

COMP@S

USER'S GUIDE



Your Power Solutions Partner

member of The  Group™

May 20, 2016

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Chapter 1 : About this guide

The information and pictures within this guide is believed to be true at the time of publication, however, Alpha Technologies S.A. accepts no responsibility to consequences from printing errors or inaccuracies. The information, pictures, drawings and specifications contained herein are subject to change without notice.

Guide History:

Date	Edition	Notes
20 may 2016	19	Revision of battery test according to the new Compas Release Updating the chapter about CompasLua Udapping and improving documentation following the up-date of Compas
1 June 2015	18	Full revision of manual with more information, tutorials and examples
30 March 2015	17	Updated for release 2.18.0.3
30 January 2015	16	Updated for release 2.17.0.3 • SNTP protocol documentation • Troubleshooting for T2S Hotplug inverters • PLC hysteresis example
04 August 2014	15	Updated for release 2.11.0.3 (First official version for 2.x)
13 June 2013	14	Updated for release 0.123.0.3
21 February 2013	13	Updated for release 0.119.0.3
21 January 2013	12	Updated for release 0.117.0.3
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17 December 2012	10	Updated for release 0.114.0.7
12 November 2012	09	DC system overview, Updated equipment tables
16 May 2012	08	Major rewrite and reorganisation - New writing tool
20 February 2012	07	New Alpha Technologies template and structure improvement.
11 June 2010	06	Added canid function (plc)
15 July 2009	05	Added section 6.8 with firmware upgrades instructions. Added information about SNMP V3
09 July 2008	03	Added chapter "Connecting multiple shelves together".
26 June 2008	02	Typo corrections, added Modbus chapter and information about PLC functions

Date	Edition	Notes
15 May 2008	01	First Edition



Information box

An information box contains useful information.



Tip box

In a tip box, you will get some useful tip that will help you to improve knowledge of our products.



Note box

Note boxes are used to give you some important information.



Warning box

Warning boxes contain really important information, please read it carefully and understand it .



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Chapter 2 : Overview

Overview Objectives

- ✓ General presentation and architecture of Compas Controller
- ✓ Overview of Alpha Technologies possibilities
- ✓ Field application examples

1. Architecture and Communications

Comp@s, the Alpha-Technologies controller, can extend the range of applications of traditional energy or monitoring system. It is a powerful site monitoring with advanced technologies, allowing the supervision and the control of:

- Environmental issues: temperature, humidity, water detection, etc.
- Access control issues: RFID badge reader, door lock, open door detection, etc.
- Integrity issues: vandalism and traffic accident detection
- Third party devices : Energy meter, SNMP devices, etc.
- Custom needs : Ask us to know what we can do for you
- ...

Our solution targets large network infrastructure, also with heterogeneous architecture. It is the ideal solution for access networks cabinet monitoring and control. This platform allows customization to satisfy your needs.

Comp@s can be easily integrated in your management system. It supports a broad range of standard communication protocols and does not request any proprietary application.

This site monitoring is a powerful tool for OPEX (**OP**erating **EX**penditures) reduction. It lowers energy costs, reduce field interventions and provide data logging and statistics facilities.

Comp@s has a very flexible hardware and software architecture, as shown on the in following figure. Thanks to this architecture, our platform is open, scalable and evolvable. All our devices (rectifiers and extensions) are connected to a reliable digital bus (CAN Bus). This allows the main monitoring unit to retrieve information, configure and command the devices.

This main monitoring unit is running the site management application. This site management application provides multiple communication interfaces: Web server, XML services, SNMP and HTTP. These interfaces are available over Ethernet and also over USB for local connection (REM: SNMP not available over USB). All the interfaces allowing access to the monitoring are secured. One administrator and up to five users can have different access and privileges.

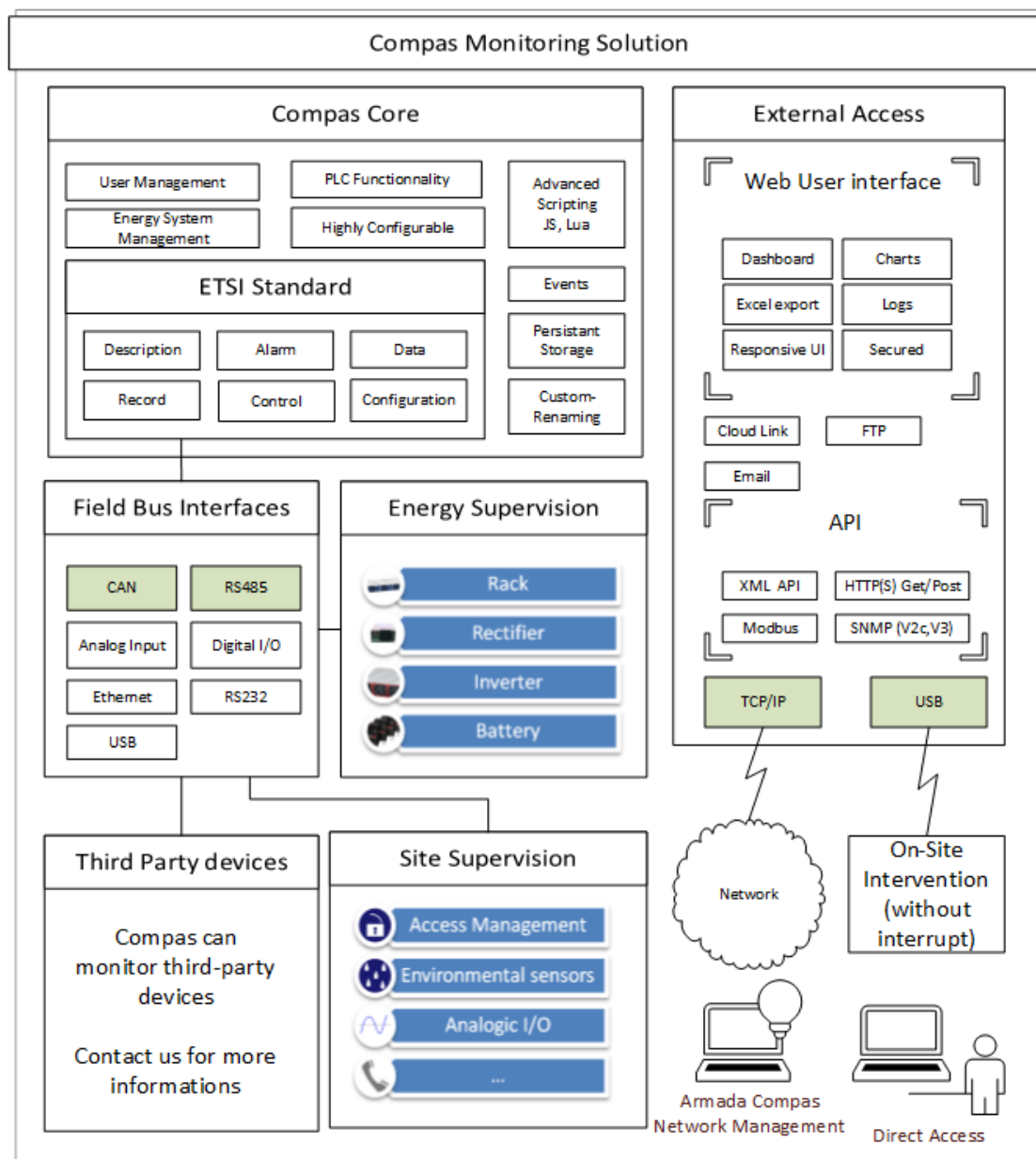


Figure 1 Compas architecture

General Features

- ✓ User Interfaces accessible with Ethernet & USB
 - Several communications protocols
 - Web Interface(HTTP, HTTPS)
 - SNMP V1, V2c, V3
 - ✓ XML API - ETSI compliant
 - Modbus
 - FTP
- ✓ Visual Dashboard
- ✓ Field Bus Interfaces : CAN, RS485, USB, RS232
- ✓ User Management
- ✓ Time Management (NTP)
- ✓ Change Traceability
- ✓ Translation
- ✓ Data Recording (Second, Minute, Hours, Days, Delta)
- ✓ Events log
- ✓ PLC (Custom Alarms and Data)
- ✓ Customizable - Renaming
- ✓ Compatible with Arm@da, or any other ETSI compatible NMS.
- ✓ Remote Comp@s Upgrade
- ✓ Backward compatible with Upgrade
- ✓ Factory Configuration
- ✓ License Model (You pay what you need)
- ✓ Ready for customization on specific projects

2. Energy Systems

Energy systems are the core business of Alpha-Technologies. Compas is our best controller that can monitor and manage multiple equipment included in one or more energy systems:

- DC System
- Inverter systems
- Remote power feeding solution.

Our solution is highly customizable to fit the need of our customers.

2.1. DC System

DC system converts AC power to DC power. Using batteries, you can protect your load from a power outage.

It is composed of:

- AC Input
- Rectifiers
- a DC Bus
- a DC Distribution
- Battery(ies), avoiding application interruption.

The following diagram is a classical representation of a DC system. As you can see, everything can be redundant in order to have very high power reliability.

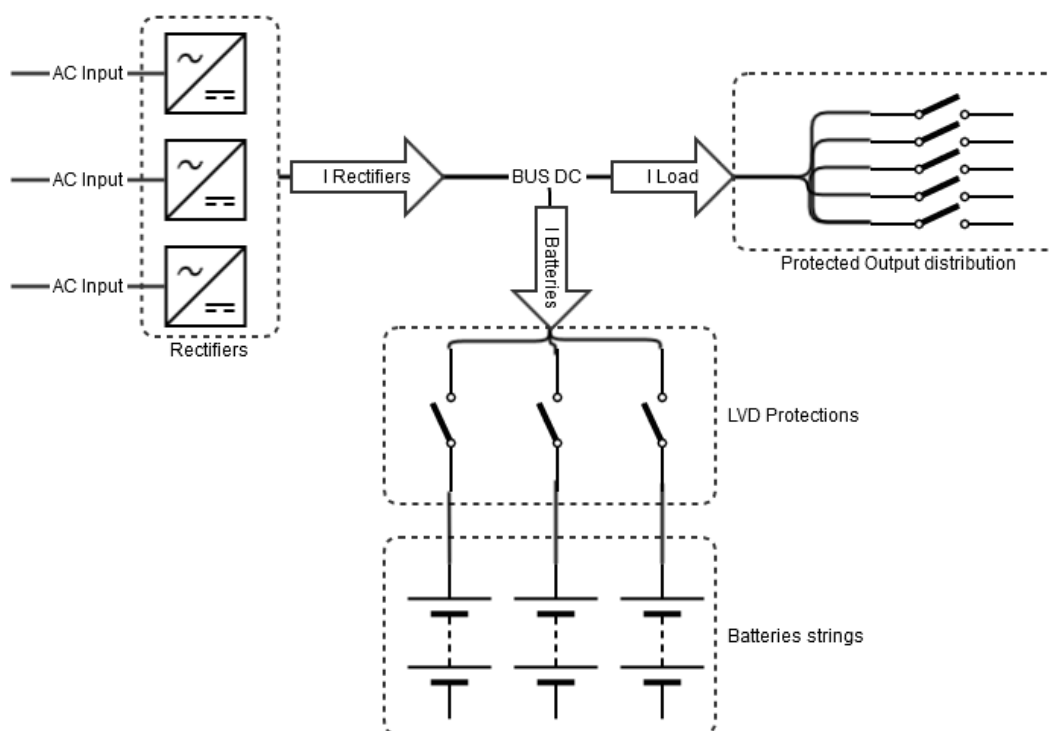


Figure 2 DC System Principles

The bus voltage is controlled following the current operation mode of the system. Our controller helps you to improve your system efficiency and battery life by using temperature compensation and charge control. We also protect your battery from extra-low voltage by using a Low Voltage Disconnect (LVD) relay. It prevents the destruction of the batteries at the first long-term power outage.

A lot of Alarms are available in order to help you to operate your system. We can detect bad rectifier or bad batteries. It helps you to *predict issues* and act before a failure. Compas is an up-time improver.

2.2. Alpha UPS and Inverters

An Alpha UPS system protects your AC equipment from power outages. Using advanced technologies, Alpha UPS is capable of using direct AC to power the load when there is no power outage; it leads to the best efficiency of your system.

This technology improves the reliability of standard ups and give you the best efficiency for your power system.

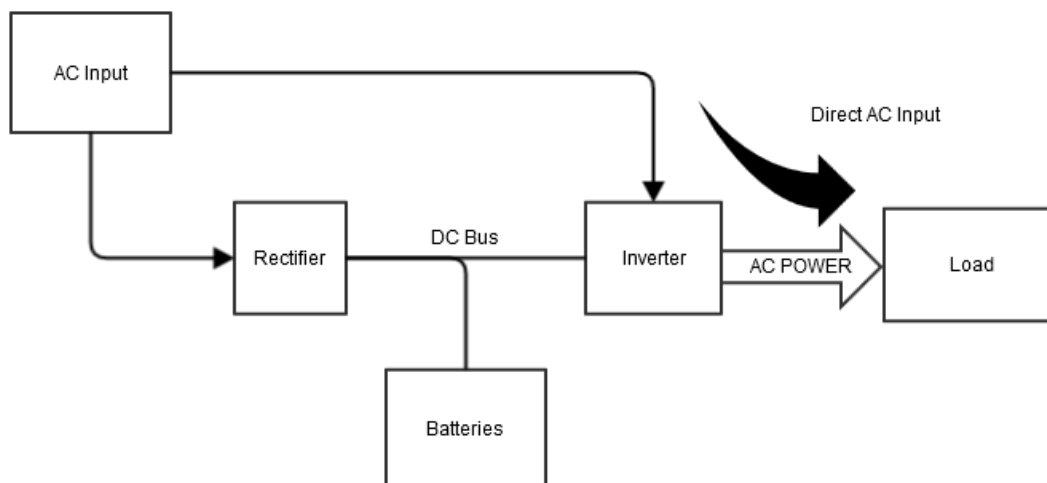


Figure 3 UPS System Principles

2.3. Remote Power Feeding

Remote feeding is a technology which enables operators to *power several remote sites* from a central location by delivering that power via *twisted pair* cables.

The solution operates within the limits of both the EN60950-1 for TNV networks and the EN/IEC 60950-21 RFT-C standards. The technology can be installed by telecom technicians *over existing copper* networks.

With its original design, the Alpha Technologies' remote feeding systems offer a highly compact solution to powering equipment in street cabinets. When compared to any traditional system (incorporating input protection & distribution, DC distribution and in many cases batteries) the cabinet space requirement is greatly reduced without compromising reliability of service.

One of the original reasons to design a remote feeding solution was the ability to offer telecoms standards of service quality without having batteries installed in street sites. No maintenance costs, no risk of theft, no safety or environmental issues, just highly available service.

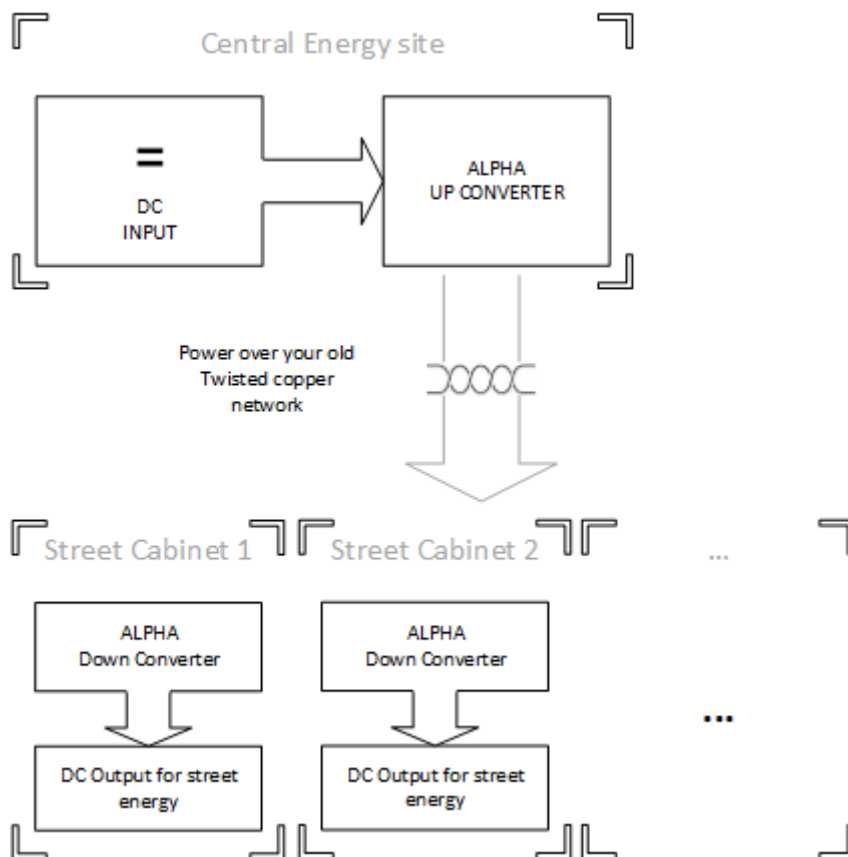


Figure 4 Remote Power Feeding principles

You can also use Alpha DC System to give the DC power to the up converter. You will get the better of the two worlds.

3. Site Management

When you have an Energy system, you usually need a device for site management. This duplicates the costs and complexity by using two different systems.

Alpha-Technologies resolves this problem with Compas. Our controller can control and monitor your energy system and your site.

We can use your I/O and our communication bus to:

- use a **Badge Reader**
- control **Door lock**
- control the light
- Detect water
- Detect **Vandalism** issues
- Read **Energy Meters**
- ...



Our Universal Compas Controller (UCC) has a lot of extensions available.



Figure 5 Universal Compas Controller

On the telecoms market, with our power-embedded solution, we have pushed the limit a little farther: In only one sub-shelf of 2U height, and 19" wide, we have the place to have the power solution (rectifier, breakers, connectors, ...) and sensors and actuators card. With this system you have everything you need to control a street cabinet and to give you the power to your equipment.

The following figure schematizes a sub-shelf which integrates 4 rectifiers, a controller unit, an extension card to interface multiple sensors/actuators and the distribution, including the breakers. The typical size of such a sub-shelf is 2U height, and 19" wide:



Figure 6 MCU with site management

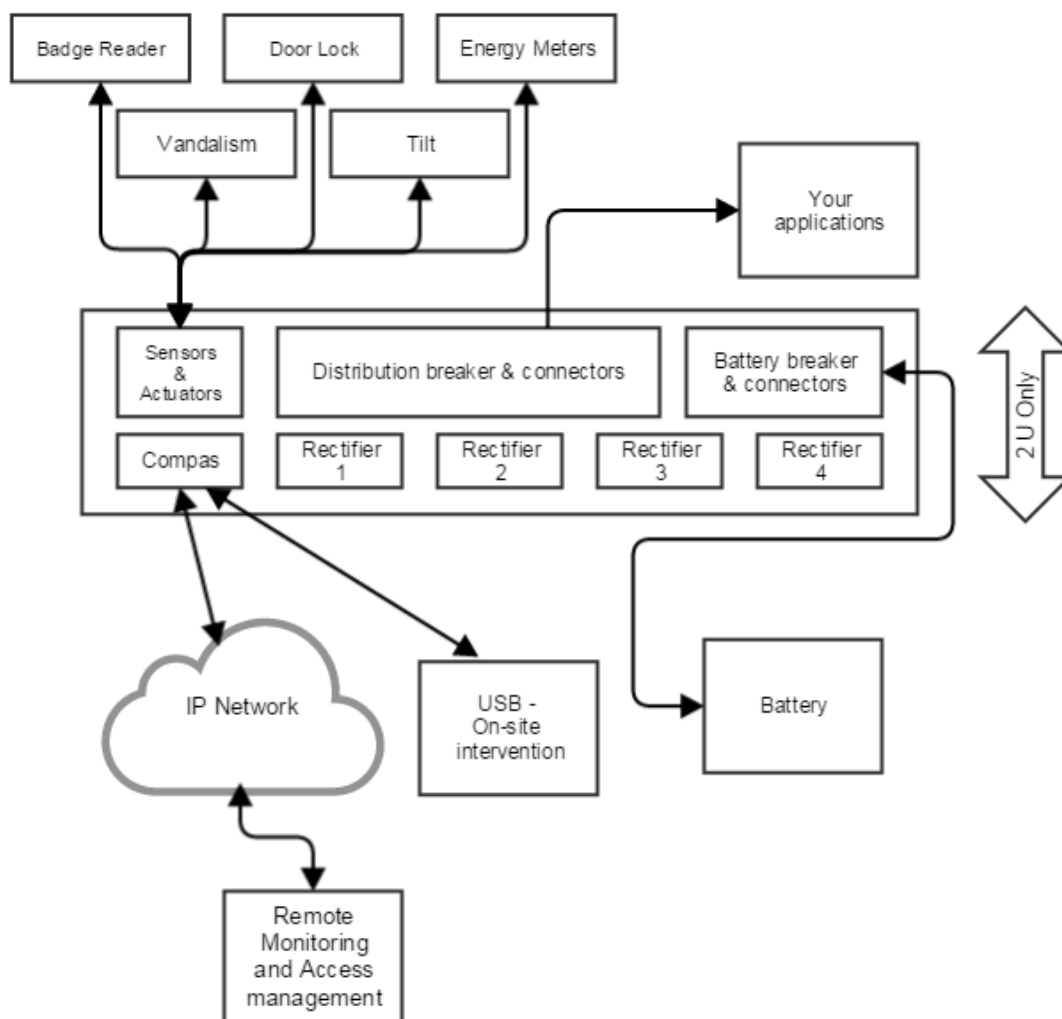


Figure 7 Rack embedding energy and site management

4. Network management solution: Armada

When you have a network of Compas, Alpha-technologies has developed the upper layer of control: **Armada**

With our solution you will have the possibility to monitor and manage your compas network from a central server. Our **excellent scalability** allows you to support from 1 to more than 50 000 Remote Site.

The main advantage of our solution is that we are based on the standard ES 202-336. This means that the information of any equipment compliant with the standard will come automatically at the right place and can be used and consolidated without any expensive programming. You just have to give the IP address of your system and Armada will discover the system by itself.

A particular benefit of the application is the extreme flexibility and ease to create different clusters of views in the same environment. For example, one can create clusters of sites by geographical areas, type of equipment, operator, alarm severity...

Armada can be interfaced with high-level management software with customized engineering work.

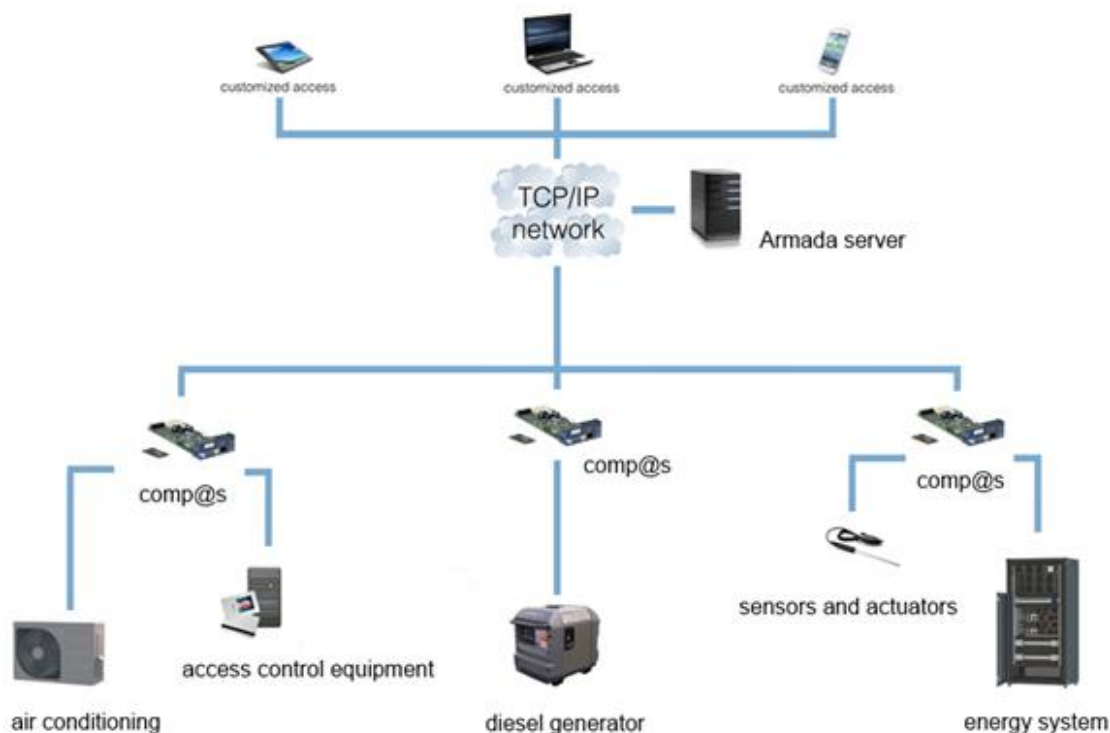


Figure 8 Armada principles

4.1. Application main functions

Armada functionalities

✓ Centralized and sophisticated alarms management:

Alarms and events are sent instantly by sites (Compas) to Armada that centralizes and stores them in its database. Alarm processing can then be extremely sophisticated: from the simple generation of summary reports to clever alarm forwarding. The alarms can be forwarded to a NOC (e.g., IBM Tivoli), by email or SMS.

- Alarm forwarding can be easily customizable :
 - send sms for some type of alarms
 - send emails to a specific technicians team only if alarm occurs during a certain time slot (evenings or weekends) and region
 - ...

✓ Cutting edge data reporting:

Armada saves historical data from multiple devices, sensors... over a long period. The frequency and sampling precision are configurable by the user. The user can then use its data from predefined reports or create itself its own reports by integrating graphics (wizard)... All saved data can also be exported in Excel.

✓ **Network Manager:**

Massive change: Armada allows to easily updating remotely a part or the whole network of Compas (software/ firmware update, configuration change).
Chirurgical change: Arm@da allows you to connect remotely to the Compas interfaces, address potential problems on a specific Compas or specific equipment.

- ✓ Armada allows backup and restoring remotely the configuration of each Compas.
- ✓ Document management. Armada allows to upload various kinds of documents (Word, Pdf ...) and to associate them with a site or a cluster.

✓ **Fine User Management:**

Ability to define roles per user

- admin
- account manager
- region manager
- operator
- ...

✓ **Customizable script:**

To meet specific demands, we offer Arm@da customers the ability to create and run custom scripts. These custom scripts are a series of commands written in a programming language (PowerShell) that allow interaction with the Arm@da database (detection of new events ...) and perform custom actions (send emails, sms, tweets ...).

✓ **Ability to support other controllers** that do not comply with ETSI XML.

It is managed in Armada using new Armada API that convert protocols:

- - API based on open source technology.
 - Fully integrated and customizable in armada.
 - API based on a scriptable language (Python).
 - No need to compile

5. Future Ready

5.1. Upgrades & Compatibility

Alpha-Technologies has a long-term support politic. Since 2006, we are able to keep the compatibility with older Compas system. This support is one the main advantage of our solution.

With our Compas Ultimate License you also get the Free Upgrade for lifetime. This will help you to manage your network and keep your systems running up to date.

5.2. Third Party Device

Alpha-Technologies works with other companies in order to support third party devices. This will give you the possibility to support your old system or to buy the sensors that you want.

Here are some examples of supported devices. If you need more information, just [contact us](#) to see what we can do for you.

5.2.1. Energy meters

Compas can monitor your system consumption or even help you to invoice your customer consumption.



Figure 9 PM9C (Schneider Electric)



Figure 10 IEM3150 (Schneider Electric)



Figure 11 B21 (ABB)

5.2.2. Interfaces



Figure 12 1-Wire Interface (LinkUSB)

5.2.3. Sensors



Figure 13 MS-TH



Figure 14 T-Sense

5.3. Compas API

Our API is highly open. You can easily interface your current monitoring system with Compas.

6. Some Compas Equipment

Here are some examples of our working system:

6.1. Site Controller

UCC : Universal Compas Controller

This 1U shelf is specialized into site Management. This shelf has many interfaces and can be extended with ADIO that will add analogic read and digital I/O.

- ✓ Ethernet
- ✓ RS485
- ✓ RS232
- ✓ USB Host
- ✓ USB Client



Figure 15 UCC

6.2. Energy Systems

6.2.1. DC Systems

Fully Integrated Shelves

In fully integrated shelves, Compas monitor Energy and your site/Cabinet. This solution is cost effective and reduces your on-field maintenance.

Captin300: Smallest 1U energy system with site management board embedded. This rack can provide up to 3x300w. It is the perfect solution for small street cabinets.

- ✓ High efficiency small load solution
- ✓ 300W rectifier based series
- ✓ Rack mounting 1U high
- ✓ Full front access



- ✓ Very easy and fast connections
- ✓ Integrated distribution
- ✓ Battery connection and management
- ✓ Multiple monitoring options

Figure 16 Captin 300

Captin 850FA: High power density rack and energy feeding.

- ✓ Integrated site management and energy feeding
- ✓ 4000W maximum output power (3000W N+1 redundant)
- ✓ 6 protected DC outputs
- ✓ Single protected battery bank connection
- ✓ Full front access
- ✓ 266 mm deep, 19"/ETSI wide, 2U High
- ✓ Optional LCD and user interface

**Figure 17 Captin 850FA**

Standard Shelves (Advanced power monitoring)

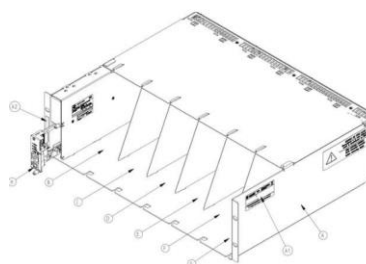
ACE102 : 1U 2000W system

- ✓ 1U high, -48V DC system
- ✓ 2000W maximum output power (1000W N+1 redundant)
- ✓ Compatible with 850W and 1000W rectifiers
- ✓ Single DC Power output
- ✓ One battery bank connection
- ✓ Integrated LVD & Distribution

**Figure 18 ACE102**

ACE186 : 3U 10800W system

- ✓ 3U high, -48V DC system
- ✓ 10 800W maximum output power (9000W N+1 redundant)
- ✓ Can be mounted in parallel to support higher power requirements
- ✓ Single DC Power output
- ✓ LVD control functionality

**Figure 19 ACE186**

6.2.2. Inverter systems

Inverter systems

Bravo : 2500 VA.

- ✓ Wide AC input 150VAC-265VAC, 2500 VA



- ✓ No need of external static Switch
- ✓ 96% efficiency in EPC mode (AC to AC double conversion)
- ✓ No transfer time from AC to DC sources
- ✓ Unity power factor on AC input

Figure 20 BRAVO : 2500 VA Modular Inverter

Nova : 750VA

- ✓ Wide AC input voltage range : 150VAC – 265VAC, 750VA
- ✓ No need of external static Switch (all STS functions included in each module)
- ✓ High power density 93% efficiency in EPC mode (AC to AC double conversion)
- ✓ No transfer time between AC and DC sources
- ✓ Unity Power Factor on AC input



Figure 21 Nova : 750VA Modular Inverter

6.3. Remote Power Feeding Systems

Up Converters

CES48 (with CEM03)

- ✓ Single or dual redundant 48V input
- ✓ Operates with any combination of remote down converter solutions
- ✓ Up to 14 slots and 52 lines
- ✓ Interchangeable power and monitoring card



Figure 22 CES48 (with CEM03)

DOWN Converter

- ✓ Complete system shelf with converters, input card and monitoring
- ✓ Operates in ambient temperatures up to 70°C (fan cooled)
- ✓ All modules are hot swappable
- ✓ Reduced number of feeding pairs required



- ✓ Two protected 48V DC outputs

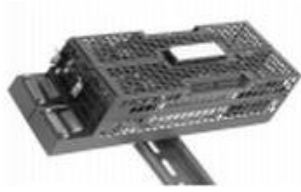


Figure 24 REC006 (60 W)



Figure 23 RES24 (3x 120w)

Figure 25 RES96 (3* 600w)

Chapter 3 : Quick Start Guide

Before diving into a more technical document, it is important to learn the bases in order to understand the next chapters easily. This chapter is about **practical** exercise specially designed to discover [Compas system](#) fundamentals.

At the end of this chapter you will be able to :

- ✓ Know the basics of ETSI standard
- ✓ Understanding Compas Structure
- ✓ Connect to the Compas web-application using USB or ethernet
- ✓ Navigate into the web interface
- ✓ Monitor alarms
- ✓ Changing fields into the site
- ✓ Changing descriptions
- ✓ Setting manually the time of the controller
- ✓ Adding a License to your system
- ✓ Changing the network configuration
- ✓ Use the on-board help

1. Connecting to a Compas

Compas Controller has two main physical interface allowing connection to the user interface:

- [USB](#)
- [Ethernet](#)

1.1. Connecting using USB

1.1.1. Requirement

The USB Type-B socket provides a standard USB client connection, allowing having a local connection with any computer. Here follows the procedure.

Required material:

- A personal computer with USB capabilities;
- A standard Type-B plug to Type-A USB plug.
- **Do Not Connect USB Cable yet**



Required software:

- A Windows XP / Vista / Seven / 8 operating system.
- A web browser: it is recommended using Firefox >= 22.x or Internet Explorer >=10.x.
- Microsoft Active Sync App :

- With XP : <http://www.microsoft.com/en-us/download/details.aspx?id=15>
- With Vista and Windows 7, if you have an internet connexion on the first connexion, Drivers will be installed automatically
 - Download for off-line update:
 - Vista 32 bits :
<http://www.microsoft.com/download/en/details.aspx?id=14>
 - Vista 64 bits :
<http://www.microsoft.com/download/en/details.aspx?id=3182>

1.1.2. Procedure

1. Do not connect the USB cable yet
2. *Install the Active Sync application.* A computer reboots may be asked at the end of the installation.
3. *Activate the port forwarding over USB*
 - a. To do this, a small modification in the registry must be done. You can use the Windows registry editor "Regedit"
 - i. Press Windows+R
 - ii. Enter "regedit" and press enter
 - iii. Navigate to
`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows CE Services\ProxyPorts` and add a DWORD "HTTP PORT FORWARDING", with data 00000050
4. Connect the USB cable between the personal computer and the Comp@s monitoring.
5. Active Sync application should detect the connection and ask to "Set Up a PartnerShip". Just click on "No" and afterwards on "Next"
6. It is now possible to browse the Comp@s Flash disk content by going to: Start menu > Computer > Compas, under Windows Vista or Windows 7 (or: Desktop > My Computer > Mobile Device, under Windows XP).
7. Start your Web Browser and enter the URL address <http://127.0.0.1> or <http://localhost>
8. The Comp@s web server will ask for a login and a password which are shown just below
9. Congratulation, You are now connected on the web interface as administrator of the system. Let's explore [The Web Interface](#).

**Need to deploy on several client**

1. Open a new text file and write the 3 lines located below. Then, save the file as "Compas.reg"
2. Execute it (double-click) on each Computer that you want to configure

```
Windows Registry Editor Version 5.00  
[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows CE Ser-  
vices\ProxyPorts]  
"HTTP PORT FORWARDING"=dword:00000050
```

**Default admin password**

Login/User Name: **admin**

Password: **compas**

(Please note that login and password are case sensitive)

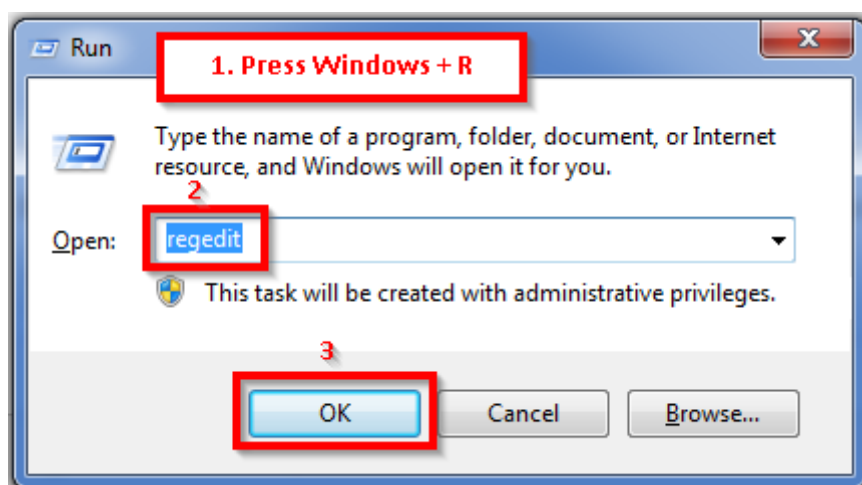
1.1.3. Visual help

Figure 26 Open Regedit

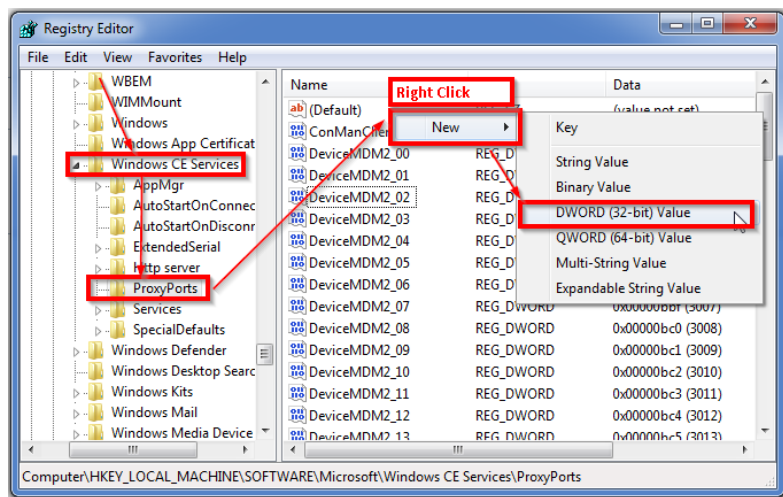


Figure 27 Navigate and create the DWORD key

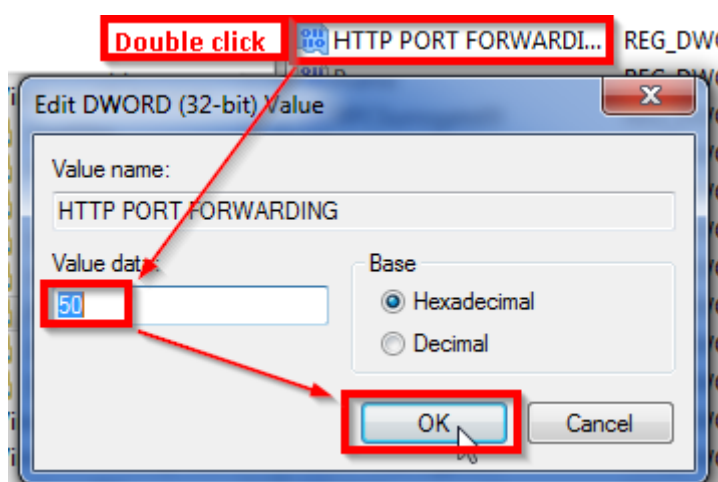


Figure 28 Edit the Key with value 50 (hex)

1.2. Connecting using Ethernet

The Comp@s monitoring RJ45 female port provides a standard 10/100 MBits Ethernet connection.



Default Ethernet Configuration

IP address: **192.168.45.2**

Sub Mask: **255.255.255.0**

1.2.1. Requirement

Required material:

- A personal computer with Ethernet capabilities;
- Ethernet cable (Any recent PC has an automatic polarity detection)

Required software:

- Any operating system with an up-to-date web browser. It is recommended using firefox >= 22.x or Internet Explorer >=10.x.

1.2.2. Connecting procedure

To connect to the system, the personal computer has to be configured with a static IP address. You can use the IP 192.168.45.3 for example, with 255.255.255.0 as sub mask.

1. Access t
2. Access Network Connections control panel
 - a. **Windows XP** : Start -> Control Panel -> Network Connections
 - b. **Windows 7** : Start -> Control Panel -> Network and Sharing center -> Change adapter settings
3. Select the used connection, generally "*Local Area Connection*". Right-click on that connection's icon and click Properties.
4. Under "this connection uses the following items" scroll down to "Internet Protocol (TCP/IP)" and double-click on that. The "Internet Protocol (TCP/IP) Properties" window will appear.
5. Right now, "Obtain an IP address automatically" is probably selected. Instead, select "Use the following IP address" In the "IP address" field, enter the address you chose (for example, 192.168.45.3). The subnet mask will automatically become 255.255.255.0, which is correct. Then, click the "OK" button.
6. Start your Web Browser and enter the URL address <http://192.168.45.2>
7. The Comp@s web server will ask for a login and a password which are shown just below
8. Congratulations, you are now connected on the web interface as the administrator of the system. Let's explore [The Web Interface](#).



Default admin password

Login/User Name: **admin**

Password: **compas**

(Please note that login and password are case sensitive)

1.2.3. Visual Help

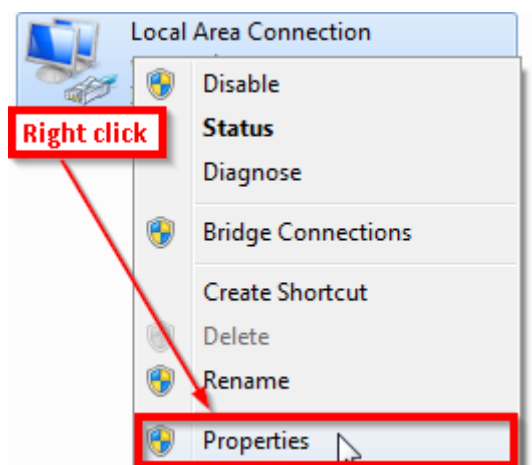


Figure 29 Open network interface properties

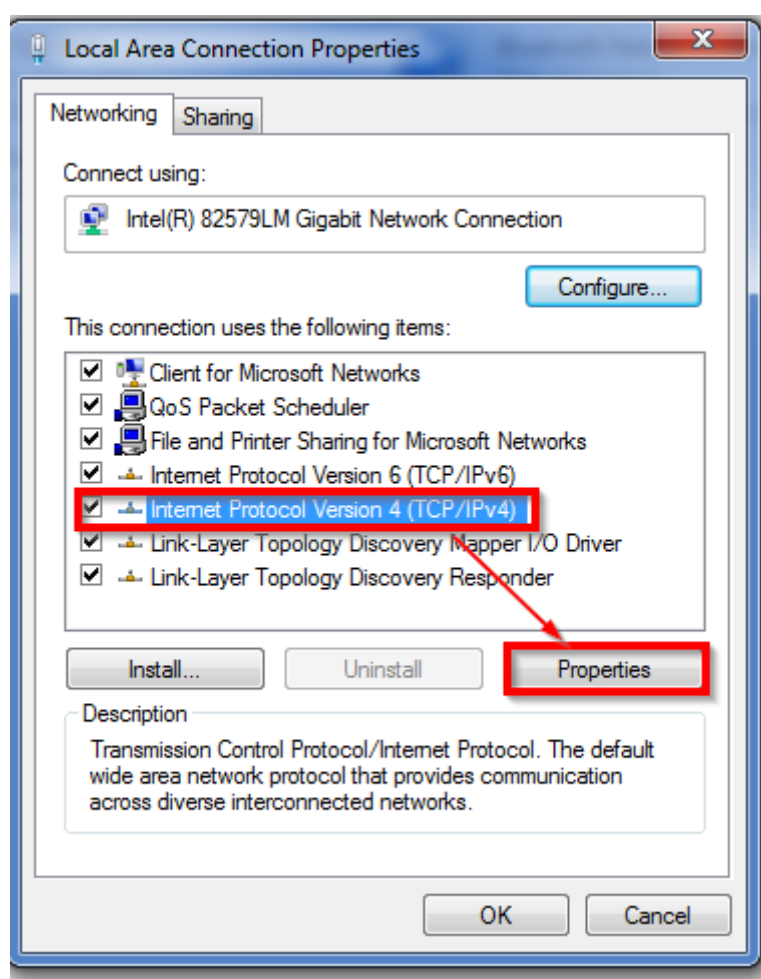


Figure 30 Edit Properties of IPV4

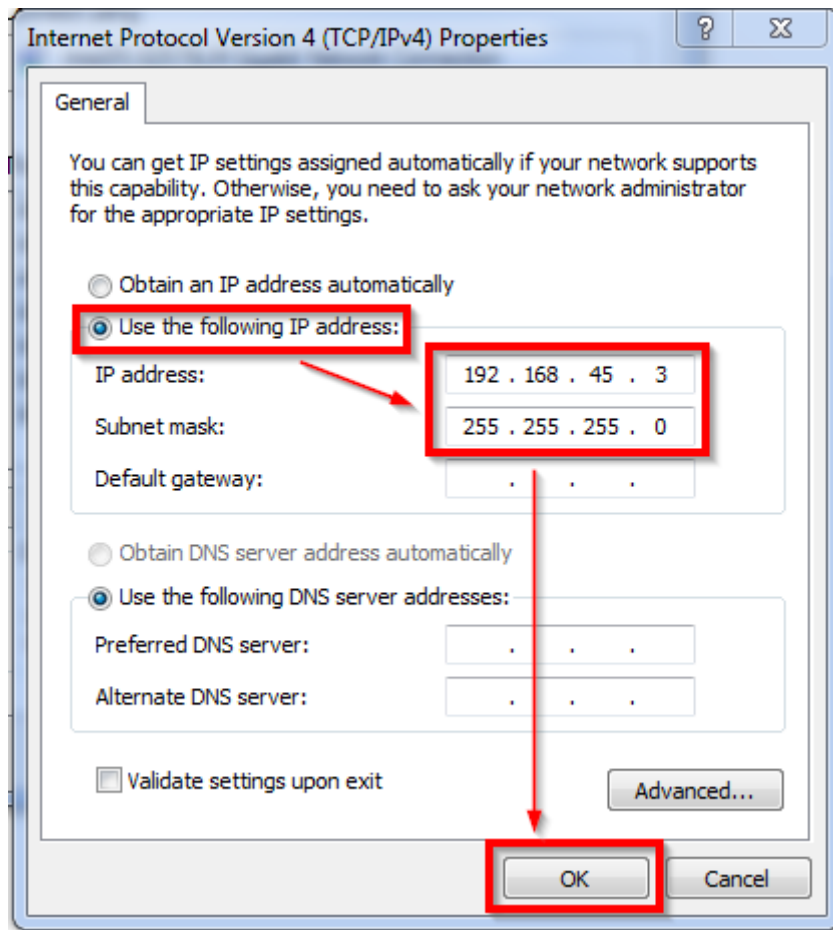


Figure 31 Change IP Settings

2. The Web Interface

2.1. Layout

The following figure shows the default initial web page displayed after login (Site):

- The top menu gives access to other pages
- The left part shows the hierarchy of the component of the system (Site, DC System, Rectifier, etc.).
- The main content concerns the description of a site, comprising address, GPS position, etc. One can see the presence of different tabs (Description, Alarms, Events, Data, Records, Configuration), allowing to see corresponding values related to the selected tree node.
- The bottom part displays the date and the time, software information, login information, and language selection

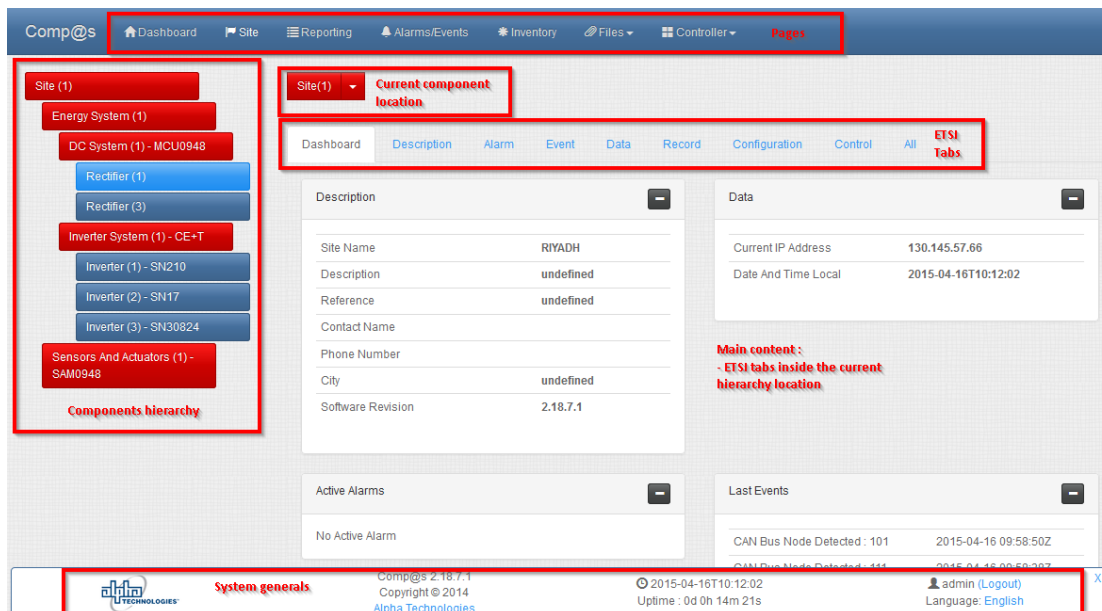


Figure 32 Page layout

2.2. Map

The website is structured as shown if the following diagram:

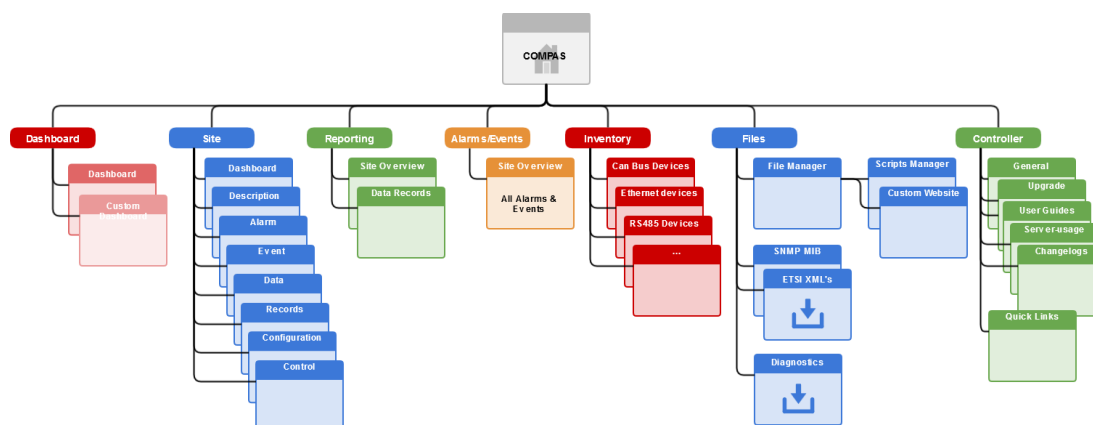


Figure 33 Site-map

The site page gives you access to all your component data and actions. It is well organized into ETSI tabs.



Don't forget to select the right device before accessing into the ETSI tabs.

2.3. Navigation example

2.3.1. Access the rectifier 1's description

Your rectifier is in the DC System 1 of the Energy system of the site.

You can access directly to it by clicking on the hierarchy. The current location will change and you will be able to click on the Description Item.

Another way to access to the rectifier is to use the location drop-down. It is the standard way to access when you are using a smartphone.

Pay attention to be on the right location, if you are on another rectifier, the page look is the same.

Product Info		
Id	Name	
DE1	Product Name	CAR1048TN
DE2	Hardware Reference	9411 011 05001
DE3	Hardware Revision	51
DE4	Software Reference	SOFT 000067 01
DE6	Serial Number	0611-716
DE8	Manufacturing Date	Y11W42

Figure 34 Using hierarchy from standard web-browser

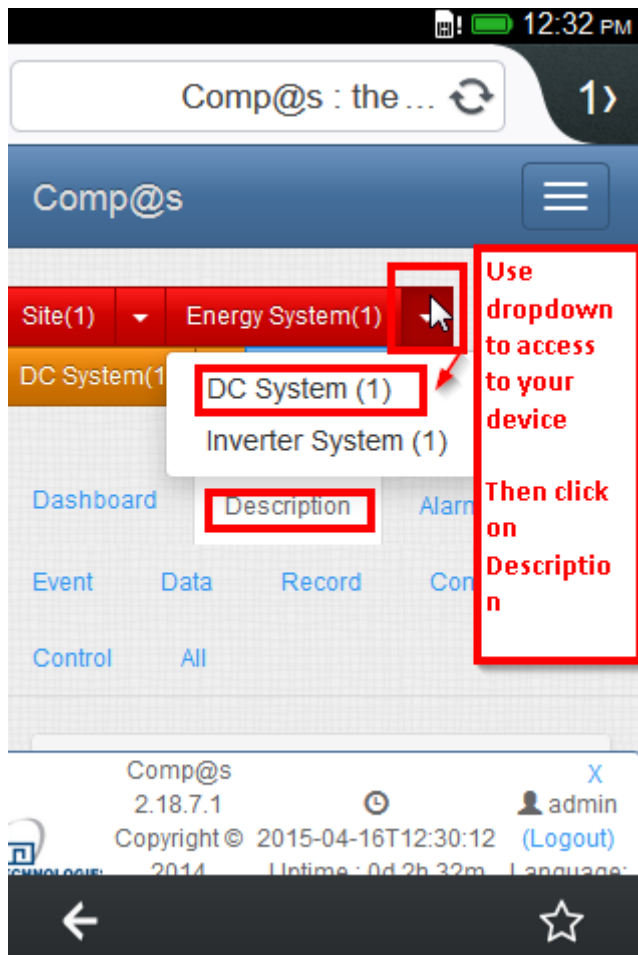


Figure 35 Smartphone lay-out and drop-down button

2.4. Some Useful information

2.4.1. Filter Concept

Sometimes, it takes time when you switch from different ETSI categories. (I.e. Change battery and launch a test) Compas has the solution: Using groups and subgroups will help you to show only the information on a certain topic. In the following visual example, we will access to all the "time" related elements from the same page thanks to the filter button.

1. On site level, click on the tab "All".
2. Select the time group in the filter drop-down
3. Now you have a view of all time-related elements. As you can see, you have Data information mixed with controls and configuration. That give you all the information that you need on the same page.

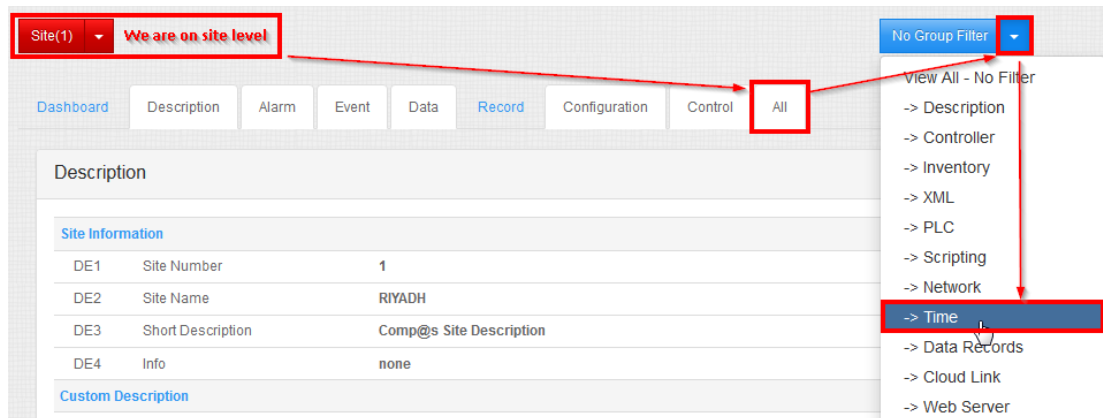


Figure 36 Filter concept - showing all

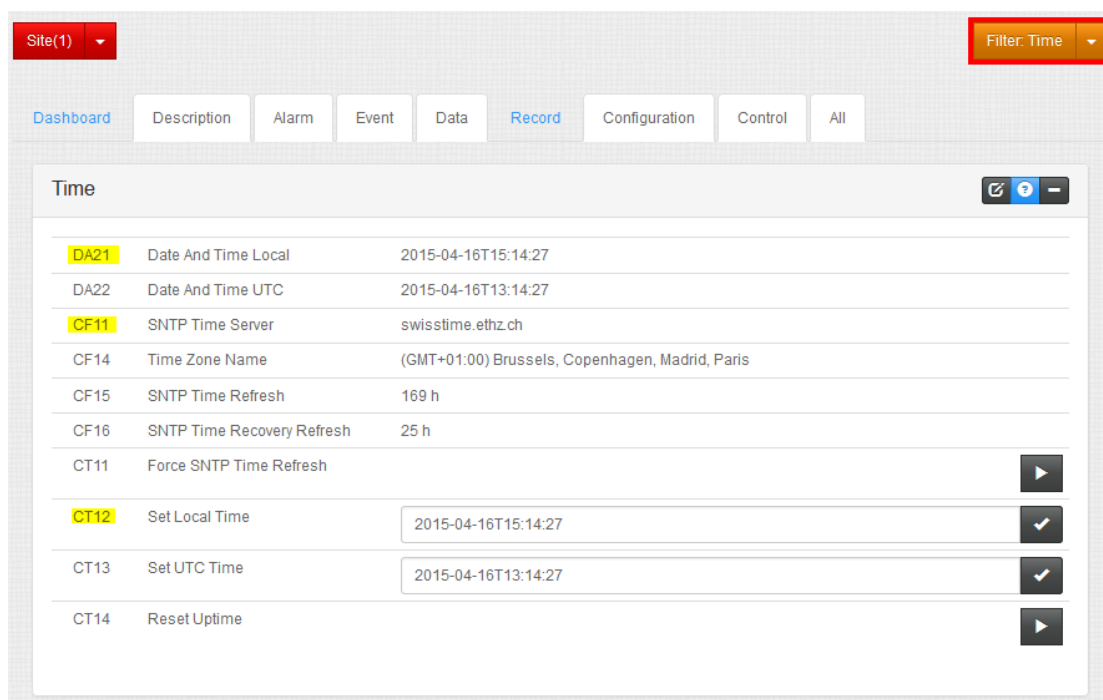


Figure 37 Filter concept - showing time information

2.4.2. Dashboard

It gives you important information about your device. On some systems, we even added a dynamic and visual dashboard to help you to understand directly what's happening.

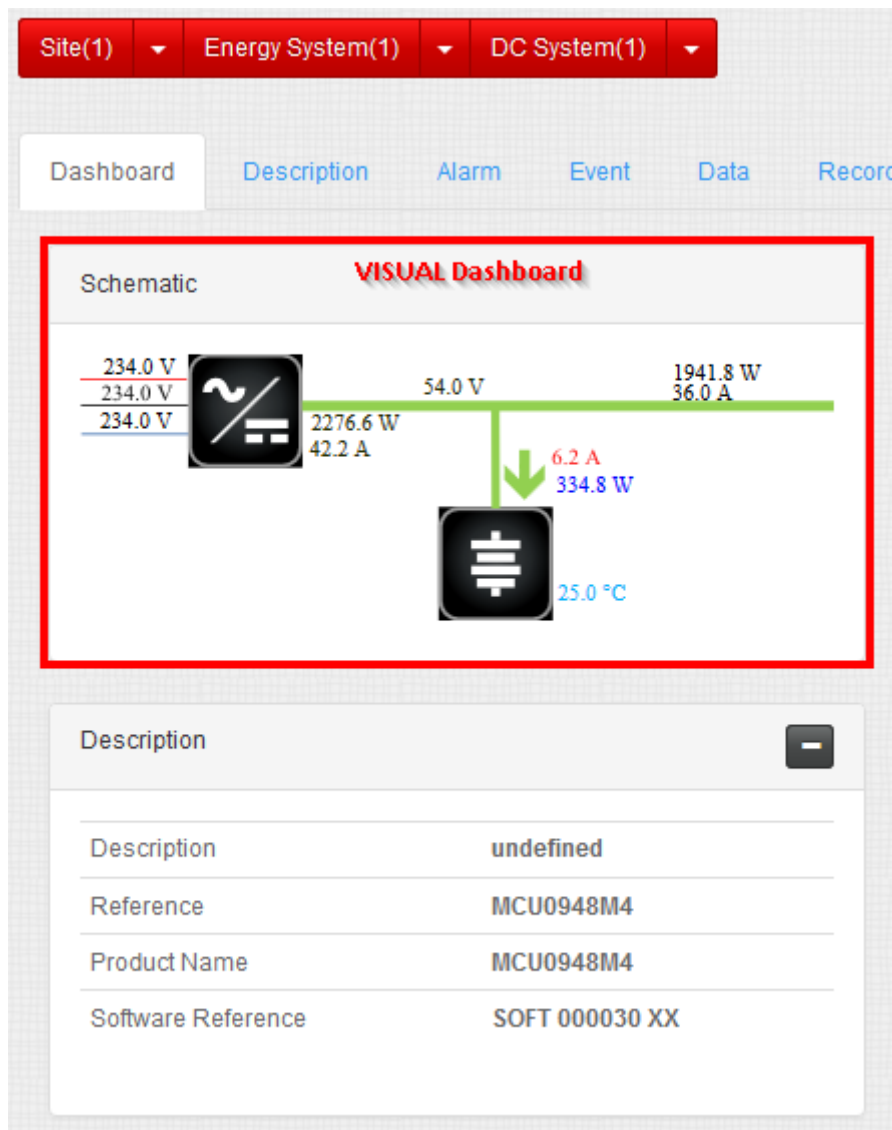


Figure 38 Dashboard

2.4.3. Alarms

With alarm panel, we have the information directly about the possible equipment issues. For example, in the following pictures, we can see directly that we have a problem with the battery:

- Battery breaker is open
- Battery LVD is open

This happens if the breaker is not ON.

LVD						
AL17	Battery LVD Relay Open	major (6)	3	↑ 2015-04-16 13:56:03Z	↓ -	🔔
Digital Inputs						
AL25	Distribution Breaker Open	major (6)	1	↑ -	↓ -	✓
AL26	Battery Breaker Open	minor (4)	2	↑ 2015-04-16 13:56:03Z	↓ -	🔔
AL27	Digital Input 3	none (0)	0	↑ -	↓ -	✓
AL28	Digital Input 4	none (0)	0	↑ 2015-04-16 09:59:02Z	↓ -	🔔

Figure 39 Visual Alarm system

Now that you know the basics of the web interface, let's practice by [setting description information of a system](#)

3. ETSI & Compas principles

3.1. Introduction

The Compas user interface is a web-application. This has many advantages:

- OS independent
- Easy Remote Access
- Smartphone access with a responsive design
- Works on all standards and actual browser

We are going to discover the basics of ETSI Standard. If you wanted to go further, please explore the appendix pages explaining [ETSI Protocol](#).

3.2. Devices Hierarchy

Each system or device is well organized inside a hierarchical tree. Systems are nested together using a logical and standard way (ETSI).

In this example, a site contains two main systems:

- Energy System
- Sensors And Actuators

The energy system is composed of :

- DC System containing multiple rectifiers
- Inverter System containing multiple inverters

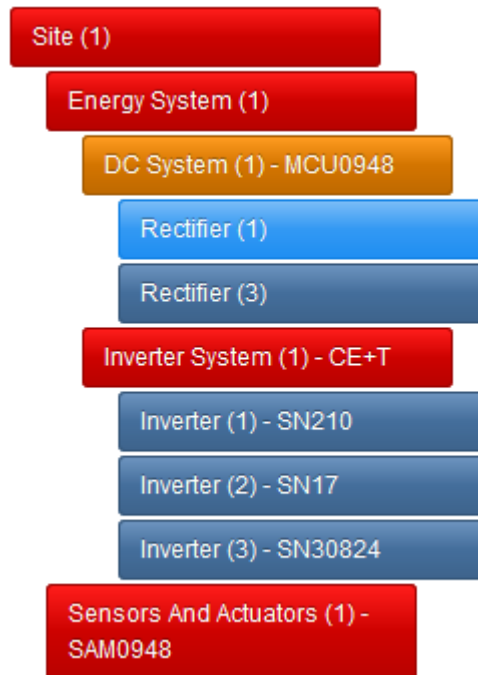


Figure 40 View of an Alpha system Tree

3.3. Equipment's elements

Each system, device or site has his own collection of description, alarm, events... Each category contains different elements that have a unique numeric ID.

	Example
Description	Contains descriptive elements of the current device. i.e. : • DE11: Product Name • DE16: Serial Number • DE18: Manufacturing Date, ...
Alarm	Contains alarms of the device (active & inactive) i.e. : • AL1 : DC Bus Extra Low • AL6 : Mains Failure • AL25 : Distribution Breaker Open
Events	Contains the events log of the system i.e. : • EV35 : Alarm set : Mains Failure • EV36 : Alarm set : Battery On discharge • EV37 : Alarm Clear : Mains Failure • EV38 : Control Executed : [id=1],[name=Back To

	Example
	Float],[value=1],[result=COMMAND_EXECUTED],...
Data	All the device data are listed in it i.e. : • DA10 : I1 • DA11 : I2 • DA21 : Total active power
Record	It is possible to make charts over data that are currently logged
Configuration	Configuration parameters allows you to set some set point or any other parameter (ip...) i.e. : • CF2 : IP address • CF3 : Subnet mask
Control	When you need to make an action and take control. i.e. : • CT2: Start Battery Test • CT41: Reset Last Battery Test State

3.4. Compas Color code

In Compas, colors represent the severity of an alarm:

- **Red**: Major alarm
- **Orange** : Minor alarm
- **Light Blue** : Warning
- **Blue** : No Alarm

The equipment has always on the color of the most severe active alarm.

4. Initial Configuration

At the end of this practical tutorial, you will be able to

- ✓ Set [the description](#)
- ✓ Set [the time](#)
- ✓ Adding a [license](#) key
- ✓ Change the [IP address](#)
- ✓ Be ready to discover the rest of compas

4.1. Changing the description of the site

Describing your site as much as possible is important, it gives essential information for technicians and field people like cabinet localization, responsible phone number,... It helps for efficient intervention team and a smaller intervention time.

4.1.1. Interface modes

The first thing to know is that Compas has different modes of view.



Normal mode



Edition mode



Rename mode



Help mode

Table 1 Compas Interface Modes

You can change and visualize the current mode by clicking on the appropriate mode icon. Help mode can be combined with other modes; it gives you more information to help you in your choices.

4.1.2. Procedure to change the description of the site

Let's change some description elements

1. Navigate to *site*-> *description*
2. Switch to the *edition* mode
Most of the fields become editable
3. Change the parameters to fit your information.
When you change multiple parameters, a color code will help you to be sure that your parameter is validated :
 - blank : no change
 - orange : unsaved change
 - green : change is saved
 - red : an error occurred and your parameter is not saved
4. Don't forget the GPS Position! It could be really useful for a technician looking for a street cabinet. (And a link to google map will be added into the controller menu)
5. If you exit the edition mode, you will see that the change is effective on the running system.
6. **If you want to make persistent your changes, you need to save the configuration**
To do that, click on the controller then "*save configuration*". You will get the message "COMMAND_EXECUTED" confirming your action
7. **Well Done**, you just changed the description of your system and make the change persistent ! Now let's configure [the time of the controller](#) !

4.1.3. Visual Help

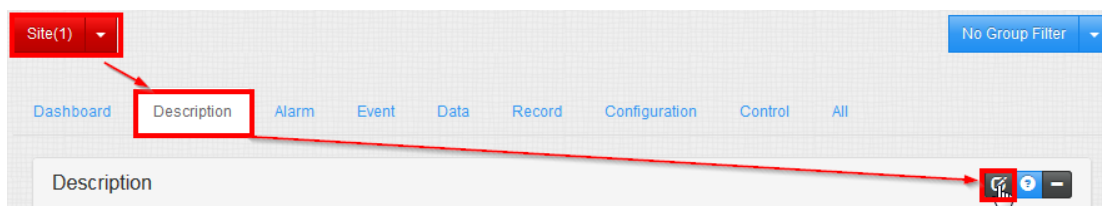


Figure 41 Navigate to description tab and switch into edit mode

Description ✎ A ⓘ -

Id	Name	Value
Site Information		
DE1	Site Number	1 Unchanged
DE2	Site Name	Alpha DC+Inverter for server changed and saved
DE3	Short Description	This system give power to alpha-technologies servers
DE4	Info	
Custom Description		
DE5	Description	server unsaved
DE6	Reference	5477-66687-114
Contact		
DE7	Contact Name	Pierre Paques
DE8	Phone Number	+3210438384

Figure 42 Change the parameters

GPS Position

DE31	Latitude	4.637279
DE32	Longitude	50.6628792
DE33	Altitude	18

Figure 43 Set the GPS coordinates

Description ✎ ⓘ -

Id	Name	Value
Site Information		
DE1	Site Number	1
DE2	Site Name	Alpha DC+Inverter for server
DE3	Short Description	This system give power to alpha-technologies servers

Figure 44 Switch into the normal mode

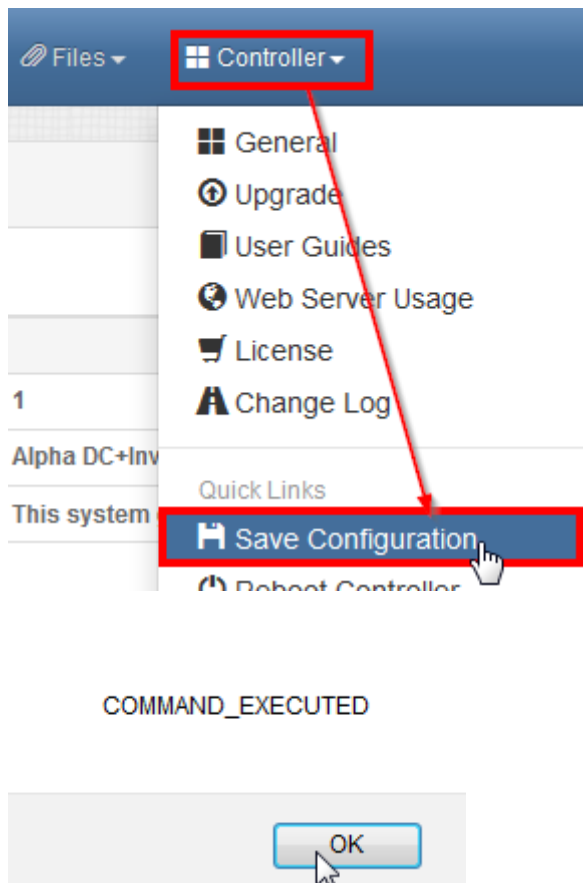


Figure 45 Save configuration

4.2. Setting the time of the controller

When you are using a system, it is really important to know when an event happened. The date & time is essential for a good usage of your device. Compas use an RTC (Real Time clock) in order to keep the time between power outage or moving the system but it has to be right configured for the first usage.

4.2.1. What time is it now?

You have multiple ways to find the system time. The first and easiest is to look at the bottom of the interface. The second is to look into site -> data -> DA21 & DA22. These two parameters will give you the local and UTC time.

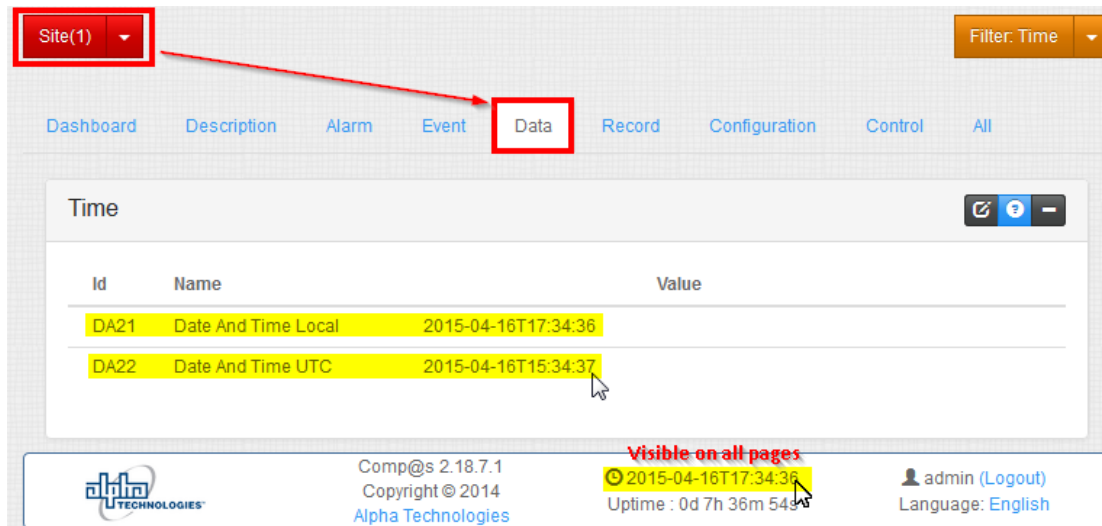


Figure 46 Reading the time of a system

4.2.2. Changing the time

For changing the time, we need a control because we are going to make an action on the system. Logically this control is located at the site level. Using the time modification control (CT12) is necessary to set the right time. Just navigate to controls inside the site, write the right date and time then validates.

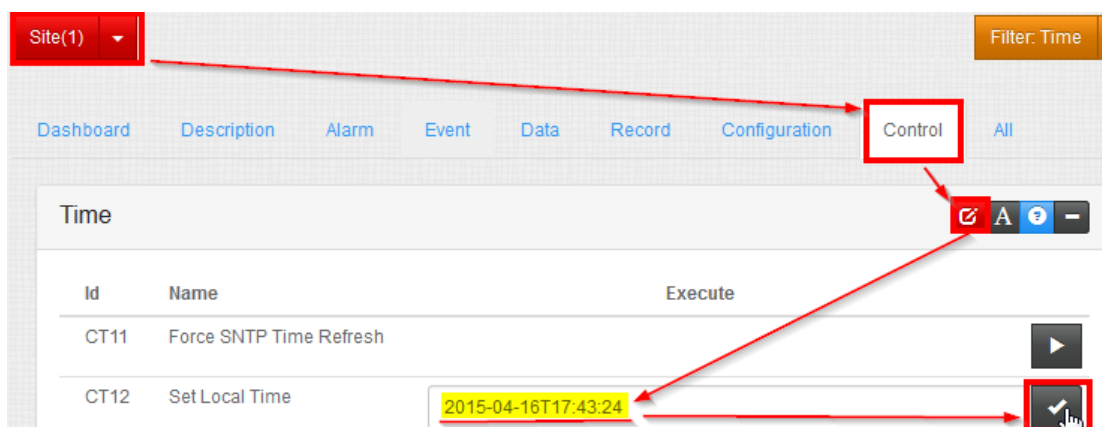


Figure 47 Setting local time

4.2.3. Other time Functions

Compas can also use a SNTP server in order to keep all your compas time synchronized with a server. It also supports the time-zone and parameters to set the SNTP refresh time. I invite you to see the [Time](#) section if you want to know more about these functions. But, if you go to the parameters, you will certainly understand how it works.

4.2.4. Conclusions

Congratulations, your second change in compas is now effective. But let's see if you can [add a license](#) to your system.

4.3. Adding a License

When you receive your system, you usually have the professional license (or basic on older system). We changed recently the [Licenses](#) options to give you more and a best user experience.

Each system has his own unique license that is linked to the hardware of your device. Licenses are not "time-based", it is functionality based. If you need to upgrade your license, just send us the site.xml file (available in Files -> Site.xml) and ask us the new license that you want. You will receive a file that you have to put on the Compas. To do that you have two ways:

- Via the web interface (in this tutorial)
- Via USB
- Via [FTP](#)

4.3.1. What are my licenses options

In Compas, almost everything is available using ETSI Structure, you can easily use the site -> data -> DA11 (Licensed Options). But well it is a little more complicated so we have made a dedicated page accessible in Controller-> License. On this page, you have the details of your licenses.

As you can see in the picture below, we have the professional License (including older licenses basic, standard, battery and asset) and our License key is valid. This page gives you also the possibility to add a better license.

Well, that seems easy let's practice a little.

Option	Info
basic	Basic License
professional	Professional License
standard	Standard License
battery	Battery Support License
asset	Asset License

License File	Options	MAC Address	Key Valid
VFlashDiskUserLicenseKey_00-14-2D-22-5A-59.xml	professional	00-14-2D-22-5A-59	True

Figure 48 Read my current license

4.3.2. Getting the new License

If you already have a license file, you can skip this step.

Let's get your site.xml license and ask to alpha-technologies a new license. To do that, just download the file site.xml site -> site.xml and send it as an attachment to support.Compas@alphatechnologies.be, don't forget to give us your billing information and the license that you want or evaluate. You will rapidly get your new license. In this example, we will get the Ultimate Compas License.

4.3.3. Adding the License

On the License page (Controller -> License) , there is a small form where you can update a file. Just put your new license file into the file dialog and click on Upload License File. You will get the response "FILE_UPLOADED". After that, you will have to restart your device in order to activate the new elements of your license. You should use "Controller -> Save configuration & Reboot Controller". After a few seconds, the system will reboot and your license key will give you access to additional features.

Upload new License

The file will be uploaded to the user folder.
Select the file to upload (*licenseKey*.xml)

Please select the License file

Parcourir... licenseKey_00-14-2D-22-5A-59.xml Upload License File

FILE_UPLOADED

OK

4.3.4. Congratulations

Congratulations, you made it. Just take a coffee (or Tea) to get ready before the next step: [Changing the Network Configuration](#)

4.4. Changing the Network Configuration

By default our system is configured with a static ip (192.168.45.2), you will certainly not use this address on your production site.

As we don't want to lose the communication with the system during the configuration, an IP modification is a little trickier than modifying another parameter. In order to change the parameters, you have two possibilities:

- save configuration and reboot (the new IP will be set at the boot time)
- apply network configuration (don't forget to save your change to make it persistent.)



Do not insert space or other data than a valid ip address in the configuration box.

4.4.1. Let's work!

1. Browse to Site --> All, and filter on Network
The configuration parameters are available in Site -> Configuration. But let's use the tips seen before (filter by groups). Use the "all" tab filtered with group '**Network**' to see live related data and control at the same time.
2. Switch to edit mode and configure your new IP. (your changes are not effective immediately)
3. Apply the change
 - a. Method 1: reboot
Use the function "Controller -> Save and reboot".
 - b. Method 2: Apply the change intermediately
To apply the changes, use the control CT6 : 'Apply Network Configuration'.
4. Check the parameter
 - a. If you are connected using USB, the data DA1 'Current IP Address' will change and show you the new address.
 - b. If you are connected using Ethernet, you have to change your computer's IP address to match with the new Compas IP. Then you will be able to re-connect verify the configuration.
 - c. If site -> DA1 (Current IP Address) is empty or 0.0.0.0, it means that there is no network available.
 - d. Everything looks right? Let's make our change persistent
5. If you used the method 2, you need to save the configuration to make your changes permanent. Otherwise, it will be lost after a reboot. (Top Menu: Controller --> Save Configuration).

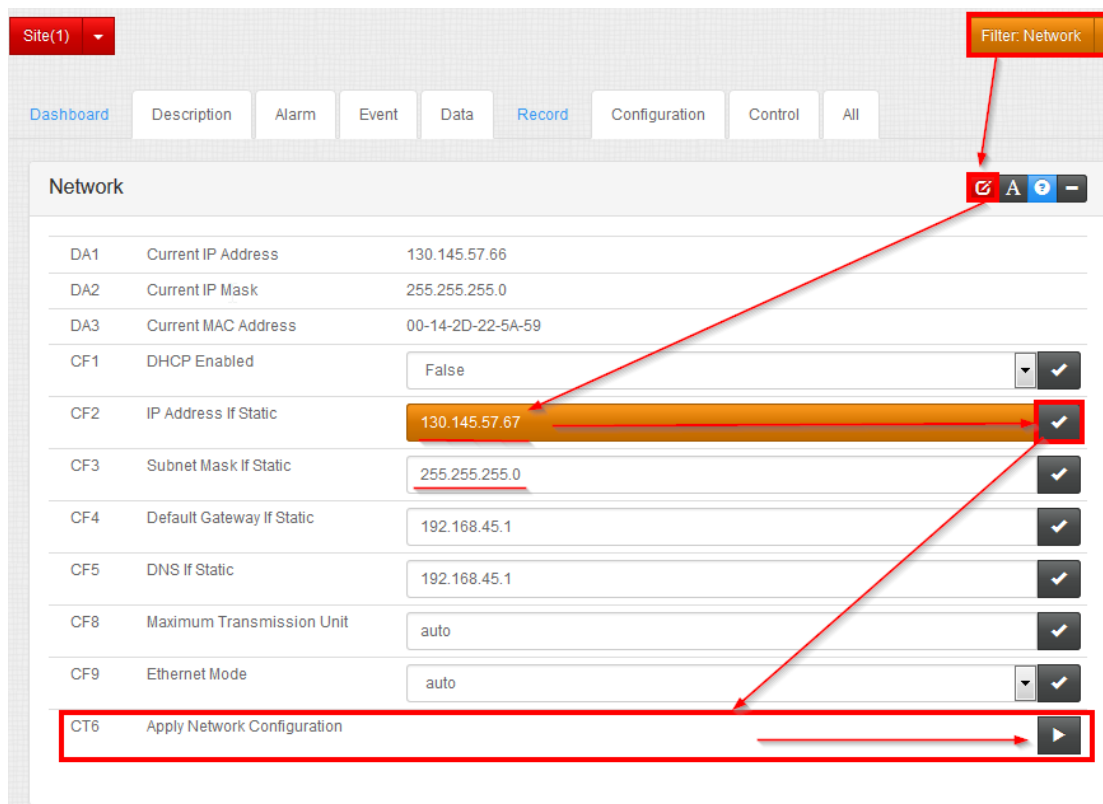


Figure 49 Changing system IP and validate it

4.5. Congratulations

You just finished the quick start guide practical exercises. Now you know the Compas fundamentals.

Compas can do a lot more, just use the user guide to discover other functionalities.

5. Support and Help

5.1. On-board help

At any-time, when you are on a field system without the manual, you could use the embedded help. It will give you some extra information to help you to understand what append, what is the meaning of a parameter... It is really useful and can help you in most cases.

Id	Name	Severity	Relay	Start Time	Stop Time
CAN Bus					
AL1	CAN Bus Failure	major (6)	↑ -	↓ -	✓
ⓘ This alarm is active when there is a problem with the CAN Bus.					
AL2	CAN Bus Addressing Error	major (0)	↑ -	↓ -	✓
ⓘ This alarm is active if 2 devices or more are using the same CAN address. You need to remove the duplication problem and reboot the compas to avoid a possible strange behavior. If the duplicated nodes are rectifier, you can try to solve the problem remotely. Be aware that the rectifier will be shutted down during this operation so you need a battery if you don't want a power outage (2 to 10 seconds) on your load. Reset devices with duplicated node id using the control CT81 in site level then reboot compas controller. If the problem persist you probably have a material configuration problem.					
AL3	Missing CAN Bus Node IDs	major (6)	↑ -	↓ -	✓
ⓘ This alarm is active if configured node ids are not detected on the bus					

Figure 50 On-board help

5.2. Going Further

If you want to know more, you should read and experience some functionalities. Don't hesitate to read the advanced battery management or the booting system. Our well-documented API will also help you to go further.

The functionalities like cloud link could also help you to save a lot of money.

Last but not least, the advanced scripting capabilities and PLC is a must read in order to profit from the Compas flexibility.

5.3. Alpha-Technologies direct support

Our technician team is ready to answer any question. Just email us (support.compas@alphatechnologies.be) and we'll answer you as soon as possible.

5.4. Suggestion?

You have some suggestions, comments about compas? Just email us (support.compas@alphatechnologies.be). We are open to customers' suggestion and we can implement a missing functionality (if we think it is needed).

Chapter 4 : Licenses

Licenses are used to give you options that you need. It is a small, hardware dependent, file that unlocks the power of your Compas monitoring system.

You don't need to change the hardware system; the license can be upgraded remotely.

Alpha-Technologies has three default [package](#) giving you the opportunities to pay only what you need while it is still possible to [upgrade](#) later if your needs have changed.

1. Compas License Packages

The new Compas License package is a simplified system giving you the possibility to buy only the package that you need. We have three main license package:

- Professional edition
- Premium Edition
- Ultimate Edition

The following diagram gives an overview of the license scheme. As you can see, the Professional has already a lot of functionalities and will work in all normal situations.

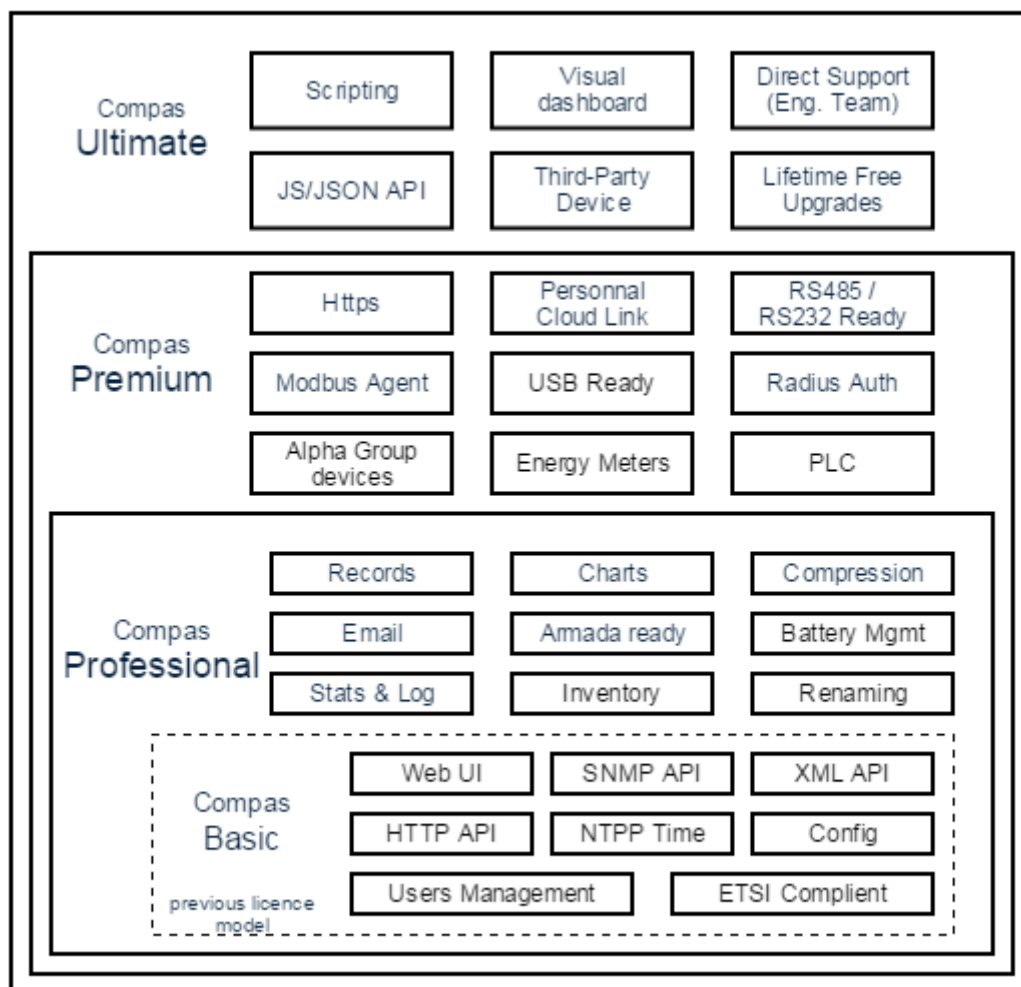


Figure 51 Licenses Model

1.1. Professional License

With the professional license you will be able to get all functionalities of an advanced monitoring system. It already gives you the opportunity to:

- Retrieve available information about components of a system, like *serial numbers, batch ids, production dates, software information,...*
- Retrieve any available data record, with a configurable resolution of second, minute, hour, day or special delta record system.
- Show your data using Charts and monitoring tools
- Retrieve detailed information about smart rectifiers
- Manage a battery
- Manage your users
- Rename everything, this helps your team works faster with the right name. It is now finished with alarm like "Input 27 alarm", just rename it : "Fire Detector at level 2 Alarm"

Naturally the Professional license give you access to our well-documented SNMP, XML and HTTP API. This will permit easy integration with every network management solution.

As a part of Professional license, Armada Ready function will give you the opportunity to use the Alpha Network management solution. With our fully integrated solution, you will be able to monitor a lot of Compas monitoring system.

Our *Basic* License has been upgraded in order to have more standard features.

1.2. Premium License

Premium License gives you great new functionalities, in addition to the professional.

- One of the greatest is the possibility to make some **PLC equation**. This allows you to :
 - Create custom data, like in a Programmable Logic Controller: a PLC Data is defined by any mathematical operation over any data
 - Create custom alarms, like in a Programmable Logic Controller: a PLC Alarm is defined by any combination of any data and any alarm.
- You will be able to use **HTTPS** in order to encrypt your monitoring traffic.
- With the RS485 port activated, you will be able to use **Modbus RTU** to get the data from devices like energy meters or others.
- If you want to read values from Compas using TCP Modbus, it is enabled. Contact us for more information about Modbus slave API.
- Last but not least, the **Cloud Link** will give you the opportunity to ease access to private/Nat networks; This is our monitoring system that will initiate an encrypted tunnel to a server. This will help you to lower your monitoring fees by lowering the needs of static IP and complex routing rules.

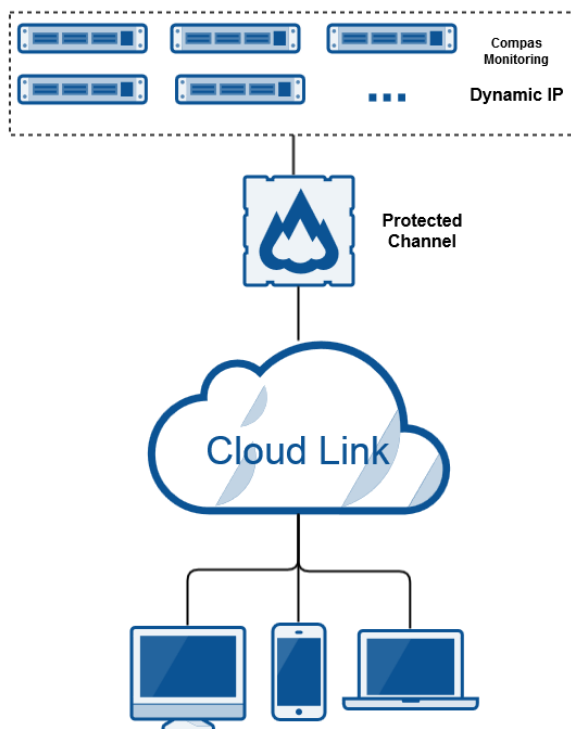


Figure 52 Compas Cloud principles

1.3. Ultimate Edition

With ultimate edition, you will get the new On-Board programming interface with advanced functionalities. This will allow you to do almost everything that you want using the scripting language Lua. We have added some useful functions in order to be interfaced with Compas monitoring system. We support already SNMP Request. So you will be able to write your own SNMP device definition (or ask us to do it) to monitor all available SNMP devices. We have already planned to deploy the Modbus implementation (RS232 & 485 & Ethernet). Ask us if you need our roadmaps.

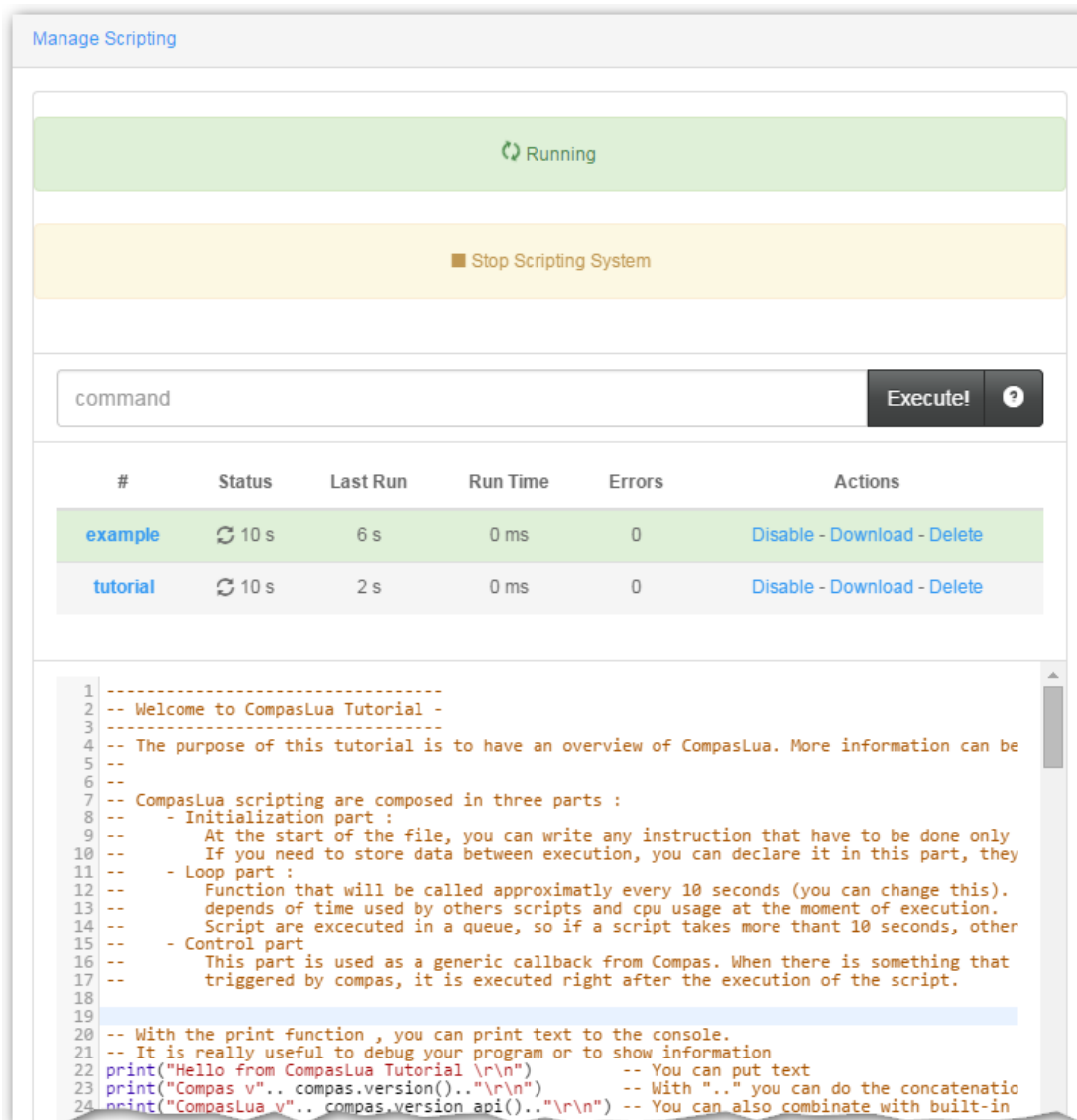


Figure 53 Advanced Scripting Management

With our JS-API and onboard Website programmer, you were able to make custom and animated dashboard. This lead to faster and easier intervention, your uptime will be highly increased. In this example, we show you a shelter dashboard example:

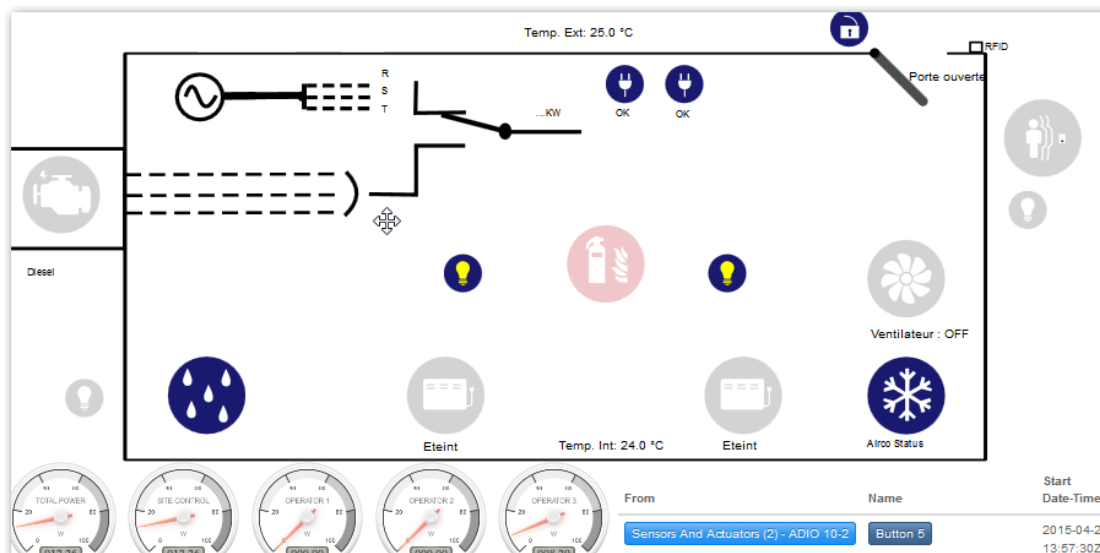


Figure 54 Visual Dashboard example

Last but not least, the ultimate edition gives you advanced support access to our specific engineer team. We guarantee that we do our best to solve all your issues, as soon as possible, and you will be on the top of the engineer priorities list.

2. How can I upgrade my license?

With Alpha system, your controller can be easily upgraded in the field. Field intervention is not needed. If you want to improve your monitoring functionalities, you just have to follow these small steps.

- Contact your vendor or Alpha Team directly
- Give your site->site.xml and ask your desired license.
- You will get a new License file
- Copy it to \\FlashDisk\\User or use the web interface to upload it directly
- Reboot your system

An illustrated tutorial is available in the [Quick Start Guide](#) > [Adding a license](#).

3. How is the license stored?

The Comp@s license is a file named "licenseKey_XX-XX-XX-XX-XX-XX.xml", where XX-XX...-XX is the registered MAC address, in hexadecimal. (Example: licenseKey_00-14-2D-20-0B-20.xml)

The file can be located in "\\FlashDisk\\Factory" if this license is set by Alpha, user upgrade license are located in "\\flashdisk\\user".

The content of this XML file looks like:

```
<licenseKey version="1.0">
  <product version="0.1.X.X">Alpha Technologies Comp@s</product>
  <macAddress>00-14-2D-AA-BB-CC</macAddress>
  <options>Ultimate</options>
</licenseKey>
```

```
<key>vddR+a7oQcx4Qrmt24padm3hSd1DJtbC3LEsKtzxdSJ5mCloN9uZMg=NnvemA13C  
WE5pOZxZBJY/uTsuCPHEwAQ==</key>  
</licenseKey>
```

The interesting part is "<options>Ultimate</options>" which corresponds to the licensed option you bought. Some other data can also be added in order to keep the backward compatibility for example:

```
<options>Basic,Asset,Battery,Ultimate</options>
```

**Info**

Note that this license is unique to each monitoring. If you copy a license file from one monitoring to another, it will not work!

Chapter 5 : Functionalities

We have regrouped all functionalities by topic in order to help you finding rapidly the documentation that you need. If you find that a chapter must be completed or you need more specific information, just [contact us](#).

1. Remote connections

At the end of this chapter, you will be able to :

- ✓ Know all available connection to compas
- ✓ Configure and understand the web-server
- ✓ Use the FTP Connection
- ✓ Configure the HTTPS server
- ✓ Configure Armada Link
- ✓ Use the Cloud link

Compas supports several remote ways to connect: standard IP, Https, cloud link, Armada link, API. Here we will discuss all way to get a remote access to the Compas web interface.

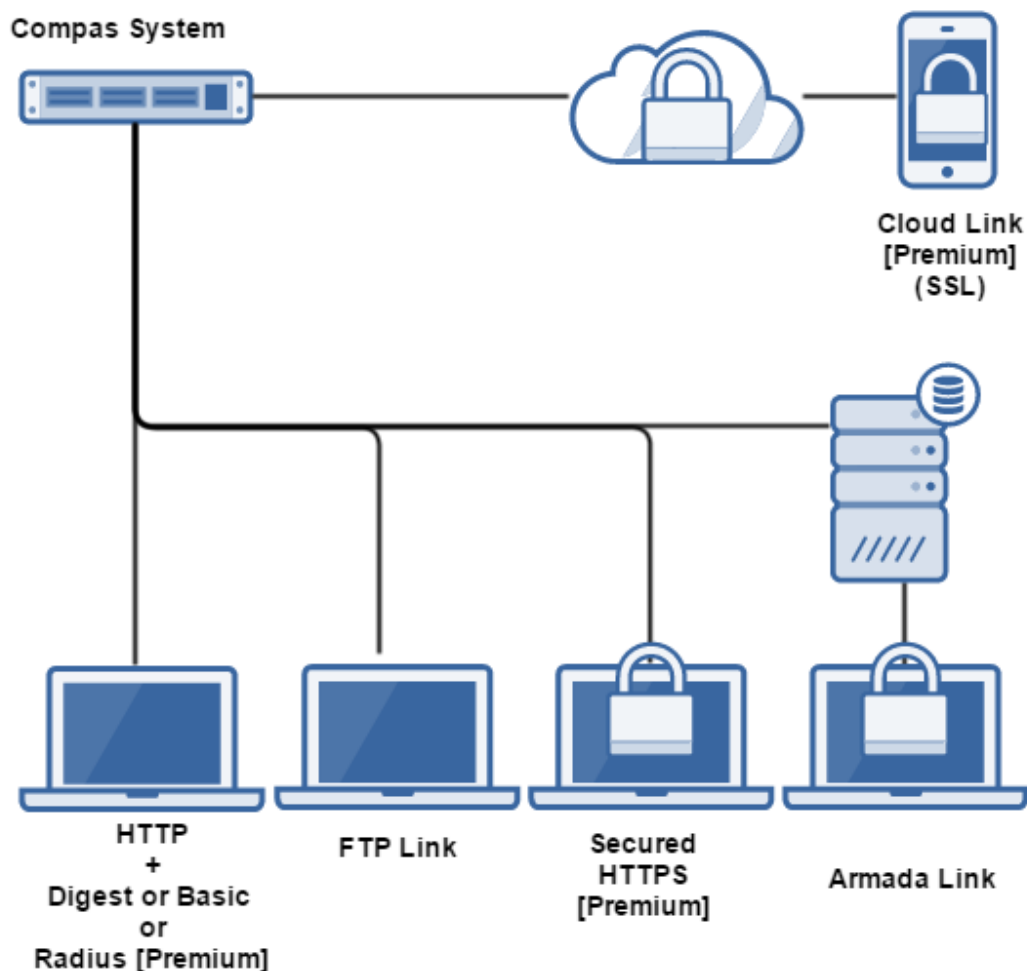


Figure 55 Available Remote Connections

There are also several API like SNMP, Modbus, XML,... If you want more information, see the [Software Interfaces & API](#) chapter.

1.1. IP Network Configuration

Compas monitoring RJ45 female port provides a standard 10/100 Mbits Ethernet connection. First you have to connect to your system, after that, you will be able to change the IP parameters.



Default Ethernet Configuration

IP address: **192.168.45.2**

Sub Mask: **255.255.255.0**

1.1.1. First connection

Please, see how to [connect using Ethernet](#) inside the [Quick Start Guide](#).

1.1.2. Parameters

By default our system takes a static IP (192.168.45.2), you will certainly not use this address on your operational site. So you will have to change that in the site configuration. Our compas system support:

- Static IP address
- DHCP
- Changing Maximum Transmission unit (advanced users only)
- Changing Ethernet Mode (Advanced users only)

As we don't want to lose the communication with the system during the configuration, an IP modification is a little trickier than modifying another parameter. You will have to change parameters then you have two possibilities:

- save configuration and reboot (the new IP will be set at the boot time)
- apply network configurations (don't forget to save your change to make it persistent.)

If you enable the DHCP protocol, Compas will ignore all other parameters and will try to get his IP address automatically.

Changing the parameters

Please, see how [Change the Network Configuration](#) inside the [Quick Start Guide](#).

1.2. Web Access & Mobile compliant

The Compas user interface is a web-application. The interface has been designed to support a standard computer and *mobile devices like smartphones and tablets*. It is really useful to access to your controller from everywhere.

The website and windows are *responsive*, the web-application adapt his page to the size of your screen in order to be readable and usable from a smartphone.



- Tested on Android, Iphone, Ipad and Windows Phone.
- The content is automatically resized, and the left menu of the site disappears.
- A dynamic menu replaces the top menu bar.

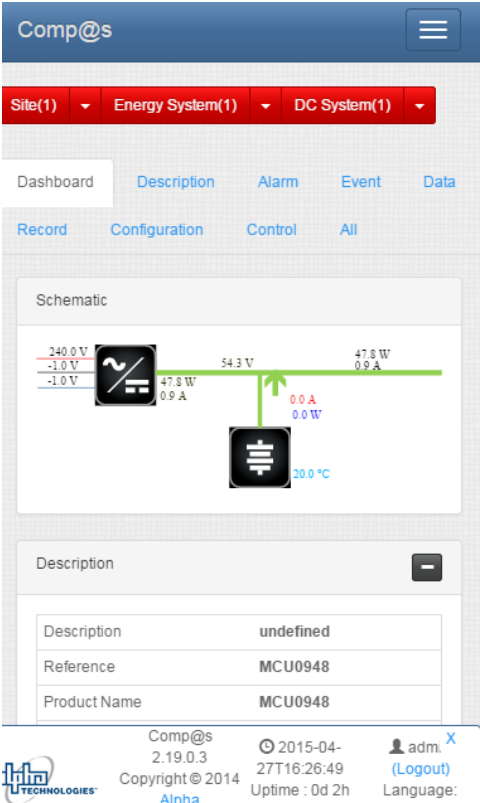


Figure 56 Energy system dashboard on a smartphone

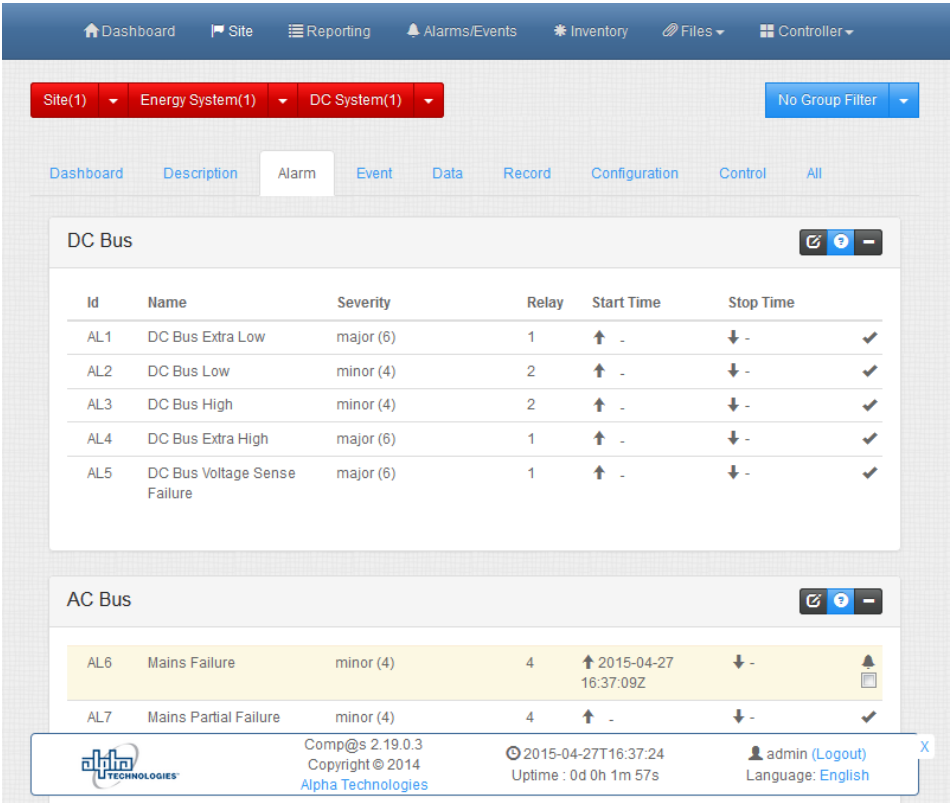


Figure 57 Full page with alarms

1.3. Web server standard

Compas provides an embedded web server configured by default on the port 80. This allows you to navigate to the monitoring interface by giving the IP address of the system. Our web server can take up to 20 requests that are queued for acceptance.

With the professional license we already provide a web authentication method:

- Basic Authentication
- Digest Authentication

All these parameters are configurable directly from the site configuration. With the diagram below, you will understand how the web server is working and which parameters are acting on the system.



Don't forget to configure the [User Access](#) before activate security. (With Premium version, you can use Radius)

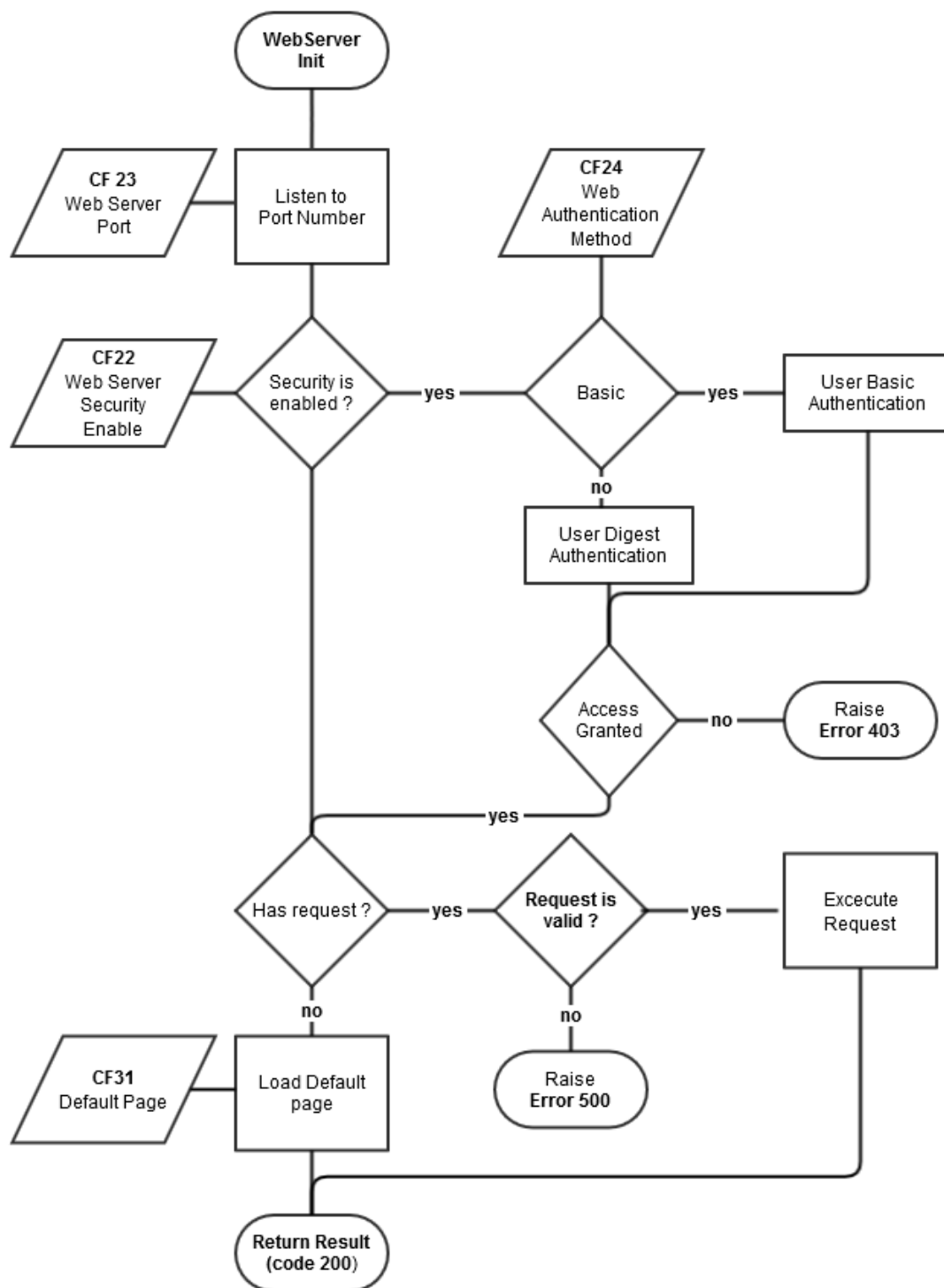


Figure 58 Web server Workflow

1.4. Secured Web Server : HTTPS tunneling [Premium feature]

With the rise of system attacks, some critical applications need to have all the traffic encrypted. It is why we implemented the https encrypted function. It consists of an encryption of the transmission to be sure that no-one can read your monitoring information by intercepting the communication.

HTTPS ("HTTP over TLS", "HTTP over SSL" or "HTTP Secure") is a communications protocol for secure communication over a computer network, with especially wide deployment on the Internet. Technically, it is not a protocol as itself; rather, it is the result of simply layering the Hypertext Transfer Protocol (HTTP) on top of the SSL or TLS protocol, thus adding the security capabilities of SSL/TLS to standard HTTP communications. The main motivation for HTTPS is to provide authentication of the visited website and prevent wiretapping and man-in-the-middle attacks. (source: Wikipedia).

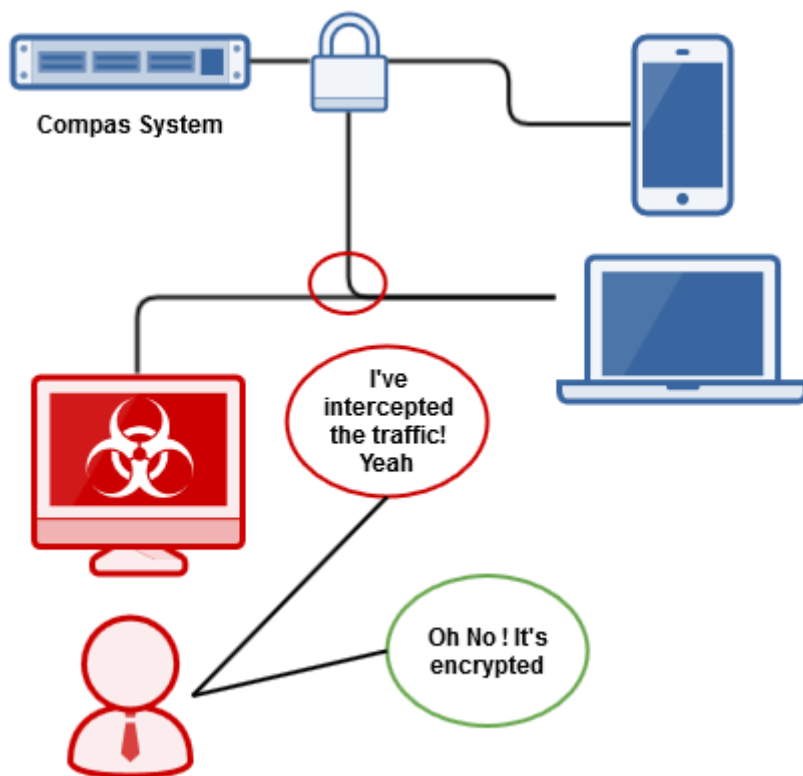


Figure 59 HTTPS Principles

1.4.1. Activation

Since version 2.18.0.3, the Compas HTTPS Web Server can be enabled. By default, the configuration element CF26 'HTTPS Web Server Port' is set to 0. By changing it to 443 (default https port), or another port, the secured web server will be started.

Web Server		
CF22	Web Server Security Enabled	True
CF23	Web Server Port	80
CF24	Web Authentication Method	Basic access
CF26	Https Web Server Port	443
CF31	Default Page	index.html?page=site

Figure 60 HTTPS Activation

Compas is now accessible at https://the_ip or https://the_ip:xxx where xxx is the defined port if the standard 443 is not used.

Certificate

A default SSL certificate will be used. But this is not recommended. You can change the certificate by copying a certificate in the folder "Flashdisk/user/certificate". The extension of the file must be ".pem" and have to combine both the private key and the certificate. Here is what it looks like:

```
-----BEGIN PRIVATE KEY-----
MIIBVAlBADANBgkqhkiG9w0BAQEFAASCAT4wggE6AgEAAkEAYkVtNckbHThk4LaH
SAKtboZRjlaztVx7+CVeDri8S/lxlvRfY4FU/akuVnEZ4CsiHBfdVXJJOHaWJozD
idOyVQIDAQABAKA1OKdgfPq6ayvY/tgJl/3RR9LGJws1C9u6Py2wlwpXMGGC9XE3
k6w20t2uDp/+1bKZ2wggfF+CfGx9dsk,6wvAP8zwRRAiEA//wd1U1CSXltjzPMO
ikGPxGRtUGqUFa2aCqCtQDKSH7FAnUs//JUwROoRmMmK/e2tRthv6xQ8txlimkG
owlgSmCUwn86PWDhfy8CnHGGaEXTjeeSvjgfXt4j58H++x/D40CIGRtU4rJ6pTzy
sq6zq1vzLjumdJ62A3345QaaUQPTAiEA/mriEC77k6YbHbAvwwn4jgOLIGjnn/Hf
csUXgs8B3ns=
-----END PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
MIICtZCCAfmGAWIBAgIJAPAUzkPv/ZFqMA0GCSqGSIb3DQEBCwUAMIGCMQswCQYD
VQQGEWJCRTEXMBUGA1UECAwOQnJhYmFudCBXYWxs24xGTAXBgNVBACMEExvdXZh
aW4tTGEtTmV1dmUxHjAcBgNVBAoMFUFfcGhhIFRIY2hub2xvZ2llcyBTQTEQMA4G
A1UECwwHQmVsZ2l1bTENMA5GA1UEAwwEQVRTQTAEFw0xNTAyMjQNTQ2MjFjFaFw0x
NjAyMjQNTQ2MjFjFaMIGCMQswCQYDVQrGEWJCRTEXMBUGA1UECAwOQnJhYmFudCBX
YWxs24xGTAXBgNVBACMEExvdXZhW4tTGEtTmV1dmUxHjAcBgNVBAoMFUFfcGhh
IFRIY2hub2xvZ2llcyBTQTEQMA4GA1UECwwHQmVsZ2l1bTENMA5GA1UEAwwEQVRT
QTBCMA0GCSqGSIb3DQEBAQUAA0sAMEsCQQDKRW01yRsdOGTgtodlAq1uhlGMhrO1
XHv4JV40uLxL8jGVWxsXLgVT9qS5WcRngKylcF91Vckk4dpYmjMOJ07JVAgMBAAGj
UDBgsB0GA1UdDgQWBWBTkSkRfDnpXotNO5h2DlSnGsy36nDAfBgNVHSMEGDAWgBTK
qsgkRfpXotNO5h2DlSnGsy36nDAMBgNVHRMEBTAQAQ/MA0GCSqGSIb3DQEBCwUA
A0EAGOPQZFo8Fir5OuMmlcM1XK6sMgB4wlZi4uoX7CWAK9BAumqA+KRvmp1/tSqi
1agXoQasZkaOC0yKwaXm5uzZCA==
-----END CERTIFICATE-----
```

The recommended tool to generate keys is OpenSSL (<http://openssl.net/>), generally preinstalled on any Linux distribution. It can also be installed on windows systems.

To generate a certificate valid for 3650 days (10 years) of 512 bits, the command line is:

```
openssl req -x509 -days 3650 -nodes -newkey rsa:512 -keyout key.pem -out cert.pem
```

You will have to answer some questions to customize your certificate:

```
user1@support:~$ openssl req -x509 -days 3650 -nodes -newkey rsa:512 -keyout
key.pem -out cert.pem
```

Generating a 512 bit RSA private key

....+++++

.....+++++

unable to write 'random state'

writing new private key to 'key.pem'

*You are about to be asked to enter information that will be incorporated
into your certificate request.*

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

Country Name (2 letter code) [AU]:BE

State or Province Name (full name) [Some-State]:BRABANT WALLON

Locality Name (eg, city) []:LOUVAIN-LA-NEUVE

Organization Name (eg, company) [Internet Widgits Pty Ltd]:Alpha Technologies SA

Organizational Unit Name (eg, section) []:ICT

Common Name (e.g. server FQDN or YOUR name) []:compas

Email Address []:somemail@internet.com

Two files have been created: cert.pem and key.pem

```
user1@support:~/certjp$
```

```
ls -la
```

```
total 16
```

```
drwxrwxr-x 2 user1 user1 4096 Mar  9 11:59 .
```

```
drwxr-xr-x 13 user1 user1 4096 Mar  9 11:59 ..
```

```
-rw-rw-r-- 1 user1 user1 960 Mar  9 11:56 cert.pem
```

```
-rw-rw-r-- 1 user1 user1 522 Mar  9 11:56 key.pem
```

These files can easily be combined into one with the following command:

```
user1@support:~/certjp$ cat key.pem cert.pem > compas.pem
```

You can now copy that certificate file 'compas.pem' to your comp@s in the "/Flashdisk/user/certificate" folder. (using FTP or USB cable)

The certificate that has been created will be recognized as unsecured by most of the browser as the authority is not known. You will have to use an authority recognized in your company to avoid the security warnings.



Figure 61 Certificate Example

A lot of additional information can be found on the internet. (For example : http://how2ssl.com/articles/openssl_commands_and_tips/)

1.5. Cloud Link

1.5.1. Purposes and generalities

When you manage a network of remote site, the standard way is to use static IP for all your devices. These addresses give you access to all monitoring. You always need to know all IP and... Even worse: *you have to buy a static IP for each device*. This could cost a lot and we have developed a method giving you the opportunity to **save the recurrent price of a fixed IP**.

There are also many disadvantages with classic port forwarding:

- Fixed Public IP
- Expensive connection
- Difficult with Mobile (Behind a Nat)
- Difficult Inside a Company Lan (firewall)
- Accessible by others (DDOS attack or others)

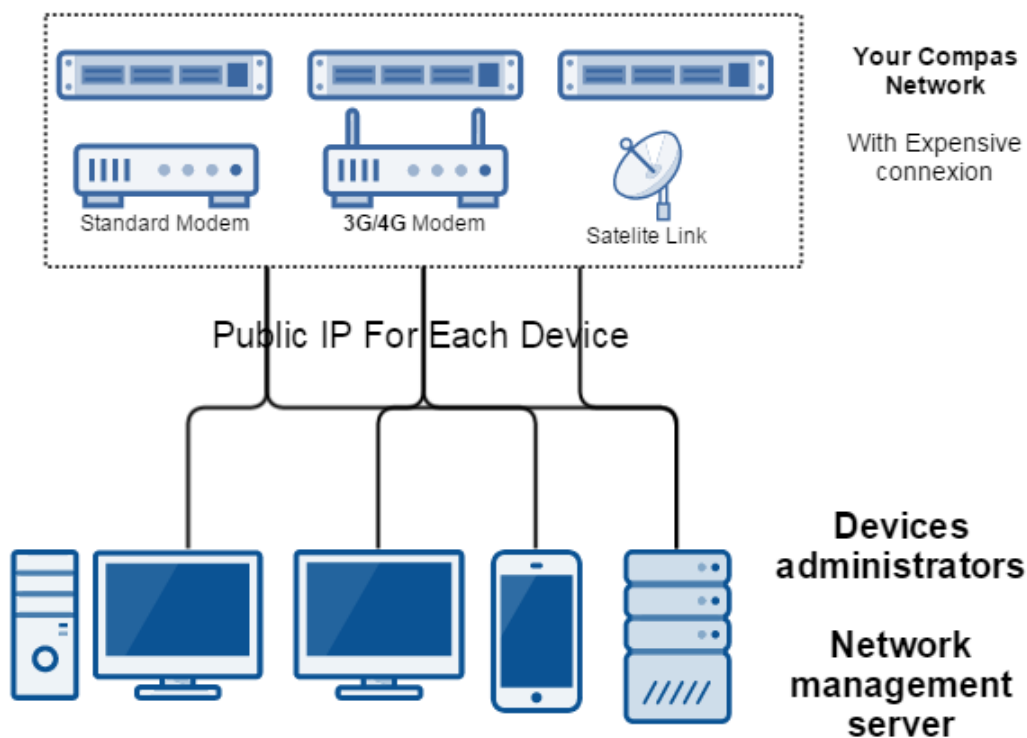


Figure 62 Classic Network Architecture

1.5.2. Compas Cloud Architecture

Our Architecture is based on SSH tunneling, this allows you to have a highly encrypted connection. The Compas Card initiates the communication and creates an SSL tunnel between your equipment and the cloud server.

Cloud system advantages

- ✓ Your system can have *dynamic ip*
- ✓ The cheapest connection is enough to monitor all your devices.
- ✓ The connection is fully encrypted
- ✓ Compas Card not accessible from the public network (no need to open port on the router)
- ✓ Almost no configuration

You can use the Alpha-cloud server with the professional License. If you want to have your own personal cloud server, it is possible but you will need the Premium License.

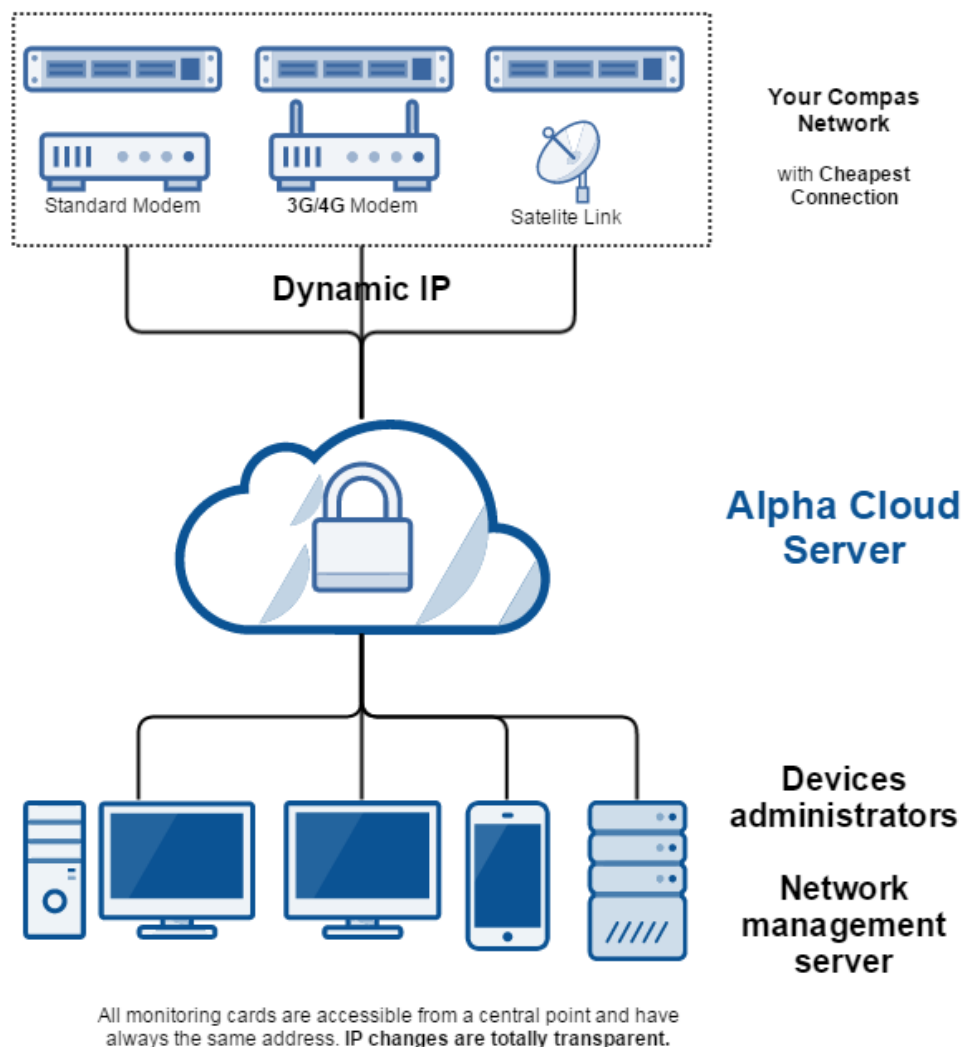


Figure 63 Cloud link Architecture

1.5.3. Alpha Cloud configuration

You have to enable the Alpha cloud in site -> CF161 (Cloud enabled). New configuration options are going to appear.

You need to configure your cloud server URL in CF162 and port in CF163. You also have to give your cloud credentials and the cloud cluster in which you want to be. After, if you want to access to your compas, just go to your cloud server and the site will be automatically added.



You have to be sure that the system can access the internet before leaving it. Be also sure that you have configured the DNS server if you access to a system that is not an IP address.

1.6. Armada Link

The Armada Link will help you to manage your complete network of Compas cards. It will get all the available data and show them with a consolidated structure.

Armada has an integrated proxy allowing you to navigate directly to the web page of the needed Compas. Please refer to Armada Manual in order to use the Armada Proxy.

In order to have this secured link improved, it is highly recommended configuring the [XML post event](#) help armada to have up-to-date information.

1.7. FTP Server

Compas has an embedded FTP server. It is totally independent of the main Compas System. It can be used even if Compas is not running. In order to use the FTP functionalities of Compas, you need a FTP client installed. We recommend the use of [Filezilla](#), a free FTP solution.



Default connection parameter

IP address / Host	The IP of your system
Port	21
Default login	admin
Default password	compas



If you use a command-line tool to upload a file, don't forget to use the **Binary mode**.

1.7.1. Login and password change

The passwords are **independent** from the main Compas application. They are managed in an independent XML file named "Compas_FTPServer.xml" located in the "user" folder. If this file does not exist, the default login and password are used.

If you want to change the default password and login:

1. Create a "Compas_FTPServer.xml" file with this content.
2. Modify the login and password and save the file.
3. Copy that file in the "\\FlashDisk\\user" ("\\Nor Flash\\user" on previous release).
4. Now, you have to use the new login and password at the next FTP connection.

```
<ftpserver>
  <ftpusers>
```

```

        <user login="admin" password="compas"/>
    </ftpusers>
</ftpserver>

```

You can create multiple ftp users by adding more than one <user/> node under the <ftpusers/> node.

1.7.2. Password encryption

If you want to keep your password a little more secret, it is possible to provide a hashed version of the password with the following syntax.

The passwordHash can be generated using this function
BytesToHex(md5.ComputeHash(encoding.GetBytes(password))).

```

<ftpserver>
  <ftpusers>
    <user login="admin" passwordHash="1F41C076E8B0C2B69FD36514C54BD86F"/>
  </ftpusers>
</ftpserver>

```

1.7.3. User specific right

By default each user has access to all the files and folders.

In some case it could be useful to limit access to a specified folder. The Compas Ftp server allows that. The user will have access to a specified folder and their sub-folder. The user will not see any files under this path.

In order to specify specific right, you have added the parameter accessDir inside the user definition.

Compas allows you also to specify the homeDir of a user, it is the folder in which the user will be logged.

```

<ftpserver>
  <ftpusers>
    <user login="admin" passwordHash="1F41C076E8B0C2B69FD36514C54BD86F"/>
    <user login="user" password="aUserPassword" accessDir="\FlashDisk\user"
homeDir="\FlashDisk\user\upload"/>
  </ftpusers>
</ftpserver>

```

In the upper example, you have a user specified with the following parameters :

- login: user
- password: aUserPassword
- access rights: \FlashDisk\user and sub-folder
- home folder: \FlashDisk\user\upload



If you let access to the file "Compas_FTPServer.xml", a use can rewrite it to change passwords and user access.

2. Alarm & Event System

At the end of this chapter you will be able to

- ✓ Read controller alarms
- ✓ Set a delay on an alarm
- ✓ Use the acknowledgement system of alarms
- ✓ Configure email notification
- ✓ Configure the SNMP trap notification
- ✓ Use the acknowledgement system of alarms

2.1. Overview

Compas supports an advanced Alarms system. Here are our main alarm functionalities:

- set & clear delay : help you to have less false positive.
- Alarm Acknowledgement : [Mute] function for alarm under investigation
- Email Notification
- SNMP Trap notification

Here are the basic workflow that our alarming system is using.

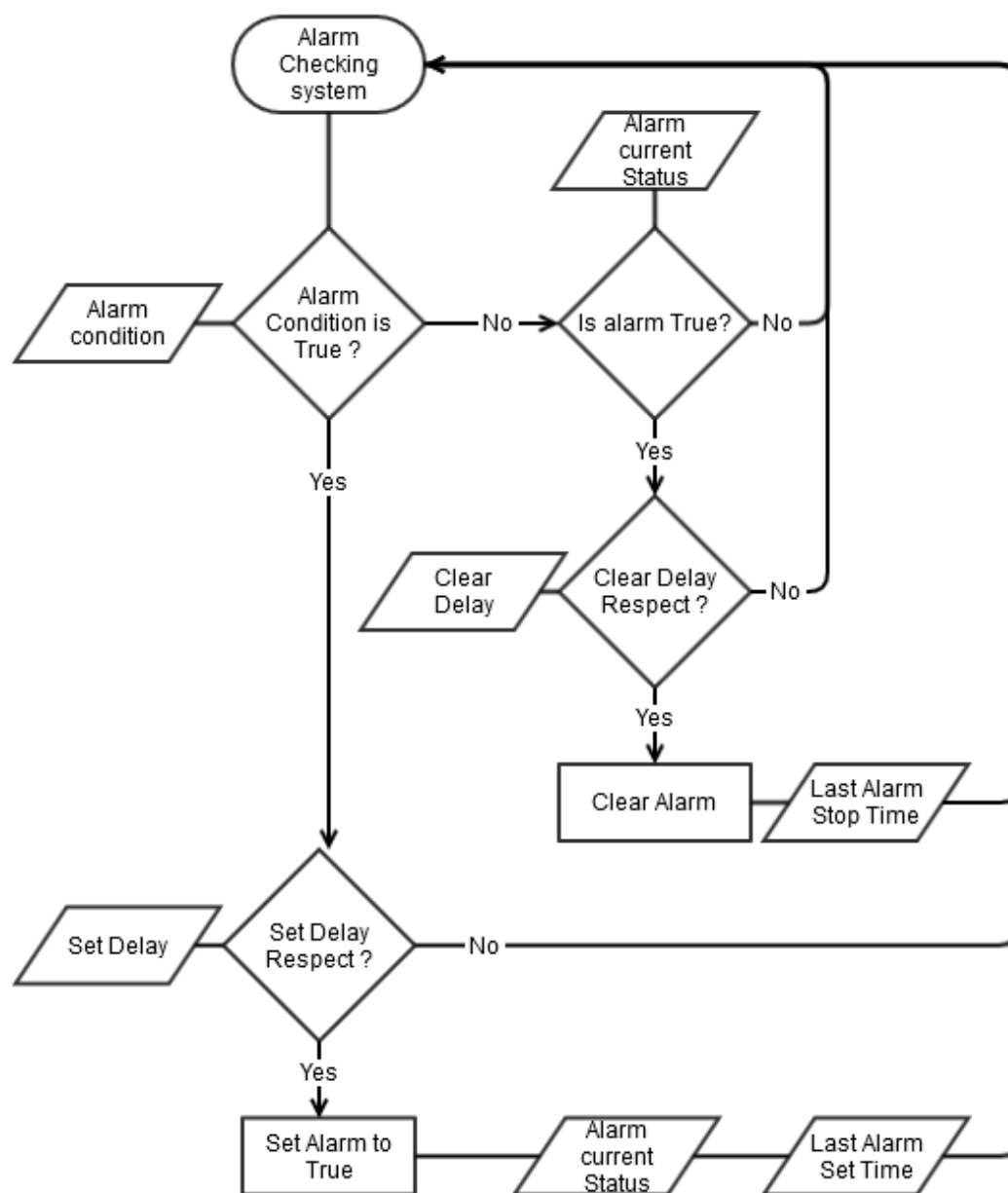


Figure 64 Alarm Checking diagram (with set and reset delays)

2.2. Reading system alarms

The web application compas gives you two ways of visualizing all the alarms available:

- By equipment (using Site Tab)
- Full listing (Using Alarms/Events Tab)

These two views give the possibility to have an overview of all alarms or to investigate only on a single device. Here, we are going to explain how to see the Alarms but, for the events, it works using the same system.

2.2.1. List All Active Alarms

As you can see below, with the Alarms/Events tabs, you have the list of all equipment with alarms and all corresponding alarms. On the screenshot below, you can see that we have several alarms:

- major alarm on the DC System : Battery LVD Relay Open
- minor alarm on the DC System : Battery Temperature Sensor Fail
- alarm (with none severity) on the DC system : Digital Input 1 (using I/O)
- warning alarm on the rectifier 1 : Remote Off.

The screenshot shows the 'Alarms/Events' tab selected in the top navigation bar. Below the navigation bar, there are two sections: 'Equipments With Active Alarms' and 'Active Alarms'. The 'Active Alarms' section contains a table with the following data:

From	Name	Start Date-Time	Acknowledge
DC System (1) - MCU0348M4	Battery LVD Relay Open	2000-01-01 00:01:11Z	☒ 2000-01-01 00:05:04Z
DC System (1) - MCU0348M4	Battery Temperature Sensor Fail	2000-01-01 00:01:11Z	☐
DC System (1) - MCU0348M4	Digital Input 1	2000-01-01 00:01:11Z	☒ 2000-01-01 00:04:55Z
DC System (1) - MCU0348M4	Digital Input 2	2000-01-01 00:01:11Z	☒ 2000-01-01 00:04:53Z
DC System (1) - MCU0348M4	Digital Input 3	2000-01-01 00:01:11Z	☐
DC System (1) - MCU0348M4	Digital Input 4	2000-01-01 00:01:11Z	☐
Rectifier (1)	Remote Off	2000-01-01 00:02:28Z	☐

At the bottom of the interface, there is a footer section with the following information:

Comp@s 2.19.0.3
Copyright © 2014
Alpha Technologies

2000-01-01T00:05:18
Uptime : 0d 0h 4m 51s

admin (Logout)
Language: English

Figure 65 Full alarm listing

2.2.2. View active alarms by equipment

If you want to see the alarms by equipment's, you just have to navigate to the device (using site Tab). Then, click on Alarm. This will list you all the alarms and showing you other alarms using the compas standard colors.

In the following screenshot, you see that the rectifier 1 has the AL4 active. This is the remote off alarm (a warning alarm with severity level of 0) and it is active since the date 2015/05/05.

Id	Name	Severity	Relay	Start Time	Stop Time
AL1	AC Failure	major (0)	↑ -	↓ -	✓
AL2	DC Failure	major (0)	↑ -	↓ -	✓
AL3	Over Temperature	major (0)	↑ -	↓ -	✓
AL4	Remote Off	warning (0)	↑ 2015-05-05 13:46:42Z	↓ -	🔔
AL7	Communication Error	warning (0)	↑ -	↓ -	✓
AL11	Short Error	major (0)	↑ -	↓ -	✓

Figure 66 Alarm on equipment

2.3. Notifications

A system without real time notification is not really efficient. Compas provides easy way to have notifications:

- [Email notification](#)
- [SNMP Trap](#)
- [XML event posting](#)

Naturally, you can use Armada that will monitor your entire network and send you a consolidated report.

2.3.1. Email

Generalities

Compas can be configured to send email to one or multiple addresses. You can naturally select the minimal severity that will trigger an email. On the screenshot bellow, you have an example of a Summary email triggered by alarms on a system. This email gives you a screenshot of what is happening and it is very convenient when you don't have access to your compas (i.e. connecting to your VPN before compas).

In this email, you have:

- Site informations
- Equipment with alarms
- Active Alarms
- Last Events

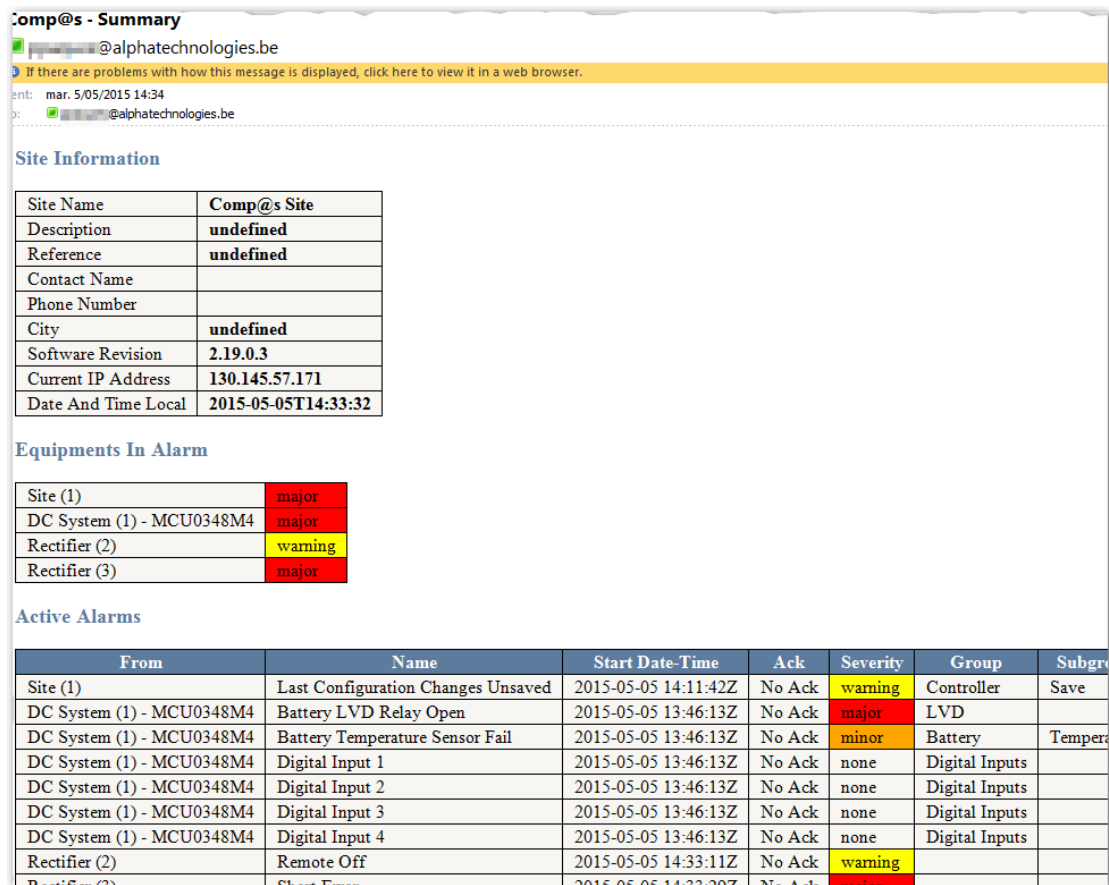


Figure 67 Email example

Configurations

In order to send emails, you need a valid SMTP server.

#	Name	Type	Signification
CF120	Enable Email Feature	True/False	Enable/Disable the email feature
CF121	SMTP Server	URL	Smtp Server url.
CF122	Smtp Domain	String	by default : "local". On some SMTP server, the domain is needed in order to initiate the SMTP protocol
CF123	SMTP User:Login	Password	Smtp Login and Password. The password is encrypted. To enter a new login and password, enter login:password and validate, the password will be encrypted.
CF130	Mail Sender	String	The 'From' of the emails you will receive.
CF131	Mail Recipients	String	Mail Recipients, separated with semicolon ';'
CF135	Minimal Severity Type To Send Mail	List<AlarmSeverity>	Minimal severity for triggering a Summary Mail



If you are using a domain name, make sure you configured the *network DNS parameter*

The screenshot shows the 'Email' configuration window. It contains several settings:

ID	Parameter	Value	Action
CF120	Enable Email Feature	True	✓
CF121	Smtp Server	130.1...	✓
CF122	Smtp Domain	local	✓
CF123	Smtp User Login:Password	...kGCZ8fAeICfQ/GorPXi7OGW+qU	Wizard ✓
CF130	Mail Sender	...alphatechnologies.be	✓
CF131	Mail Recipients	...alphatechnologies.be	✓
CF135	Minimal Severity Type To Send Mail	major	✓
CT120	Send Summary Email		▶

Figure 68 Email configuration example

2.3.2. SNMP Traps

Compas can be used with SNMP in order to send traps. The traps are send on the port 162 of a targeted IP. Please see [Using and Configuring SNMP traps](#) chapter.

2.3.3. XML posting event

Compas Support the XML Event Posting. See [XML files](#) for more information.

2.4. Alarm Configuration

You can easily configure all your system alarm. Just enter into the configuration mode and navigate to the device alarm that you want to edit.

You will have the possibility to edit:

- Severity Type
- Severity Level
- Relay mapping
- Set & Reset delay

Id	Name	Severity Type	Severity Level	Relay	Set Delay	Clear Delay
AL1	DC Bus Extra Low	major	6	1	5	2
AL2	DC Bus Low	minor	4	2	5	2
AL3	DC Bus High	minor	4	2	5	2

Figure 69 Alarms edition

2.4.1. Severity

You can set the alarm severity using a severity level (a number from 0 to 9) .

The severity type match ETSI standard and are used to set compas alarm color.

- None
- Warning
- Minor
- Major
- Critical
- Disabled



By setting the alarm to disabled, the system will not evaluate the condition. You will not be alerted in case of problem.

2.4.2. Relay

On Dc system system that have embedded relays, you can map directly the alarm to the dedicated relay. It is really useful for a fast configuration.



When you use ADIO system, you can configure directly a boolean expression (see [PLC Functionalities](#)) into the relay output configuration.

2.4.3. Set and reset delay

Adding a set or reset delay is really easy with compas: just enter the value that you wanted in second in the alarm configuration.

2.4.4. Custom Alarms

Compas Supports custom alarms made using equations. Take a look to [PLC Functionalities](#) in order to discover how to do that.

2.5. Alarm Acknowledgement

When an alarm is set, it is possible to acknowledge it. The alarm will stay active, but with an acknowledged status. When the alarm is clear, the status state disappears.

It can be used with Arm@da to differentiate the new alarms and the alarms under investigation by a technician. When someone acknowledges, an event is generated, with the information about the user and the IP address from which it was done.

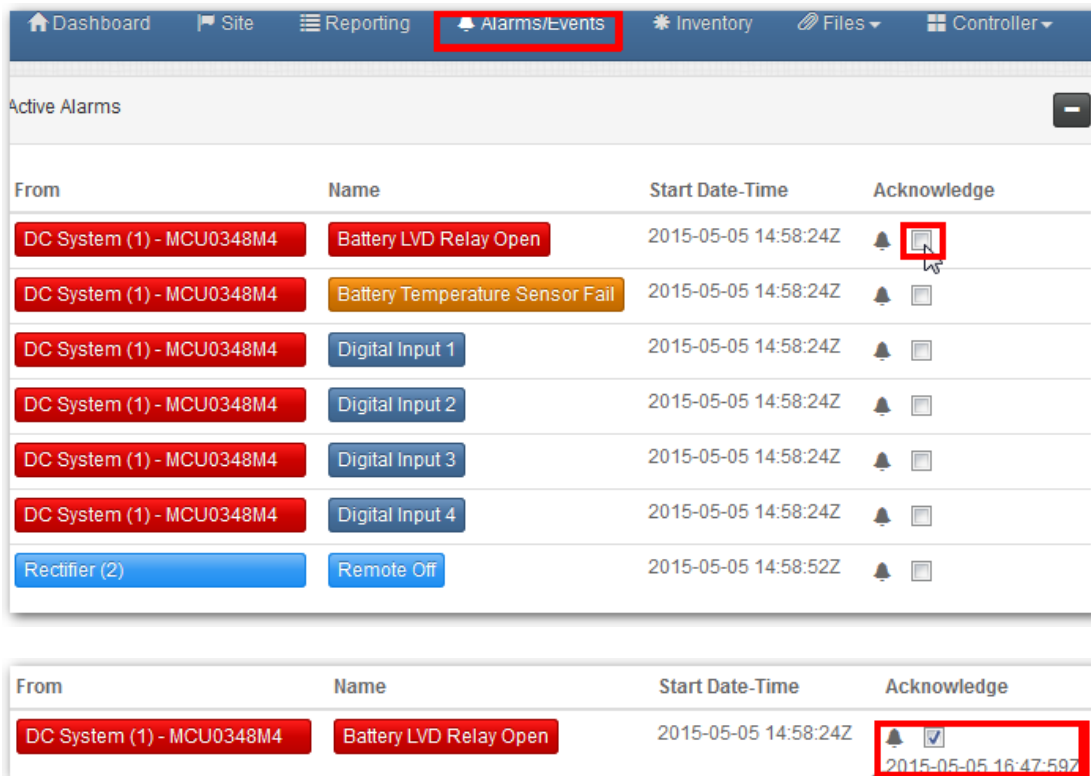


Figure 70 Alarm acknowledgement

2.6. Event Saving system

All events are saved automatically; they are added to the "events_flat.xml" file located at "http://Your_IP/files/user/events_flat.xml".

This file is a non-standard ETSI and a modified XML file. You can easily read it and understand it but, in order to improve the flash disk life, we open this file in "append mode".

```
<event path="/site/1" id="296" datetime="2015-05-11T09:06:39" severity_type="major" severity_level="6" type="cold start" group="Controller">Comp@s Monitoring Started</event>
<event path="/site/1" id="297" datetime="2015-05-11T09:06:42" severity_type="none" severity_level="0" type="information" group="Inventory" subgroup="CAN Bus">CAN Bus Node Detected : 2</event>
<event path="/site/1" id="298" datetime="2015-05-11T09:06:42" severity_type="none" severity_level="0" type="information" group="Inventory" subgroup="CAN Bus">CAN Bus Node Detected : 3</event>
<event path="/site/1" id="299" datetime="2015-05-11T09:06:42" severity_type="none" severity_level="0" type="information" group="Inventory">
```



```

subgroup="CAN Bus">CAN Bus Node Detected : 121</event>
<event path="/site/1" id="300" datetime="2015-05-11T09:06:44" severity_type="none" severity_level="0" type="information" group="Inventory"
subgroup="CAN Bus">CAN Bus Node Detected : 101</event>
<event path="/site/1/energy_system/1/dc_system/1" id="203"
datetime="2015-05-11T09:06:50" severity_type="major" severity_level="6"
type="cold start" group="Controller">DC System Started</event>
<event path="/site/1/energy_system/1/dc_system/1" id="211"
datetime="2015-05-11T12:48:37" severity_type="none" severity_level="0"
type="information" group="Controller" subgroup="Control Execution">Control Executed : [id=3],[name=Force Battery
Test],[value=1],[result=COMMAND_EXECUTED],[user=alice],[ip=130.*.*]</ev
ent>
<event path="/site/1/energy_system/1/dc_system/1" id="214"
datetime="2015-05-11T12:49:24" severity_type="none" severity_level="0"
type="information" group="Battery Test">Battery Test Result : On Going
[DA73=0.00],[DA74=0.00],[DA75=51.0]</event>

```

Code Block 1 eventflat.xml example

3. Date and Time Management

Having the right time is important for the managing of the event, periodic actions, etc... In most cases, Compas systems have a Real Time clock. That IC has an independent battery used to keep time between power outage. It can keep your system time even if there is a power outage for several weeks.

Compas support also configurable time synchronization with [\(S\)NTP Protocol](#). For Daylight saving support, you will need to [configure the right Time Zone](#) for your device.

Code	Parameter	Value	Action
DA21	Date And Time Local	2015-06-29T10:15:45	
DA22	Date And Time UTC	2015-06-29T08:15:45	
CF11	SNTP Time Server	130.145.57.41	✓
CF14	Time Zone Name	(GMT+01:00) Brussels, Copenhagen, Madrid, Paris	✓
CF15	SNTP Time Refresh (hour)	168	✓
CF16	SNTP Time Recovery Refresh (hour)	24	✓
CT11	Force SNTP Time Refresh		▶
CT12	Set Local Time	2015-06-29T10:15:46	Sync With Computer ✓
CT13	Set UTC Time	2015-06-29T08:15:46	Sync With Computer ✓
CT14	Reset Uptime		▶

Figure 71 Time options

3.1. Set time Manually

If you want to change the time on your compas system, you just need to use the **site** -> **CT12** to set the Local Time or the **site** -> **CT13** to set the UTC time.

3.2. Time zone & daylight saving time

The time zone is important if you want to use correctly the daylight saving time. In compas, it is available at the site level and it can be easily changed.

You can configure the time zone in **Site** -> **CF14** (Time Zone Name). In edit mode, you will see all the available time zone in the drop down list.

Id	Name	Value
CF11	SNTP Time Server	172.16.3.2
CF14	Time Zone Name	(GMT+01:00) Brussels, Copenhagen, Madrid, Paris
CF15	SNTP Time Refresh (hour)	(GMT-03:00) Cayenne (GMT+04:00) Moscow, St. Petersburg, Volgograd (GMT+01:00) Brussels, Copenhagen, Madrid, Paris
CF16	SNTP Time Recovery Refresh (hour)	(GMT-04:00) Asuncion (GMT+05:00) Islamabad, Karachi (GMT-08:00) Tijuana, Baja California

Figure 72 Changing time zone



When a change in time zone has been done, it is necessary to reboot the monitoring to have the changes applied.



List of Available time zone (API helper)

All the available time zone can also be retrieved on this file:

http://A_ip_of_Compas/timezones.txt .

3.3. Time synchronization: (S)NTP Time protocol

The time can be automatically synchronized with an UTC time server, implementing the Network Time Protocol (NTP) (or SNTP). This allows having all the monitoring time synchronized with one reference time server.

Before using SNTP, you need to be sure that the right [time zone is configured](#).

The configuration parameters are available at Site -> Configuration. You can configure the desired server, the refresh time and the "recovery refresh time", the time if last refresh has failed.

#	Name	Description	Default
CF11	SNTP Time Server	IP address or domain that will provide SNTP	swisstime.ethz.ch
CF15	SNTP Refresh	Time between normal SNTP refresh in hour	168h : Each week
CF16	SNTP Recovery Re-fresh	Time before retry if a normal SNTP has failed	24h : Each Day

You can try your setting by forcing a SNTP refresh using **site -> CT11**. (If you want to be sure, just set a wrong time with the "set local time" control.

4. User Access Management

Compas use user credentials. We currently support :

- [Local user management](#)
- [Radius Authentication \[Premium Feature\]](#)

4.1. Web server usage

In compas, we have a login history. It is accessible in Controller -> Web Server usage.

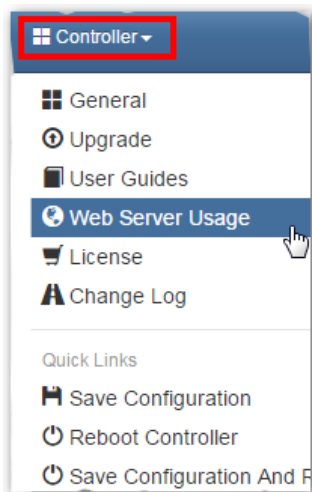


Figure 73 Web server usage link

Session Summary				
IP Address	Login	Count	Last Request	Is Browsing
130. [redacted]	admin	34	5/6/2015 5:23:16 PM	True
130. [redacted]	alice	72	5/6/2015 4:59:25 PM	False

Figure 74 Web server usage

4.2. Local user management

4.2.1. Introduction

The web server and the SNMP agent are protected by an authentication mechanism based on login/password. There are by default six users defined: one administrator and 5 users.

The administrator is allowed to use all the functionalities of the monitoring and to change any configuration parameter.

The 5 users can only access the functionalities they are authorized to. It is possible to define, for each equipment, user read/write/none access.

The following figure shows the "Read Access User Numbers" and the "Write Access User Numbers" configuration entries. The value is a list of coma separated values corresponding to the user number allowed to read or write at the Site level. These 2 parameters are also available in each "DC system" and in each "Sensors and Actuators". All these default login/password can be changed by the help of any interface. The passwords are encrypted in the configuration file; the key also relies on the user name. These parameters are located in Site -> Configuration, as shown on the following figure.



Users which have write access at the Site level are able to change the login and the password of all the other users, including the administrator.



Default users and passwords

<u>Login</u>	<u>Password</u>
admin	compas
user1	compas
user2	compas
user3	compas
user4	compas
user5	compas

Users			
Id	Name	Value	
CF101	Administrator Login:Password	admin:iUlvrgzLaY2IWH7lZyjFVzsfLvj1Prv2uUh6YSrsk5g=	Wizard ✓
CF102	User 1 Login:Password	user1:XwhM5CCz+GT9SMS+Lzbebb2SO1vfwrp/yTG3W3Wcubg=	Wizard ✓
CF103	User 2 Login:Password	user2:mWOpPjKfVsW6xDoGU/QbCz1aJtFqOm0RQqMfyixGhzA=	Wizard ✓
CF104	User 3 Login:Password	user3:Z7+ekqLzcpnmFr4tBA0Bo+xSyCKFKBGdby55kchGAnM=	Wizard ✓
CF105	User 4 Login:Password	user4:viQkEzvhBGaqOyXpUo/BkiqMaxZVRXTfnijvtgQWpU=	Wizard ✓
CF106	User 5 Login:Password	user5:zqlmAxvb3DRWu3Rn4el0ks43Rw7u3C74MEh9QVOT75l=	Wizard ✓

Figure 75 User configuration

4.2.2. Manage a username and password

1. Browse to Site ->Configuration
2. Click on "Edit Mode"
3. Click on the wizard button of the desired user
4. Use the wizard to set the username and password
5. Do not forget to save your configuration to make your changes persistent



Direct Control usage

If you want act directly on the control and bypassing the wizard, you can use the syntax: "LOGIN:PASSWORD" (i.e. mike:SuperSecretPassword). This is useful for API usage.

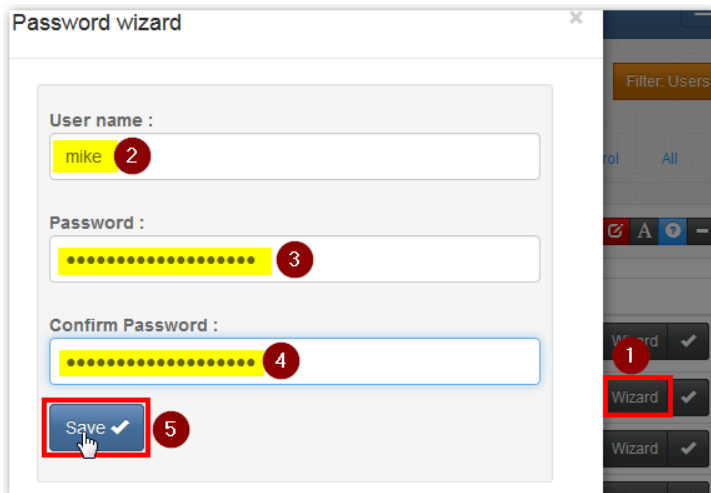


Figure 76 Password wizard

4.2.3. Customize access by user

Administrator has always a full access. If you use Radius authentication, the user have the full access to the system. More access management could be implemented on demand.

In compas you can configure the access of each user by device.

- Read access (or not)
- Write access

Customized user access management can be configured in each device into the generic group -> allowed users.

Example:In the site configuration showed below, users will have theses access :

User	Read	Write
Admin	✓	✓
User 1	✗	✗
User 2	✓	✗
User 3	✓	✓
User 4	✗	✗
User 5	✗	✗

Dashboard

Description

Alarm

Event

Data

Record

Configuration

Control

All

Generic

Id		Name		Value	
Allowed Users					
CF521	Read Access User Numbers	2,3			
CF522	Write Access User Numbers	3			

Figure 77 Example of configured access

4.3. Radius Authentication [Premium Feature]

4.3.1. Generalities

Remote Authentication Dial In User Service (RADIUS) is a networking protocol that provides a centralized authorization and accounting management. It is widely used to control users credentials, access and use of a network service. Actually, we support PAP Authentication only.

Radius is only available with Premium license. If you want to try it, it is possible to get an evaluation license.



Radius authentication is currently in beta version, if you have problems using it, you could find some debug information in the file http://your_compas_ip/debug_auth.txt. Do not hesitate to send us feedback at support.compas@alphatechnologies.be.



For now, all user connected using radius are logged as administrators.



Don't forget to deactivate users that you didn't want to connect.

4.3.2. Configuring your server

Configuring your radius server is really easy. First, enter your server, port and pass phrase. After that, enable the radius authentication on the web server.

1. Set your **Radius server URL** in Site -> Configuration -> *CF111*
2. Set your **Radius Server Port** in Site -> Configuration -> *CF112*
3. Set your **Radius secret** in Site -> Configuration -> *CF113*. The password will be encrypted in order to be unreadable in the configuration.xml file.

Radius Authentication			
CF111	Radius Server	130.145...	✓
CF112	Radius Port	1812	✓
CF113	Radius Secret	3f6qJdjlmain1KVA=	✓

Figure 78 Radius authentication configuration

4.3.3. Enable the radius authentication

Now that your server is configured, you have to enable this authentication method for web access to Compas.

- Activate the "**Radius + Basic**" in site -> *CF24 (Web authentication method)*

Web Server			
Id	Name	Value	
CF22	Web Server Security Enabled	True	✓
CF23	Web Server Port	80	✓
CF24	Web Authentication Method	Radius + Basic	✓
CF26	Https Web Server Port	0	✓
CF31	Default Page	index.html?page=site	✓



Don't forget to save your configuration (controller -> save configuration) to make your changes persistent

4.3.4. Try your configuration

Try to reconnect to Compas using a credential coming from your radius server.

1. Click on log-out
2. Then click on "Back to the main page."

3. Login with your Radius Credential
4. If you have been successfully connected, then you have well configured your Radius Authentication server.

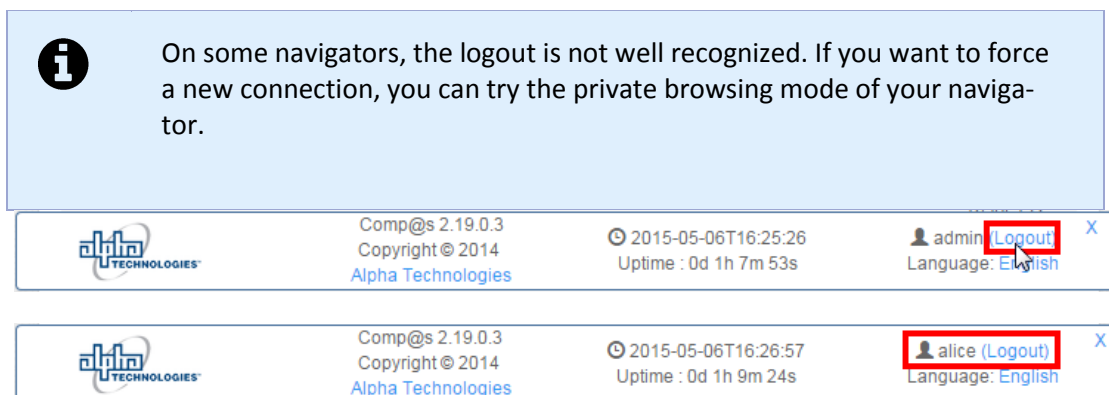


Figure 79 Logout and login

4.3.5. Authentication log

People logged onto the system with radius are also listed on the web server usage.

Session Summary				
IP Address	Login	Count	Last Request	Is Browsing
130. [redacted]	admin	34	5/6/2015 5:23:16 PM	True
130. [redacted]	alice	72	5/6/2015 4:59:25 PM	False

Figure 80 Radius authentication log

4.3.6. Setting a backup server

You can configure a secondary server that will be used by Compas as a backup of the primary. If there is a failure during communication with primary server, the secondary server will be used as a fallback.

1. Edit the Radius server field (CF111)
 - a. Add the backup server after the primary server using a coma as a separator.
2. Do the same for Radius Port (CF112)
3. Do the same for Radius Secret (CF113)

In the end, your configuration looks like the picture below.

Radius Authentication		
CF111	Radius Server	130.145.55.55 82.15.22.33
CF112	Radius Port	1812 1822
CF113	Radius Secret	MSEepDIjsJGThI6+9vzKj1fMpKMP2EcbXf7ohQcRqR4+ MSEepDIjsJGThI6+9vzKjzbFBz8UYdSKWiS9/pspJNTFVv0Q0Mmv02fZCsjZLuY

Figure 81 Radius Configuration with Backup server

5. Remote Upgrade Management

5.1. Generalities and architecture

Compas is designed to be entirely and remotely (with an IP connection) upgradable. This gives you the opportunity to fit your need without changing the controller.

Compas has multiple layer of software, each layer is updatable. Most of the functionalities are located into the Compas layer. It contains the "brain" of our device. Sometimes, you may want to restore your controller to the factory default, it is possible since Compas store theses information.

- **OS Layer:** nearly never uploaded, it contains the operating system
- **Compas layer :** Monitoring application, load all data of your devices, core of the system
- **Devices Layer :** Most of the Alpha-Technologies devices have a firmware. From a rectifier to I/O. In some rare case it could be necessary to upgrade it.

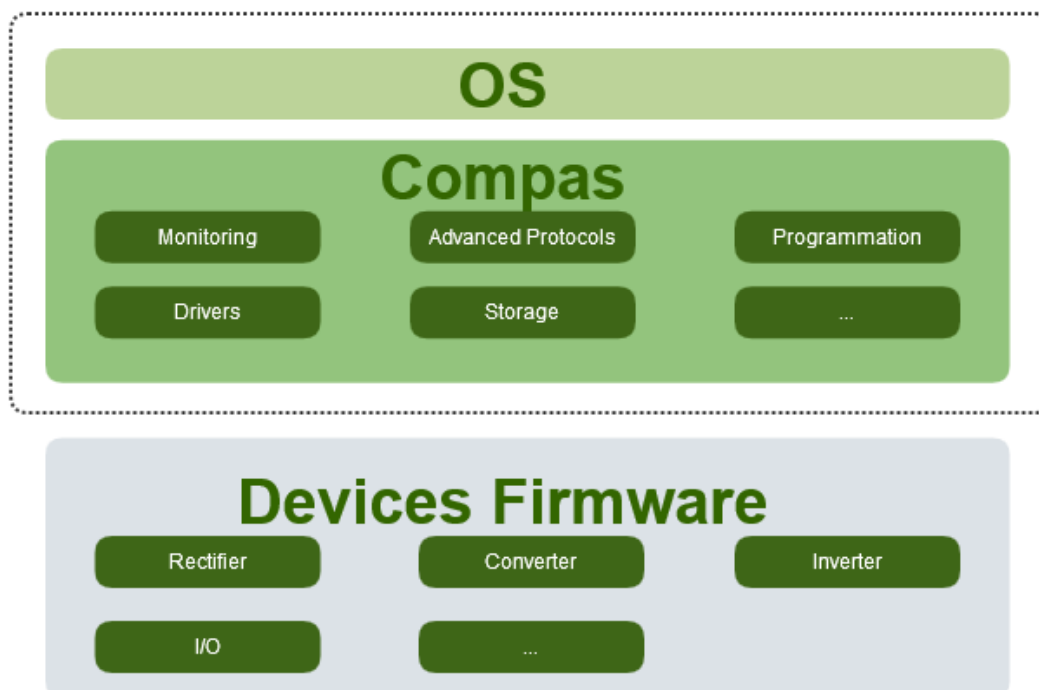


Figure 82 Compas Software Architecture

5.2. Upgrading the Comp@s Software Layer

Compas has several ways to be upgraded:

- Remotely via an IP connection:
 - Via the web interface
 - Via the FTP connexion
- Locally via USB



Before uploading new Compas software, please check that there is enough available memory (10 Mo minimum, 25 Mo recommended). You can check that into site -> DA33 (Free flash Memory Space)

5.2.1. Which version are you working with?

You can check the running Comp@s software version in Site -> Description -> Software Revision. It is also displayed at the bottom of all the web pages.

Id	Name	Value
Product Info		
DE91	Software Revision	2.19.0.3
Operating System Info		
DE92	Operating System Revision	4.2
Hardware Info		
DE93	CPU	PXA300

Comp@s 2.19.0.3
Copyright © 2014
Alpha Technologies

2015-05-08T15:47:40
Uptime : 0d 0h 3m 38s

admin (Logout)
Language: English

Figure 83 Checking compas version

5.2.2. Upgrading with Web Interface

Since newer versions, the update procedure has been simplified. It is as simple as a file upload.

The automated process will:

- If zip: Extract the file (and validate the compas.exe.md5 checksum if available in the zip file)
- move the Compas.exe to the user folder.
- Save the configuration

- Reboot the Controller

After less than 2 minutes, the controller is fully operational.

In some rare case, the manual way can be useful: if your network connection cannot send the file or if there are restriction on the file upload size. The manual way is still supported.

Automatic firmware upgrade

1. Click on Controller --> Upgrade
2. Select the new 'compas.exe' or compas*.zip file on your computer
3. Click the Button 'Upload, Save Actual Configuration and Reboot'.

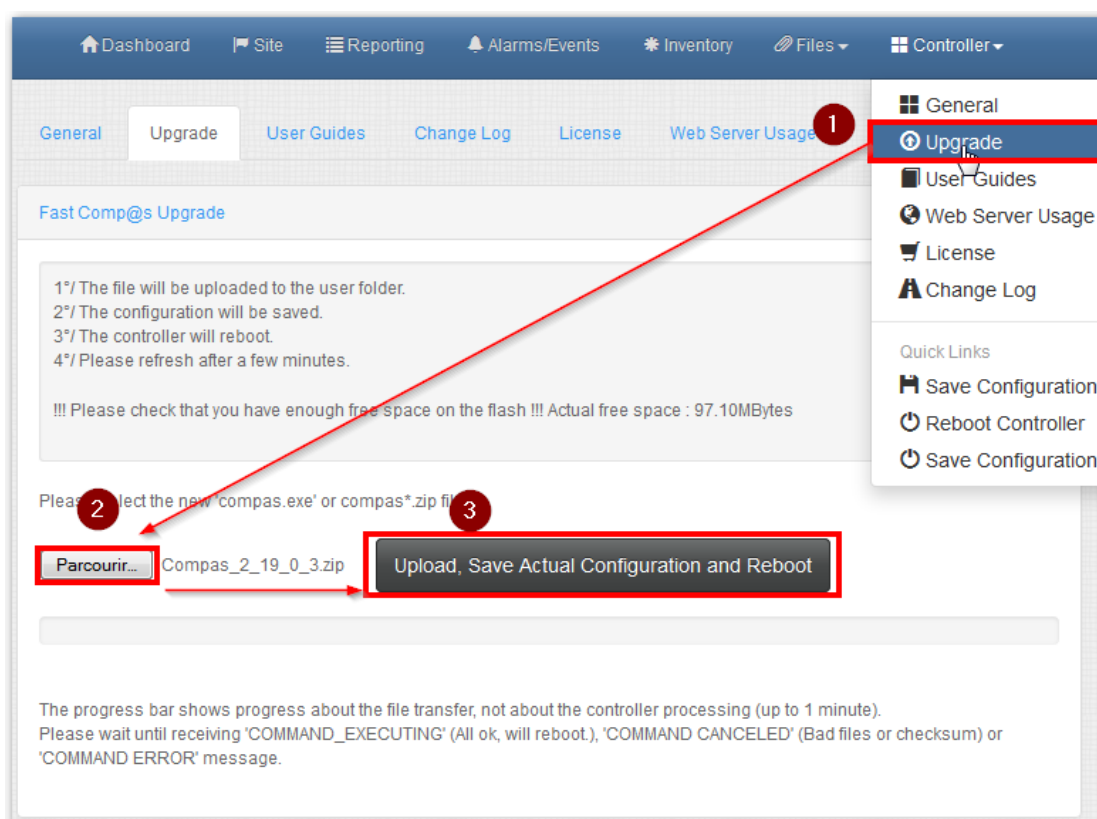


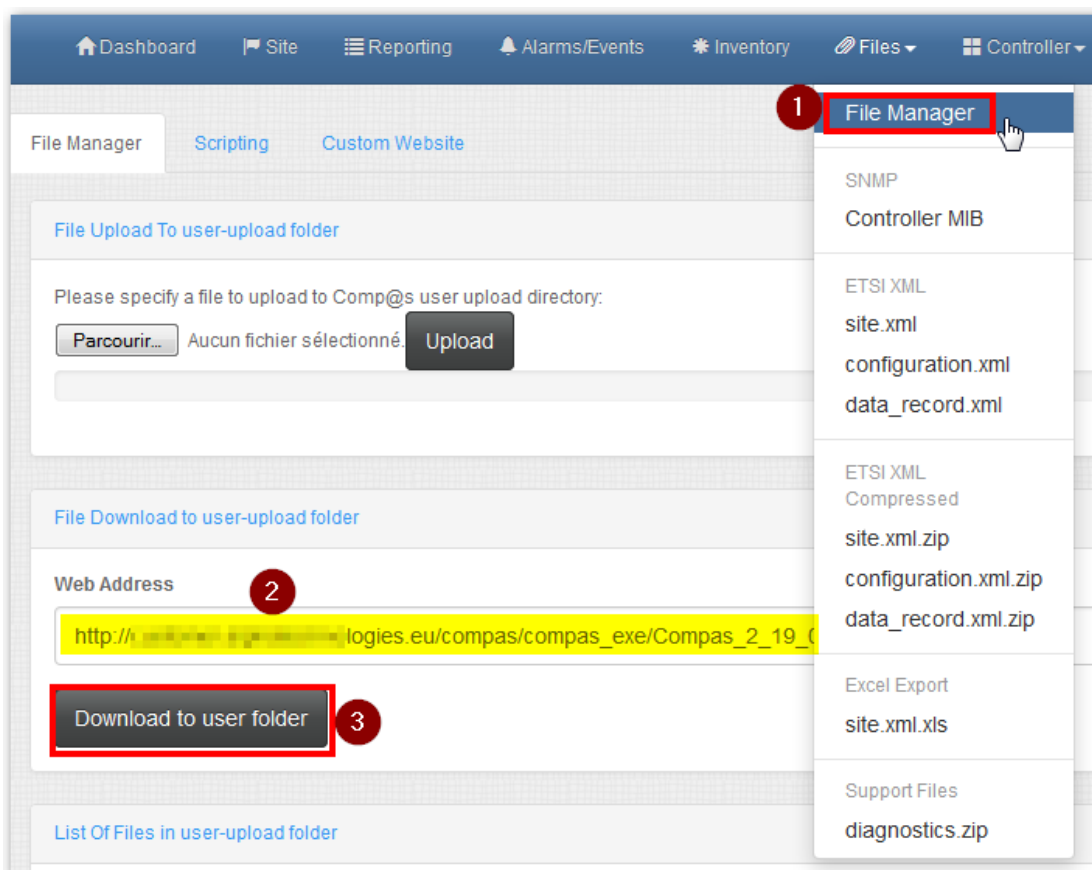
Figure 84 Upgrade using automatic update system

Manual Upgrade procedure

Manual update is needed with older compas version or when there is no possibility to upload the firmware with your connection.

1. Navigate to the File Manager : "Files" > "File Manager"
2. Update your Compas Executable (2 possibilities)
 - a. *possibility 1*: Use the standard upload form

- b. *possibility 2*: Use the Compas Downloader
 - i. specify the url and click on download to user folder
 - ii. Click on "*download to user folder*"
You can follow the download in the event of the site.
 - iii. Wait for the event "Download Success"
 - iv. If there is a fail, check your network configuration, maybe the gateway or DNS are misconfigured
3. Now your file is listed in the "List Of Files in user-upload folder". If you have sent the zip, you will need to extract the zip by clicking on "Extract File"
4. If you get the response "COMMAND_ERROR", please check that there is no file with the name Compas.exe or Compas.exe.md5 in user-upload folder
5. After that you will need to check that it is the right version of compas that is showed in "Other info".
6. Then, Click on "Replace/Move Compas.exe to user folder"
You will receive the "COMMAND_EXECUTED" response.
7. Finally You can now save your configuration and reboot your controller
The controller will take up to two minutes to restart



List Of Files in user-upload folder

File	Write Time	File Size	Other Info	Std Command	Detected Specific Command
Compas_2_19_0_3.zip	5/8/2015 4:34:52 PM	2312044	Compas.exe,Compas.exe.md5	Delete	Extract File 1
PAR_001_000053_ed02_configuration.xml	12/31/1999 11:41:12 PM	1128		Delete	
Compas.exe	4/23/2015 5:32:04 PM	4488704	2.19.0.3 2	Delete	Replace/Move Compas.exe to user folder 3
Compas.exe.md5	4/23/2015 5:45:22 PM	32		Delete	

Figure 85 Manual upgrade procedure using File downloader

5.2.3. Upgrading with FTP

The upgrade can be done through a FTP connection:

1. Connect the system with your FTP client (See [FTP](#)).
2. Browse to the "\user" folder, in the "\\FlashDisk" folder ("\\NOR Flash" on old devices (before 2008))
3. Copy the new "Compas.exe" release in that folder.
4. Reboot the monitoring with the Web Interface (Site -> Control) or with SNMP.
5. You can check that the running software revision has changed.

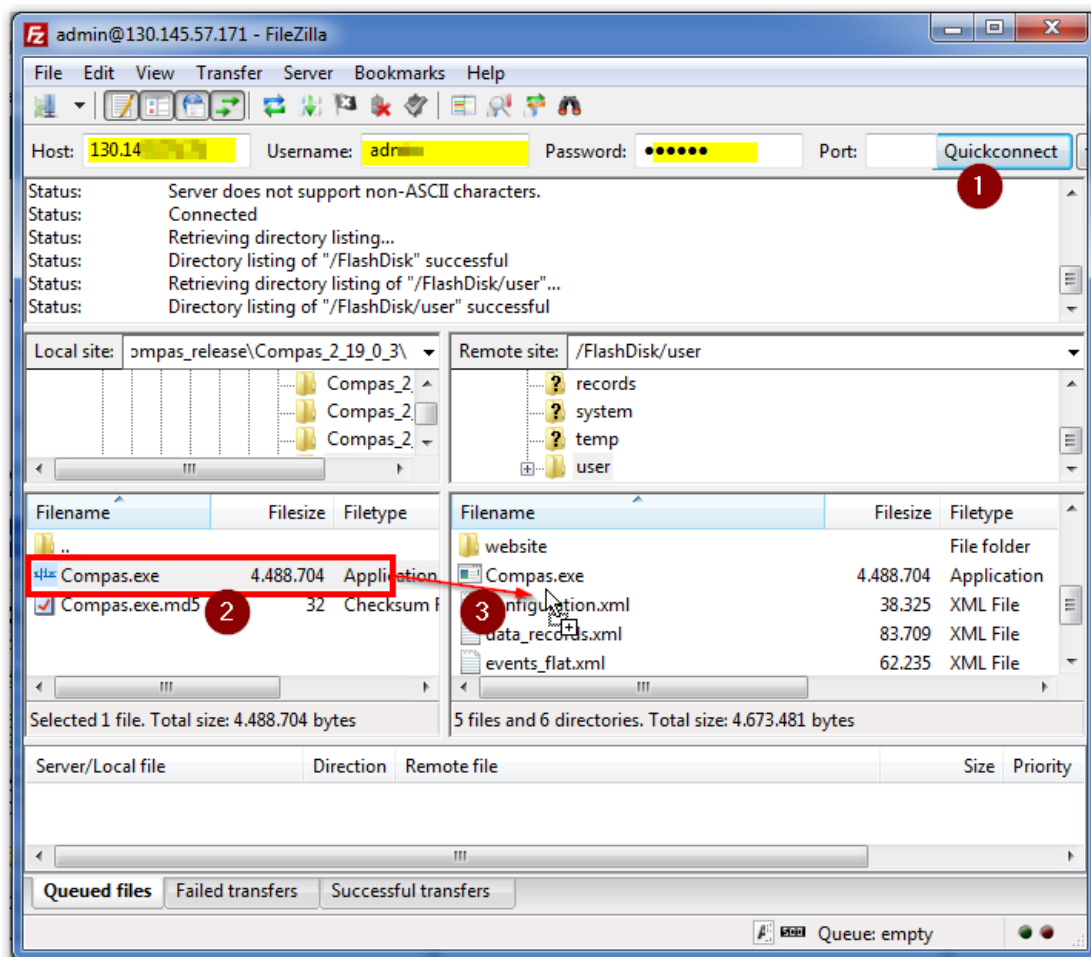


Figure 86 Upgrading via FTP

5.2.4. Upgrading Locally with USB

The upgrade is done through the USB Active Sync connection.

1. Be sure you have ActiveSync correctly installed as described in (see – [Connecting with USB](#)).
2. Connect the USB cable between the Comp@s system and your personal computer.
3. Open the windows explorer and click on “Mobile Device”, under “My Computer”. You should have access to the memory of the Comp@s Monitoring.
4. Browse to “\\FlashDisk\User” (“\\NOR Flash\\User” on some previous release)
5. Copy the new “Compas.exe” release in that folder.
6. Reboot the monitoring with the Web Interface.
7. You can check that the running software revision has changed.

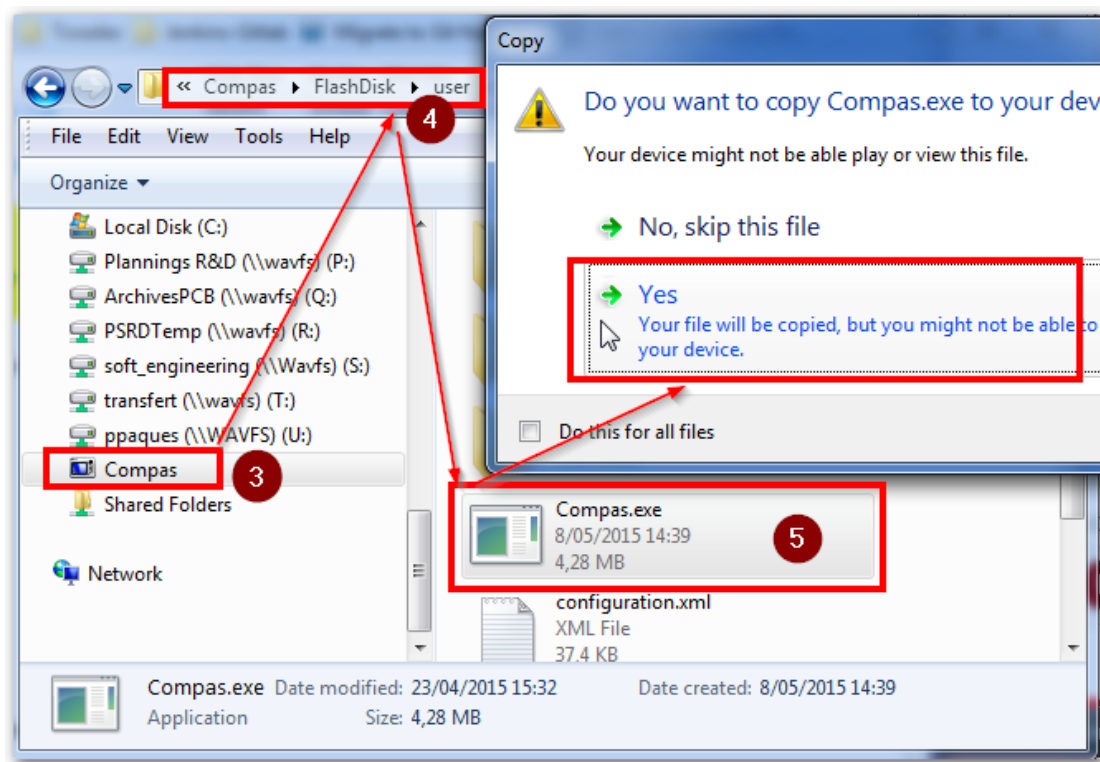


Figure 87 Upgrade using usb

5.2.5. Upgrading from an old system

Compas is still compatible with old system. From 2006, all Compas version have a backward compatibility. With older hardware revision, you have to pay attention that it may have not enough space on the system.



The following procedure will change the CompasStarter File. This file is the launcher of the card, it stars the FTP Server and Compas. If it gets corrupted, your card is not going to restart without an on-site intervention and an usb recovery.



To do this procedure, you need to get the CompasStarter version that support zip extraction. [Contact us](#) in order to get all the necessary files.

You can update your system remotely or locally using the FTP or the USB connection to access to the file system.

In order to upgrade your old system (before 2012), you have to respect this procedure:

1. Connect on your card via FTP (or USB)

2. Upgrade the file *Compas_Starter.exe* in the folder **\\FlashDisk\\AutoRun** (or **\\NOR Flash\\AutoRun** for even older systems)
3. Be sure that this file is well updated
4. Delete the file **user\\Compas.exe**
5. Download the zip version of Compas that you want to install and rename it to *Compas.zip*. (i.e: Download *Compas_2_20_0_3.zip* on customer page and rename it to *Compas.zip*)
6. Copy the zip into the User Folder : **user\\Compas.zip**
7. Restart Compas



Old card may not support the update via the web interface. Please upgrade via FTP and be sure that there is enough space on the card.

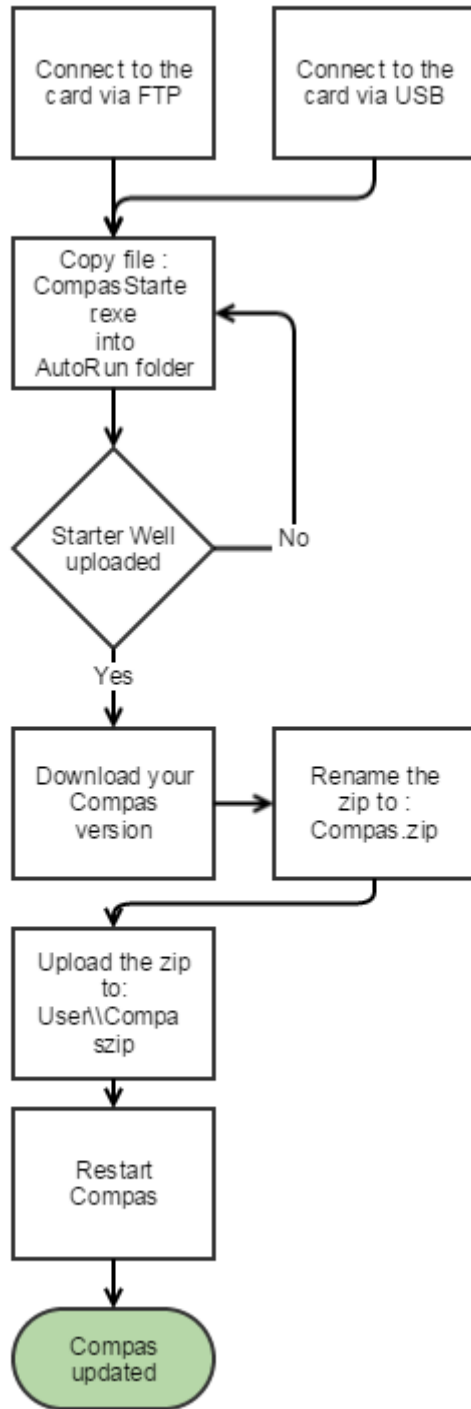


Figure 88 Old Compas Update Procedure

5.3. Upgrading a CAN Device Firmware with Comp@s

Any software/firmware of any Alpha Technologies equipment connected to the CAN bus can be upgraded remotely thanks to Comp@s.



If you are updating a rectifier, you have should have at least another rectifier or a battery connected



DO NOT POWER OFF THE EQUIPMENT DURING THE PROCEDURE.

5.3.1. Procedure

1. **Preparation:** Verify that you have at least one other rectifier (or battery) connected to the system if you are upgrading a rectifier. (The rectifier will be down during the upgrade)
2. **Preparation:** In inventory tabs, use the frame "Upload Bootloader File" in order to send the firmware to Comp@s. A firmware file has usually a name that looks like "SOFT_XXXXX_XX.txt" or "*.acan"

The firmware will be showed in the "Available Upgrades" frame. You can also make this step by uploading the file to the correct path "\\FlashDisk\User\Firmware" using FTP or a usb connection.

3. **Action:** Click on "Start Upgrade" in order to start the firmware upgrade. You will receive a "COMMAND_EXECUTING" response.
You can also start this step using the control CT91 in site. You have to specify the id number of the CAN Node, followed by a coma, followed by the file name. *Example : '101,SOFT_0000030_01.txt'.*
4. **Action:** Once you received the message "COMMAND_EXECUTING", click 'OK'. After, you can see the progress in 'Can Bus Information'. The Comp@s card is sending the firmware to the device over the CAN Bus (about 2-3 minutes). Your equipment will disappear from the CANOpen Nodes list during the upgrade.
5. **Confirmation:** When the progression is finished, the equipment reboot and is detected again by Comp@s. The new firmware is installed. You can see the firmware revisions in the "CANOpen Nodes".



If you are updating a MCU, you may want to save your system parameter inside the MCU by using the control : *DC System -> CT51 (Save configuration in MCU).*

5.3.2. Visual help

Upload Bootloader File

The file will be uploaded to the user/firmware folder.
Select the file to upload (SOFT_XXXXXX_YY.txt - *.acan)

Please select the firmware file

1

2

Parcourir...

SOFT_000092_02_TO_SOFT_000084_03..txt

Upload Firmware File

Figure 89 Uploading a firmware

Available Upgrades

Physical Channel: CAN0

Node ID	Actual SW Info	Available Upgrade File	Command
2	SOFT 000092 01	SOFT_000092_02_TO_SOFT_000084_03..txt	Start Upgrade

Physical Channel: CAN0

Available Update File

SOFT_000092_02_TO_SOFT_000084_03..txt

Upgrade All Compatible

Downgrade All Compatible

Figure 90 Starting and upgrade

CAN Bus Information

Bootloader True
Actif

Node 2

Line Sent 310/3488
/Total Line

File Name SOFT_000092_02_TO_SOFT_000084_03..txt

State 5

Bootload 1/1
task
queue

Figure 91 Monitor the firmware upgrade procedure

CANOpen Nodes				
Node ID	Node Available	HW Info	SW Info	Product Name
2	true - Heartbeat(1011 ms) Last Comm : 283ms ago	9411 010 95001	<u>SOFT 000084 03</u>	<u>CAR0948TN</u>

Figure 92 Check result of firmware upgrade

5.3.3. Device recovery

If an equipment is powered off or if another equipment is powered on during the upgrade process, the software of these devices may be corrupted. In this case it will be stuck in "bootloader" mode and will no more appear in the CANOpen Nodes list or in the inventory. If this happens, you will have to force the upgrade procedure. This operation can be performed remotely if a single equipment is affected.



This operation can only be performed if **a single device** is stuck in such state. If multiple devices are affected, you will need to power them off and force the upgrade one by one.

Recovery Procedure

1. **Preparation:** Power on the system using another rectifier (or battery) connected to the system.
2. **Preparation:** In inventory tabs, use the frame "Upload Bootloader File" in order to send the firmware to Comp@s. A firmware file has usually a name that looks like "SOFT_XXXXX_XX.txt" or "*.acan". You can also make this step by uploading the file to the correct path "\\FlashDisk\User\Firmware" using FTP or direct usb connection.
3. **Action:** In the "control" tab of the site, go to control field CT91. Instead of the id number of the CAN Node you must use the letter "F", followed by a coma, followed by the file name. *Example : 'F,SOFT_0000030_01.txt'.*
4. **Action:** Once you received the message "COMMAND_EXECUTING", click 'OK'. The Comp@s card is sending the firmware to the device over the CAN Bus (about 2-3 minutes).
5. **Confirmation:** When the progression is finished, the equipment reboot and is detected again by Comp@s. The firmware has been repaired. You can see the firmware revisions in the "CANOpen Nodes".

5.4. Upgrading The Operating System

The operating system on which Comp@s is running can be updated. The operating system is not evolving quickly. Last version is 4.2. Version 3.9 are the most common, if you have it, you don't have to upgrade. You can check you version in Site/Description : "Operating System Revision". This procedure is for **Advanced users only**. If the update that you have done is not required, your warranty will be voided. The only way to keep your warranty is to do the update under the Alpha-Technologies supervision Team. If you think you need to do this update, read carefully the procedure and then do it. Be aware that you can broke your system.



DO NOT POWER OFF THE EQUIPMENT DURING THE PROCEDURE.



An OS Update is not a small update, usually it is not necessary. This procedure is for advanced users only.

5.4.1. Procedure

1. **Preparation:** You must first upload the files "COMPAS_EBOOT_xxx.bin" and "COMPAS_OS_xxx.bin" to the the comp@s card. The correct folder is "\\FlashDisk\User\Firmware". This can be done through FTP or USB. The following screenshot shows the folder in Filezilla, with both files uploaded.
2. **Action:** Go to site/control (CT103), and type the file name to flash.
3. **Action:** You should start to update with EBOOT file (the bootloader), and then the OS (wait the competition of the EBOOT File). You can follow the progress with the events.
4. **Confirmation:** Reboot the controller, In site -> description, the operating revision have changed.



Always upgrade EBOOT before OS.

5.4.2. Visual help

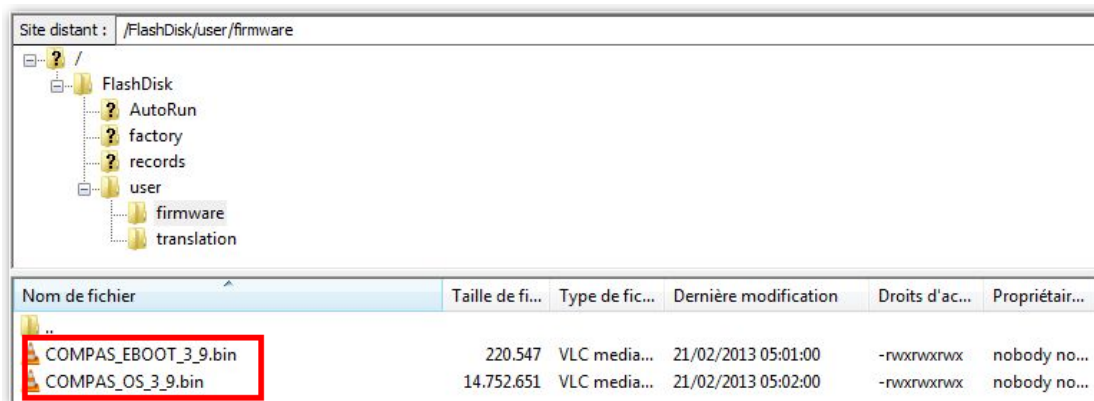


Figure 93 Upload EBOOT and OS

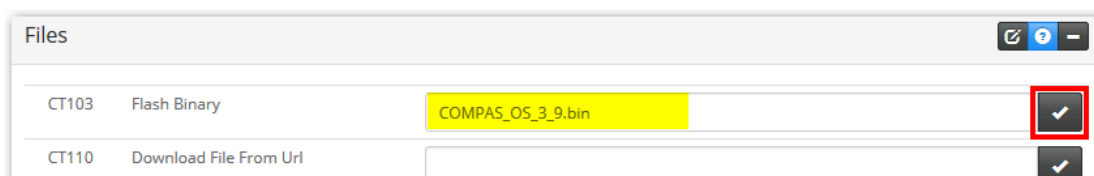


Figure 94 Start an OS upgrade

Id	Name
Last 10 Minutes	
EV195	Binary File Deleted : COMPAS_OS_3_9.bin
EV194	Binary Flash Success : COMPAS_OS_3_9.bin
EV193	Binary Flash Started : COMPAS_OS_3_9.bin
EV192	Control Executed : [id=103], [name=Flash Binary], [value=COMPAS_OS_3_9.bin], [result=OK],[user=admin], [ip=130.145.57.186]
EV191	Alarm Set : Controller Reboot Required
EV190	Binary File Deleted : COMPAS_EBOOT_3_9.bin
EV189	Binary Flash Success : COMPAS_EBOOT_3_9.bin
EV188	Binary Flash Started : COMPAS_EBOOT_3_9.bin
EV187	Control Executed : [id=103], [name=Flash Binary], [value=COMPAS_EBOOT_3_9.bin], [result=OK],[user=admin], [ip=130.145.57.186]

Figure 95 Check update process in events

5.5. Restoring the factory system

In Compas, you can keep the factory parameters and the factory software separately. If you want to restore both, just do the two procedures then restart Compas.

5.5.1. Restoring only the factory parameters

If you want to restore the factory settings, you just have to delete the file "*configuration.xml*" located into the user folder. After that, restart the system.

You have multiples way to do that:

- Using the ftp server
- Using the usb connection
- Using the file manager of the web-interface

**Default IP will be restored**

Don't forget that you will also restore the factory IP settings. If you work remotely, you may want to put a customized configuration.xml containing only your IP configuration.

```
<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<site id="1">
  <config_table>
    <config id="1" name="DHCP Enabled" group="Network">False</config>
    <config id="2" name="IP Address If Static"
group="Network">IP_ADDRESS</config>
    <config id="3" name="Subnet Mask If Static"
group="Network">SUBNET_MASK</config>
    <config id="4" name="Default Gateway If Static"
group="Network">IP_GATEWAY</config>
    <config id="5" name="DNS If Static"
group="Network">IP_DNS_SERVER</config>
  </config_table>
</site>
```

Code Block 2 Customized configuration.xml with only ip configuration

5.5.2. Restoring the factory software version

If you want to restore the Factory version of compas, you have to delete the file "compas.exe" located into the user folder. After that, restart the system.

You have multiples way to do that:

- Using the ftp server
- Using the usb connection
- Using the file manager of the web-interface

**Note**

Some functionalities may not exist in the factory version, as it is older.

6. Data Records, Charts & Reporting

With Compas, record functionality is a standard option. You can easily configure what you want to keep and which precision you need. After a few time, you will be able to make charts and reports on all the data collected by the compas Software.

The on-board recording functionality is essential to understand what happened when there is a problem to investigate.

6.1. Data Records

6.1.1. Overview

For each data on each device, you can select a customized record option. This will allow you to select the right precision for the right data. We have two main type of record used in compas: **Standard records** and **Delta records**.

Standard records are based on a time trigger (i.e.: Each second). Delta records are based on a value change trigger (i.e. : each change superior of 1 volt of the bus voltage.)

So, for each data, we can configure;

- Time Based Recording
 - Seconds Records
 - Minutes Records
 - Hour Records
 - Day Records
 - Change Based Recording
 - Delta records
- Like always, with Alpha-Technologies, our data storage files are open, you will always be able to read your data from the records. This is a big advantage over our competitors.

6.1.2. Standard Recording system

The standard recording works as described below. As you can see, each period can have his own precision. If you want, you can save the data each second during the last 10 minutes or on the last 60 seconds.

Each minute, we take the min, max and average value. It is also done by hour and day. This will help you to detect improper value. Each data that we save is linked with a time stamp.

Data's are saved each day at midnight or just before the end of life of the system (i.e. a Low Voltage Disconnect opening for battery protection.).

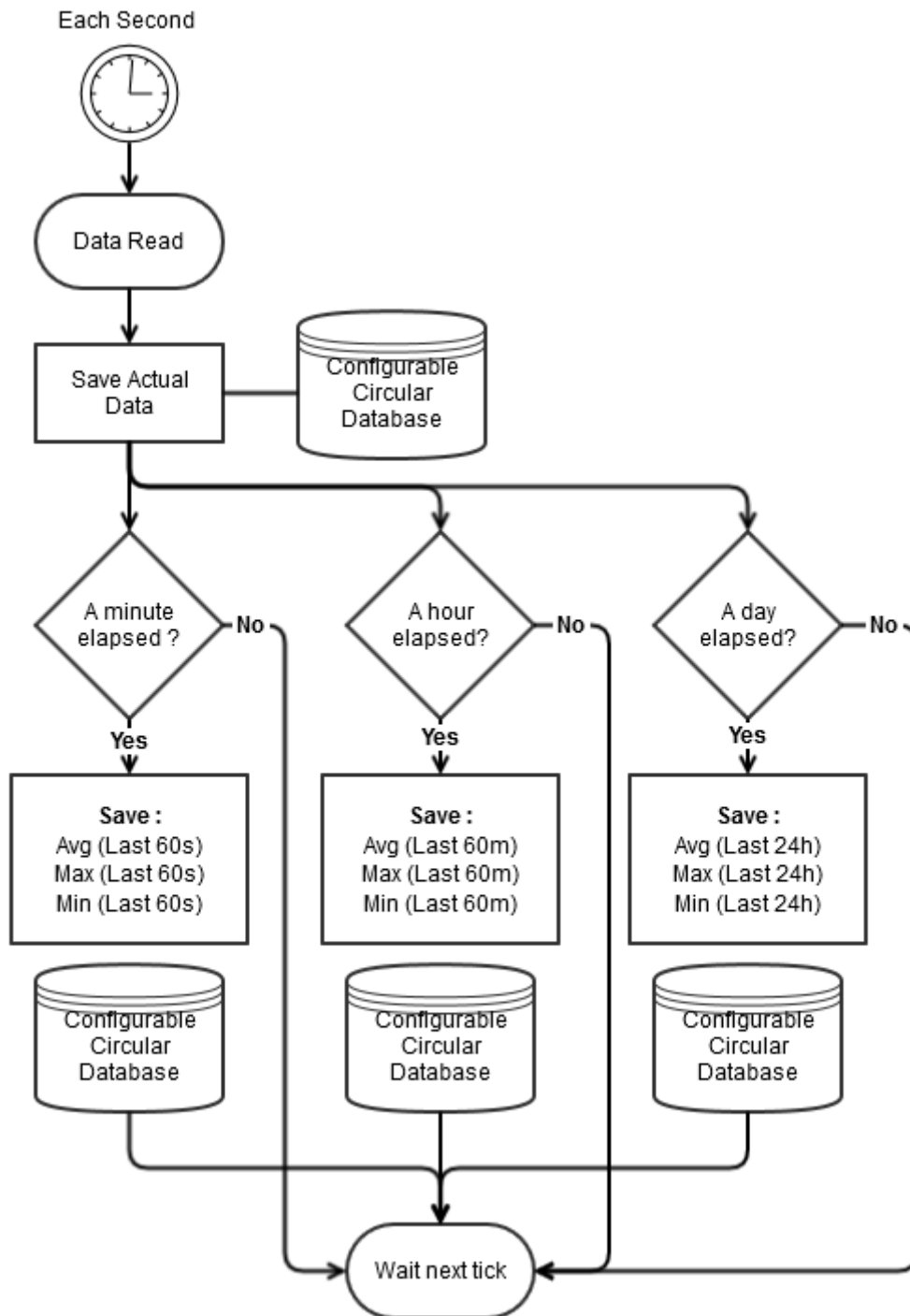


Figure 96 Standard recording system

6.1.3. Delta recording system

Delta records saving are triggered with a value change. You can parameter a delta value which is the minimal change before triggering a save into a circular database.

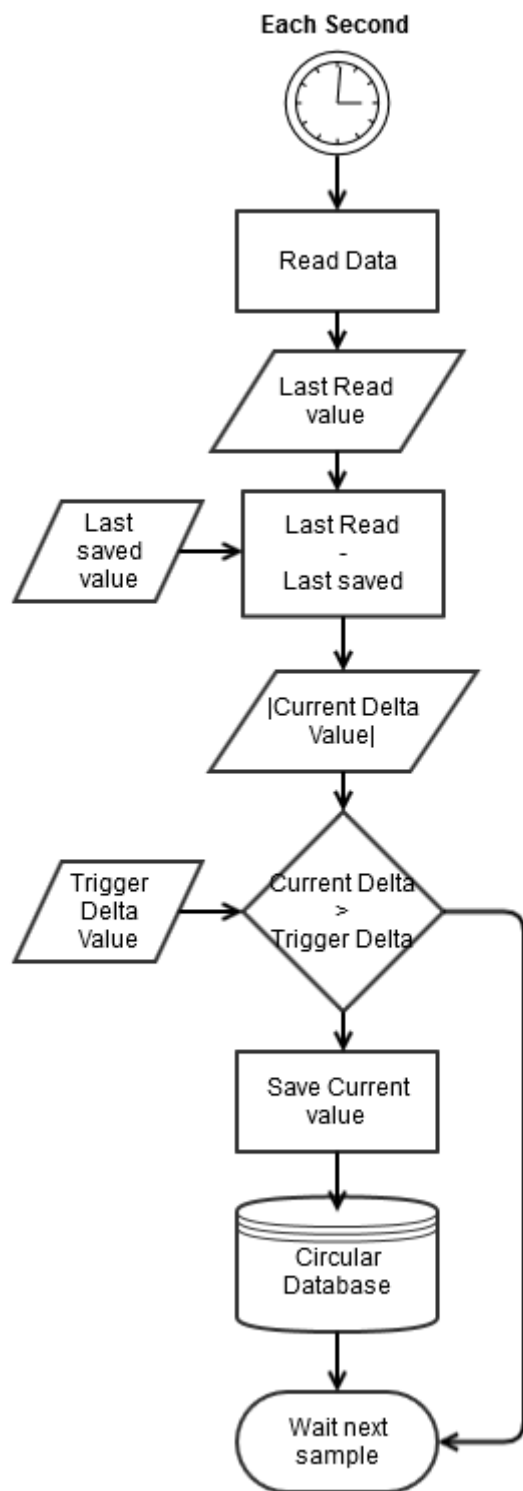


Figure 97 Delta Record saving system

6.1.4. Configuring records

Wizard configuration

In each device, you have to go to the Record tabs and switch to edit mode. After that, it is highly advised to use the wizard to configure the record like you want. We will teach you using a user case:

If you want to save your bus voltage, with the following requirements:

- save each second during 10 minutes
- save each minute during 25 hours
- save each hour during last two weeks
- save each day during last year
- save the last 500 values changes of the system with a delta value of 0.5 volts

Procedure

Let's do it:

1. Go to your site -> energy system -> DC system
2. Go to the tab Record
3. Switch to edit mode
4. Click on Wizard into the bus voltage parameter, a pop-up will appears with configuration options.
5. Configure the record like you want.
As you can see, the wizard is giving you a lot of approximation in order to help you to configure the line.
6. Validate your changes by clicking on the validate icon (✓)



Raw configuration

Raw configuration is still available, you can configure directly the record without using the wizard:

i.e. : s604,m1500,h334,d366,dp507,dy0.5

Each type is followed directly by the size or the value; there is no space in the line.

- s : seconds
- m : minutes
- h : hours
- d: days
- dp : size of delta record data

- dy: delta value for saving the date

Visual help

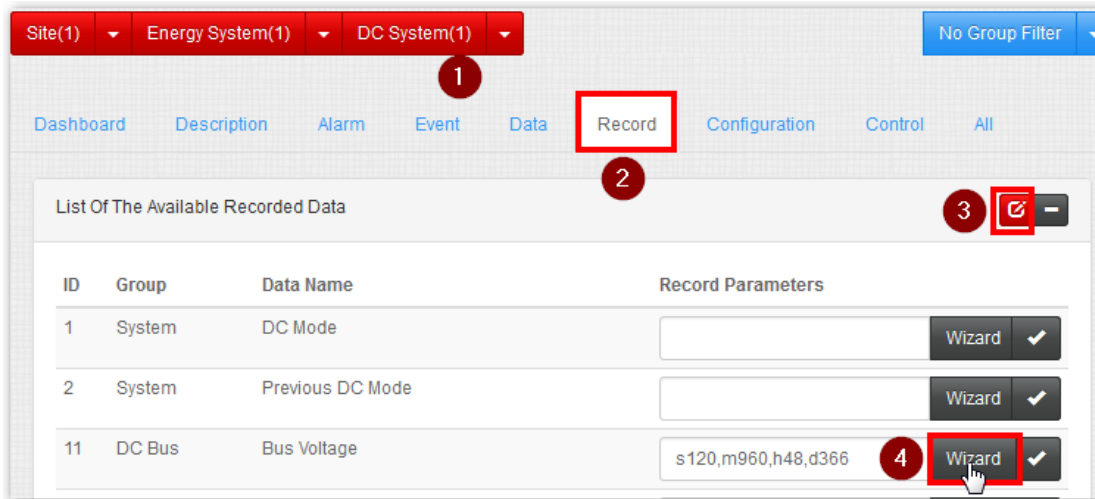


Figure 98 Edition of recording delays

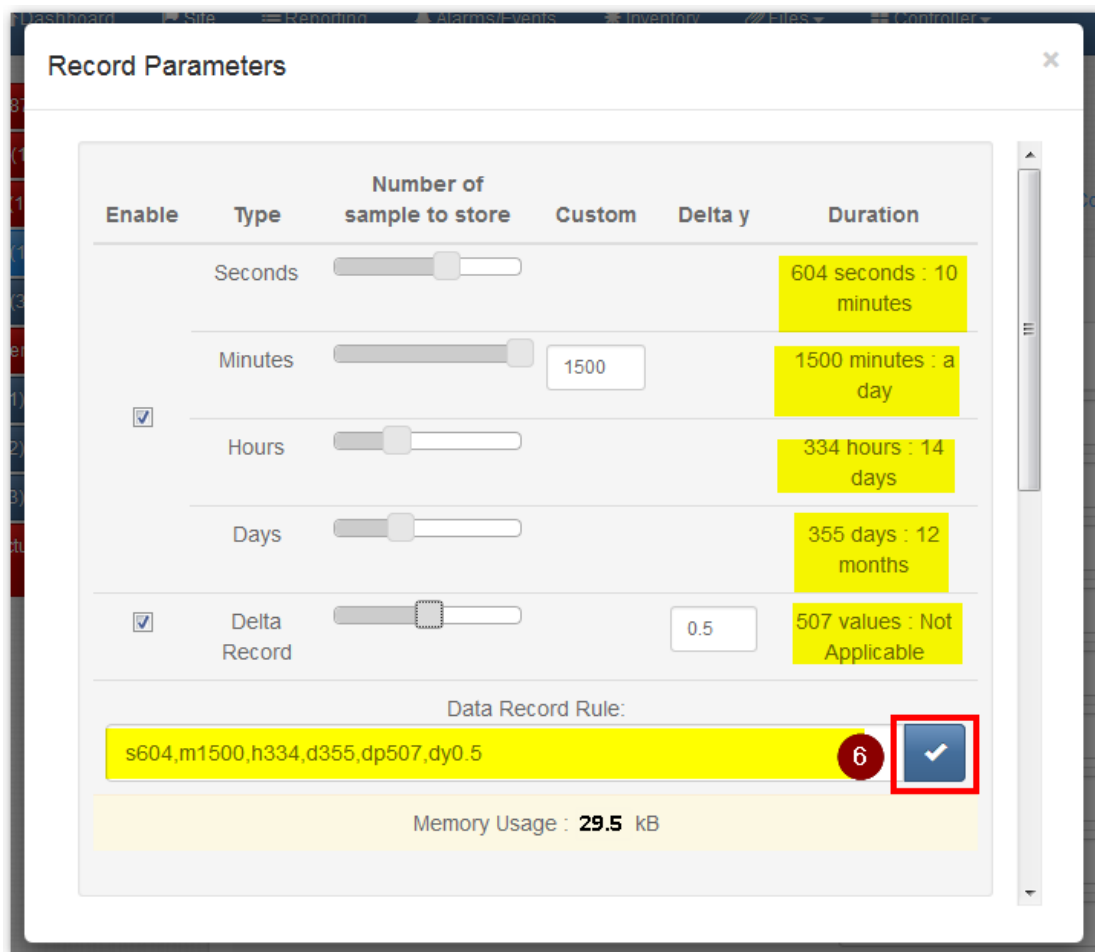


Figure 99 Wizard configuration

6.1.5. Forcing a save

The data records are saved once a day or just before a predicted power cut (LVD). But, if you want, you can force the saving:

- Use the control CT33 to save the data record in xml format (in *user\data_records.xml*)

You can also :

- Use the control CT35 to archive all Data Records (create a new file with time stamp in user folder (xml format))
- Use the control CT34 to export all data records in csv format (in *records*.csv*)

6.2. Charts

After configuring the record, if your system has run enough time, you may want to see the chart and do reporting.

In the example below, you will see a chart on an ups system. As you can see, there is a power cut at +/- 13:03 during 7 minutes. Theses information can be really interesting if you have a power contract with indemnities in case of power cut.

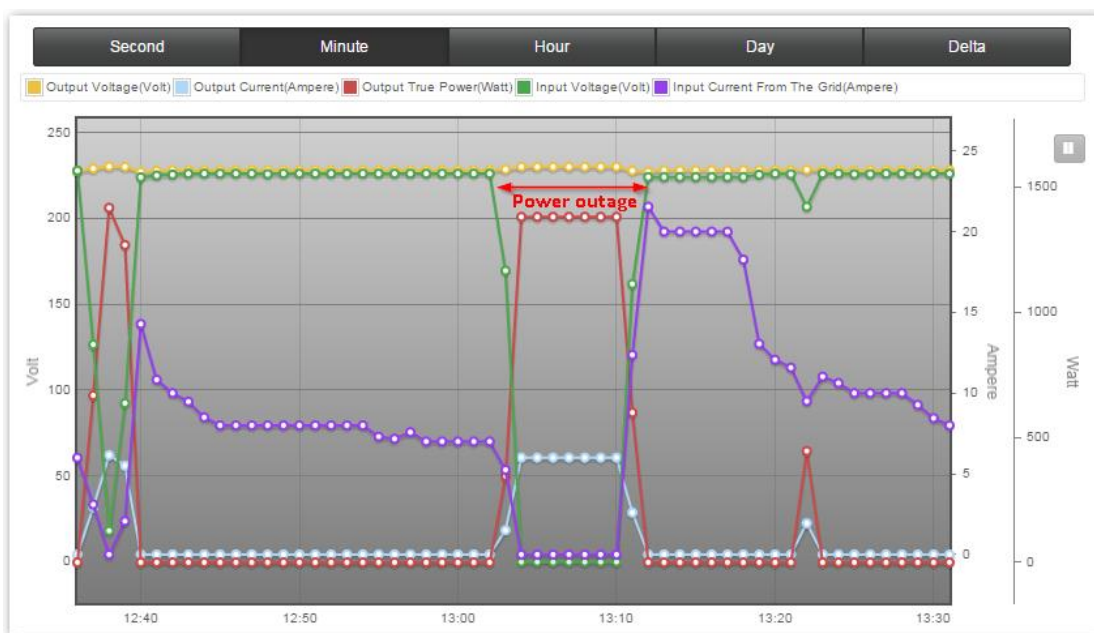


Figure 100 Chart example

6.2.1. On-Line Charts

You can display live charts, you can go into each device then in the record tabs (normal mode), and select the data that you want to see.



If you select only a one data, the minimal & maximal values are also shown.

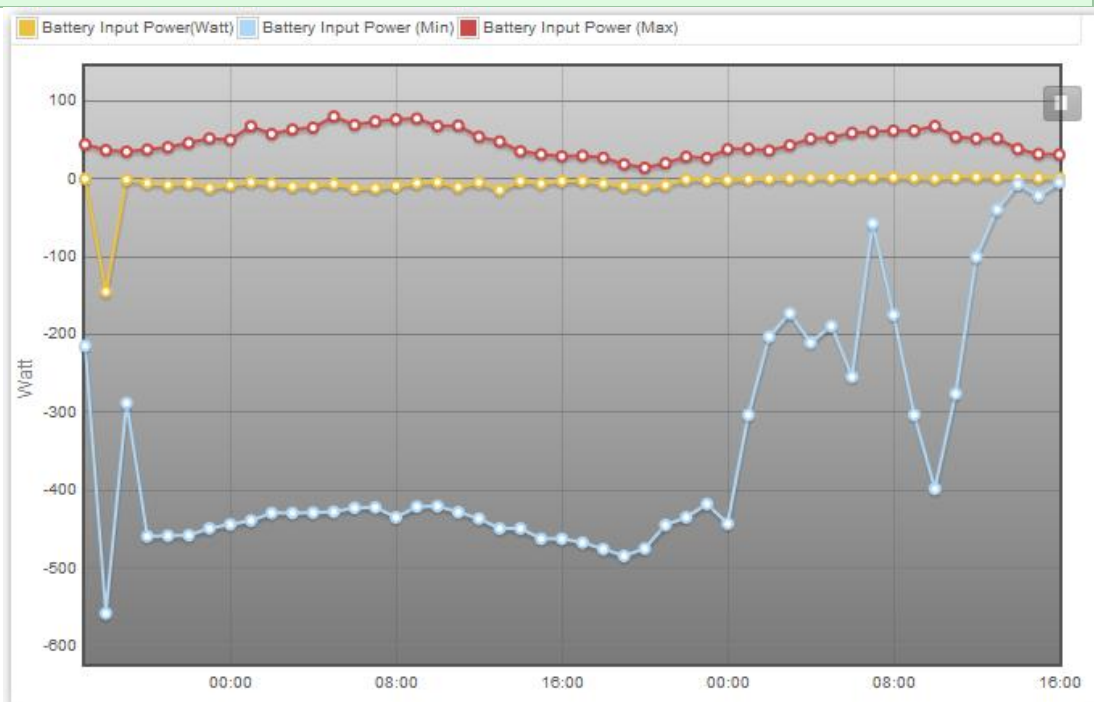


Figure 101 Chart example (with min & max)

Naturally, you can mix different devices using the reporting tabs -> data records.

Then select the data that you want to show. In this example, three data are coming from different devices monitored by compas.

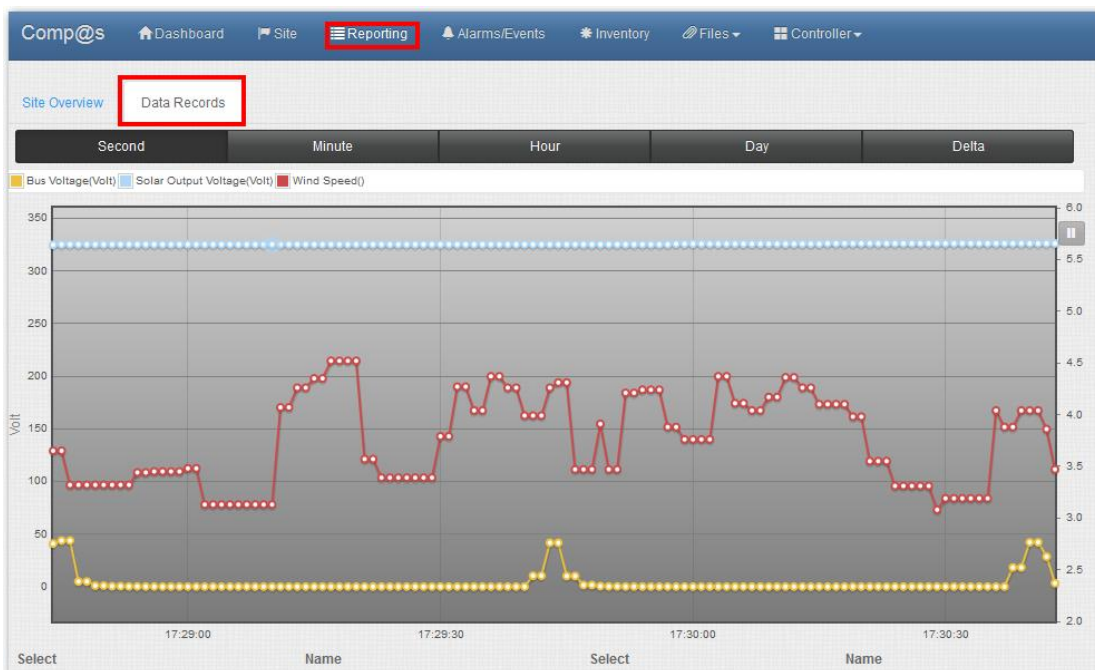


Figure 102 Reporting data record

6.3. Reporting

6.3.1. Time based records

When you want to do reporting, you usually want to download data stored into compas. Time based records are available in XML format and CSV format.

The data are available directly into the XML ETSI standard file -> "*data_record.xml*". You can see an example of the file content below.

```
<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<site id="1" status="alarms" severity_type="major" severity_level="6"
datetime="2015-05-11T17:31:54">
  <data_record_table>
    <data_record id="31" name="Monitoring Memory Used" group="Controller"
subgroup="Operating System Info" unit="Kb" datetime="2015-05-
11T17:31:54">
      <last_hours_datetime>2015-03-29T17:00;2015-03-
29T18:00</last_hours_datetime>
      <last_hours>6040.47;7664.25</last_hours>
      <last_hours_min>4832.38;6131.470</last_hours_min>
      <last_hours_max>7248.57;9197.10</last_hours_max>
      <last_days_datetime>2014-03-29;2014-03-3</last_days_datetime>
      <last_days>5348.34;5715.10;6078.84</last_days>
      <last_days_min>4278.68;4572.08</last_days_min>
      <last_days_max>6418.01;6858.11</last_days_max>
    </data_record>
  </data_record_table>
  <energy_system id="1" status="alarms" severity_type="major" severi-
ty_level="6">
    [....]
  </xml>
```

By default, the file does not contain the seconds & minutes records. This is done in order to prevent big file download. You can add the "*minute=true*" and "*second=true*" to parameter URL in order to have it. Or eventually you can ask the two. Example: "*data_record.xml?minute=true&second=true*". You can also ask to not have hour for example by using : "*data_record.xml?hour=false*".

Here are possible options:

- second
- minute
- hour
- day

You can also download the data record in cvs format. Navigate to your device, and then in the record tabs you have a section named "*Download All Data Record in CSV Format*".

Download All Data Records In CSV Format	
	Record Period
Records Of Average	second- minute- hour- day
Records Of Minimum	minute- hour- day
Records Of Maximum	minute- hour- day

Figure 103 Data record download

6.3.2. Delta records

It is possible to download data records in CSV format (Comma-Separated values). This allows using these records in Microsoft Excel for statistical and advanced charting purpose.

Delta records are also available. Navigate to your device then in the record tabs, you will be able to download the file into "*Download Delta Record in CSV Format*" section. Naturally, all these data are available into the **record folder**. You can browse it using the embedded file manage, the ftp or even the usb connection. The period of time can be a second, a minute, an hour or a day:

Download Delta Records In CSV Format				
Id	Group	Name	Record Count	Download Link
11		Wind Turbine Output Power	545	CSV - Zip
91	Voltage Sensor	Wind Turbine Output Voltage	619	CSV - Zip
301		Wind Turbine MPPT GlobalSet Point	530	CSV - Zip

Figure 104 Delta record download

7. Third-Party Equipment

With Compas, Alpha-technologies has a highly open politic. We accept to monitor other component or even to monitor some of our competitors. With this politic, you are able to monitor and control all your devices in a site directly through Compas.

From a single phase energy meter to full inverter rack, we are able to adapt to other devices. If you have a device that is not supported in standard, you can just ask us and we will see what we can do for you.

Depending of your system, we can use these communications:

- CAN with CanOpen protocol
- RS232
- RS485 with Modbus RTU protocol (or another one if you doesn't need the modbus RTU)
- 1-wire using usb converter
- Ethernet -> Modbus over ethernet, SNMP, XML, http,...

7.1. Energy Meters

Energy Meters are important if you want to know exactly your power consumption or if you want to sell energy.

7.1.1. Supported devices

Compas currently support several Energy Meters:

- PM9C from Schneider-Electrics (220 VAC): Three-phase measurement with current transformers
- IEM3150 from Schneider-Electrics (220 VAC) : Direct Three-phase measurement or three direct mono phase measurement
- B21 from ABB (220 VAC) : Direct mono phase measurement
- (...)
- If you want to use another modbus energy meter, it is possible. Just contact us.

7.1.2. Requirements

Hardware

- RS485 Compatible comp@s product
 - **UCC Core** Module
 - **Sensors and actuators** (SAM0348 or SAM0948) with a Comp@s module
 - For other hardware, check your manual to be sure that your device is compatible.

Software requirement

- minimum Compas version : **2.16.0.3**
- minimum SAM0348 firmware : **SOFT 000136 05** (Only needed if you use the the RS485 over SAM0348)
- minimum SAM0948 firmware : **SOFT 000003 05** (Only needed if you use the the RS485 over SAM0948)

7.1.3. Installation

Energy Meter configuration

In order to use compas Communication, you need to configure the meter communication according to theses parameters:

Baud rate	9600
Data bits	8
Parity	None
Protocol	Modbus

(please, refer to the manufacturer manual)

Connecting the energy meter to Compas

According to your device's user manual, connect your energy meter to the Compas RS485 bus line. For example, here are the pin layout of the SAM0948 and SAM0348. On these devices, you can connect both a badge reader and an energy meter.

Reader connector (SAM0948&SAM0348)	Pin Number	Signification
	1	+12 V
	2	GND_POWER
	3	A
	4	B
	5	GND_SIG
	6	N/A or shield

Configuring compas

1. Add the "premium" or "metering" license.
2. Change the RS485 configuration field according to your configuration:
 - a. with **UCC Core Module** (or another Comp@s control device with *embedded direct RS485 bus*)
 - Site
 - Configuration tab -> Inventory -> RS485 Bus
 - Parameter CF210
 - b. with **Sensors and actuators** module (SAM0348 or SAM0948) and comp@s
 - Site > Sensors and Actuators
 - Configuration -> RS485 BUS
 - Parameter CF150
3. Specify the device name that you want to use with the address in brackets and save the configuration (I.e. : *B21(1)* for energy meter B21 on modbus address 1). You can specify multiples devices using semicolons (example below).
4. Your device will be created and you will be able to browse it
5. Don't forget to save your configuration in order to make the change persistent



RS485 Extensions configuration example

PM9C(1);IEM3150(2)

In this example, you have specified two different energy meter :

- PM9C with modbus address 1
- IEM3150 with modbus address 2

Discover your new device

Once your device is added in configuration, new equipment "*Energy Meter*" is created into the site structure:

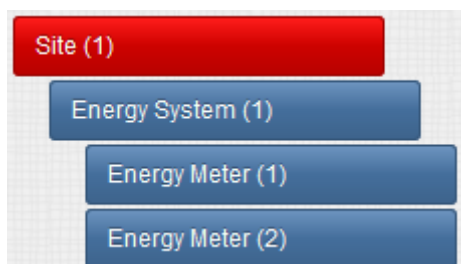


Figure 105 Device tree with energy meter

On description tabs, you will find the identification data provided by the meter. If your meter has a readable serial number, it will be in this tabs:

Product Info		
Id	Name	Value
DE1	Product Name	iEM3150
DE4	Software Version	1.0.300
DE9	Manufacturer	Schneider Electric

Figure 106 Energy meter description

In data tabs, you will find all the data fetched on the device.

Instantaneous values		
Id	Name	Value
DA10	I1	0.17 A
DA17	V1N	217.14 V
DA20	Frequency	49.97 Hz
DA24	Power Factor	0.30
DA31	Instantaneous effective power Total	11.15 W

Figure 107 Energy meter instantaneous values.

You will find all control to reset the partial energy counter or configuration of the refresh time of the device in all others tabs. These tabs are more device specific.

7.1.4. Case studies: *adding an overload current alarm via PLC system*

If you have the premium license, you are able to create a PLC alarm. In this example we are going to create an overload alarm on the energy meter.

1. Change the parameter CF902 (Number Of PLC Alarm) of the energy meter to 1.
You will see two new parameters (CF1001, CF1002)
2. Configure the alarm name and triggering condition
 - a. CF1001 : Alarm Name
 - i. Change the name (e.g. "Overload current on line 1 (current > 1A)")
 - b. CF1002 : Alarm 1 Boolean Expression
 - i. change the expression to : "@(data10) >= 1"
 1. **@(data10)** represent the data with id 10 of this device (here, i1)
 2. **>=** is the operator
 3. **1** is the value to compare the data
 - c. we can read these parameters as :
 - i. The alarm with name "Overload current on line 1 (current > 1A)" is triggered when the data parameter with ID=10 (DA10) is superior or equal to one.
3. Change the severity of the added alarm in the alarm tab. Here we are going to set the severity to "critical" with a level of 7.

Now you have a device specific alarm that will be fired when you have an overload current on line 1 of your energy meter.

For more advanced usage of PLC alarm, check the chapter about [PLC alarms](#) to know all possibilities, operators and syntax.

7.2. Inverter TSI

7.2.1. Overview

Since years, Alpha Technologies work in collaboration with TSI. These inverters are directly supported by compas.

In order to monitor the TSI inverter, you need to :

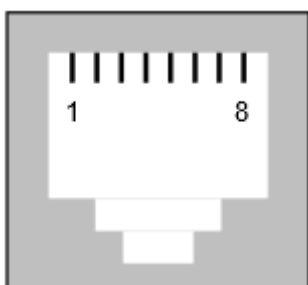
- Have a T2S controller in CANOpen mode ([See Appendix - Convert TSI to CANOpen](#) to make the conversion)
- Change a parameter of configuration
- Connect the inverter to the Compas CANOpen
- Save & Reboot Compas

7.2.2. Connection procedure

1. In **Site > Configuration > Inventory**
2. If you already have a DC-system connected, with CAR rectifier using node id from 1 to x : change the **CF92** parameter to **50-100** not to use the address of your rectifier. The TSI will be addressed in the 50-100 node id range
3. Connect the TSI CanOpen to the Compas CANOpen connector (see below some connector details)
4. Save your configuration and reboot your controller (Controller -> *save configuration and reboot*)
 - a. After a few seconds, Compas reboot, the inverter node is detected and you can configure the monitoring directly on the device.



Please refer to your device manual, the examples below are only available for our best-seller system. The examples below may not be actual. Please, pay attention to your system.



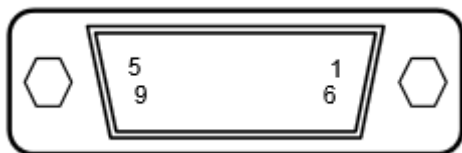
Pin #	Name	Description
1	CAN_H	CAN bus High
2	CAN_L	CAN bus Low
3	CAN_GND	CAN bus Ground
4-8	NOT_CONNECT	Do not connect to these ports

Table 2 Rack UCC can



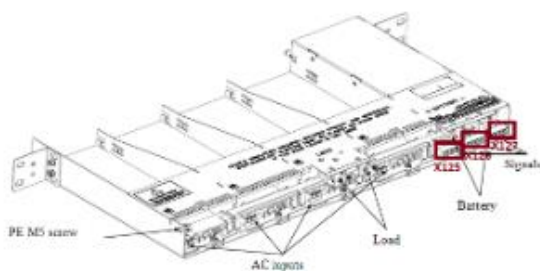
Pin #	Name	Description
X9-6	CAN_H	CAN bus High
X9-9	CAN_L	CAN bus Low
X9-10	CAN_GND	CAN bus Ground

Table 3 Rack SP35 Can connector



Pin #	Name	Description
1,8,9	NC	No usage
2	CAN_L	CAN bus Low
3	CAN_GND	CAN bus Ground
4	-48V	-48V power
5	0V	0V power
6	CAN_GND	CAN bus Ground
7	CAN_H	CAN bus High

Table 4 Captin 850 CAN connector



Pin #	Name	Description
X125.1	-48V sense	No usage
X125.3	CAN_GND	CAN bus Ground
X125.7	CAN_H	CAN bus High
X125.8	CAN_L	CAN bus Low

Table 5 ACE094 can connector

7.2.3. Alarms and specific alarms

The inverter alarm table will be automatically created.

For inverter specific alarm, there is an alarm named "specific alarm". When this alarm is active, you need to go into the data page and you will have the details of the specific alarm into specific alarm names.

7.2.4. Inverter Operation

Inverter Module Indicator

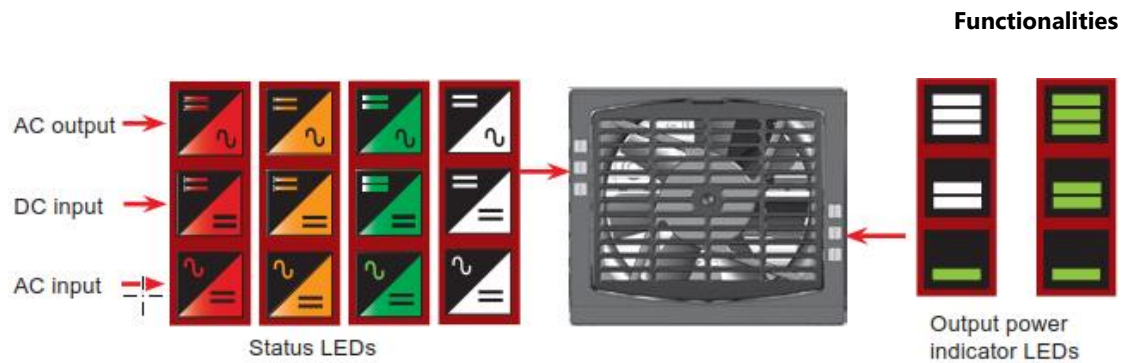


Figure 108 Output power indicator LEDs

Status Leds

Inverter Status LED	Description	Corrective Action
OFF	No input power or forced stop	Check AC input
Permanent green	AC input OK, normal operation	None required
Flashing green	Inverter OK but conditions are not within normal parameters	Check upstream and surrounding equipment
Flashing green/orange alternating	Recovery mode after boost (10 In short circuit condition)	Wait for a while
Permanent orange	Starting-up mode	Wait
Flashing orange	Modules cannot start	Connect Compas and check Alarms
Flashing red	Recoverable fault	Wait or attempt to clear fault condition by removing and reinserting the module. If the error is persistent, download the diagnostics.zip and ask for support.
Permanent red	Non recoverable fault	- Attempt to clear fault condition by removing and reinserting the module. - Download Compas Disagnostics.zip and ask for support.

Output Power (Redondancy not counted)

The output power LEDs (located on the right side of the module's front panel) indicate the amount of power (percentage of rated power) provided by the module. The number of bars that are illuminated combined with whether or not they are on steady or flashing indicate the output power level or overload condition as shown in the figure below.

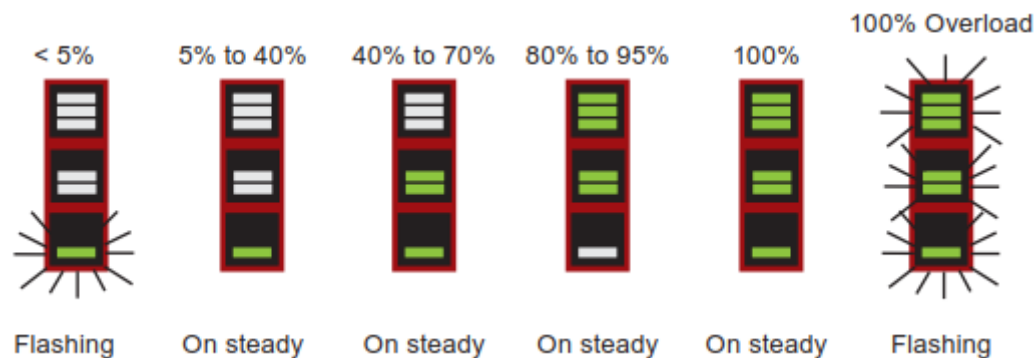


Figure 109 Output power indicator LEDs

7.3. Outback power system

Compas support AXS port form Outback Power. You just have to enter the required configuration and your device will be monitored. In CF220 at the site level, you have the parameter Ethernet Extensions Configuration. Just change the configuration to :

AXS(IP.OF.YOUR.AXS)



This support is still a beta, when there is a power cut, the AXS port is not giving anymore information.

8. Programming capabilities

In compas, we have two main ways to program the card in order to do what you need.

PLC (Programmable Logic Controller.) gives you the opportunity to add customized alarms & datas. This system can do most of the work if you just want to operate on data that the system has already. You will be able to use relays and configure custom behaviors by working with the alarms set and reset delays.

CompasLua is a complete programming interface available directly in Compas. You will be able to create devices, theirs data, alarms, descriptions... Callbacks are possible for the configuration and control usage. By giving you well-documented functions, you will be able to use the controller communications. You have virtually no limit in what you want to monitor. You can also implement your algorithms and devices without modifying Compas. [CompasLua](#) has his own chapter; please refer to [it](#) for more information.

8.1. PLC Functionalities [Premium Edition]

8.1.1. Overview

PLC stands for Programmable Logic Controller. It allows adding custom features by using some logical expression. It is very cost effective for regulation where the main loop is not faster than 1 sec.

Some configuration elements can be filled with a Boolean expression or a mathematical expression. Here follow information about the syntax and some examples of valid expressions:

8.1.2. Our PLC Syntax

Using data and alarm entries from a monitored device

Syntax	Signification
@(dataXXX) @(daXXX)	The data with id XXX of the relative equipment
@(dcY_dataXXX)	The data with id XXX relative to the dc system with id Y. Example: @(dc1_data11) is the bus voltage of the DC System 1.
@(saY_dataXXX)	The data with id XXX relative to the Sensors And Actuators with id Y.
@(dcX_reZ_dataYYYY)	The data with id YYYY located inside the dc system X and rectifier Z.
@(alarmXXX) @(alXXX)	The alarm with id XXX of the relative equipment
@(dcY_alarmXXX)	The data with id XXX relative to the dc system with id Y. Example: @(dc1_data11) is the bus voltage of the DC System 1.
@(saY_alarmXXX)	The data with id XXX relative to the Sensors And Actuators with id Y.
@(severity_level)	The severity level of the relative equipment (0->9). This can be useful to activate a relay based on the severity level.
@(severity_type)	The severity type of the relative equipment (none - warning - minor - major - critical). This can be useful to activate a relay based on the severity level.
@(dcY_severity_level)	The severity level relative to the dc system with id Y.
@(saY_severity_level)	The severity level relative to the Sensors And Actuators with id Y.

Operators & functions

Syntax	Signification
(...)	Parentheses
&&	Logical AND
	Logical OR

Syntax	Signification
==	Equal
!=	Not Equal
+	Addition
-	Subtraction
*	Multiplication
/	Division
%	Modulo
>	Superior
>=	Superior or Equal
<	Inferior
<=	Inferior or equal
\$second()	Second part of the actual time
\$minute()	Minute part of the actual time
\$hour()	Hour part of the actual time
\$day()	Integer indicating the day of the month.
\$dayofweek()	Integer indicating the day of the week. This integer ranges from zero, indicating Sunday, to six, indicating Saturday
\$dayofyear()	Integer indicating the day of the year.
\$month()	Integer indicating the month of the year.
\$year()	Integer indicating the year.
\$time()	The time of the day
@ts(XXXXX)	Create a time span variable from XXXX string. Example: @ts(11:32) corresponds to 11h32.
\$abs(XXX)	The absolute value of XXX
\$canid(XXX)	Can Id XXX is present
\$case(condition, val, condition2, val2, ...)	Equivalent to "switch"
\$ceil(XXX)	The ceil value of XXX
\$floor(XXX)	The floor value of XXX
\$iif(condition, val if true, val if false)	Equivalent to "If then else"
\$max(X1, X2, X3, ...)	The maximum value between X1,X2,X3, etc.
\$min(X1, X2, X3, ...)	The minimum value between X1,X2,X3, etc.
\$sqrt(XXX)	The square root value of XXX

8.1.3. Examples

Basics expressions

Condition or data	Configuration Element Value
The bus voltage is under 47V. (PLC Alarm is inside a DC System.)	@(data11)<47

Condition or data	Configuration Element Value
The rectifier output power is over 2500W. (PLC Alarm is inside a DC System)	@(data21)>2500
The time of the day is comprised between 10:23 and 11:34	(\$time())>@ts(10:23))&&(\$time())<@ts(11:34))
The day of the week is Sunday	\$dayofweek()==0
The alarm with id 17 is active	@(alarm17) ==True
The alarm with id 17 and 18 are active	@(alarm17) ==True && @(alarm18) ==True
true 5 seconds over 10	\$second()%10<5
Voltage on bloc 2 of the battery (data) (if in DC System)	@(data161)-@(data162)

Switch case example

We are going to use the temperature sensors of an ADIO10 in order to give some textual advice for choosing clothes.

Here is the requirement :

- IF $T < 0$
 - *It's cold, take mittens, $T < 0$*
- IF $0 < T < 15$
 - *It's cold, take your sweatshort. $0 < T < 15$*
- Normal temperature $15 < T < 25$
 - IF $T > 25$
- Don't forget to drink $T > 25$ Solution :

```
$case( @(data1) < 0, "It's cold, Take mittens: T<0", @(data1)>0 && @(data1)< 15, "It's cold. Take your sweatshort. 0..T...15", @(data1) >25, "Don't forget to drink. 25...T", True, "Normal Temperature: 15...T...25")
```

Condition 1: $T < 0$

Value 1 for the data: "It's cold, take mittens, $T < 0$ "

Condition 2: $T > 0$ && $T < 15$

Value 2 for the data: "It's cold, take your sweatshort. $0 < T < 15$ "



You can put a default value by adding at the end of the switch case :

```
$case(cond1, "val1", [...], True, "Default Value")
```

8.1.4. Case Study 1: Hysteresis on a temperature alarm

Context

You have an ADIO10 and you want to add a temperature high alarm. But you also want an hysteresis of 2°C. This alarm has to be called *Indoor Temperature High* and has a major severity. It is triggered when temperature is higher than 50°C and unset when temperature fall under 48°C.

Procedure

1. Create a new PLC alarm in ADIO10
 - a. set ADIO10 -> Configuration -> CF902 to 1
2. Change the name of the created Alarm
 - a. set ADIO10 -> Configuration -> CF1001 to *Indoor Temperature High*
3. Proceed step by step in order to make your equation
 - a. Activate the alarm if temperature is over 50°:
 set ADIO10 -> configuration -> PLC Alarm1 Boolean Expression (CF1002)
 to `@(data1)>50`
 @(data1) will take the data 1 of this device, the data 1 is the first temperature measure of the ADIO10
 - b. Add a 2°C hysteresis
 set ADIO10 -> configuration -> PLC Alarm1 Boolean Expression (CF1002)
 to `(@(data1)>50) || ( (@(alarm101) == True && @(data1) > 48 ))`
 - Alarm will be triggered if @(data1) is over 50 OR if @(alarm101) is true and @(data1) is still over 48°
 - Alarm 101 is the alarm created by the PLC configuration
4. You can now configure your alarm severity, security level and set & clear delay
 - a. Change Severity of PLC alarm in ADIO10 > Alarm > *Indoor Temperature High* (AL101)
5. You can rename the Group of the alarm
6. Don't forget to save your configuration in order to have your alarm saved when you reboot your device

Visual procedure :

Visual procedure for creating a new PLC alarm:

1. Click on the **Site** menu item.
2. Click on **Sensors And Actuators(4)**.
3. Click on the **Configuration** tab.
4. Click on the edit icon (pencil) for the selected PLC.
5. Enter the value for the alarm (e.g., 1).
6. Click on the checkmark icon to save the configuration.

Figure 110 PLC tutorial (1): Creating a new plc alarm

Visual procedure for creating a new PLC alarm:

1. Click on the **Site** menu item.
2. Click on **Sensors And Actuators(4)**.
3. Click on the **Configuration** tab.
4. Click on the edit icon (pencil) for the selected PLC.
5. Enter the value for the alarm (e.g., 1).
6. Click on the checkmark icon to save the configuration.
7. Enter the alarm name (e.g., Indoor Temperature High).
8. Enter the alarm trigger expression (e.g., @(data1)>50).
9. Click on the checkmark icon to save the configuration.

Figure 111 PLC Tutorial (2): Alarm name and trigger only when temp >50°C

Site(1) Sensors And Actuators(4) Filter: PLC

Dashboard Description Alarm Event Data Record Configuration Control All

PLC

AL101	Indoor Temperature High	major	5	2
CF901	Number Of PLC Data	0		
CF902	Number Of PLC Alarm	1		
CF1001	PLC Alarm 1 Name	Indoor Temperature High		
CF1002	PLC Alarm 1 Boolean Expression	@(data1)>50		

Figure 112 PLC Tutorial (3): change alarm severity

PLC

Id	Name	Value
CF901	Number Of PLC Data	0
CF902	Number Of PLC Alarm	1
CF1001	PLC Alarm 1 Name	Indoor Temperature High
CF1002	PLC Alarm 1 Boolean Expression	(@(data1)>50) ((@(alarm101) == True && @(data1) > 48))

Figure 113 PLC tutorial (4): improve equation

PLC

Id	Name Default	Name	Group Default	Group	Subgroup Default	Subgroup
AL101	PLC Alarm 1	Indoor Temper	PLC	Server Room		
CF901	Number Of PLC Data	Number Of PLC	PLC	PLC		

Figure 114 PLC Tutorial (5): Change the group of the alarm

Case Study 2: Add an overload alarm on a energy meter

See [Energy Meters](#).

9. Renaming and Web-interface translations

9.1. Renaming system

Having understandable names for field technicians is really important for true on-field debugging and resolves errors rapidly. Compas allows you to rename every alarm, description, configuration,... We use UTF8 to store the names so you can even rename it using Chinese or Russian language if you want. Group and sub-groups are also available.

When you are on the rename mode, you can see the default name to see if you want to change it.

9.1.1. Procedure

To do that, you just have to use the edit name mode. Here are the procedure to access to it:

1. Navigate to the ETSI data that you want to rename
2. Go through edit mode
3. Click on the "A" icon
4. Now you can edit all the names visible on the page. The default name is also showed so you can easily identify the default name.
5. Exit the rename and edit mode by clicking on the A icon then on the edit mode icon.
6. If you want to make changes persistent, save the configuration using Controller-> Save configuration

9.1.2. Visual help

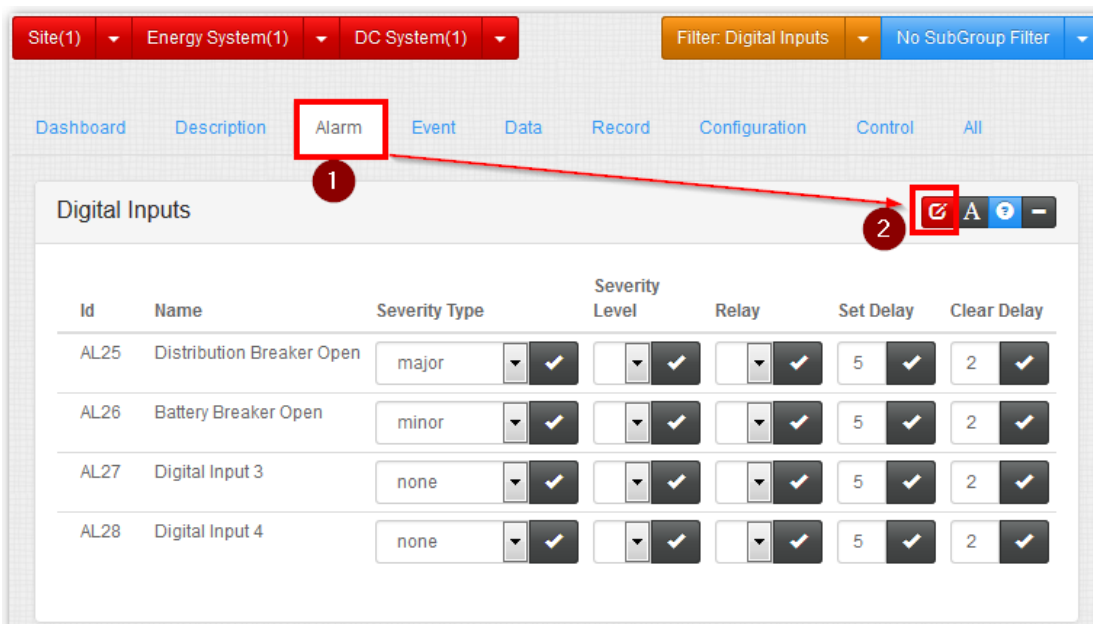


Figure 115 Renaming tutorial: Edition mode

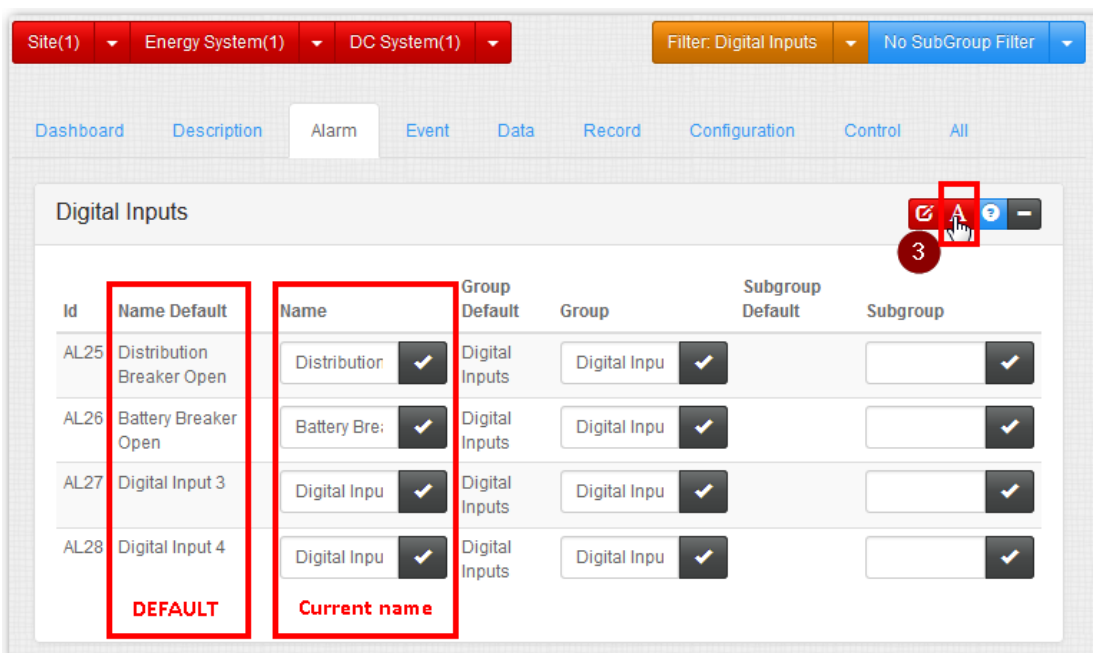


Figure 116 Renaming tutorial: Go to renaming mode

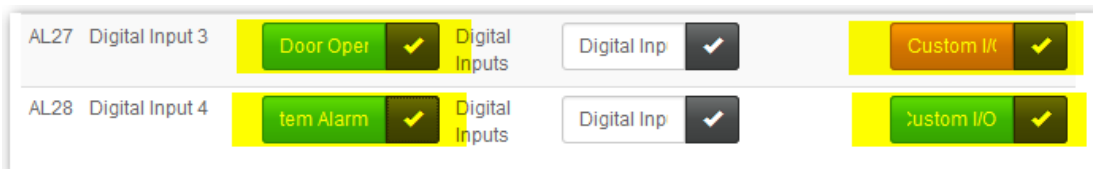


Figure 117 Renaming tutorial: Renaming the name

Digital Inputs						
Id	Name	Severity	Relay	Start Time	Stop Time	
AL25	Distribution Breaker Open	major (6)	1	↑ -	↓ -	✓
AL26	Battery Breaker Open	minor (4)	2	↑ 2015-05-20 09:02:29Z	↓ -	🔔
Custom I/O						
AL27	Door Open	none (0)	0	↑ -	↓ -	✓
AL28	System Alarm	none (0)	0	↑ 2015-05-20 09:02:29Z	↓ - / Ack: 2015-05-20 10:13:28Z	🔔

Figure 118 Renaming tutorial: Result

9.1.3. Resetting to the default name

It is possible to reset default name for a device or for a group of devices. On Each device, you have two controls that will help you to reset the default name & group of the device.

- **CT521 "Reset Default Names And Groups"** -> Reset default names & groups of current device
- **CT521 "Reset Default Names And Groups Recursive"** -> Reset the default names & groups of current device and child device (ex: If done on the dc system, you will also reset the name of the rectifiers)

9.2. Translating all the Web-Interface

9.2.1. Making translation

While the default Compas Language is English, you may want to have the interface completely translated in another language. To do that, you have to modify the translations into a small csv file.

1. Download a CSV file with the list of the words and sentences used in the Comp@s interface is available at URL: <http://the.compas.ip/translation.csv>,
2. This file is encoded in UTF8, open it with an UTF8-capable text editor like SciTE, Notepad2, Notepad++ or even SublimeText2. (Libre office calc can also open these file)
3. The first two lines are the file language definition. It will be used to determine which language is in the file. Replace "MYLANGUAGE" by the full name of your language like "French" or "Dutch" and "MYLANG" by the short language abbreviation like "FR" or "NL". Your two first lines must looks like :

```
#LANGUAGE; French
#LANG; FR
```

4. Now you can translate the interface by adding the translation just after the ";". Your translation file must now looks like

```
#LANGUAGE;FRENCH
#LANG;FR
Site Number;Numéro de site
Site Name;Nom du site
Site Information;Information du site
Group {0};Groupe {0}
```

5. Then, save the file (in **UTF8!**) You can choose the name you want, but the extension must be "csv".
6. Copy it to the monitoring with an FTP client to the folder:
"/FlashDisk/user/translation/"
7. Now you have to reload the translations using the **CT41** available at the site level.
8. You will see available language in the status bar at the bottom of the site. You can now change language easily

```
#LANGUAGE;FRENCH
#LANG;FR
Site Number;Nombre de site
Site Name;Nom du site
Site Information;Informations du site
Group {0};Groupe {0}
Short Description;Brève Description
```

Figure 119 Translating web-interface

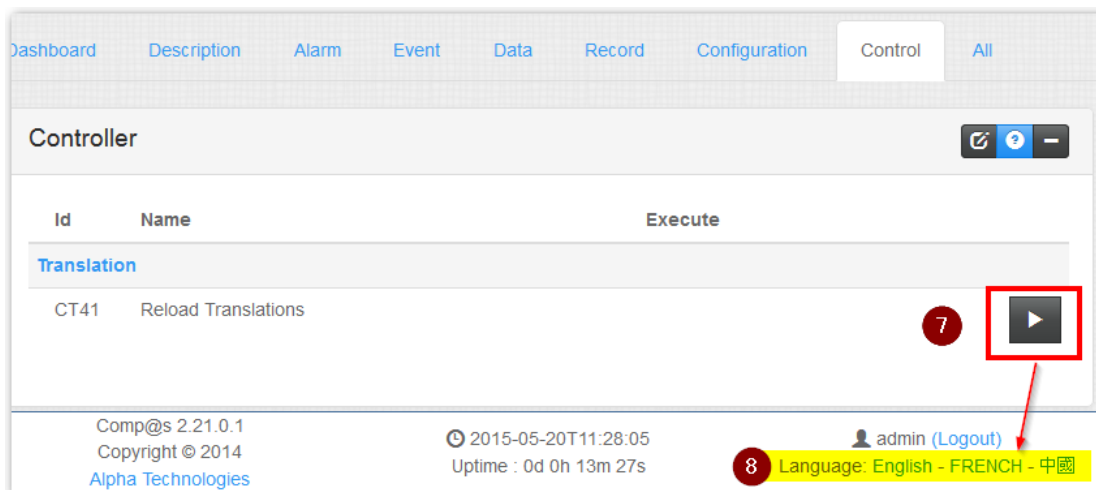


Figure 120 Reloading translations



Figure 121 Translating module : Chinese compas



The Chinese translation in the upper example has been made with an automatic system. Some of the names can be incorrect.

9.2.2. Set default start-up language

In order to set the default start-up language, you just have to modify the default page of the web interface. It is the **configuration CF31** at the site level. Change it to add the parameter "*lang*".

Example:

```
index.html?page=site&lang=FR
```

or

```
index.html?page=site&lang=NL
```

10. Configuration management

The Configuration in compas is stored as a single file. It is a standard XML, readable and understandable. It is a high advantage over our competitors that use binary files with proprietary syntax. Our system keeps also the factory configuration in order to restore the factory data.

This format is compliant with ETSI ES 202-336 standard.

10.1. Configuration file

The configuration file is a simple xml file. It is open readable and easily understandable. It has to be in the user folder and his name must be *configuration.xml*. The file looks like :

```
<site id="1" datetime="2015-05-21T12:50:11">
  <description_table>
    <description id="1" name="Site Number" group="Description" subgroup="Site Information">1</description>
```

```

<description id="2" name="Site Name" group="Description" subgroup="Site Infor-
mation">Comp@s Site</description>
<description id="3" name="Short Description" group="Description" subgroup="Site In-
formation">Comp@s Site Description</description>
<description id="4" name="Info" group="Description" subgroup="Site Infor-
mation">none</description>
[...]
```

```

</description_table>
[...]
```

```

</site>
```

Here is the process that compas use to choose the configuration file :

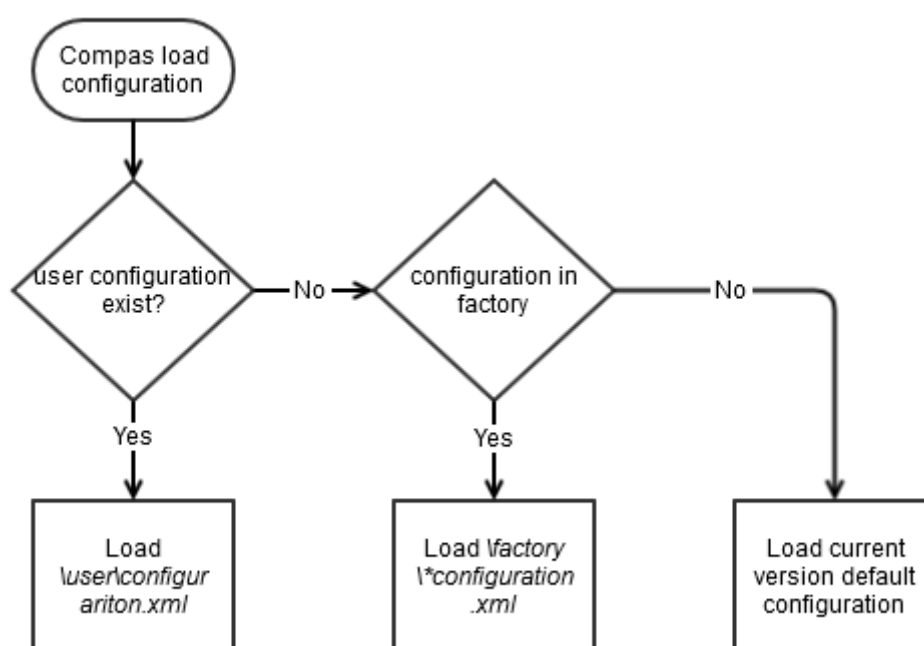


Figure 122 Configuration loader choice

10.2. Restoring the factory configuration

Just delete the configuration.xml located in user folder. Don't forget that you will restore the factory IP address. The factory configuration always finish with "_configuration.xml". If there is no factory parameters, the IP address will be set to 192.168.45.2.

10.3. Copying configuration from a system to another

1. Retrieve the configuration of one system. On the web interface, click on "configuration.xml" and save the file as "configuration.xml".
2. Copy this file (configuration.xml) on the other system, in the "user" folder, with FTP over Ethernet, or locally with ActiveSync over USB.

3. Reboot this other system, the same configuration is applied.



You copy also the network configuration, including the IP address. Keep in mind that if two systems with the same IP address are present on same network, it will not work! A solution to this is to edit the XML file before copying it and to change the IP address. Or use the DHCP protocol for automatic IP addressing.



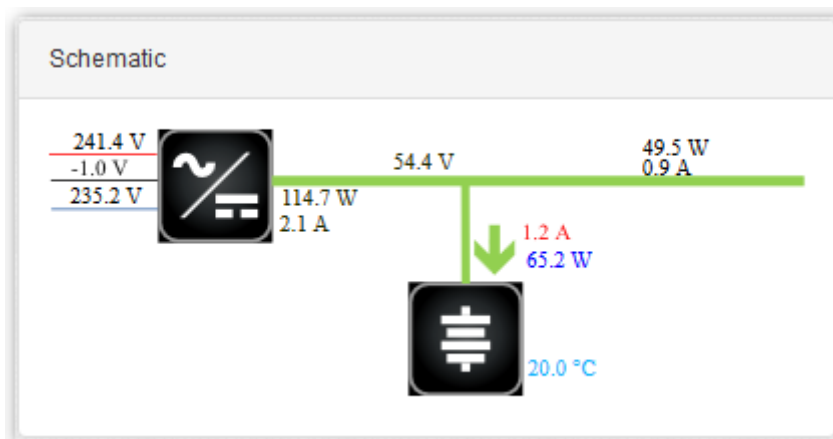
The Configuration file MUST be save in UTF-8 format !

11. Visual Dashboard

11.1. Standard dashboard

Compas support visual dashboard. For standard equipment like dc system there is sometime some visual dashboard.

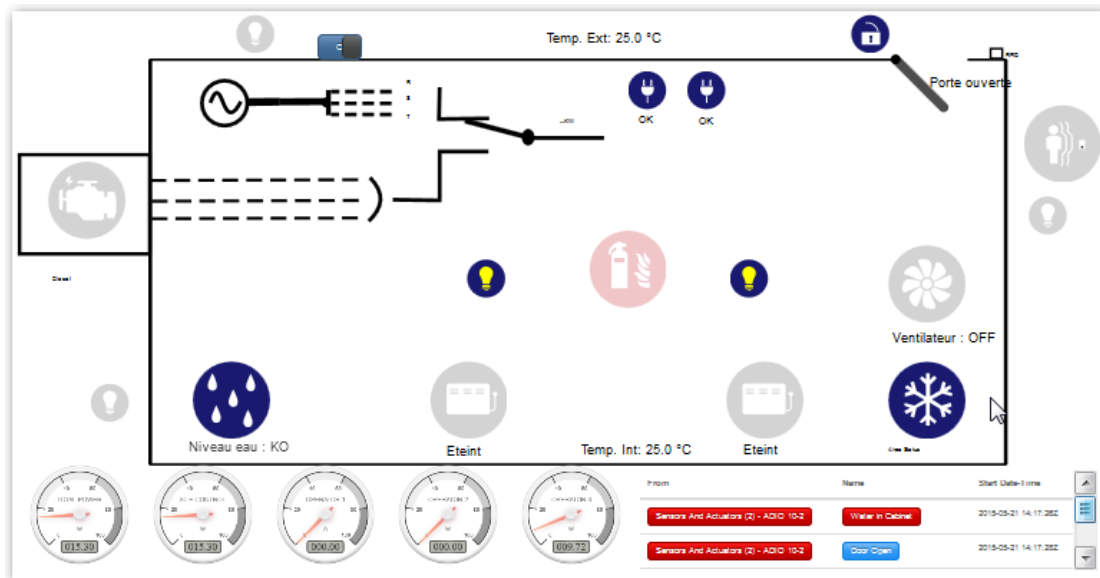
For example, in a DC system:



11.2. Custom dashboard [Ultimate edition]

With compas, we have created a totally new method for monitoring. Now, you are able to create your custom dashboard with a library created by alpha. We designed a well-documented API that you can use to generate the page that you want. It is mainly composed of web language so, it is really easy to implement what you want.

The custom dashboard is currently in alpha version and validation is in progress. Here is an example of what you can do with our framework:



If you want to know more, please contact us.

Chapter 6 : Scripting : CompasLua

1. Overview

The Lua scripting system gives you a new efficient way to meet all your need. It can be used to:

- Create a new equipment with custom descriptions, alarms, data, records, parameters or controls.
- Adding events
- Setting all Compas data or setting function
- sending emails
- monitor other devices
- (...) Other protocols (modbus, 1 wire,..) and interfaces will follow with further version. Please, let us if you need something else in order to prioritize the development.

You have the possibility to execute different scripts in order to keep your system clean and functionalities independent.

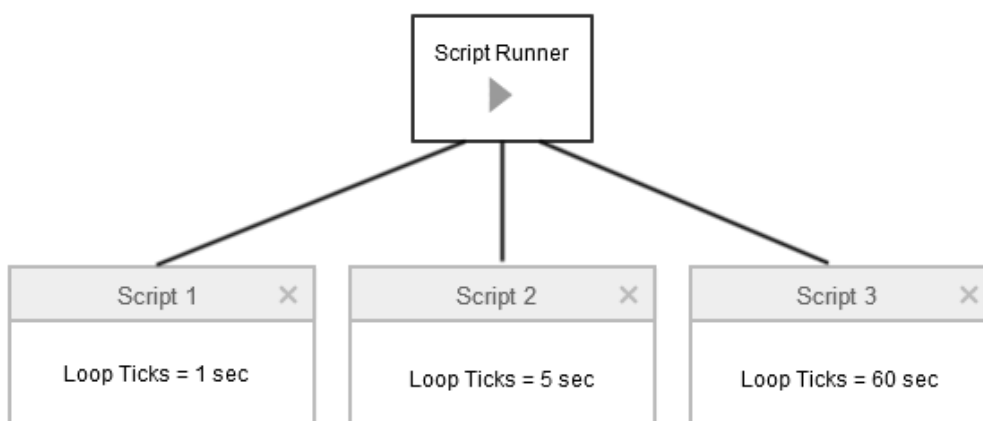


Figure 123 Script Runner Overview



CompasLua scripting system is only available with ultimate license

On Board Help

There is an "On board" help that is accessible by creating the file "*tutorial.Lua*".

2. Script Runner

As you have multiple scripts on your system and that you didn't want to overload your controller, the execution is controlled by the Compas system. It controls the execution of all scripts and their respective callback.

Each script can have a different loop time and time-out. The schema below explains you how the script runner works. The script runner is managed by command given to a standard control.

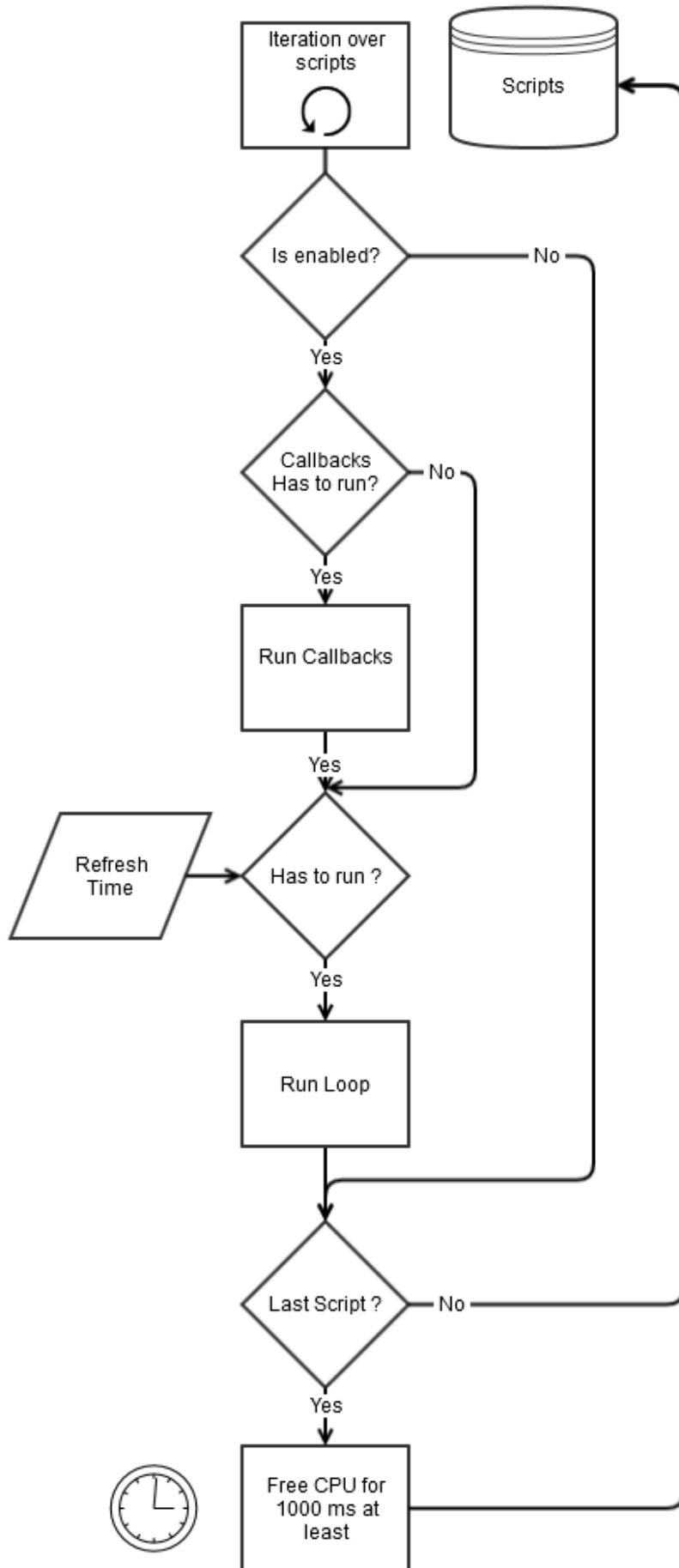


Figure 124 Script runner details

2.1. Script Monitoring

It could happen that a buggy script takes all the CPU, so we have added a watchdog. If a script execution takes more than 15 seconds, it is killed and the runner is restarted preventing too long time execution.

3. Script structure

Your CompasLua Script has to be composed of three sections:

- Initialization
- Loop function
- Callback block

The *initialization* part is the part of the script that will be read and executed at the start-up. It contains all the script global variables and system initialization system. In this part, you will be able to add functions that will be callable everywhere inside the script.

The *Loop function* is the function called every time it is asked by the script. This function has to be interpreted as a "while-true" temporized. This is done to prevent a high CPU usage and to maintain the system operating.

The *Callback block* is the input point of Compas Callback. It is used when Compas want to inform the script that an event has happened: For example when a control is pressed.

4. Your first script

4.1. Objectives

With your first script, you are going to create a script and change it in order to monitor another device using the SNMP protocol. This is only an introduction to some function of Lua, it can do a lot more. See documentation of Lua language and our documentation of CompasLua API. This "*tutorial*" will help you to understand the basics of Compas Lua.

At the end of the exercise, you will be able to:

- ✓ Create a script
- ✓ Create a device inside compas
- ✓ Use a small SNMP device and make some get
- ✓ save your configuration

4.2. Discover the interface

Let's start to use your scripting system directly. It is accessible inside the files -> scripting path. We are going to create your first script: enter the command "*new*

`my_first_script`" and press the Execute button. A new script will be created. With the screenshot below, you will see the main parts of Compas Scripting system.

- A script manager
 - Fast Scripting status and Command
 - Command window
 - A Script Manager: one line by script
- A Script editor (press on the name of the script that you want to edit)
- A Log that will log all errors or message printed by the system

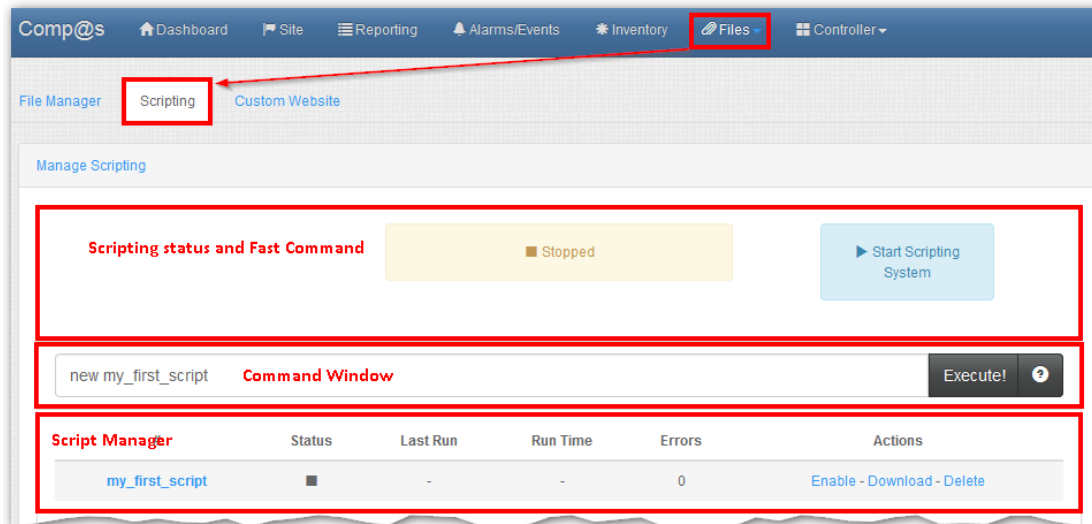


Figure 125 Compas Lua Interface

Take a look to the script inside the script editor. Some comment explains you parts of the script. Let's decompose this script and understand what it does.

4.3. The script

In the Lua language, comments are with two hyphens. Most of Lua embedded functions are available. If you need more specific information about Lua functions, just take a look to the [Lua language](#).

4.3.1. The initialization part

```
17 --- Initialization ---
18 print("Hello from CompasLua ".. compas.version_api() .. "\r\n")
19
```

As you can see, we will just print a text in the initialization. This is to show when the script is started. You can also see how functions are called in Lua and how you can concatenate strings and functions. Here we call the function `print` which will print text in the console box, the string is concatenated with the function `compas.version_api()`. This function is specific to `compasLua`, it will just return a string that contains the version number of the Lua API. (Functions added by Alpha to Lua Language)

4.3.2. The Loop part

```

21 --- Loop part ---
22 -- The loop can't take longer than 10 seconds to let time to other scripts
23 -- If the loop takes too much time, the script will be disabled by the system to spare time to other files
24 function loop()
25     -- function to be processed every X seconds
26     print("CompasLua loop is running.\r\n")
27     print("Add the file tutorial to have the list of available functions and their descriptions. \r\n")
28     -- Loop function has to finish with the return of the string OK.
29     return "OK"
30 end
31
32

```

The loop part contains the function that will be called approximately every 10 seconds (configurable), in this case the initial content is just some basic text that will be shown inside the console. The loop function has to return the string "OK", so the system will assume that everything is OK. If there is a problem, you can return another string like "KO" that will record a problem inside the error system and alarms related to scripting system.

4.3.3. The Callbacks part

```

302 function callbacks(Path, Value)
303     print("[callbacks]\t\t" .. Path .. "\t\t" .. Value .. "\r\n") -- debug
304
305     if(Path == solar_conf_address_path) then
306         monitoring_http_address = Value
307         return true
308     elseif (Path == "/site/1/your/path/2") then
309         print("Your second action.\r\n")
310         return true
311     else
312         print("Non implemented path : " .. Path)
313         return false
314     end
315 end

```

The callback block is located at the end of the file. It contains the functions that have to be executed in case of a callback. A Callback is always composed of:

- **Path:** The callback trace
- **Value:** The data to be processed

It has to return a boolean. If the boolean is false, an error will be added on scripting error counter.

4.3.4. Starting a script

Now that you have a script, let's start the scripting system:

1. push on the "Start Scripting System" button
2. the status will pass to "Initializing..."
3. Reload the page (or click on the scripting tab), you will see that the status is now "running".

Sine the script runner can work with multiple scripts, you have to enable it:

1. Click on the enable link on the script line inside the script manager

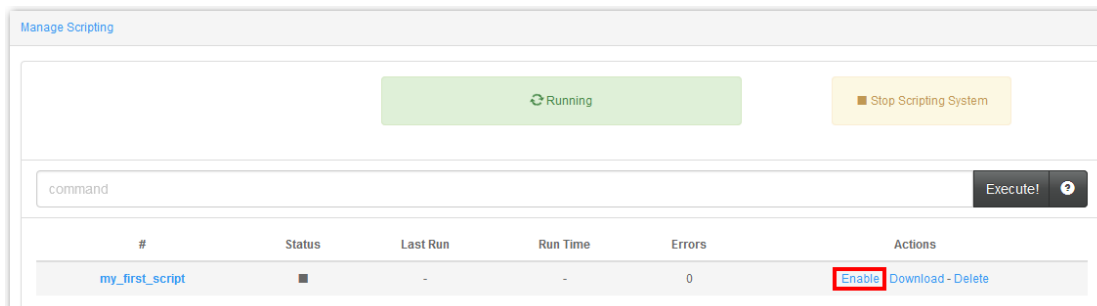


Figure 126 CompasLua: Enable a script

Now the script has started, you can see a little more information about it : It is running every 10 seconds, the last time it has run it is 8 second ago and the script duration is 11ms. (on the screen shot below).

#	Status	Last Run	Run Time	Errors	Actions
my_first_script	10 s	8 s	11 ms	0	Disable - Download - Delete

Figure 127 Script running

You can also see the console output that will show the text that you have entered in the script. As you can see, the initialization part has run only at the start of the script. After that, it is the loop that has been called by the Script runner.

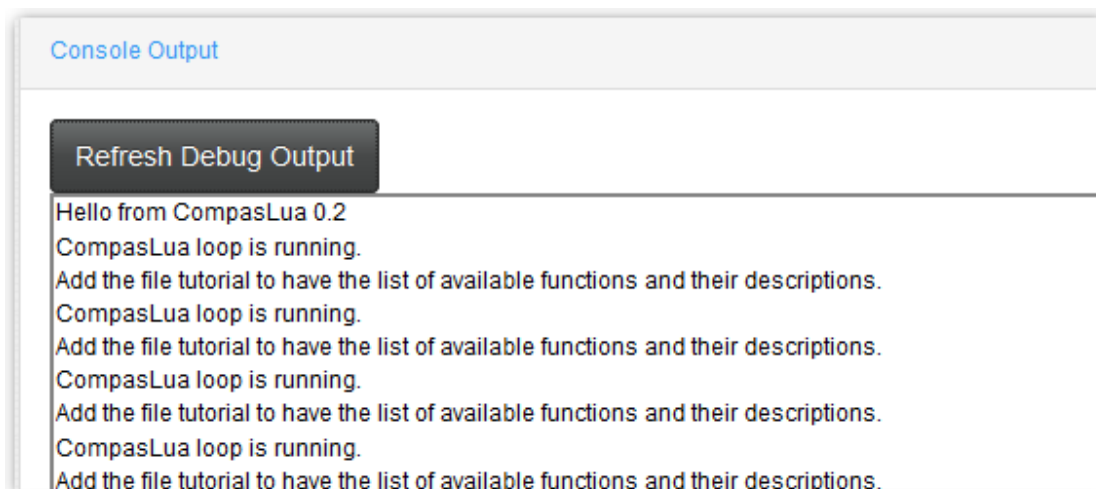


Figure 128 CompasLua: debug output console

In order to have the script starting at the start-up, you have to enable CompasLua system (having the green flag indicating "running" on scripting page is a good indicator), enable the scripts that you want to start automatically and save your configuration. If you have more than one script, it is the greyed line that is the current edited script. If there is an error the line corresponding will also be in red.

4.3.5. Modifying your script in order to monitor a small SNMP device

Currently, Compas is supporting SNMP get command. We will just try to monitor another device using the SNMP communications. We are going to monitor a Micro-secure UPS, controller coming directly from the alpha group.

What are we going to do into this small script?

1. create an `ac_ups_system`
2. with one description manually defined
3. with one description read from SNMP
4. with several alarms coming from SNMP
5. and with several data coming from the ups

This exercise has a progressive difficulty.

Creating the device in Compas

Let's create the ups device in Compas. So we need to create an `ac_ups` system in the first energy system. To do that just add these lines into the initialization part which is located on the top of the file. Then save the file. A new device `ac_ups_system` now appears on the site tab.

```
print("Initialization of ac_ups_system\r\n")
--
-- initialization of equipment
--
-- energy system path
path_es1 = "/site/1/energy_system/1";
-- creation of equipment - path_es1 - name - I'd
ac_ups_system = compas.equ_init{parent = path_es1, type="ac_ups_system", id=1}
```

We have used the function `compas.equ_init(table[])`. For the parent path we set the first energy system, we decided to make an ac ups system (to make other, just read the documentation below, these are ETSI standard) with the `id=1`. The variable `ac_ups_system` now contains the path to the new ups.

Creating a device description

We are going to use the function `compas.equ_description_init(ParentPath, id, name, group)` in order to add a description.

Let's add the following line below the code added in the phase 1:

```
-- creating a manual description
ac_ups_system_desc_manual = compas.equ_description_init{parent = ac_ups_system,
id = 1, name = "Product Name", group = "Product Info", value = "This is your first Com-
pasLua Monitored device" }
```

Easy! But the next phase will be a little harder

Creating a device description read in SNMP.

We are also going to read create the description of the function `compas.equ_description_init` but we will also use the SNMP agent. Add the line below to your script initialization part.


```

-- connection to micro-secure
ac_ups_system_desc_hard = compas.equ_description_init{ parent = ac_ups_system, id =
2, name = "Hardware Reference", group = "Product Info"}

-- get the connection
snmp_microsecure = compas.snmp_get_device{ server = "130.145.57.77", port = 161,
read_community = "public"}

-- read the data through snmp
description_for_ups_system = compas.snmp_get{ device = snmp_microsecure, oids =
{"1.3.6.1.4.1.7309.6.1.1.3.0"} }

-- set the data inside compas
compas.set{ path = ac_ups_system_desc_hard, value = description_for_ups_system[0]}

```

SNMP agent has to be initialized with the function `snmp_get_device(server, port, password)`. After that you will read corresponding oids (see SNMP protocol) using the function `compas.snmp_get(connector, oids)` that will return you the value that you just have to set to the corresponding description. You can put a table into the oids in order to read more than one Oid in one request.

Reading several alarms on the device

Now, we are going to monitor the device. To do that, we need to create some alarm and read it periodically to see if they are active. We are going to create alarms in the initialization part and read it in the loop. Let's add the alarms by adding the following code in the initialization part.

```

-- adding the alarms using a for loop. Alarms will start at AL10.
ac_ups_system_alarm = {
  "Overload",
  "Fan Alarm",
  "Battery Test",
  "Battery Temp High",
  "Battery Temp low",
  "Battery Low Warning",
  "Temp probe unplug",
  "In freq out of range",
  "User input Alarm",
  "Battery breaker open",
  "Weak battery",
  "Invalid software",
  "AC Breaker open",
  "keep alive"}

-- be careful; the for begin to count at 1
-- creating alarms and store paths inside the previous list
for i=1,14 do
  ac_ups_system_alarm[i] = compas.equ_alarm_init{parent = ac_ups_system, id= 9+i,
name = ac_ups_system_alarm[i], group= "Alarms", severity_type = "major"}
end

```

The part is listing all the alarm names into a table. You can see that table is easily created using `{}`. After that we use the `"for"` keywords to iterate over all the alarm name

and creating it. Here we directly write the path of equipment's inside the previous table. Be careful, the table begin with id = 1. Here we create alarm id beginning with 10 (9+1 in the first loop). For this example we created only major alarm in the group Alarms. If you want, you can be more precise for each alarm.

Now that we have some alarms, let's read it from the device in the loop part. Replace the loop by the code below and, let's examine it:

```
function loop()
  -- read alarms
  alarms_for_ups_system = compas.snmp_get{device = snmp_microsecure, oids =
  {
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.1",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.2",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.3",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.4",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.5",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.6",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.7",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.8",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.9",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.10",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.11",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.12",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.13",
    ".1.3.6.1.4.1.7309.6.1.5.2.1.3.14",
  }}
  for i=1, 14 do
    -- Give the data address and the new data
    compas.set{path = ac_ups_system_alarm[i], value = alarms_for_ups_system[i-1]}
  end

  -- Loop function has to finish with the return of the string OK.
  return "OK"
end
```

So, with the list of corresponding oid, we just use the function "compas.snmp_get", then we use a for loop to assign all the alarms. It is fast, easy and powerful. Alarms are read every 10 seconds, if you want this refresh time a little higher, it is possible by using "compas.set_script_config". The alarms are set using the function "compas.set" which set some numeric value to data.

Reading data

Reading data is a little trickier because there is some conversion to do in order to set it correctly. First, let's add these lines in the initialization part:

```
-- adding some data coming from the microsecure
-- Creating data; need the equipment device, the id of the data, the name of the data,
the data group

ac_ups_system_data = {"", "", "", "", "", "", "", "", "", "", ""} -- storing in a table
-- input
```

```

ac_ups_system_data[0] = compas.equ_data_init{ parent = ac_ups_system, id = 10,
name = "Input AC Voltage", group = "Input", type = "number" }
ac_ups_system_data[1] = compas.equ_data_init{ parent = ac_ups_system, id = 11,
name = "Input Frequency", group = "Input", type = "number" }
-- output data
ac_ups_system_data[2] = compas.equ_data_init{ parent = ac_ups_system, id = 30,
name = "Output Line Voltage", group = "Output", type = "number" }
ac_ups_system_data[3] = compas.equ_data_init{ parent = ac_ups_system, id = 31,
name = "Output Frequency", group = "Output", type = "number" }
ac_ups_system_data[4] = compas.equ_data_init{ parent = ac_ups_system, id = 32,
name = "Output AC Current", group = "Output", type = "number" }
ac_ups_system_data[5] = compas.equ_data_init{ parent = ac_ups_system, id = 33,
name = "Output total Power", group = "Output", type = "number" }
ac_ups_system_data[6] = compas.equ_data_init{ parent = ac_ups_system, id = 34,
name = "Output Power factor", group = "Output", type = "number" }
-- battery data
ac_ups_system_data[7] = compas.equ_data_init{ parent = ac_ups_system, id = 40,
name = "Battery Voltage", group = "Battery", type = "number" }
ac_ups_system_data[8] = compas.equ_data_init{ parent = ac_ups_system, id = 41,
name = "Battery Temperature", group = "Battery", type = "number" }
ac_ups_system_data[9] = compas.equ_data_init{ parent = ac_ups_system, id = 42,
name = "Battery Status", group = "Battery", type = "number" }
ac_ups_system_data[10] = compas.equ_data_init{ parent = ac_ups_system, id = 42,
name = "Battery Capacity", group = "Battery", type = "number" }

```

Here you see that we add the data in the right group with different ids for each. We also have a table to store the different paths. Well, this isn't so interesting because you already know how to use these kinds of functions.

Let's see how we read the data by adding these lines inside the loop part, between the code that reads alarms and the return of the loop function.

```

data_for_ups_system = compas.snmp_get{device = nmp_microsecure, oids =
{
    ".1.3.6.1.4.1.7309.6.1.3.2.1.3.1", -- AC input voltage
    ".1.3.6.1.4.1.7309.6.1.3.2.1.2.1", -- Input Frequency
    ".1.3.6.1.4.1.7309.6.1.4.4.1.2.1", -- Output Line Voltage
    ".1.3.6.1.4.1.7309.6.1.4.2", -- Output Frequency
    ".1.3.6.1.4.1.7309.6.1.4.4.1.3.1", -- Output AC Current
    ".1.3.6.1.4.1.7309.6.1.4.4.1.5.1", -- Output total Power
    ".1.3.6.1.4.1.7309.6.1.4.4.1.6.1", -- Output Power factor
    ".1.3.6.1.4.1.7309.6.1.2.3.0", -- Battery Voltage
    ".1.3.6.1.4.1.7309.6.1.2.6.0", -- Battery Temperature
    ".1.3.6.1.4.1.7309.6.1.2.1.0", -- Battery Status
    ".1.3.6.1.4.1.7309.6.1.2.5.0", -- Battery Capacity
}}
-- Saving data
compas.set{path = ac_ups_system_data[0], value = data_for_ups_system[0]/10}
compas.set{path = ac_ups_system_data[1], value = data_for_ups_system[1]}
compas.set{path = ac_ups_system_data[2], value = data_for_ups_system[2]/10}
compas.set{path = ac_ups_system_data[3], value = data_for_ups_system[3]/10}
compas.set{path = ac_ups_system_data[4], value = data_for_ups_system[4]/10}
compas.set{path = ac_ups_system_data[5], value = data_for_ups_system[5]/10}
compas.set{path = ac_ups_system_data[6], value = data_for_ups_system[6]}

```

```

compas.set{path = ac_ups_system_data[7], value = data_for_ups_system[7]/10}
compas.set{path = ac_ups_system_data[8], value = data_for_ups_system[8]}
compas.set{path = ac_ups_system_data[9], value = data_for_ups_system[9]}
compas.set{path = ac_ups_system_data[10], value = data_for_ups_system[10]}

```

As you can see, it isn't so difficult to add the conversion factor; we just have to put it where it is necessary.

Congratulations, now, you know the basics to monitor a SNMP device!

Final Code for a micro-secure SNMP monitoring

```

print("Initialization of ac_ups_system\r\n")
--
-- initialization of equipment
--
-- energy system path
path_es1 = "/site/1/energy_system/1";
-- creation of equipment - path_es1 - name - I'd
ac_ups_system = compas.equ_init{parent = path_es1, type="ac_ups_system",
id=1}

-- creating a manual description
ac_ups_system_desc_manual = compas.equ_description_init{parent =
ac_ups_system, id = 1, name = "Product Name", group = "Product Info",
value = "This is your first CompasLua Monitored device" }

-- connection to micro-secure
ac_ups_system_desc_hard = compas.equ_description_init{ parent =
ac_ups_system, id = 2, name = "Hardware Reference", group = "Product In-
fo"}
-- get the connection
snmp_microsecure = compas.snmp_get_device{ server = "130.145.57.77", port
= 161, read_community = "public"}
-- read the data through snmp
description_for_ups_system = compas.snmp_get{ device = snmp_microsecure,
oids = {".1.3.6.1.4.1.7309.6.1.1.3.0"} }
-- set the data inside compas
compas.set{ path = ac_ups_system_desc_hard, value = descrip-
tion_for_ups_system[0]}

-- adding the alarms using a for loop. Alarms will start at AL10.
ac_ups_system_alarm = {
  "Overload",
  "Fan Alarm",
  "Battery Test",
  "Battery Temp High",
  "Battery Temp low",
  "Battery Low Warning",
  "Temp probe unplug",
  "In freq out of range",
  "User input Alarm",
  "Battery breaker open",
  "Weak battery",
  "Invalid software",
  "AC Breaker open",
  "keep alive"}
-- be careful; the for begin to count at 1
-- creating alarms and store paths inside the previous list
for i=1,14 do
  ac_ups_system_alarm[i] = compas.equ_alarm_init{parent = ac_ups_system,
id= 9+i, name = ac_ups_system_alarm[i], group= "Alarms", severity_type =
"major"}
end

```

```

-- adding some data coming from the microsecure
--      Creating data; need the equipment device, the id of the data, the
name of the data, the data group
ac_ups_system_data = {"", "", "", "", "", "", "", "", "", "", ""} --
storing in a table
-- input
ac_ups_system_data[0] = compas.equ_data_init{ parent = ac_ups_system, id
= 10, name = "Input AC Voltage", group = "Input", type = "number" }
ac_ups_system_data[1] = compas.equ_data_init{ parent = ac_ups_system, id
= 11, name = "Input Frequency", group = "Input", type = "number" }
-- output data
ac_ups_system_data[2] = compas.equ_data_init{ parent = ac_ups_system, id
= 30, name = "Output Line Voltage", group = "Output", type = "number" }
ac_ups_system_data[3] = compas.equ_data_init{ parent = ac_ups_system, id
= 31, name = "Output Frequency", group = "Output", type = "number" }
ac_ups_system_data[4] = compas.equ_data_init{ parent = ac_ups_system, id
= 32, name = "Output AC Current", group = "Output", type = "number" }
ac_ups_system_data[5] = compas.equ_data_init{ parent = ac_ups_system, id
= 33, name = "Output total Power", group = "Output", type = "number" }
ac_ups_system_data[6] = compas.equ_data_init{ parent = ac_ups_system, id
= 34, name = "Output Power factor", group = "Output", type = "number" }
-- battery data
ac_ups_system_data[7] = compas.equ_data_init{ parent = ac_ups_system, id
= 40, name = "Battery Voltage", group = "Battery", type = "number" }
ac_ups_system_data[8] = compas.equ_data_init{ parent = ac_ups_system, id
= 41, name = "Battery Temperature", group = "Battery", type = "number" }
ac_ups_system_data[9] = compas.equ_data_init{ parent = ac_ups_system, id
= 42, name = "Battery Status", group = "Battery", type = "number" }
ac_ups_system_data[10] = compas.equ_data_init{ parent = ac_ups_system, id
= 42, name = "Battery Capacity", group = "Battery", type = "number" }

function loop()
    -- read alarms
    alarms_for_ups_system = compas.snmp_get{device = snmp_microsecure,
oids =
    {
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.1",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.2",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.3",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.4",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.5",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.6",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.7",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.8",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.9",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.10",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.11",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.12",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.13",
        ".1.3.6.1.4.1.7309.6.1.5.2.1.3.14",
    }}
    for i=1, 14 do
        -- Give the data address and the new data
        compas.set{path = ac_ups_system_alarm[i], value =
alarms_for_ups_system[i-1]}
    end

    data_for_ups_system = compas.snmp_get{device = nmp_microsecure, oids
=
    {
        ".1.3.6.1.4.1.7309.6.1.3.2.1.3.1", -- AC input voltage
        ".1.3.6.1.4.1.7309.6.1.3.2.1.2.1", -- Input Frequency
        ".1.3.6.1.4.1.7309.6.1.4.4.1.2.1", -- Output Line Voltage
        ".1.3.6.1.4.1.7309.6.1.4.2", -- Output Frequency
        ".1.3.6.1.4.1.7309.6.1.4.4.1.3.1", -- Output AC Current
        ".1.3.6.1.4.1.7309.6.1.4.4.1.5.1", -- Output total Power
    }
}

```

```

        ".1.3.6.1.4.1.7309.6.1.4.4.1.6.1", -- Output Power factor
        ".1.3.6.1.4.1.7309.6.1.2.3.0",   -- Battery Voltage
        ".1.3.6.1.4.1.7309.6.1.2.6.0",   -- Battery Temperature
        ".1.3.6.1.4.1.7309.6.1.2.1.0",   -- Battery Status
        ".1.3.6.1.4.1.7309.6.1.2.5.0",   -- Battery Capacity
    })
    -- Saving data
    compas.set{path = ac_ups_system_data[0], value = data_for_ups_system[0]/10}
    compas.set{path = ac_ups_system_data[1], value = data_for_ups_system[1]}
    compas.set{path = ac_ups_system_data[2], value = data_for_ups_system[2]/10}
    compas.set{path = ac_ups_system_data[3], value = data_for_ups_system[3]/10}
    compas.set{path = ac_ups_system_data[4], value = data_for_ups_system[4]/10}
    compas.set{path = ac_ups_system_data[5], value = data_for_ups_system[5]/10}
    compas.set{path = ac_ups_system_data[6], value = data_for_ups_system[6]}
    compas.set{path = ac_ups_system_data[7], value = data_for_ups_system[7]/10}
    compas.set{path = ac_ups_system_data[8], value = data_for_ups_system[8]}
    compas.set{path = ac_ups_system_data[9], value = data_for_ups_system[9]}
    compas.set{path = ac_ups_system_data[10], value = data_for_ups_system[10]}

    -- Loop function has to finish with the return of the string OK.
    return "OK"
end

function callbacks(Path, Value)
    if(Path == "/site/1/your/path") then
        print("Your Action\r\n")
        return true
    elseif (Path == "/site/1/your/path/2") then
        print("Your second action.\r\n")
        return false
    else
        print("Non implemented path : " .. Path)
        return false
    end
end
end

```

5. Working with files directly

Compas Lua is working with files in order to save scripts. This allows you to manage running scripts directly from the file system if you want.

All the script files are stored into the "*FlashDisk\user\scripts*" folder. Active script is ended by *_active* while disabled script has no underscore at the end of the name.

If you want to activate all the script system at a start-up, you just have to activate script then save the configuration. It is the parameter CF250 located at the site level.

6. Command line interface with the script runner

Script runner is controlled using a command system. It is the **CT250** which is located at the site level. All available commands are explained here but the onboard help can help you on site. It is located on the control help or directly inside the scripting page on the help button of the control executor.

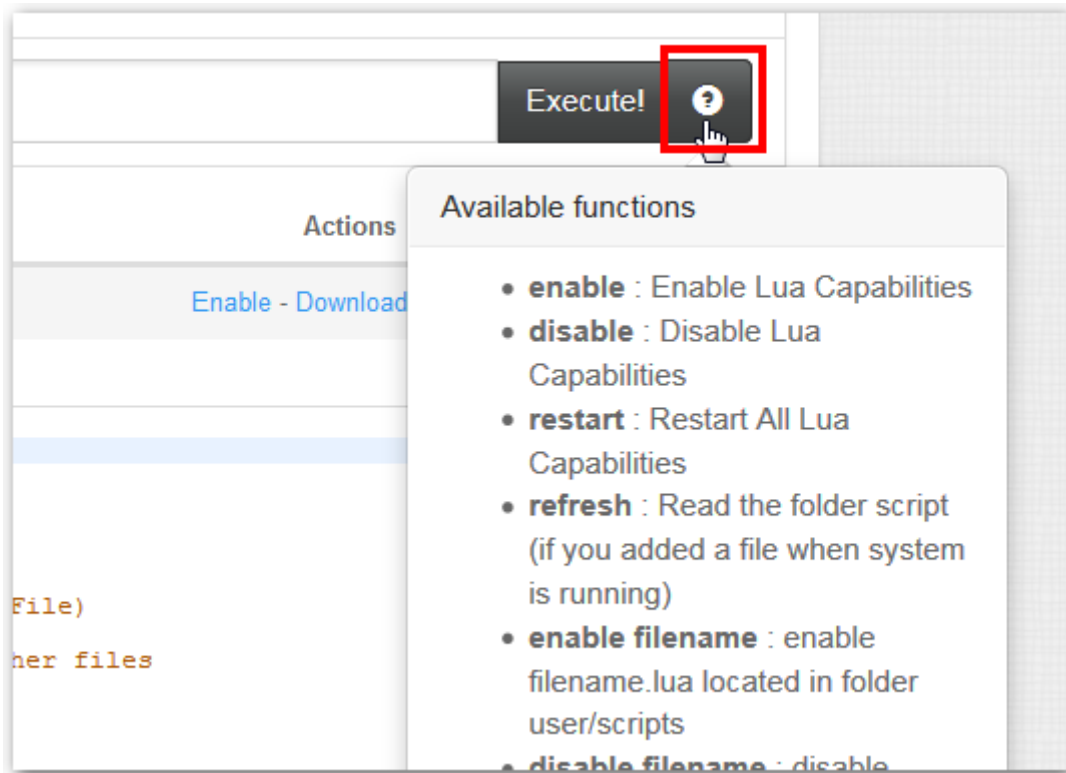


Figure 129 CompasLua Command interface and help

6.1. Available command

- **enable** : Enable Lua Capabilities (set CF250 to True)
- **disable** : Disable Lua Capabilities (set CF250 to False)
- **restart** : Restart All Lua Capabilities (Set CF250 to False, discard all script then restart all the systems)
- **refresh** : Read the folder script (if you added a file when system is running)
- **enable filename** : enable the script filename.Lua located in a folder user/scripts
- **disable filename** : disable the script filename.Lua located in a folder user/scripts
- **restart filename** : Restart the script filename.Lua located in a folder user/scripts. The script must be enabled
- **new filename** : create script filename
- **delete filename** : delete script filename

- **new tutorial** : create the tutorial containing all the basic functions, this is an on-board helper
- **reseterrors** : Reset all errors counters
- **reseterrors filename** : Reset errors counter for filename

7. Restrictions

There is some restriction on our system:

- Inside a Callback, you can't execute a control which refers to the same callback, it could result in an infinite callback queue and freeze the system
- Avoid making recursively functions, it can eat a lot of memory and cpu
- Scripts work each after each, there is no concurrent run and no parallel processing.
- Minimal execution time per script is one second
- Scripts names must be only ASCII character
- Some functions of Lua are not available: See Lua Known Limitation



CompasLua is still in beta, we may have forgotten some restrictions.

The restrictions list can be updated at any moment.



With CompasLua, you have a direct access to the CPU. We added some systems to abort a script taking too long to execute but this is maybe not enough. You have the full responsibility on your scripts.

8. Lua Known Limitation

1. Package OS
 - a. OS.date
 - i. %z and %Z not available (TimeZone)

9. Functions

9.1. Equipment management

9.1.1. Device creation

```
function compas.equ_init(PathParent, ETSIname, id)
--      Input :
--      PathParent  = Path of the parent where equipment will be
created
--      ETSIname    = etsi name of the device (ie : ac_ups_system)
--      ID          = ID of the new device, if you put 0, it will
take the next available id.
--                  If a device with the same type and id exist,
it will overwrite it.
--                  Only id between 0 et 1000 are valid.

--      Output :
--      EquipmentPath = path of the created device or an error
code, see below the Standard return code
```

```
ac_ups = compas.equ_init("/site/1/energy_system/1", "ac_ups_system", 1)
```

9.1.2. ETSI Description

The description of your device contains informations to identify your device:
Id of device, software version, name of device, ... with AlphaTechnologies, we are trying to respect these ids :

- 1 Product Name (typically a readable name)
- 2 Hardware Reference
- 3 Hardware Revision
- 4 Software Reference
- 6 Serial Number
- 8 Manufacturing Date

```
function compas.equ_description_init(EquPath, id, name, group)
--      Input :
--      EquPath   = Path of the device within you will add a de-
scription
--      id        = ID of the description, this id could not be 0
or null
--      name      = Name of the description system that you want to
create
--      group     = group where the description item will be
stocked
--      Output
--      DescPath  = Path to the description item, if error, see
below the Standard return code
```

```
ac_ups_description_1 = compas.equ_description_init(ac_ups, 1, "Product Name", "De-
scription")
```

```
-- you can set the description directly using set function (see below
to know usage)
```

```
compas.set(ac_ups_description_1, "Dummy AC ups (CompasLua)")
```

9.1.3. ETSI Alarm

Systems need to inform you when there is a problem. You can create an alarm using `equ_alarm_init` function.

```
-- function compas.equ_alarm_init(EquPath, id, name, group, se-
-- verity)
-- Input :--          EquPath    = Path of the device within you
-- will add an alarm
--          id          = ID of the alarm, this id could not be 0 or null
--          name        = Name of the alarm system that you want to cre-
-- ate
--          group       = group where the alarm item will be stocked
--          severity    = Severity of the alarm : "none", "warning", "mi-
-- nor", "major", "critical"
--                               -> none is default
-- Output :
--          AlarmPath = Path to the alarm item, if error, see below the
-- Standard return code
```

```
ac_ups_alarm_1 = compas.equ_alarm_init(ac_ups, 10, "AC Fail", "AC input", "major")
```

```
-- to set or clear the alarm you can simply use the set_num function
-- (used to set a number) :
```

```
compas.set_num(ac_ups_alarm_1, 1) -- set the alarm
```

9.1.4. ETSI data

Adding data is very similar than adding a description or alarms.

```
-- function compas.equ_data_init(EquPath, id, name, group, type)
-- Input :
--          EquPath    = Path of the device within you will add a data
--          id          = ID of the data, this id could not be 0 or null
--          name        = Name of the data system that you want to create
--          group       = group where the data item will be stocked
--          type        = type of the data : float or text
-- Output :
--          DataPath = Path to the data item, if error, see below the
-- Standard return code
-- preparing a table where to save the data.
-- Be careful, the table in lua begin with id = 1
```

```
ac_ups_datas = {}
```

```
-- now make a loop from 1 to 3 in order to add 3 datas (i=1, i=2,
-- i=3)
```

```
for i=1,3 do
```

```
    ac_ups_datas[i] = compas.equ_data_init(ac_ups, 10+i, "v"..i, "Input Voltage", "float")
```

```
    compas.set_num(ac_ups_datas[i], math.random(210,235)) -- see lua documentation to
    know how to use math module.
```

```
end
```

```
-- try with a text data
```

```
ac_ups_datas[4] = compas.equ_data_init(ac_ups, 14, "My super text", "Misc Data",
"text")
```

9.1.5. ETSI Configuration

Configuration is essential when you have some parameters in your device.

```
--      function compas.equ_configuration_init(EquPath, id, name,
group)
--      Input :
--      EquPath   = Path of the device within you will add a con-
figuration item
--      id        = ID of the configuration, this id could not be 0
or null
--      name      = Name of the parameter that you want to create
--      group     = group where the configuration item will be
stocked
--      Output :
--      ConfPath  = Path to the configuration item, if error, see
below the Standard return code
```

```
ac_ups_configuration_1 = compas.equ_configuration_init(ac_ups, 1, "ups Enable", "Test
Configuration")
compas.set(ac_ups_configuration_1, "True")
```

9.1.6. ETSI Control

Add a control to your device. When this control is called, compas will call the function controlAction. You will receive a path from the control and a data (or True if no value is needed). You will be able to check something and do the appropriate action.

```
--      function compas.equ_control_init(EquPath, id, name, group,
needValue)
--      Input :
--      EquPath   = Path of the device within you will add a data
--      id        = ID of the control, this id could not be 0 or
null
--      name      = Name of the control system that you want to
create
--      group     = group where the control item will be stocked
--      needValue = has the control need a value to be executed : 1
or 0
--      Output :
--      ConfPath  = Path to the control item, if error, see below
the Standard return code
```

```
ac_ups_control_1 = compas.equ_control_init(ac_ups, 1, "Test Battery", "Battery", 0)
ac_ups_control_2 = compas.equ_control_init(ac_ups, 2, "Run on Battery for X seconds",
"Battery", 1)
```

9.1.7. ETSI Event

```
-- function compas.new_event(Path, Name, Group, Severity)
--   Input :
--     EquPath   = Path of the device within you will add an event
--     name       = Name of the event that you want to add
--     group      = group of the event
--     severity   = Severity of the event : "none", "warning",
-- "minor", "major", "critical"
--               -> select none by default
--   Output :
--     return code : OK if everything ok, error code if error
-- (see below the Standard return code)
```

```
compas.equ_new_event(ac_ups, "Main Power Lost", "Input Power", "major")
```

9.2. Generic getter and setter for ETSI data

9.2.1. Getter

Get and *get_num* function can get you all the ETSI data that you wanted.

```
-- function compas.get(Path)
-- function compas.get_num(Path);
--   Input :
--     Path      = Path of the device where to write
--   Output
--     Value     = The value you wanted or an error code if there
-- is an error. (see error code below)
```

```
print( "get : " .. compas.get(ac_ups_datas[4]) .. "\r\n")
print( "get_num : " .. compas.get_num(ac_ups_datas[2]) .. "\r\n")
```

9.2.2. Setter

```
-- Generic function to set any data
-- set, set_num
-- theses function can set you all the data that you wanted
--
-- function compas.set(Path, Value);
-- function compas.set(Path, Value);
--   Input :
--     Path      = Path of the device where to write
--     Value     = Value of what you want to write
--   Output
--     Ok if the value was set, an error code if there is an er-
-- ror. (see error code below)
```

```
print( "set : " .. compas.set(ac_ups_datas[4], "SuperTest") .. "\r\n")
print( "set_num : " .. compas.set_num(ac_ups_datas[2], 222.3547) .. "\r\n")
```

9.3. The callback system

When a control created by CompasLua is created, there is a callback to the button path. These function has to be named *controlAction(Path,Value)*

```
-- This function is called when yoy push on a control button. You
have to check the coming path of the control and then make the action
that the control has to do
--   Input :
--       Path = Path from where the function is called
--       Value = Value of the control to press (1 if control has no
string value)
--   Output :
--       A standard response :
--       - compas.access_denied()
--       - compas.bad_argument()
--       - compas.command_error()
--       - compas.invalid_data()
--       - compas.not_found()
--       - compas.command_executed()
--       - compas.command_executing()
--       - compas.command_ok()
```

```
function controlAction(Path, Value)
  if(Path == ac_ups_control_1) then
    print("Control 1 pressed: Test battery...\r\n")
    return compas.command_executing()
  elseif (Path==ac_ups_control_2) then
    print("Control 2 pressed: Running on battery for ".. Value .." seconds.\r\n")
    return compas.command_executed()
  else
    print("Non implemented path : " .. Path)
    return compas.not_found()
  end
end
```

9.4. Time functions

Compas has also some time functions. You can access on time function with two different way :

- using Lua function `os.time` (see lua documentation)
- using CompasLua time function
 - `time_second`
 - `time_minute`
 - `time_hour`
 - `time_day`
 - `time_month`
 - `time_year`

```
print("We are in " .. compas.time_year() .. " and it is " .. compas.time_hour() .. ":" .. com-
pas.time_minute() )
```

9.5. Mail functions

Allow you to send an email to someone. Don't forget to configure the smtp server and mail receiver.

```
-- function compas.mail(Subject, Message)
-- Input :
-- Subject = subject of email
-- Message = message that you want to send. Messages are in
html format
-- Output :
-- return = OK if everything ok, error code if error (see
below the Standard return code)
```

```
subject="Compas Lua has started"
message= [[Hello CompasLua user,
<p>Compas Lua has started.</p>]]
message = message .. "Compas version = ".. compas.version() .."<br>"
message = message .. "CompasLua version = ".. compas.version_api()
```

```
-- please, add your email in site configuration if you want to test
this function
```

```
compas.mail(subject, message)
```

9.6. SNMP functions

CompasLua allows making SNMP request. This could be really useful in order to monitor non-alpha device. Currently, we only support the get function (first release). Others functions will be added later.

The first step is to get the connection string then you will be able to make some snmp call.

9.6.1. Getting the connection

Get the connection string with `compas.get_device_snmp`

```
-- function compas.get_device_snmp(ip, port, password)
-- Input :
-- ip      = IP of the snmp device
-- port    = Port of the snmp device
-- password = Password of the snmp device
-- Output :
-- connection string, or a standard error code (see below)
```

```
snmp_connector = compas.get_device_snmp("10.0.0.201", 161, "public")
```

9.6.2. SNMP GET

```
-- function compas.snmp_get(ConnectionString, listOfOid)
-- Input :
-- ConnectionString = The string with connection
-- listOfOid       = array of Oid's to retrieve
-- Output :
-- array with responses or a standard error code
```

```
data = compas.snmp_get(snmp_connector,
{
```

```

".1.3.6.1.4.1.7309.6.1.3.2.1.3.1", -- AC input voltage
".1.3.6.1.4.1.7309.6.1.3.2.1.2.1", -- Input Frequency
".1.3.6.1.4.1.7309.6.1.4.4.1.2.1" -- Output Line Voltage
})

```

9.7. Miscellaneous functions

9.7.1. Version functions checks

- Compas version
 - `compas.version()`
 - Return a string with the current compas version
- CompasLua API version
 - `compas.version_api()`
 - return a string with the current version of CompasLua API

9.7.2. Standard return code

Standard return code are in this list, their explanation speak by their name :

Errors codes:

- "ACCESS_DENIED" => `compas.access_denied()`
- "BAD_ARGUMENT" => `compas.bad_argument()`
- "COMMAND_ERROR" => `compas.command_error()`
- "COMMAND_CANCELED" => `compas.command_canceled()`
- "INVALID DATA" => `compas.invalid_data()`
- "NOT_FOUND" => `compas.not_found()`
- "NEED_LICENSE" => No license
- "READ_ONLY_VARIABLE" => Read only variable

Normal codes:

- "COMMAND_EXECUTED" => `compas.command_executed()`
- "COMMAND_EXECUTING" => `compas.command_executing()`
- "OK" => `compas.command_ok()`

9.7.3. Refresh speed control command

With `compas.set_script_refresh_time_sec(Time)` you are able to set the refresh speed of the script in seconds.



We give you the full control of the refresh speed, pay attention to not overload your controller CPU.

9.7.4. Max Runtime control command

Compas monitor the execution of your Lua Scripts. By default, your script has a maximum runtime of 5 seconds. This can be changed using `compas.set_script_max_runtime_sec(Time)` which allows you to make a script taking more time.



We give you the full control of the maximum runtime, pay attention to not overload your controller CPU.

9.7.5. Control queue

The control queue contains all Callback that notify the system that a change has been made. It can be executed manually inside a of running script:

- `compas.execute_control_queue()`

This can be helpful when you need to wait inside a script and that you want that the system execute something.

Chapter 7 : DC Systems Management

1. Introduction

The bus voltage is controlled following the current operation mode of the system. Your battery life is important so compas helps you to improve it using his advanced Temperature Compensation and Charge Control. We also protect your battery from extra-low voltage that could damage your battery in only one power outage using a Low Voltage Disconnect (LVD).

A lot of Alarms are available in order to help you to operate your system. We can detect bad rectifiers or bad batteries. With Compas system, you can predict issues and act before a major failure. Compas improves your uptime.

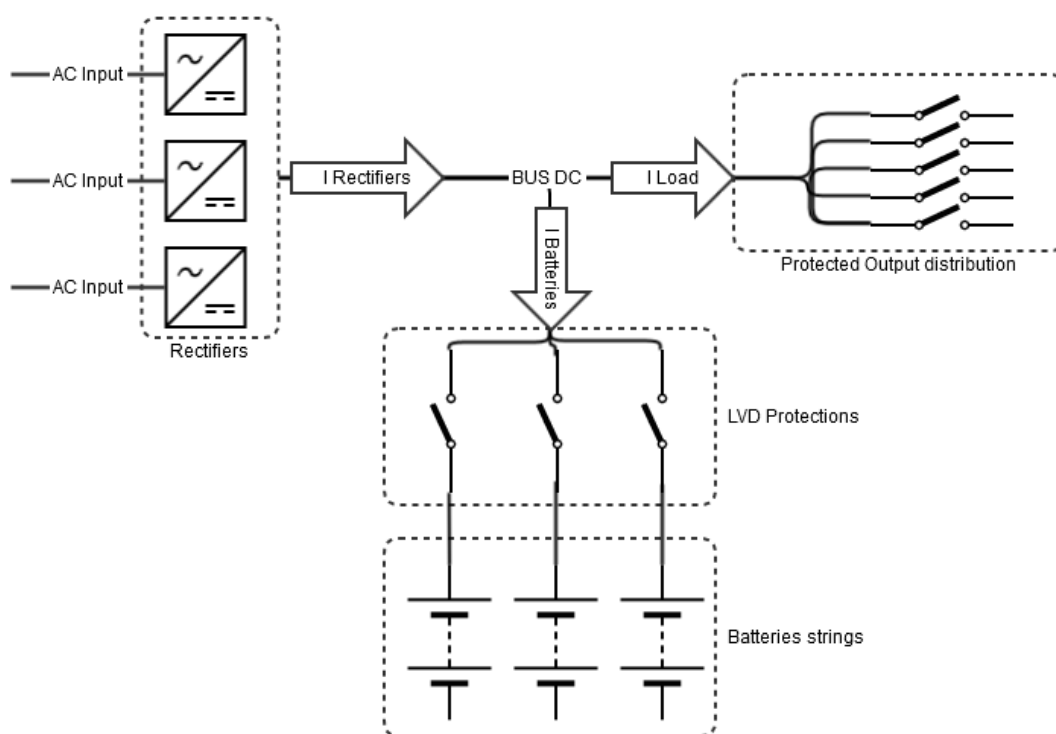


Figure 130 DC System

2. Controllers

Compas can be run on two different controllers and using different types of rectifier. Each system has his own specifications. Here is the list of differences/Compatibility :

	MCU	UCC
System Modes	✓	✓

	MCU	UCC
Batteries support	✓	✓
Battery Current Read	Inside MCU (Integrated shunt)	External Shunt Linked on an ADIO10
Battery Current Limit support	✓	✓
Battery Current Regulation	Voltage Regulation (see particularities)	Power Regulation (see particularities)
Battery LVD	✓	✗ (coming...)
Rectifiers Belgium	✓	✓ (No battery test)
Rectifiers Canada	✓ (No battery test)	✓
Rectifier Output Read	From Back panel.	Sum(Rectifiers current)
Rectifiers Status	Numeric, Fallback with Analogical values	Numeric
Stat-up Time		
Start-up regulation time	< 5 sec	< 2 minutes
Compas Start-up	< 2 minutes	< 2 minutes

2.1. MCU

Your dc system is usually controlled by a Monitoring Control Unit (MCU). It is a micro controller-based monitoring system intended for use to monitor DC Systems, including rectifiers, batteries, and other modules. It usually contains the compas card which gives you the opportunity to enhance your system monitoring. On most of the systems, the controller is a hot-pluggable, hot-swappable unit that fits into the rectifier rack.

There are often theses LED on the front plate:

- Status Led (Green) :
 - Steady : Monitoring is OK
 - Quick Blinking (200ms): Comp@s is not present (or starting), the MCU is working in standalone (With the configuration saved inside the MCU - This can be copied from Comp@s with "Save In MCU" function)
 - Slow Blinking (1Hz): Battery test is running
 - 800 ms On, 200 ms Off : System is in boost mode
- LVD OK (Green) : steady when the LVD is closed
- 4 LED for Alarms (Red): The LEDs are linked to the dry alarm relays. Each alarm can be mapped to any relay number (1-4). By convention, we use by default the 1 for major alarms, the 2 for minor alarms, the 3 for battery specific alarms, and the 4 when the system is in AC Failure.

There is often one push-button:

- Pressed for 5-10 sec : Start Battery Test
- Pressed for > 10 sec: Force Battery Test
- Pressed during battery test cancel the test.

2.2. UCC

An UCC with an ADIO10 can also be used to monitor a DC System. You have to change the configuration parameter *site*->*CF93* (System Nodes Definition) in order to create the DC System :

- *es1_dc1(1-100,111,112)*

The configuration parameter create a DC System 1 inside the energy system 1 using devices :

- rectifiers with node ids from 1 to 100.
- ADIO10 with node ids 111 and 112 (used to monitor the battery current, manage LVD,...)

Battery strings need to have a shunt that is connected to the current measurement of the ADIO10. You can monitor more than one battery string by connecting the next shunt

3. Operational modes

In order to test the battery, improve his life expectancy, have a rapid recovery when there is a power outage, our DC bus has several mode to control his voltage.

Mode	Voltage control	Current limit	Temp. comp.	Example
Float	Setting defined	✓	✓	54V
Boost	Setting defined and a little more than float	✓	✓	56V
Battery Test	Voltage drop until wanted current for discharge test	✓	✓	
AC Failure	Rectifier OFF	✗	✗	LVD open at 42V
Safe	Safe voltage when communication problem	✗	✗	52V

3.1. Float Mode

Float Mode is the standby mode, the output voltage is set to the float voltage setting. It can be automatically adjusted by the temperature compensation or the current limitation. This is usually the recommended voltage in the specifications of the battery.

3.2. Boost Mode

The DC bus voltage is increased in order to charge the battery faster. When the system arrives at the bus voltage, the system will set the batteries to a higher voltage in order to force the battery charge current according to your parameters. The boost

maximum voltage can be configured in the DC system. This mode can be automatically started after an AC Failure, after a battery test, or remotely.



This mode will respect the battery current charge but the voltage will be set to a higher condition than the float voltage.

This is not recommended with all kinds of batteries, please inform yourself to your battery seller.

3.3. Battery Test

The battery is being tested. The voltage is going down until we reach the desired battery current for the test. Alarm like *"Bus Voltage Low"* and *"battery on discharge"* can be generated.

3.4. AC Failure

There is no more rectifiers to give power, the battery is discharging and the bus voltage is dropping.

3.5. Safe Mode

The system can go to safe when there is a communication problem or when the voltage/current/temperature sense is not connected correctly.

4. Battery current Regulation principles

The current charge regulation can be controlled using two different methods. It is really important to understand well how it is working otherwise you can have some non-predicted effect.

With voltage regulation, the controller use the bus voltage to control the current flowing inside the batteries. Rectifiers are not power limited, they can give a full power nearly instantaneously.

With power regulation, the controller use the power limitation to control the current flowing inside the batteries. Rectifiers are power limited, they cannot give a load step-up instantaneously. The batteries will give the power during the transitory. If you activated battery current control without batteries, your system will not be able to take a fast load step-up. The system will be on power limitations and the bus voltage will drop.

	Voltage Regulation	Power regulation
Load Step up	Rectifiers will give the step	Battery will take the step until the system stabilization

	Voltage Regulation	Power regulation
Load Step Down	Batteries take the current spike	No battery spike inside the load

5. Alarms

Here is a non-exhaustive alarm list. Don't forget that you can also make a custom alarm by using our [Programming capabilities](#).

- **AC Input alarms**
 - Mains Failure
 - Mains Partial Failure
 - Mains Low (on some systems)
 - Mains High (on some systems).
- **DC Output bus voltage** (only related to the Bus voltage measurement. There are different hysteresis to avoid changing alarm state around border values.)
 - *DC Bus Extra Low* : with parameters "DC Bus Voltage Extra Low" and "DC Bus Voltage Extra Low Hysteresis"
 - *DC Bus Low* : with parameters "DC Bus Voltage Low" and "DC Bus Voltage Low Hysteresis"
 - *DC Bus High* : with parameters "DC Bus Voltage High" and "DC Bus Voltage High Hysteresis"
 - *DC Bus Extra High* : with parameters "DC Bus Voltage Extra High" and "DC Bus Voltage Extra High Hysteresis"
 - *DC Bus Voltage Sense Failure*.
- **Battery alarm**
 - Battery Last Test Failed
 - Battery on Discharge
 - Battery LVD Relay Open
 - Battery Temperature Too High : with parameters "Battery Temperature High" and "Battery Temperature Hysteresis"
 - Battery Temperature Too Low : with parameters "Battery Temperature Low" and "Battery Temperature Hysteresis"
 - Battery Temperature Sensor Fail.
- **Rectifier alarms**
 - One Rectifier Failure
 - More Than One Rectifier Failure
 - Missing Rectifiers : with parameter "Minimal Number of Present Rectifiers".
- **User Input related alarm**
 - Digital Input X
 - Battery Breaker Open
 - Distribution Breaker Open
 - Ambient Temperature Too High
 - Ambient Temperature Too Low
 - Ambient Temperature Sensor Fail.

6. Events

Here is a non-exhaustive list of DC System's possible events. For each listed event, a possible fix or user action is suggested:

Event Name	Description	Fix
DC System Started	DC System shelf has been detected by Comp@s and is now monitored	Nothing to do
DC System Dying.	This event only happens when DC system is using battery. Alarm "DC Bus Extra Low" will be generated just before this event happens (see: Battery Low Voltage Disconnect Operation (LVD)).	Charge battery, or recover AC input voltage
DC Mode Changed : <new_mode>	Mode of operations has been changed (see: Operation mode). If critical, an alarm will be generated.	Check alarm
Alarm Set: <alarm_name>	The corresponding alarm has been set.	Check alarm
Alarm Clear: <alarm_name>	The corresponding alarm has been cleared.	Nothing to do

7. DC System Functionalities

7.1. Low Voltage Disconnect operation

The purpose of the Low Battery Disconnect mechanism is to prevent permanent damage to the lead acid battery due to excessive deep discharge.

When the LVD is opened, and that the system has no AC input power, the application will not be powered anymore. It is possible to configure a delay before the opening. It allows to absorb peaks of consumptions without opening the LVD and/or to shut down properly the application thanks to the alarm "DC Bus Voltage Extra Low" for instance.

Before opening the LVD, a DC System event is generated: "System Dying".

Here is a non-exhaustive list of the related configuration parameters (see equipment tables for detailed information):

- LVD Disconnect Voltage
- LVD Disconnect Delay
- DC Bus Voltage Extra Low.

7.2. Battery Charge Current Control [MCU]

The Battery Monitor feature enhances the controller's capability to provide information about the battery to the User. Charge Current Control will help to improve

battery longevity by keeping the battery current within specified limits. Charge current flowing to the battery during recharge will be limited to a value as programmed by the Supervisor. This value will be derived from the battery manufacturer's specification sheet and entered by the Supervisor.

On system with **MCU**, The controller performs this limitation by lowering the rectifiers programming voltage when needed, through a control loop in the controller program. This limitation is also active in boost mode.



Related configuration parameter

- **DC System**
 - **CF31** : Battery Charge Current Limit (Ampere)
 - **CF32** : Shunt Rating At 60mV

7.3. Battery Charge Current Control [UCC]

On **UCC DC System**, we use a power limitation, this is the standard regulation of Cordex system. It Works by limiting the power of the module. When there is a spike on the load, The batteries gives the necessary power. The rectifiers power limitation will be set rapidly to a higher level. You can't activate the Battery Charge Current Control Without batteries. Your system will not be able to sustain a fast load step-up.

7.4. Battery Temperature Compensation

Battery life expectancy and performance is directly related to battery ambient temperature. The optimum temperature for battery operation is 25°C (77°F). Without compensation, battery life is seriously compromised at temperatures above 25°C, while battery performance is reduced below it.

Adjusting the battery's float voltage to correspond with temperature fluctuations will ensure maximum battery performance and life expectancy. With the MCU, this may be accomplished by using the software's built-in automatic temperature compensation function.

This function works by adjusting the system voltage, by step of 0.1V, as the temperature changes, according to the defined parameters.

Temperature compensation occurs at standard rates commonly referred to as slope-compensation settings. For maximum performance, it's important to match the battery slope compensation with the setting recommended by the battery manufacturer. This is not to be confused with slope regulation; which refers to the process of regulating current among a group of parallel-operating rectifiers.

Temperature compensation feature has programmable breakpoints. These are the points at which Temp Comp will cease. Further temperature decreases or increases will NOT increase or decrease the output voltage. This protects the connected load from excessive voltage conditions. As Temp Comp is active in either *float*, *equalize* or *boost mode*, breakpoints should be set with this in mind.

Temperature compensation feature also incorporates fail-safe circuitry to prevent it from driving the rectifier system to a voltage higher than it is suitable for the load or battery.

The controller includes a control loop that compares the bus voltage with a reference value, and pilots on the rectifiers programming voltage accordingly. It also measures the battery temperature through an external temperature probe (NTC 10K). This measurement, together with the "DC Bus Float Voltage at 25°C" and "Battery Temperature Compensation" configuration, determines the reference voltage.

The Battery Temperature Compensation is regulated by the MCU. The configuration is stored in the MCU, and can be updated by Comp@s if present. On UCC, Compas Manage the Battery Temperature Compensation itself.



Related configuration parameter

- **DC System**
 - **CF21** : Temperature Compensation Slope (mV/degree)
 - **CF22** : Maximum Positive Temperature Compensation (Volt)
 - **CF23** : Maximum Negative Temperature Compensation (Volt)

7.5. Smart Energy

The smart energy function has been developed in order to improve the global efficiency of the system. It is very useful in systems that have a very high level of redundancy. The purpose of this system is to use rectifiers at the best efficiency. With all alpha-technologies rectifier, we know the efficiency curve and the system adapts itself to the load. Unused rectifier supporting the remote off will be un-powered in order to save energy.

The smart energy is available at the DC system level, it is the parameter **CF83** and it supports Boolean condition (see [PLC Functionalities](#)).

8. Battery Test [MCU]

Battery test is a tool that helps you to detect bad batteries and makes prevention in order to change the batteries before a major power failure. With our controller, you will be able to ensure that supported equipment is adequately backed-up and prevent unexpected failure. This is really important for critical electrical equipment that must remain on.

Compas is able to do two types of battery test :

- Discharge to a certain capacity of the battery and check final voltage of the battery: **Standard test**
- Discharge during a defined time and check if this match the battery life expectation using **Peukert's Law**

At the end of this chapter you will be able to :

- ✓ Understand principles behind a battery test
- ✓ Configure a battery test following your application
- ✓ Start manually a battery test
- ✓ Schedule automatically a battery test
- ✓ Interpret a battery test and decide if you have to change your batteries
- ✓ Maintain your power solution reliable in time

8.1. Battery test principles

As we know that your application (load) is really important, we have designed a non-intrusive battery test: unlike a lot of our competitors, our rectifiers power is still available during the battery test. This prevents a power outage on your equipment if the batteries are really bad.

The battery test consists of programing the bus voltage down progressively to a lower level. This has the effect of discharging the battery into the load because the battery voltage will be higher than rectifier output voltage.

With our system you can make a battery test with a lower discharge rate than your full load. This has an important impact over the battery life expectancy by reducing the memory effect. If the output current is greater than the discharge current limit, the rectifiers will supply the difference of current.

Our system support two types of test:

- Standard test
 - Discharge the battery of a certain percentage.
 - Check the end voltage of the test to see if batteries are in good condition.
- Time based

- Discharge the battery during a certain time
- Use Peukert's law to check if batteries are in good condition.

Here is a small comparative that will help you to choose between the two methods:

Condition	Standard test	Peukert's test
System safety	+	+
Test reliability	+	+
Size of the discharge for battery evaluation	-	+
Fixed test time	-	+
Support variable load	+	- ⁽¹⁾
Need manufacturer advanced specifications	+	- ⁽²⁾

(1): Peukert test can be used with variable load only if :

- The load variation is slow
- The load is always over the value specified by the test discharge voltage (seed battery test configuration)

(2): You will need the Peukert Number of the batteries, Manufacturer will not always give it to you. It can be found by making two battery test but this procedure could take some time.

8.2. Battery test configuration

8.2.1. General parameters

Navigate to the dc system then in the configuration tabs. Switch to edit mode in order to be able to modify the parameters.



Needed values

In order to configure the battery test, you will need your batteries' specifications:

- Capacity
- Recommended Battery charge Current limit
- Maximum Depth of discharge before a battery damage (will be used to estimate your battery autonomy)

If you want to use the Peukert's Law to test and estimate your batteries, you will need your batteries' discharge curves or the Peukert's exponent.

If it is not available, we will explain you how to determine it using

As you don't want to damage or use the batteries during a test, first fields to configure are the battery Charge parameters:

- CF31: Battery Charge Current Limit (Ampere)
 - The battery will be charged using this set point
- CF32: Battery String Capacity
 - We need this value to estimate the state of charge/discharge of the battery
- CF30: Max floating Battery current
 - This value is used by the system to determine if the battery is fully charged or not. Be careful to take in account that you may have some measurement error. We recommend putting at least 0.5A.

Now, we have to configure the battery test itself. These fields are common to the two testing methods:

- CF69: Battery Test Type
 - Select the type of battery test that you want. It can be :
 - Capacity Based
 - Time Based
- CF70: Battery test end voltage
 - Voltage that will stop the battery test. This prevents the battery to be too much discharged and prevent a power outage if you have really bad batteries. Note that it is important to set it to a higher value than the lvd disconnect voltage (CF10). Usually we set it to 46 V if you have a 48 V Lead-acid gel battery string.
- CF73: Battery Test Discharge Current
 - Current that the battery will provide during the test. This allows you to set a lower value than the total load of your system in order to have a smaller impact on the battery life.
- CF74: Battery test Minimal Discharge current.
 - The minimal current needed inside the batteries during the battery test. It is important to have a minimum current in order to reduce the impact of the measurement precision at lower current value. It has to be higher than 2 amperes.
- CF76: Battery Test Requested Minutes Without Mains Failure
 - Number of minutes required before launching a battery test. This is the time required to fully charge the battery. It is used by the system to prevent an automatic battery test to be launched while a main failure has occurred several minutes before.



Battery test after a changing the battery string

When you change the battery string, you have to wait that the batteries are fully charged before doing a battery test. The system doesn't know the state of batteries at the first charge: Compas will determine that the bat-

teries are fully charged if it detects that the float current is below a user defined value (CF30: Max floating Battery Current) during more than one hour.

8.2.2. Standard battery test

The batteries are discharged of a desired percentage. During the discharge, the batteries voltage must remain higher than the battery test voltage.

- CF71: Battery Test Discharge Ratio
 - Ratio of the battery capacity to discharge. We can configure the level of discharge desired for the battery test. By default it is set to at 30 percent.
- CF75: Battery Test Duration
 - Time in minutes that the battery test has to respect. If it takes more time than expected, the battery test is ended and an alarm is triggered.

8.2.3. Peukert battery test

First you have to set the Peukert's number in order to change the test mode. If your manufacturer did not give you the discharging curve or the Peukert's exponent, you can check the following chapter that will explain you how to find it and calculate it using Compas wizard.

- CF38: Peukert Number
 - Set your Peukert number (number between 1 and 1.9 depending on your batteries.). It is usually between 1.1 and 1.3 for lead acid gel batteries. You can also use the integrated wizard to calculate it (see below)
- CF75: Battery Test Duration (Minute)
 - Time on which the battery test will be proceeded. This has to be enough to test the batteries.

8.3. Peukert's exponent

8.3.1. What is Peukert's Exponent?

When your batteries are discharged, capacity is depending on the load. More the load is high, less will be the batteries' capacity (and less you will have autonomy). Peukert's exponent is describing this physical phenomenon. Peukert's exponent is necessary to estimate the real autonomy of your system which will depend on the load and your battery efficiency.

8.3.2. How to find the Peukert's exponent

Usually Peukert's exponent is given by your batteries' manufacturer. If not, you can determine it with your battery discharge curve (from data sheets or using experiment).

Using discharge curves from data sheets.

With the manufacturer data, you can find the Peukert's Exponent. You only need two discharge curves at different constant load. With theses data, you can connect directly inside Compas and in the DC System configuration, you can click on the wizard button of the Peukert Number (CF38). Then enter the capacity and time for the tests 1 and 2, click on Calculate and you will have directly Peukert's exponent that you will have to confirm.

In order to make the things clearly, here is a real example coming from a lead-acid battery datasheet:

- Specifications given by manufacturers
 - Discharge Rates in Amperes to 1.75Vpc at 25°C
 - 30 minutes
 - 84.4 Amps
 - 8 hours
 - 7.74 Amps

You need to convert theses data in Ampere hour and time:

- Test 1 Ah = $84.4 / 2 = 42.2$ Ah
- Test 1 Time = 30 minutes
- Test 2 Ahs = $7.74 * 8 = 61.92$ Ah
- Test 2 Time = $60 * 8 = 480$ minutes

Then use the wizard to find this battery Peukert's exponent. Check that the result is between 1 and 1.9. and confirm it. (Otherwise the system will show you a warning because the value seems to be wrong.)

The screenshot shows a wizard interface for calculating Peukert's Exponent. It consists of several input fields and buttons:

- Test 1: Capacity discharged [Ahrs]**: Input field with value 42.2 (labeled 1).
- Test 1: Time [min]**: Input field with value 30 (labeled 2).
- Test 2: Capacity discharged [Ahrs]**: Input field with value 61.92 (labeled 3).
- Test 2: Time [min]**: Input field with value 480 (labeled 4).
- Calculate**: A button (labeled 5) that triggers the calculation.
- Result**: A field showing the calculated Peukert's Exponent as 1.16.
- Confirm**: A green button with a checkmark (labeled 6) to confirm the result.

Figure 131 Calculate Peukert's Exponent with Embedded Wizard

Using Two Battery Tests

You can use Compas to perform two battery test at different loads. This will give you the needed data in battery test results data. (DC system -> DA 74: Last battery test Discharged Capacity and DA 76: Last battery test duration). We recommend you to make a difference between load the higher as it is possible (like 7A and 50A discharge if your batteries are rated).

After the two tests, you will have the results that will allow you to calculate Peukert's exponent using the embedded wizard.

8.4. Launching a battery test

A battery test can be started periodically, remotely, or when the front plate switch of the MCU is pressed for more than 5 seconds. Before launching a battery test, several test are done in order to be sure that batteries are fully loaded before the launch of the test:

- Checking the status of the application
- Checking that there is enough minutes since the last AC Fail. (Configurable with **DC System -> CF76** (*Battery Test Requested Minutes Without Mains Failure*).

In order to launch a battery test manually, you can use the control **DC System -> CT2** (*Start Battery Test*). This control will start the battery test after verification's listed before.



You can force a battery test with **DC System -> CT3** (*Force Battery Test*), the battery test will be launched without any check. When using this control, you have to be careful and to be sure that the battery has enough power to sustain the load.



Before launching a battery test, please check that the **DC System -> CF70** "*Battery Test End Voltage*" is higher than **DC System -> CF10** "*LVD Disconnect voltage*". This prevents an unwanted battery disconnection during a test.

Here is the workflow to understand how the system decides if it can start a Battery Test:

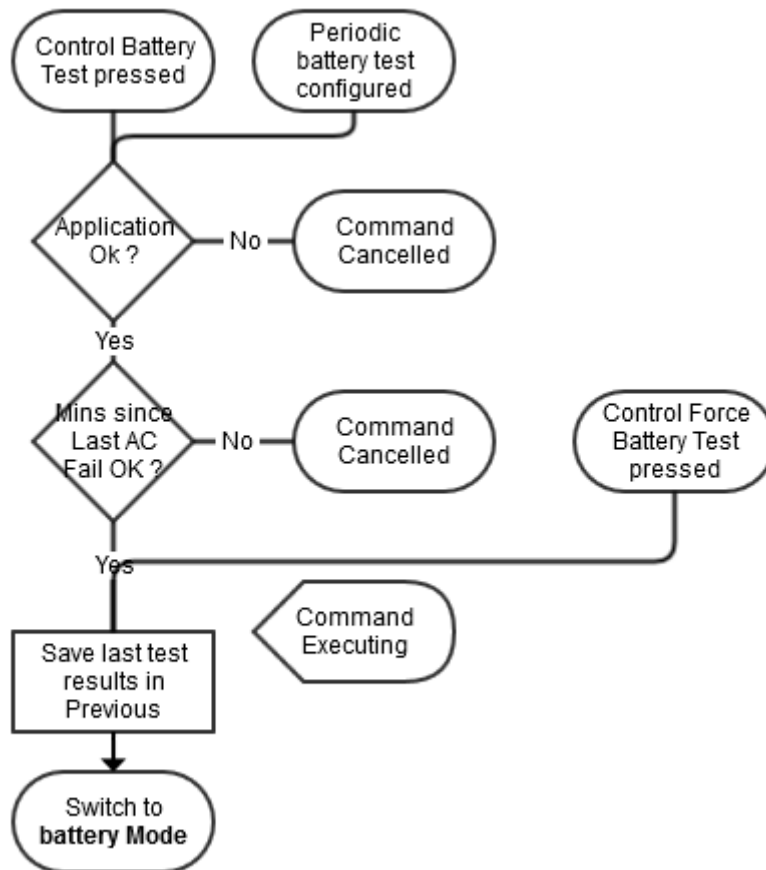


Figure 132 Battery test condition checker

8.5. The battery test itself

Our Battery test will regulate the voltage of the bus DC in order to have the desired load on the battery. This prevents a power failure if the batteries are completely dead and prevent too high discharge rate on the batteries. (The battery test has the smallest impact possible on the battery's life expectancy. During the battery test, the current inside the batteries is integrated in order to see how many Ampere hours are given by the batteries.

Here is an example of a battery test on a system:

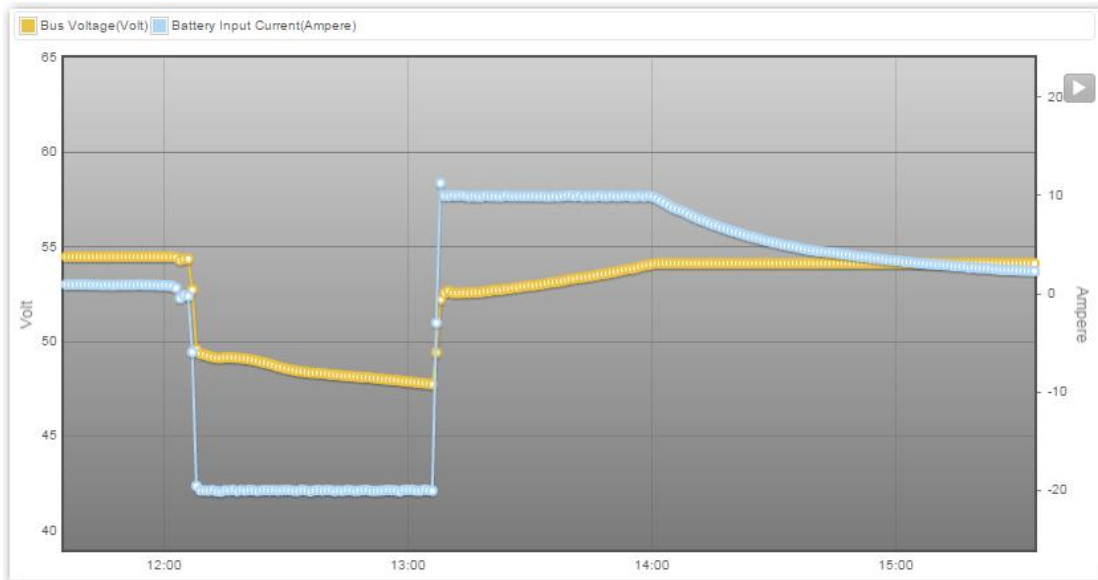


Figure 133 Example of a battery test

As you can see, at the beginning the float voltage (yellow line) was at 54V. The battery test was launched approximately at t 12h05.

As rectifier power is going progressively down, the bus voltage is going down and the batteries began to give power. The set point was 20A and was reached during the test.

During the following 60 minutes, the test will be performed and the bus voltage will decrease progressively with the batteries voltage in order to keep the 20 amperes inside the batteries.

At the end of the test, the bus voltage is restored progressively in order to regulate the battery input power at 10A and make a soft charge. After several hours, the input current is smaller and smaller. The DC Bus is restored at 54V.



Faster recharge

You can configure the boost mode to automatic in order to charge faster of the batteries by forcing a higher current. This operation will put the bus voltage at a higher value.

During the battery test, you can monitor the bus voltage, battery input current, discharged capacity directly inside the data.

A Battery test can be canceled, stopped or failed for several reasons :

- A main failure occurs
- Someone press the front panel switch
- Someone uses the control **DC System** -> **CT1** *"Back To Float."*
- Someone uses the control **DC System** -> **CT4** *"Back To Boost."*
- The bus voltage reaches the **DC System** -> **CF70** *"Battery Test End Voltage."*
- The battery discharge ratio is reached **DC System** -> **CF71** *"Battery Test Discharge Ratio."*
- The battery load is too low, according to **DC System** -> **CF74** *"Battery Test Minimal Discharge Current."*
- The test duration is too long according to **DC System** -> **CF75** *"Battery Test duration (minutes)"*

Here is the workflow followed during the battery test:

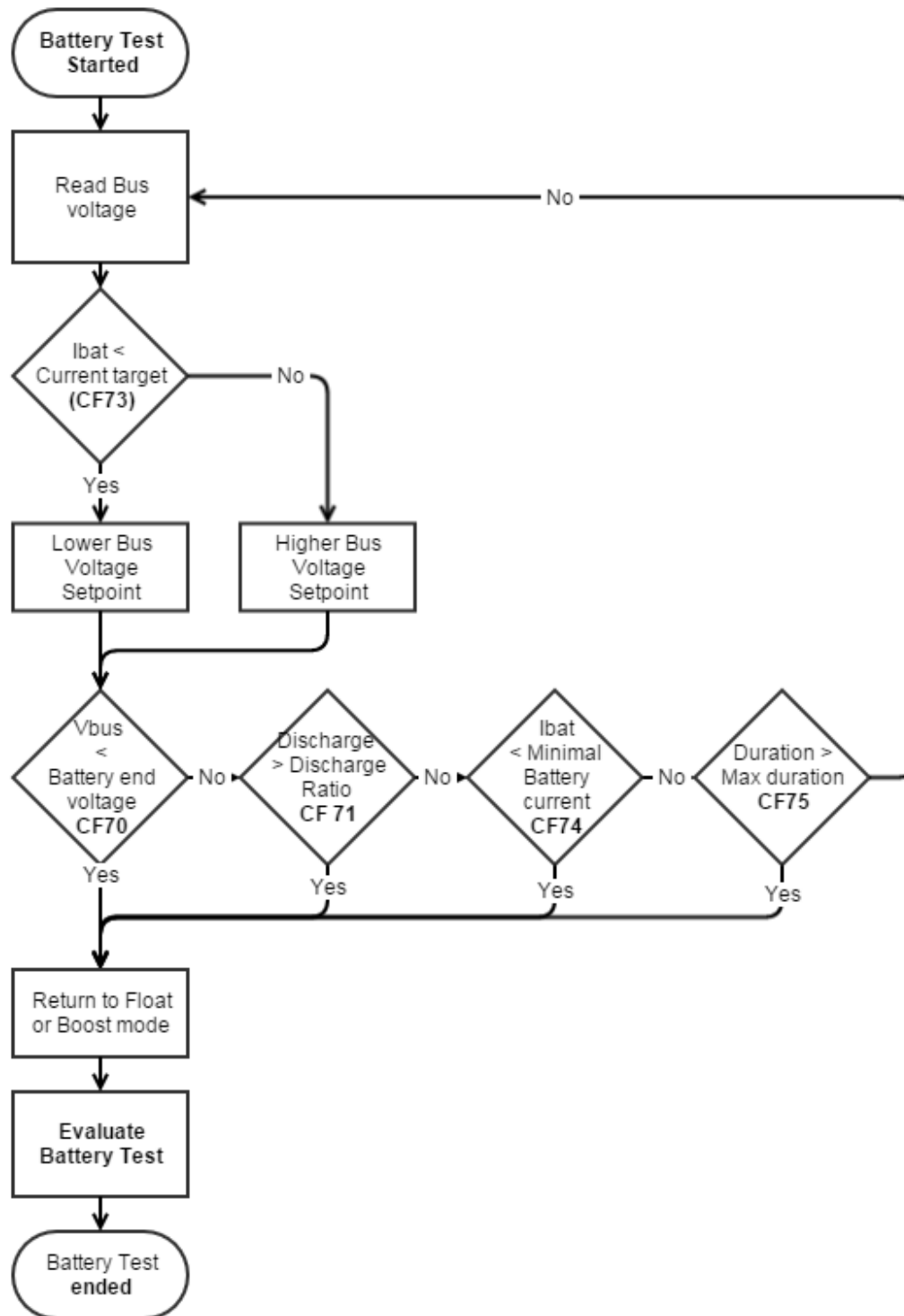


Figure 134 Battery test workflow

8.6. Test evaluation

8.6.1. Standard test

The battery test is considered as success if :

- Ampere hour value is reached while the bus voltage is still above the "Battery Test End Voltage"

Battery Test is considered as fail if :

- If the bus voltage reaches the "Battery Test End Voltage" prior to reaching the Ampere hour value
- The load is too low to perform the test
- There is an AC Failure during the test
- The lvd has been opened during the test
- There is a time-out during the battery test

A battery considered as fail trigger the dc system alarm AL13 : Battery Last Test Failed.

This test needs you to know your batteries and to perform several tests in order to determine the Battery test End Voltage accurately to your load.

8.6.2. Peukert's Test

The battery test is considered as success if :

- Ampere hour value is reached while the bus voltage is still above the "Battery Test End Voltage"
- Checked using Peukert's Law

Battery Test is considered as fail if :

- If the bus voltage reaches the "Battery Test End Voltage" prior to reaching the Ampere hour value
- The load is too low to perform the test
- There is an AC Failure during the test
- The lvd has been opened during the test

A battery considered as fail trigger the dc system alarm AL13 : Battery Last Test Failed.

8.7. Estimated autonomy

The estimated autonomy is based on Peukert's law for discharging a lead-acid battery, which predicts battery capacity for a given discharge current and discharge time. Battery String Capacity is the capacity in Ampere-hours given by constructors for a rated discharge time (generally: 10 hours). Peukert Number is a constant comprised between 1.1 and 1.6, according to lead-acid used technology and batteries ageing.

According to this model, effective current (battery capacity divided by actual time to discharge it) is calculated by: $\text{actual current} * (\text{actual current} * \text{rated discharge time} / \text{battery capacity}) ^ {(\text{Peukert} - 1)}$.

If effective current is < 0 , battery is discharging.

If effective current is > 0 , battery is charging.

Battery remaining capacity equals (in %) to: $100 * (\text{battery capacity} + \text{sum}(\text{effective current}(\text{minute}) / 60) / \text{battery capacity})$.

9. MCU in standalone mode

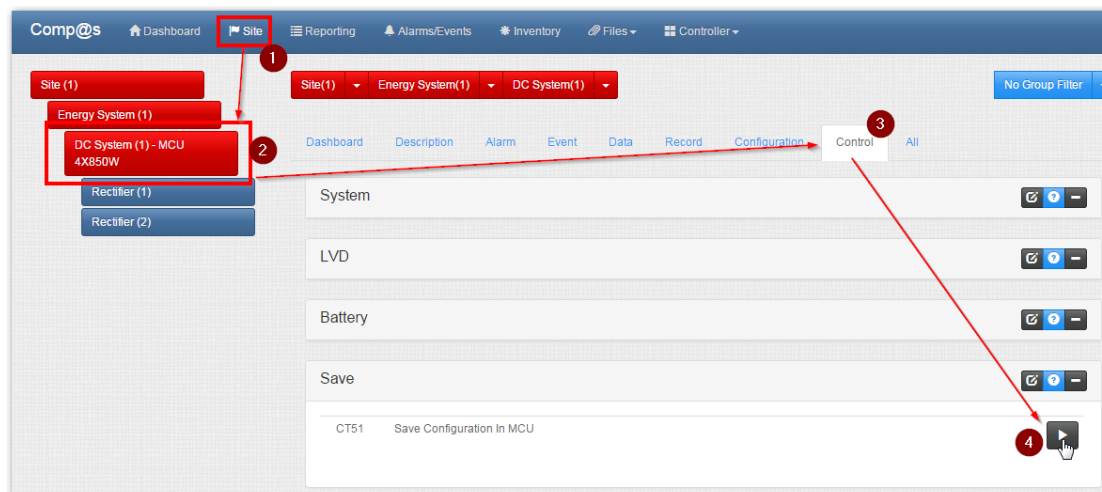
The MCU can work in a standalone mode. In this mode, the DC System voltage will be fully managed by the MCU. You will lose a lot of functionalities like records, advanced monitoring, PLC,...

9.1. Required materials

- A MCU
- Compas Card (to set configuration)

9.2. Procedure

1. Connect your Compas Card to the system
2. Set your parameters inside the Compas Card
 - a. Site -> Energy System -> DC system -> parameters
3. Execute the control CT51 "Save in MCU" inside the DC System.



Chapter 8 : Inverter Systems Management

Compas energy system with inverter are really powerful, it can mix both a DC System and an inverter system. Our system support direct current flow in order to power directly from the ac input when there is no power outage.

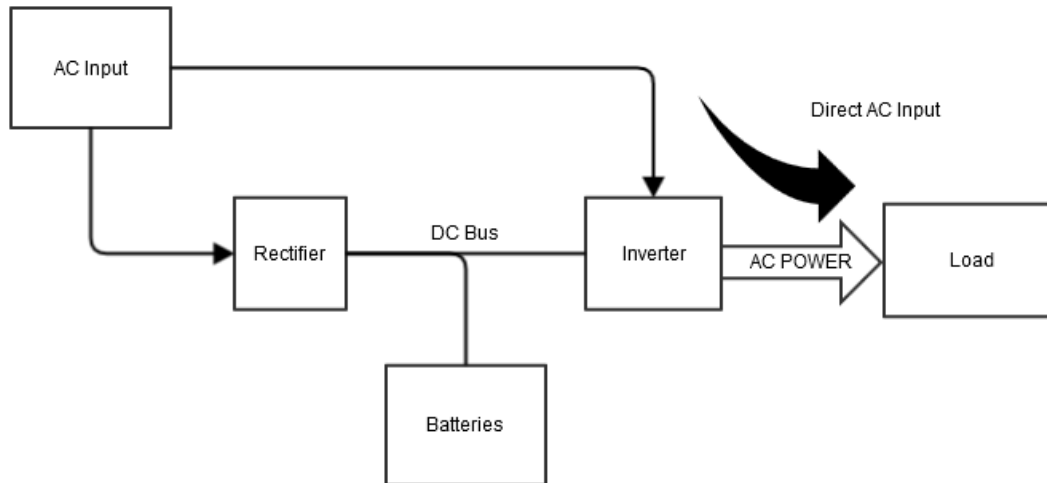


Figure 135 System with inverter

This kind of system are seen by compas as two different energy system :

- DC system
 - Here with two rectifiers
- Inverter System
 - Here with three inverters

On DC System, you can connect a DC load and you connect the Inverter system. The inverter system contains the three inverters that power our load.

As you can see, every equipment are monitored and redundant, this gives you a very high reliability.

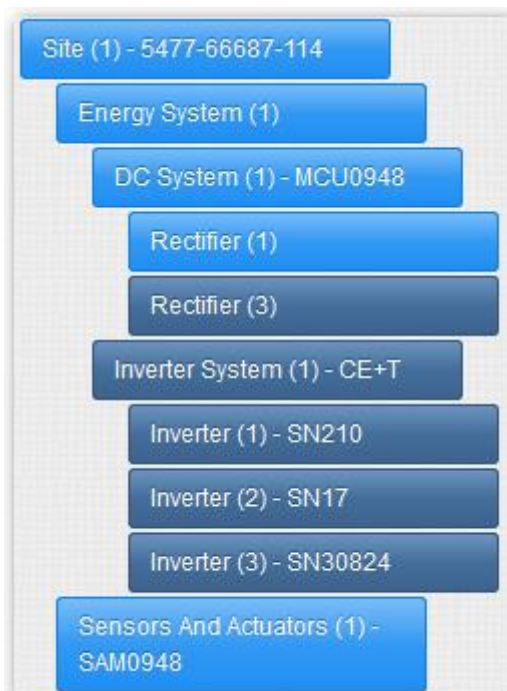


Figure 136 System with inverter hierarchy

Chapter 9 : Remote Power Feeding System

1. Overview

Remote powering feeding system can save you a lot of money by using your copper network to power your end-point device. This allows you to have your power distribution centralized in only one cabinet and to have less maintenance fee. (See our white papers)

Usually, remote power systems are hard to monitor: you can have many remote sites and it isn't easy to know which site is working well or have an alarm problems. With compas, remote site can be easily monitored and you can put some information like address, GPS coordinates. This allows you a fast intervention and less down time. Your technicians have directly addresses and coordinates of the remote site.

Depending of your remote sites, you can have communication or dry contacts. With compas, it is possible to maps the relays to a remote site by using an ADIO system. If you have multiple dry contacts by remote site and that you want to save copper lines, it is also possible to use only one twisted pair and use analogic measurement in order to have multiples sates.

In the example on the right, you see a remote powering system that has one up system and several remote sites.

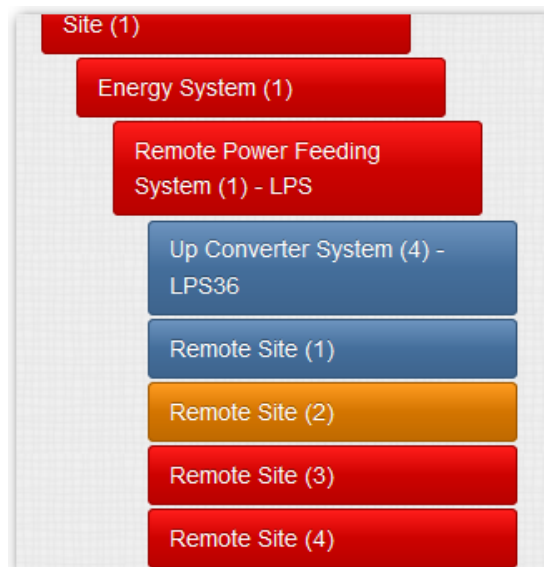


Figure 137 Remote site Compas Hierarchy

Site(1) Energy System(1) Remote Power Feeding System(1) Remote Site(1) No Group Filter

Dashboard Description Alarm Event Data Record Configuration Control All

Site

Id	Name	Value
DE2	Site Name	Street B2
DE3	Short Description	right corner
DE4	Info	box counter

Address

DE11	Street	2 Alpha street
DE12	City	Louvain La neuve
DE13	Province	Brabant
DE14	Postal Code	1348

Figure 138 Description details in remote site

In order to have a better understanding of the system and his terminology, here is a hierarchical view of a remote powering system. As you can see, the way that compas shows information are in a logical structure and correspond to the reality of the field.

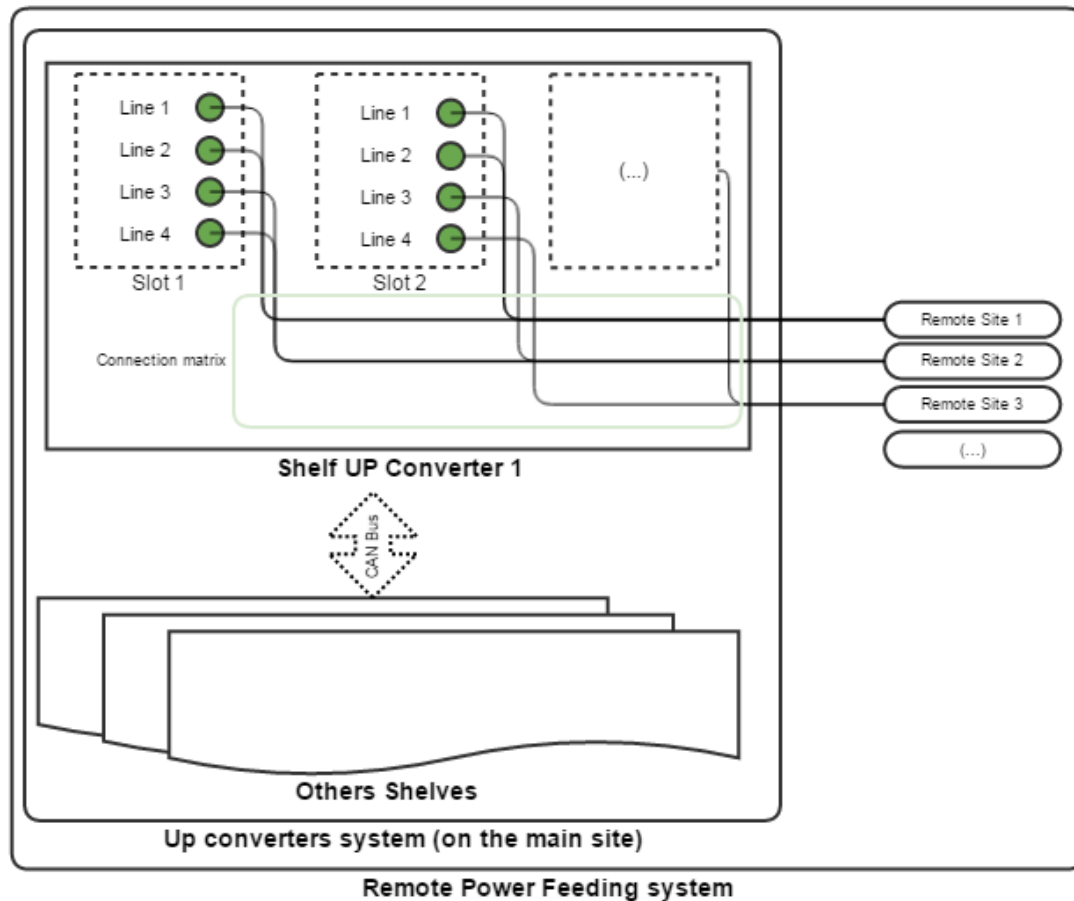


Figure 139 Remote power feeding Connections

2. Matrix configuration

In the up converter system configuration you will find the configuration matrix. you have to go inside the up-converter system then in the tab configuration. Here you will have all the available slot and lines. Just enter for each line the corresponding remote site separated by a coma. You can mix sites on a same slot.

Example for the schematics show in the overview:

Slot 1 : 1,1,2,2

Slot 2 : 1,1,2,3

Slot X : 3,3,3,3

Other example: In this case, the slot one and two have all their lines linked to the remote site 1. The slot 3 has all his lines connected to the remote site 2.

Slots			
Id	Name	Value	
Slot 1			
CF100	Slot 1	1,1,1,1	✓
Slot 2			
CF200	Slot 2	1,1,1,1	✓
Slot 3			
CF300	Slot 3	2,2,2,2	✓

Figure 140 Connection matrix example

3. CES Particularities

The controller card can be inserted in the same slot that the up converter, in this slot you just have to enter "COMPAS".



Don't forget to connect the CAN bus between devices.



If you want to have a return from your down converter, just connect the monitoring lines and you will get some reporting information.

4. LPS Particularities

You can connect up to 9 shelves giving power to your modules.

Compas can monitor the remote site using a UCC and an ADIO7. You will be able to use the digital inputs to get dry contact information about remote sites alarm. We are also developing another way to do that using only one twisted pair for several states of the down converter. For doing that we just need to put some resistors between dry contact on the remote site and compas will be able to know which dry contact is closed/open.

It is also possible to estimate the power consumed by your remote system. This allows you to monitor your sites.



LPS system is under hard development. Please be aware that information bellow may be outdated.

Chapter 10 : Software Interfaces & API

Compas has been developed to ease interfacing. We support many API and communication protocol. That permits you to work and monitor our units without changing your protocols.

Currently, we support:

- HTTP
 - [XML files](#)
 - [Get and Post HTTP request](#)
 - [JSON](#)
- [SNMP Agent](#)
- [FTP](#)
- [Modbus Slave \[Premium\]](#)

1. HTTP

1.1. XML files

1.1.1. Get any data/value

Each Compas monitoring can act as a server, holding one or more XML documents. Each existing document is within the HTTP standard referred to as a resource. Each resource is identified by a unique resource identifier known as a URI (Uniform Resource Identifier). An example of URI is "http://the_ip/site.xml". The first part of the URI is always the IP address of the site. If hostname are defined, the IP address can be replaced.

A request to such an URI will result in a response message from the server with information about the status of the request and, in applicable cases, the XML document requested.

Parameters can be passed with the URI to retrieve specific parts of the XML file. The following table describes these parameters:

Parameter name	Value	Description
description (or description_table)	true/false	Define if the description table must be included in the generated xml document (at each level of hierarchy)
alarm (or alarm_table)	true/false	Define if the alarm be included in the generated xml document (at each level of hierarchy)
event (or event_table)	true/false	Define if the event must be included in the generated xml document (at each level of hierarchy)
data (or data_table)	true/false	Define if the data must be included in the generated xml document (at each level of hierarchy)
data_record (or data_record_table)	true/false	Define if the data record must be included in the generated xml document (at each level of hierarchy)

Parameter name	Value	Description
configuration (or config_table)	true/false	Define if the configuration table must be included in the generated xml document (at each level of hierarchy)
control (or control_table)	true/false	Define if the control table must be included in the generated xml document (at each level of hierarchy)
level	0, 1, 2, etc	Define the maximum level of hierarchy. 0 will retrieve only the site level, 1 will retrieve site and energy system level, etc. If this parameter is not specified, you will receive all the level of hierarchy.
newEvents	0, 1, 2	This option can be used to know which events were not posted yet to a Management Server. If you set this parameter to 1, you will get all the events not posted to the Primary Post Server. If you set this parameter to 2, you will get all the events not posted to the Secondary Post Server. If you set this parameter to 0, you will get all the events.
notable	true/false	This is an option to receive no table at all but you can still add some table you want with the corresponding parameters set to true.

These parameters are passed in the URI. The order of the parameters is free, and none is mandatory.

For example, if we want to retrieve the data table and the alarm table up to the third level of hierarchy, the URI is:

```
http://the_site_ip/site.xml?description=false&alarm=true&event=false&data=true&data_record=false&config=false&level=3
```

If no option is set, the whole file is sent, except data record table and control table.

Some other files can also be retrieved, with the same available options:

File Name	Description
energy_system.xml	You get only the energy system XML part
dc_system.xml or dc_system1.xml	You get only the first dc system XML part
dc_system2.xml	You get only the second dc system XML part
configuration.xml	You get the actual user configuration file of the system

These XML files are compliant with the ETSI ES 202 336 standard, a summary of the relevant parts is available in [ETSI Protocol](#).

1.1.2. Set Data/value/parameter

This function can be used to configure multiple parameters in one command. It is possible to send a full XML structure (like the configuration.xml) in the post data. All the valid elements will be updated with the new value.

In order to use the set function using xml, just post it to the address

http://<The Ip Address>/ProcessXML.cgi

Type : POST

body: ETSI XML configuration

1.1.3. Event notification (XML Auto-Post)

The controller can send XML events, in compliance with ETSI standard ES-202-336, part 1. The standard is available free of charge on www.etsi.org. (<http://pda.etsi.org/pda/queryform.asp> allows to search for ES 202 336).

At the site level, in configuration, it is possible to configure what table must be sent in case of event (description, alarm, config, etc.) The following screenshot show some of the configuration elements. Up to 2 servers can be configured to allow redundancy.

Usually in monitoring, software just does pooling. In order to get information faster, Armada and Compas support post and heartbeat using XML. This is configurable directly in the site.

Parameter	Name	Usages	Signification
site -> CF41	XML Event Posting Activated	True/False	Set this parameter to activate the XML Event posting
site -> CF42	XML Event Posting Refresh Time (second)	unsigned Number	The minimal time in second between the calculation to send or not the post
site -> CF43	XML Event Posting Timeout (millisecond)	unsigned Number	The timeout in millisecond when trying to post XML data to a Web Server.
site -> CF45	XML Event Posting To Secondary Only If Primary Failure	True/False	True: The events will be sent to secondary server only if primary server is not available. False: All the events will be sent to primary and secondary server
site -> CF46	XML Tables To Post On XML Event	name of ETSI data	The list of the tables to send when an event is generated. (description,alarm,data,config,control). This allows to have armada database updated on event.
site -> CF651	XML Events Primary Post URL	String (url)	Primary server used for the post. A XML ETSI standard is used in the posted data content.
site -> CF652	XML Events Primary Post Login	string	The login of the primary server (optional)

Parameter	Name	Usages	Signification
site -> CF653	XML Events Primary Post Password	string	The password of the primary server (optional)
site -> CF661	XML Events Secondary Post URL	string (url)	This is the second URL at which the events related to this equipment must be posted. The XML ETSI standard is used in the posted data content. This allows having redundancy with the management server.
site -> CF662	XML Events Secondary Post Login	string	The login of the secondary server (optional)
site -> CF663	XML Events Secondary Post Password	string	The password of the secondary server (optional)

In order to know the state of the system we provide also a xml heartbeat configurable using theses parameters:

Parameter	Name	Usages	Signification
site -> CF51	XML Heartbeat Time (minute)	unsigned number	This is the time between 2 XML Post of heartbeat. If set to 0, there is no heartbeat.

Codes Example

The following c# code is an example to create an http listener that can receive events.

```
using System;
using System.Collections.Generic;
using System.IO; using System.Linq;
using System.Threading;
using System.Net;
using System.Xml;
namespace HelpDebugPostXml
{
    public class XmlPostListener {

        private Thread _threadServer;
        private Thread _threadDecodeXml;
        private Form1 form1;

        public XmlPostListener(Form1 form1)
        {
            this.form1 = form1;
        }

        public void StartListening()
        {
            _threadServer = new Thread(ThreadServer);
            _threadServer.Start();
        }
        public void StopListening()
        {
            if (_httpListener != null && _httpListener.IsListening)
```

```

        _httpListener.Stop();
    }
    public void Stop()
    {
        StopListning();
    }

    private System.Threading.AutoResetEvent listenForNextRequest = new
System.Threading.AutoResetEvent(false);
    private HttpListener _httpListener;

    private void ThreadServer()
    {
        try
        {
            _httpListener = new HttpListener();
            _httpListener.Prefixes.Clear();

            _httpListener.Prefixes.Add(form1.textBoxPostUrl.Text);
            _httpListener.Start();
            System.Threading.ThreadPool.QueueUserWorkItem(Listen);
        }
        catch (Exception ex)
        {
            System.Windows.Forms.MessageBox.Show("Error : " +
ex.Message);
        }
    }

    // Loop here to begin processing of new requests.
    private void Listen(object state)
    {
        while (_httpListener.IsListening)
        {
            _httpListener.BeginGetContext(new Async-
Callback(ListenerCallback), _httpListener);
            listenForNextRequest.WaitOne();
        }
    }

    private void ListenerCallback(IAsyncResult result)
    {
        HttpListener listener = result.AsyncState as HttpListener;
        HttpListenerContext context = null;

        if (listener == null)
            return;

        try
        {
            context = listener.EndGetContext(result);
        }
        catch (Exception ex)
        {
            System.Windows.Forms.MessageBox.Show("Error : " +
ex.Message);
            return;
        }
        finally
        {
            listenForNextRequest.Set();
        }

        if (context == null)

```

```

        return;

        ProcessRequest(context);
    }

    private void ProcessRequest(HttpListenerContext context)
    {
        string s = "";
        HttpListenerRequest request = null;
        HttpListenerResponse response = null;

        try
        {
            request = context.Request;
            response = context.Response;
            response.KeepAlive = false;
            response.SendChunked = false;
            Stream body = request.InputStream;
            var encoding = request.ContentEncoding;
            var reader = new StreamReader(body, encoding);

            s = reader.ReadToEnd();
            body.Close();
            reader.Close();

            if (request.RemoteEndPoint == null)
            {
                response.Abort();
                return;
            }

        }
        catch (Exception ex)
        {
            System.Windows.Forms.MessageBox.Show("Error : " +
ex.Message);
            response.Abort();
            return;
        }

        System.Windows.Forms.MethodInvoker m = delegate
        {
            form1.richTextBox1.Text += '\n' + s;
        };
        form1.richTextBox1.BeginInvoke(m);

        //We send to the compas that we have received the message
        response.StatusCode = (int) HttpStatusCode.OK;
        const string responseString = "OK";
        byte[] buffer = System.Text.Encoding.UTF8.GetBytes(responseString);
        // Get a response stream and write the response to it.
        response.ContentLength64 = buffer.Length;

        Stream output = response.OutputStream;
        output.Write(buffer, 0, buffer.Length);
        // You must close the output stream.
        output.Close();
        response.Close();
    }
}

```

Arm@da, our server application, is managing all these events, by filling in a mysql database. Please contact your reseller for more information.

1.2. Get and Post HTTP request

1.2.1. Retrieve a value (GET)

It is possible to retrieve easily element values through a simple HTTP get request. This can be considered as an equivalent of an SNMP get, but over HTTP.

Syntax

Call the *get.txt* file on your system using an http get command. Just enter the path of the data that you want to retrieve in the parameter. Don't forget to add your username and password inside the request (with basic or digest authentication).

```
http://<The Ip Address>/get.txt?path=<Path to the ETSI element>
```

Examples

Get local time:

```
http://<the ip address>/get.txt?path=/site/data_table/21
```

Get DC system 1 bus voltage:

```
http://<the ip address>/get.txt?path=/site/energy_system/dc_system/data_table/11
```

Get severity type of the alarm 1 of the dc system:

```
http://<the ip address>/get.txt?path=/site/energy_system/dc_system/alarm_table/1/severity_type
```

1.2.2. Post a unique value (SetValue.cgi)

Syntax

The arguments to pass in the HTTP POST body are:

- path : this is the path to the parameter to change
- value : this is the new value

Other argument to pass following the basic or digest protocol :

- username & password

Examples

Here follows the source code of a simple c# implementation of the post. You can easily use it with test the code with the free environment [Microsoft C# Express](#).

The function takes as parameter:

- the URL of the post
- the data string to send in the body of the post
- the login of an user allowed to change values for this equipment

- the password of this user.

Here is an example of code to manually set the local time by using functions bellows:

```
string path = "/site/1/control_table/control/12";
string value = System.DateTime.Now.ToString("s");
string postdata = "path=" + path + "&value=" + value;

PostMsg("http://<The Ip address>/SetValue.cgi", postdata, "admin", "compas");
```

```
public string PostMsg(string url, string postdata, string login, string
password)
{
    WebRequest webRequest = WebRequest.Create(url);
    webRequest.ContentType = "application/x-www-form-urlencoded";
    Encoding asciiEncoding = Encoding.ASCII;
    byte[] byteArray = new byte[asciiEncoding.GetByteCount("xxx:xxx")];
    byteArray = asciiEncoding.GetBytes(login+":"+password);
    webRequest.Headers.Add(HttpRequestHeader.Authorization, "Basic " +
Convert.ToBase64String(byteArray));
    webRequest.Method = "POST";
    byte[] bytes = Encoding.ASCII.GetBytes(postdata);
    Stream os = null;
    try
    { // send the Post
        webRequest.ContentLength = bytes.Length;    //Count bytes to send
        os = webRequest.GetRequestStream();
        os.Write(bytes, 0, bytes.Length);          //Send it
    }
    catch (WebException ex)
    {
        return "error";
    }
    finally
    {
        if (os != null)
        {
            os.Close();
        }
    }
    try
    { // get the response
        WebResponse webResponse = webRequest.GetResponse();
        if (webResponse != null)
        {
            StreamReader sr = new StreamRead-
er(webResponse.GetResponseStream());
            return sr.ReadToEnd().Trim();
        }
    }
    catch { return "error"; }
    return "error";
}
```

Code Block 3 C# code

1.3. JSON



This section will come as soon as possible.

2. SNMP Agent

2.1. SNMP Interface introduction

The SNMP server is only active on the Ethernet port.

The Simple Network Management Protocol (SNMP) exposes management data in the form of variables on the managed systems, which describe the system configuration. These variables can then be queried and sometimes set by managing applications.

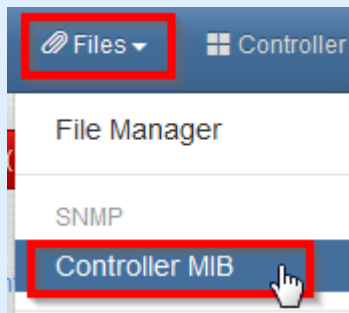
The Comp@s monitoring provides a SNMP v1, v2c and V3 interface.



Have you already the MIB?

If you don't have Alpha mib (Management Information Base), you will need to download it from compas web-server. So you may follow the connecting tutorial to connect to compas.

The mib is downloadable at the address "[http:// **the ip address** /Compas.mib](http://**the_ip_address**/Compas.mib)" or from the user interface (Files -> Controller MIB -> Right click & save target as)



This MIB is generated dynamically according to the number and the type of the sub-equipment's present at the time of the generation:

- dc systems
- extension module
- etc.

The default port running the SNMP agent is 161. This can be configured if requested.

When an event happens, a SNMP trap can be sent. Multiple target IP can be configured. These multiple IP must be configured for each sub-equipment to increase the flexibility of the system.

If you want free software to test SNMP, you can download iReasoning MIB Browser from URL: <http://www.ireasoning.com/mibbrowser.shtml>.

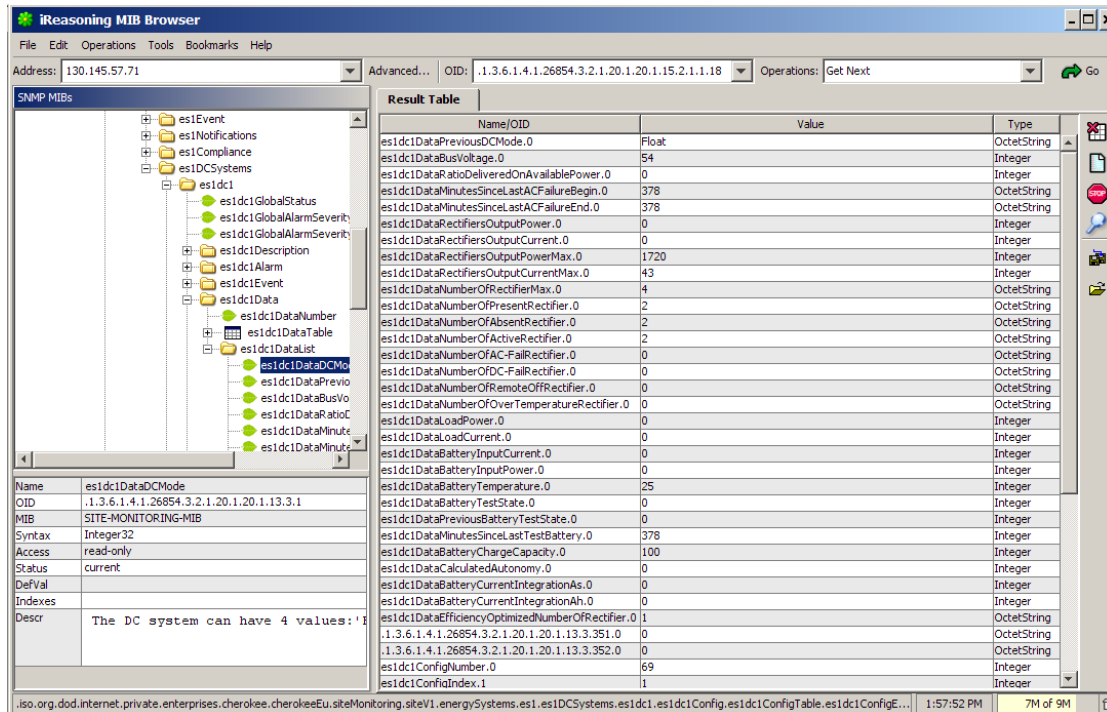


Figure 141 Ireasoning MIB Browser

The SNMP agent supports the SNMP v1, v2c and V3 command:

- GET, GETNEXT, GETBULK
- SET
- WALK

The SNMP configuration is available at the site -> configuration level, as shown on the following screenshot:

Site(1) Filter: SNMP

Dashboard Description Alarm Event Data Record Configuration Control All

SNMP

CF61	SNMP Activated	True	✓
CF63	SNMP Trap Version	V2c	✓
CF64	SNMP GET Minimum Security Level	V1 Community	✓
CF65	SNMP SET Minimum Security Level	V1 Community	✓
CF66	SNMP V3 Auth Algorithm	MD5	✓
CF67	SNMP V3 Privacy Algorithm	DES	✓
CF68	SNMP V3 Privacy Password		✓
CF69	SNMP V3 Engine ID	compas	✓
CF72	SNMP V3 Trap Auth Algorithm	MD5	✓
CF73	SNMP V3 Trap Privacy Algorithm	DES	✓
CF74	SNMP V3 Trap Username	compas	✓
CF75	SNMP V3 Trap Auth Password		✓
CF76	SNMP V3 Trap Privacy Password		✓
CF77	Site Description Ids Included In Traps		✓
CF611	SNMP Trap Targets IP		✓
CF612	Minimal Event Severity For Traps	none	✓

Figure 142 SNMP Configuration Level

SNMP v2c uses the mechanism of the SNMP communities (Read and Write). An SNMP community is the group that devices and management stations running SNMP belong to. It helps define where information is sent. The community name is used to identify the group. It will not respond to requests from management stations that do not belong to one of its communities. The login and password are the same as for the web server interface. BUT, as the community is only a string, the syntax is:

Default password :
LOGIN:PASSWORD

SNMP V3 uses login and passwords. The same accounts are used as in the web interface.

You can define a minimum security level (an SNMP version) for SET and GET operations:

- No Authentication
- V1 Community
- V2c Community
- V3

If you are using SNMP V3, you can set an Auth Algorithm:

- MD5 : Message Digest Algorithm 5 – HMAC-MD5-96
- SHA : Secure Hash Algorithm – HMAC-SHA-96
- Any: Both MD5 and SHA will be tried.

You can also use privacy password with a privacy Algorithm:

- DES: Data Encryption Standard
- AES: Advanced Encryption Standard with key length of 128
- 3DES: Triple Data Encryption Standard.

2.2. Using and Configuring SNMP traps

2.2.1. Configuration

1. Connect the Comp@s web server
2. Browse to Site -> Configuration
3. Check that SNMP Activated is "True".
4. Configure the "SNMP" targets IP", further in the page. This parameter can be filled with multiple IP address separated by coma. Example: "130.145.23.1, 130.23.12.45".
5. Check that "Minimal Event Severity For Traps" is set to "none". This is the minimal severity of the event to send a SNMP trap. You can set this parameter to "warning", "minor", "major" or "critical".

Your system is now configured; each event will be sent by trap.

2.2.2. Testing your configuration

Set-up the receiver

In order to receive traps, you need SNMP software able to receive traps. For testing purposes, you can download the free Ireasoning MIB Browser which can do the job. The install file is available at: <http://www.ireasoning.com/mibbrowser.shtml>.

Once you have installed the MIB browser and loaded the MIB. You can use the "Trap Receiver".



Verify that the trap receiver is listening on the port 162

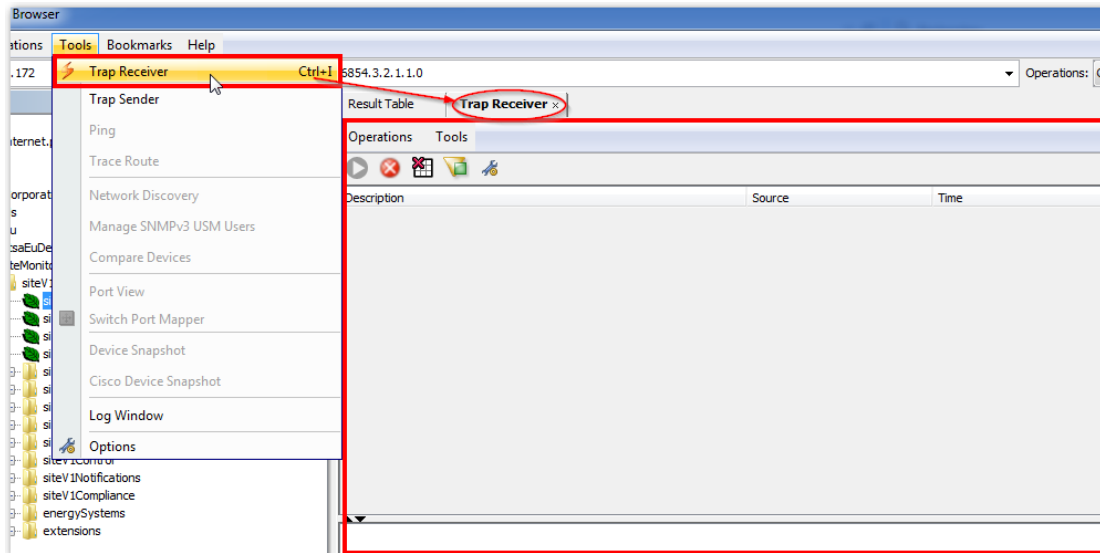


Figure 143 Trap Receiver set-up

Generate an event

1. Connect the Comp@s web server
2. Browse to Site -> Control or to DC System -> Control
3. At the bottom of the page, you can enter a text in the field called "Add Event".
4. Click on the corresponding "Execute" button.
5. An event has been added and was sent through traps.

Check result in the receiver

The event can now be read inside the trap receiver:

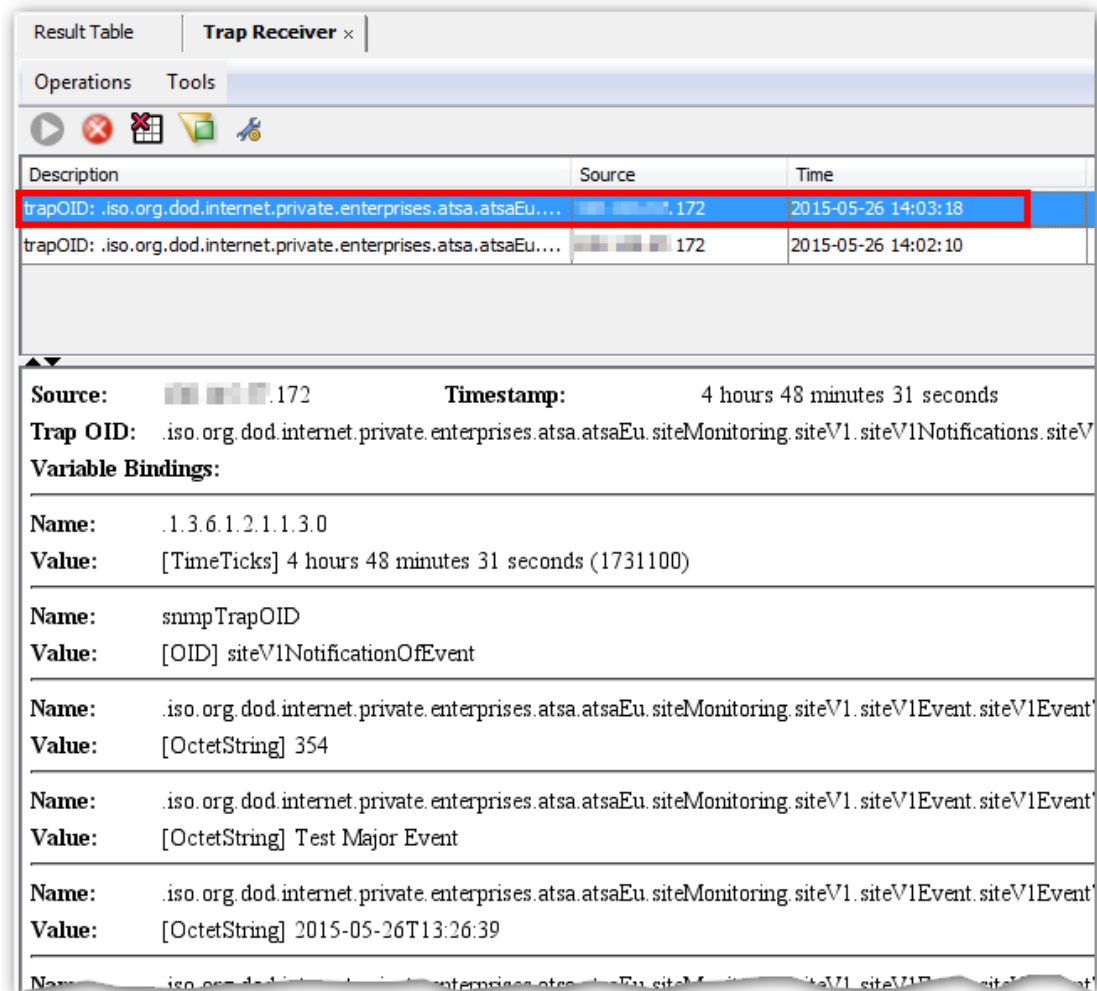


Figure 144 Trap received

3. Modbus Slave [Premium]

With the Premium license (or modbus on 2.X systems), most of the systems can monitored with the Modbus over TCP/IP protocol. Please not that this protocol do not allow to access all the Comp@s feature because of the limitation of the protocol itself.

The following device/equipment mapping has been defined :

1	DcSystem 1
2	DcSystem 2
3	DcSystem 3
4	DcSystem 4
11	Inverter System 1
12	Inverter System 2
13	Inverter System 3
14	Inverter System 4
100	Site
101	Sensors And Actuators 1

102	Sensors And Actuators 2
103	Sensors And Actuators 3
104	Sensors And Actuators 4
105	Sensors And Actuators 5
106	Sensors And Actuators 6
107	Sensors And Actuators 7
108	Sensors And Actuators 8
109	Sensors And Actuators 9
110	Sensors And Actuators 10

When an equipment do not exists, it will respond with function code 4.

- Each **discrete input** is associated with the **alarm** of the equipment, with the same id. Reading 1 means that the alarm is active.
- Each **input registers** corresponds to the **data** of the equipment. All these values are coded as signed 16 bit. A correction factor is often applied. All the values are not available (like strings. Some status are coded as uint)
- Each **discrete coil** corresponds to the entries for controlling the equipment. It support only simple control, without any parameters.

Here follows the exchange table of a DC SYSTEM between the supervisor and the Comp@s monitoring. The Modbus transport layer is Ethernet over TCP/IP. The default used port is 502:

- [Discrete Inputs \(Read Only\)](#)
- [Input Registers \(Read Only\)](#)
- [Discrete Coils Table \(Command\)](#).

If you want to use Modbus to monitor other type of system, please contact us, we will study the business case and make a proposal.

3.1. Discrete Inputs (Read Only)

Each discrete input is associated with an alarm related to the DC System level. This table corresponds to the alarm table in [DC System Tables](#).

Index	Name	Help
1	DC Bus Extra Low	The bus voltage is extra low
2	DC Bus Low	The bus voltage is low
3	DC Bus High	The bus voltage is high
4	DC Bus Extra High	The bus voltage is extra high
5	DC Bus Voltage Sense Failure	The DC bus voltage sense is defect or unconnected
6	Mains Failure	All the phases are down
7	Mains Partial Failure	Some rectifiers are in AC Failure
8	Mains Low	The main voltage is low on one or more phases

Index	Name	Help
9	Mains High	The main voltage is high on one or more phases
10	One Rectifier Failure	One rectifier must be replaced
11	More Than One Rectifier Failure	More than one rectifier must be replaced
12	Missing Rectifiers	There is not enough rectifier according to the minimal number of rectifier configuration element
13	Battery Last Test Failed	The last battery test did not succeed. Maybe the battery should be replaced.
14	Battery On Discharge	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure.
17	Battery LVD Relay Open	The battery Low Voltage Disconnect is open.
18	Battery Temperature Too High	The temperature of the battery is too high.
19	Battery Temperature Too Low	The temperature of the battery is too low.
20	Battery Temperature Sensor Fail	The battery temperature sense (NTC) is not connected or is defect.
21	Ambient Temperature Too High	The ambient temperature is too high.
22	Ambient Temperature Too Low	The ambient temperature is too low.
23	Ambient Temperature Sensor Fail	The ambient temperature sense (NTC) is not connected or is defect
25	Digital Input 1	This alarm is related to digital input 1
26	Digital Input 2	This alarm is related to digital input 2
27	Digital Input 3	This alarm is related to digital input 3
28	Digital Input 4	This alarm is related to digital input 4
29	Digital Input 5	This alarm is related to digital input 5
30	Digital Input 6	This alarm is related to digital input 6
31	Digital Input 7	This alarm is related to digital input 7
32	Digital Input 8	This alarm is related to digital input 8

If custom alarms are defined with the PLC, they are available starting from index 101.

3.2. Input Registers (Read Only)

These input registers correspond to the main data related to the DC System level. All these values are coded as signed 16 bits:

Index	Name:	Group	Unit	Help
1	DC Mode	General		The DC system can be in 6 possible

Index	Name:	Group	Unit	Help
				states: • Float : 0 • Equalize : 1 • Battery Test : 2 • AC Failure : 3 • (Slave : 4) • Safe : 5
2	Previous DC Mode	General		The DC system was previously in one of the 6 possible states: • Float : 0 • Equalize : 1 • Battery Test : 2 • AC Failure : 3 • (Slave : 4) • Safe : 5
5	Day	OS		Can be used to read the date
6	Month	OS		Can be used to read the date
7	Year	OS		Can be used to read the date
8	Hour	OS		Can be used to read the time.
9	Minute	OS		Can be used to read the time.
10	Second	OS		Can be used to read the time.
11	Bus Voltage	General	0.1 Volt	The DC bus voltage in volt.
12	Ratio Delivered On Available Power	General	0.01 %	This is the ratio of the delivered power divided by the installed power, in %.
13	Hours Since Last AC Failure Begin	General	hour	The number of hours since the last AC Failure begin
14	Hours Since Last AC Failure End	General	hour	The number of hours since the last AC Failure end
21	Rectifiers Output Power	Rectifiers	100 Watt	The sum of the delivered rectifier power
22	Rectifiers Output Current	Rectifiers	0.1 Am-pere	The sum of the delivered rectifier current
23	Rectifiers Output Power Max	Rectifiers	100 Watt	The sum of the deliverable rectifier power
24	Rectifiers Output Current Max	Rectifiers	0.1 Am-pere	The sum of the deliverable rectifier current
26	DC Rectifiers Output Power	Rectifiers	100 Watt	The sum of the delivered dc-powered rectifier power
27	DC Rectifiers Output Current	Rectifiers	0.1 Am-pere	The sum of the delivered dc-powered rectifier current

Index	Name:	Group	Unit	Help
28	DC Rectifiers Output Power Max	Rectifiers	100 Watt	The sum of the deliverable dc-powered rectifier power
29	DC Rectifiers Output Current Max	Rectifiers	0.1 Am-pere	The sum of the deliverable dc-powered rectifier current
31	Number Of Rectifier Max	Rectifiers		The maximum possible number of rectifier in this dc system
32	Number Of Present Rectifier	Rectifiers		The actual number of present rectifier in this dc system
33	Number Of Absent Rectifier	Rectifiers		The actual number of absent rectifier in this dc system
34	Number Of Active Rectifier	Rectifiers		The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.
35	Number Of AC-Fail Rectifier	Rectifiers		The actual number or rectifier in AC Failure.
36	Number Of DC-Fail Rectifier	Rectifiers		The actual number or rectifier with DC Failure.
37	Number Of Remote Off Rectifier	Rectifiers		The actual number or rectifier in remote off.
38	Number Of Over Temperature Rectifier	Rectifiers		The actual number or rectifier in OVER Temperature.
41	AC Phase 1 Voltage	AC	0.1 Volt	The voltage on AC phase 1
42	AC Phase 2 Voltage	AC	0.1 Volt	The voltage on AC phase 2
43	AC Phase 3 Voltage	AC	0.1 Volt	The voltage on AC phase 3
51	Load Power	Load	100 Watt	Estimation of the load power consumption
52	Load Current	Load	0.1 Am-pere	Estimation of the load current consumption
61	Battery Input Current	Battery	0.1 Am-pere	Measurement of the battery input current. A negative value means that the battery is discharging
62	Battery Input Power	Battery	100 Watt	Measurement of the battery input power. A negative value means that the battery is discharging
71	Battery Temperature	Battery	0.1 °C	The battery temperature
72	Battery Test State	Battery		This is about the result of the last battery

Index	Name:	Group	Unit	Help
				test. 9 values are possible : • Never Tested : 0 • Success : 1 • On Going : 2 • Failed : Timeout : 3 • Failed : Vbus Too Low : 4 • Failed : Load Too Low : 5 • Failed : Ac Failure : 6 • Failed: Canceled : 7 • Failed : Lvd Opened : 8 • Failed: No Battery : 9
73	Battery Test Dis-charged Capacity	Battery	0.01%	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.
74	Battery Test Dis-charged Capacity Ah	Battery	Ah	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.
75	Battery Test Final Voltage	Battery	0.1 Volt	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.
81	Previous Battery Test State			This is about the previous result of the last battery test. 9 values are possible : • Never Tested : 0 • Success : 1 • On Going : 2 • Failed : Timeout : 3 • Failed : Vbus Too Low : 4 • Failed : Load Too Low : 5 • Failed : Ac Failure : 6 • Failed: Canceled : 7 • Failed : Lvd Opened : 8 • Failed : No Battery : 9

3.3. Discrete Coils Table (Command)

These outputs Boolean register correspond to the entries for controlling the DC System. All these commands are also executable with the CDM (Comp@s Display Module).

In order to start the command, a "1" must be written to this entry. The value is directly reset to 0 on the command start.

ID	Name	Group	Help
1	Back To Float	DC Mode	The dc system must go back in floating mode.
2	Start Battery Test	DC Mode	The dc system must start a battery test.
3	Force Battery Test	DC Mode	The dc system must force a battery test.
4	Start Boost Mode	DC Mode	The dc system must go in boost mode.
11	Open The LVD	LVD	The LVD must be opened
12	Close The LVD	LVD	The LVD must be closed
31	Reset Battery Current Integration	Battery	Reset the integration of the battery current.
41	Reset Last Battery Test State	Battery	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.

4. FTP

See [FTP Server](#) in [Functionalities](#) -> [Remote connections](#).

Chapter 11 : Emulation Capabilities

1. What is the Comp@s emulator?

This is a PC software which allows the simulation of the Comp@s monitoring, with some DC Systems and extension cards.

By default, the emulator simulates the presence of 1 Captin FA with 4x850W rectifiers. Also an AC failure alarm that appears and disappears, generating events and modifications of element status. An extension card with some sensors and access control is also simulated (SAM0948).

With the emulator, you can develop and test the integration of our monitoring platform inside your network management application.

2. Requirements

- Any personal computer running Windows XP, Windows 7 or later.
- You need the Microsoft .NET Framework 2.0 installed on your computer. This is freely available through Microsoft website or Windows Update.

3. How to use the emulator

The emulator comes on an executable form. we provide you the "*CompasEmulatorPC.exe*", it is possible that the windows firewall ask to open port 80 and/or 161. This is necessary in order to run the web server and the SNMP agent. You can stop at each time the emulator by exiting the window that has been created.

- Start the application by clicking on the executable (*CompasEmulatorPC.exe*)
- Select the system that correspond to the system that you want to emulate
- Testing the Web Server :
 - a. Start you favourite web browser (Firefox > 30, Internet Explorer > 8, chrome)
 - b. Browse to <http://127.0.0.1:8080/> or <http://localhost:8080/>
 - c. You are asked for a login/password which is admin/compas by default
 - d. Please refer to this user-guide to use the Web Interface ([Quick Start Guide](#))
- Testing SNMP :
 - a. You need a SNMP MIB browser (see [SNMP Interface introduction](#))
 - b. The MIB can be downloaded through the web interface
 - c. You can test the SNMP agent at the ip 127.0.0.1 (port 162)
 - d. Read Community is admin:compas by default
 - e. Write Community is admin:compas by default
 - f. Please refer to [SNMP Agent](#) for more information.
- Now you can try a little more with Compas Emulator

Note : Some functionalities are not available in emulator mode.

4. Multiple compas emulation

You can select the port on which the emulator has to work, just add it as a parameter to the executable. This functionality is really useful when you want to simulate multiple sites or a network of compas card.

Command explanation :

CompasEmulator.exe WebPort SNMPPort SystemID

- *WebPort*: Port for the web interface (8080 by default)
- *SNMPPort*: Port that run SNMP (161 by default)
- *SystemID*: Emulation system number (1 by default)

5. Where to get it?

Please contact your vendor or reseller.

6. Remarks

- This emulator is just an introduction to the different interfaces, it has not been mode to replace a real system but just to give you an introduction over all functionalities.
- This emulator is not deeply tested as the real embedded monitoring, bugs may be present, please tell us.
- By default, the emulator opens the port 8080 for the web server. If you are already running a web server on your computer, you will need to start the emulator on another port.
- The FTP Server is not present in the emulated system.
- Files will be generated into the folder "c:/COMPAS_FLASH"
- Application needs Admin Rights (on required port and files)

Chapter 12 : Support

At Alpha Technologies, we really want to give the best user experience to our client. Our support team is ready to help you.

In most cases (75%), answers are directly inside our application or user-guides. Please respect this procedure:

- Check inside the application for the [Support and Help](#)
- Check users-guides & [Frequently Asked Questions](#)
- Email-us : "support.compas@alphatechnologies.be"

Do not hesitate to send us any **feedback or suggestions**.

1. Frequently Asked Questions

1.1. Connection Troubles

1.1.1. *Usb Connection*

Q : I can browse Comp@s flash disk but I cannot open the Comp@s webpage in my web browser.

This kind of troubles usually occurs when software on your computer is listening on port 80. To solve, check if your port 80 is listening and then shutdown the application listening on it or kill it. This trouble appears with IIS, Skype, ...

To do that:

1. Open cmd prompt and type the following command
2. Focus on line: TCP 0.0.0.0:80 0.0.0.0 LISTENING 4. You see on the first line something is listening on port 80 and it's the pid number 4 which is listening.
3. Open task manager and check if you can locate pid number. If you cannot see pid column, click "View -> Select columns" and check checkbox "PID Process identifier". Select the pid process and click on "End Process" button:
4. If you cannot find your pid, open cmd prompt and type "c:\windows\system32\telnet 127.0.0.1 80". Telnet connect to the port. A black screen occurs and type "Echo". If the telnet command is not recognized, type "pkgmgr /iu:TelnetClient ", and retry.
5. In my example case, I type echo in the black screen and I have the following message. I see it's Microsoft HTTP Server, so I shutdown IIS
6. And finally, I retype "netstat -ano | findstr 0.0:80" and I see nothing is listening on port 80. So I can now connect to Comp@s WebPage.

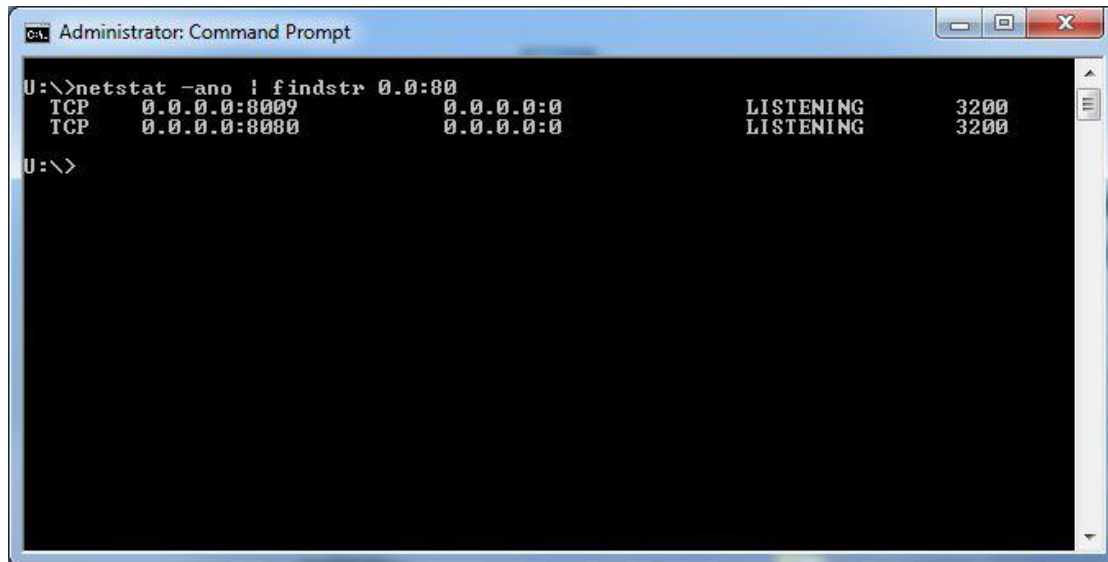


Figure 145 Administrator command prompt

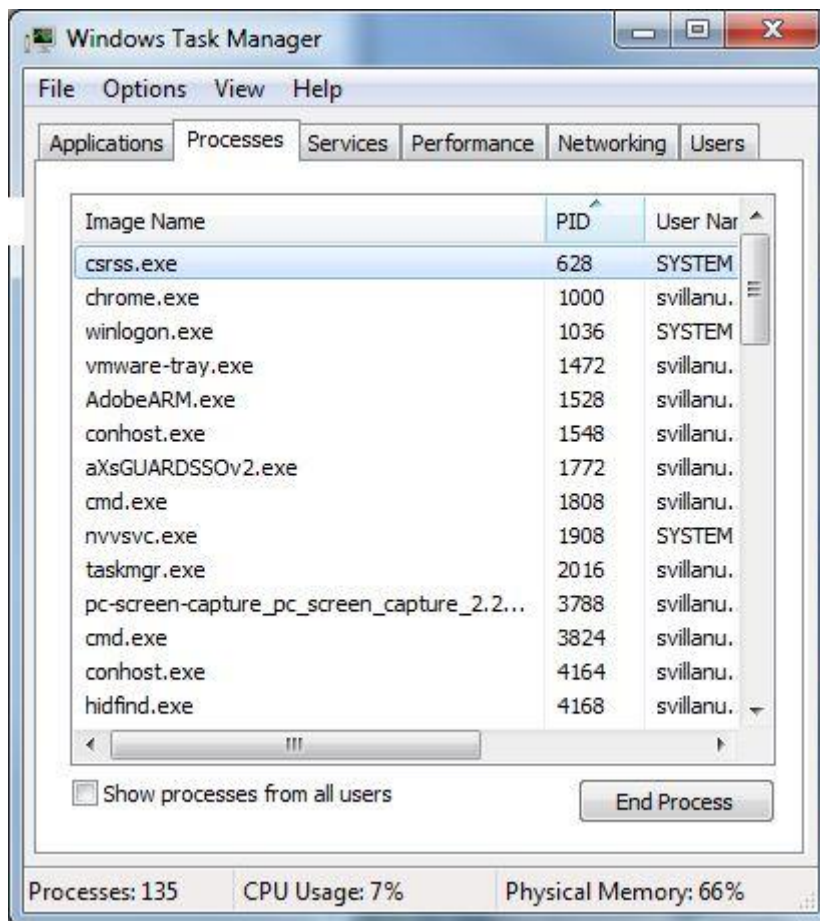


Figure 146 Windows Task Manager

```

Administrator: Command Prompt

HTTP/1.1 400 Bad Request
Content-Type: text/html; charset=us-ascii
Server: Microsoft-HTTPAPI/2.0
Date: Thu, 18 Aug 2011 12:10:38 GMT
Connection: close
Content-Length: 326

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/strict.dtd">
<HTML><HEAD><TITLE>Bad Request</TITLE>
<META HTTP-EQUIV="Content-Type" Content="text/html; charset=us-ascii"></HEAD>
<BODY><h2>Bad Request - Invalid Verb</h2>
<hr><p>HTTP Error 400. The request verb is invalid.</p>
</BODY></HTML>

Connection to host lost.
U:\>

```

Figure 147 ISS Shutdown

Q : After plug in, the usb cable in my computer, I see the device is not recognized and the driver could not successfully installed.

Check your cable connection by disconnecting it the reconnect it. You have also to take care of using multiple mobile devices at the same time. For example, it's not possible to connect to compas if you have connected your mobile phone to the computer using bluetooth and so on.

Q: On my web browser, I see access denied to 127.0.0.1 .

If you are connected to LAN, and the network uses proxy or firewall, it is possible the connection to 127.0.0.1 is blocked.

Try to unplug your Ethernet cable or switch off your wifi connection, and try again. It's possible to add a special rule in browser connection settings to bypass proxy/firewall when connection to 127.0.0.1 occurs.

For this example, if you use IE, go to options -> Connections -> Lan Settings and check "Bypass proxy server for local address":

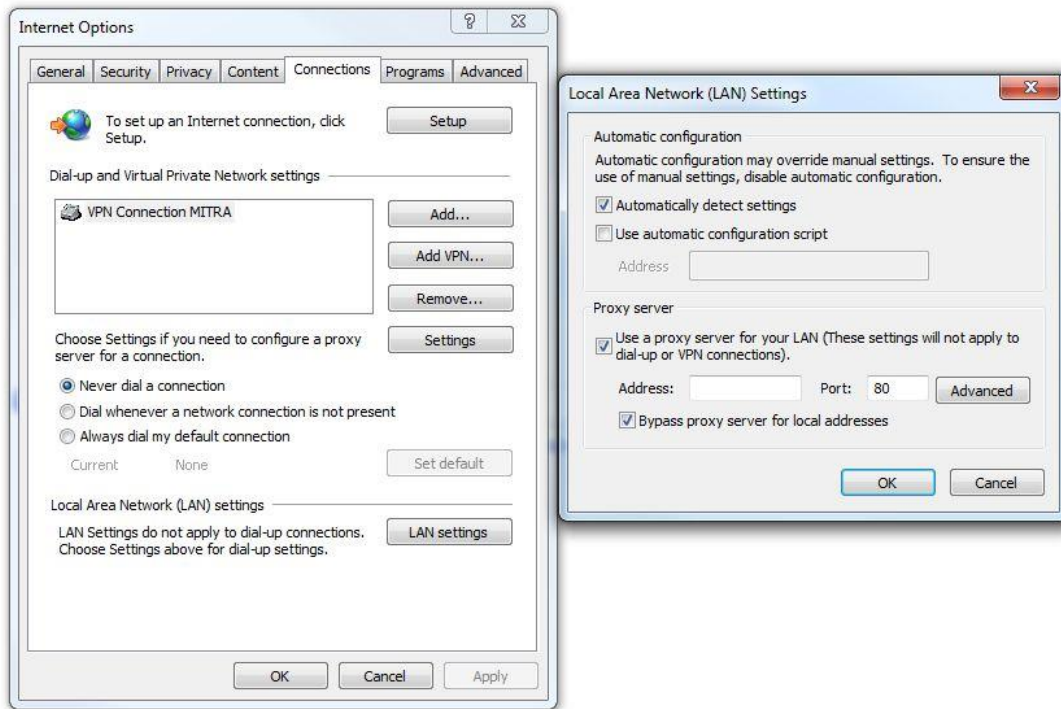


Figure 148 Bypass Proxy Server for Local Address

1.1.2. Ethernet connection

Q: After a Compas update & reboot, Compas does not start anymore but I still use the FTP server

It is probably an upload error. If you have updated using FTP, please check that you have sent the file using the **binary** mode.

1. Check if you can connect to the FTP server
2. Try to delete the Compas.exe in user folder
3. After maximum 10 minutes, compas must have restarted using the factory version.

Q: Compas does not want to take a ip address

Symptoms

- Current Ip address (da1) is 0.0.0.0
- Current Mac Address is 00-00-00-00-00

Resolution

- Connect with the usb cable
- Change ip addresses configuration in order to be sure that there is no space before and after the ip. Manually type it.
- On site control use an hidden function

- CT103 (Flash binary in /site/1)
 - Put "CLEAR REGISTRY" without quote
 - execute the command
- Reboot the system

1.2. Devices troubles

1.2.1. Q: My rectifiers are not well recognized (blinking or no smart energy or no description)

Symptoms

- Smart Energy not working
- DC system -> Data 124 (Rectifier Model Used For Calculation)
 - Disabled
 - Rectifier not recognized
 - site -> CF92 use rectifier id
- Rectifier blinking

Resolution

- Site -> Configuration -> edit parameter **CF92**
 - Change it to 50-80
 - Controller -> Save configuration and restart

1.2.2. Q: The remaining time on battery is not showed on my system

Please, upgrade your device, this bug is corrected since v2.16.0.3 of compas.

Chapter 13 : Appendix

1. Software Changelog

- [.NET Executable Versioning](#)
- [Comp@s Changelog](#).

1.1. .NET Executable Versioning

The software versioning is the process of assigning unique version numbers to unique states of computer software. Each assembly has a version number as part of its identity.

Since March 2012, the standardized format used is:

<major version>.<minor version>.<build number>.<revision>

All the fields are integers.

- The major version changes when a release is made that breaks backwards compatibility.
- The minor version will be used in other cases when we release versions.
- The build number increments as we do code reviews and check in working code to the repository . (this number is not displayed to the customer to avoid confusion - it is shown as 0.
- The revision is used for internal build, it designate alpha or beta status for releases that are not stable enough for general or practical deployment and are intended for testing/internal use only:
 - <revision> - 0 : for alpha (non-stable)
 - <revision> - 1: for beta (internal)
 - <revision> - 2 : for release candidate (QA-passed, final tests)
 - <revision> - 3 : for public (release)
 - <revision> - 4 and following : for releasing specific modifications on a released version (for specific customers - should be avoided as much as possible)

Before that version, the used format was:

0.Y.0.X where:

- X is the minor revision number and is:
 - odd for beta version
 - even for stable version
- Y is the major revision number.

1.2. Comp@s Changelog

Note: Only revisions with a code SOFT were released in production. The other versions were distributed to customers for upgrade when necessary.

Legend:

- + Added feature
- * Improved/changed feature
- - Bug fixed
- ! Known issue / missing feature

Revision 2.30.0.3 (17/05/2016) - SOFT_000031_66,SOFT_000146_07

+ ADIO8 - New Alpha product supporting Impulse relays, Digital input, Voltage input, 4-20mA measurement, Relay, Temperature.

+ Lua: Automatic upload of a script, with a drag and drop of the file directly on the scripting zone.

+ Lua: SNMP Set is now available.

+ Lua: compas.http_request is now available and can be used inside lua script to make an http request.

+ Lua: New function allowing the deletion of an equipment.

+ Custom Website: It is now possible to add/update a file using drag and drop.

* Lua: Display script list inside the file manager.

* Lua: Edit of script is done in another window. This allows easier development with multiple scripts.

* Lua: The function running callbacks inside the script returns now the number of executed callbacks.

* Lua: New debug file for Lua scripts (included in diagnostics.zip).

* Lua: Timeout support for snmp request (GET/SET).

* Custom Website: Edition is now done in another window.

* For a specific customer, renaming some fields.

* ECOR1048TN: SmartEnergy supports a new mode allowing remote off the rectifiers without cutting down the power. This allows the use of SmartEnergy without batteries.

* ECOR1048TN: Efficiency curves have been updated in order to have a good calculation of SmartEnergy.

* License: On SAM extension, a meter can be added directly after a license update/reload (without reboot).

* ADIO10: Refresh speed of digital inputs has been increased.

* PLC equation now supports the usage of short data and alarm designators. These two syntax are now supported : @(data1) @(da1).

- HTTPS (beta): Correcting a regression preventing https to start if it has never been started before. The bug was introduced on version 2.26.0.3.

Revision 2.29.0.3 (14/04/2016) - SOFT_000031_65,SOFT_000146_06

* In some rare circumstance, a request could use ipv6 and not ipv4 as expected.

* Upgrading VisualDashboard library (an animated arrow is now available).

* Automatic recovery in case of some subprocess errors. This corrects an error with the event poster.

Revision 2.29.0.3 (14/04/2016) - SOFT_000031_65,SOFT_000146_06

- * XML Posting: The system now consider a successful post as a successful heartbeat.
- * A minimum of 10Mb is now required before starting a web remote upgrade.
- * Email Link for support requests.
- * Diagnostics.zip contains more information.
- + Beta release of Lua Scripting API V1.0
- Remote Alarm Possible power feed reduced is corrected.
- Correcting a small issue with encoding inside the emulator.

Revision 2.28.0.3 (8/03/2016) - SOFT_000031_64,SOFT_000146_05

- * Refresh speed of ADIO7 digital inputs has been improved.
- * Reset the uptime if the value is negative. (could happen with SNTP time refresh)
- * DC system: It is now possible to set battery string capacity with one decimal.
- * CompasLua: Showing more of the stack inside the debug output.
- + Adding the possibility to use a GemproxP5 Badge reader on the RS485 BUS (UCC only)
- + CompasLua: Automatic restart of a Lua script if it takes too much processing time.
- For a specific customer, it was impossible to set the severity type on ADIO7 using configuration file
- * For a specific customer, define alarm set and clear delay to 0 by default
- * For a specific customer, display additionnal information in charts (subgroup)
- * For a specific customer, removal of some charts when related data is not enabled
- * For a specific customer, replace 65535 value by -1 for nicer charts

Revision 2.27.0.5 (1/02/2016) - SOFT_000031_63,SOFT_000146_04

- Lua Correction of time function and edition or data
- Specific customer license detection added

Revision 2.27.0.3 (28/01/2016) - SOFT_000031_62,SOFT_000146_03

- * Adding a cancel bootloader link on inventory page (visible only if the bootloader is active).
- * Unlock CompasLua API with ultimate License.
- * Speed control of messages on the can CAN have been improved.
- * Add a better check on the SNTP refresh time parameters.
- * Refuse to set radius server if license is not premium. (command_cancel message is given)
- * Configuration exchange processes have been reviewed and is now much more efficient.
- Specific customer flag "Internal OK" is set only if all the system was tested
- In some circumstances, upgrade all firmware button were only upgrading the first

Revision 2.27.0.3 (28/01/2016) - SOFT_000031_62,SOFT_000146_03

device.

Revision 2.26.0.3 (6/01/2016) - SOFT_000031_61,SOFT_000146_02

- + Support a new bootloader for our next generation of high performance rectifier.
- * Many improvements in the WebServer.
- * Use 2048 bits by default for HTTPS system.
- * Automatic correction and update for some parameters. When a correction is done, an event is added inside the related equipment and AL15 is triggered at site level.
- * API - ProcessXml.cgi : record_conf is now available inside the API
- * Many UI improvements.
- * Adding a wizard in order to calculate the Peukert Number.
- * Adding the duration of the battery test inside data (DC System -> DA76).
- * Prevent a bad DC system configuration: It is now impossible to configure the battery test end voltage below the low voltage disconnect (LVD).
- * More information are available about software system (Site-> Descripton).
- * Add help text inside the renaming page.
- * Adding a page allowing easy configuration of FTP server V2.
- * Diagnostic file contains more informations.
- * Adding automatic reset of communication when another equipment than Compas send NMT Request
- * Details of previous battery test is now available (DC System -> Data).
- Correcting a view compatibility with Armada.
- Correcting DC System -> DA82: Minutes since last battery test: showing correctly the total number of minutes (before, it worked only the first hour).
- Correcting DC System -> DA73: Battery test discharged capacity ratio was always 0.
- In some circumstances, DC System -> AL13: Battery Last Test Failed was triggered when the test was success.
- When Peukert is not set (equals to 1), we have to consider the time-out as a battery test fail.
- In some circumstances, a firmware file could not be uploaded through the web interface
- In some circumstances, a license file could not be uploaded through the web interface
- Minor corrections for compatibility with the new generation of processor
- Correction of a small memory leak inside visual dashboard.
- API - ProcessXml.cgi : Data elements were not correctly saved.
- Specific customer flag "Internal OK" has been corrected
- DC system and Inverter system will no longer include severity of child.

Revision 2.25.0.3 (3/09/2015) - SOFT_000031_60,SOFT_000146_01

Revision 2.25.0.3 (3/09/2015) - SOFT_000031_60,SOFT_000146_01

- Fix a rare bug that can generate bad messages on the can bus with SAM.
- On rare condition event log where not well reduced.
- * Better validation of armada Post url.
- + SNTP server is now supporting several server using a coma.
- + Initial support of our new generation of processor.

Revision 2.23.0.3 (18/08/2015) - SOFT_000031_58,SOFT_000VYB_01

- * Renaming page : List of all renamed elements.
- * Support fallback server in radius authentication
- Custom Json Get/post fixed
- Remote site addresses bug is now corrected
- Sync with my computer was not working as expected in some rare cases
- Add "disabled" in mib alarm severity
- Wizards are not always working as expected when site id was not 1
- * Implement alarm severity type and level change via SNMP

Revision 2.22.0.3 (23/06/2015) - SOFT 000031 57

- * Improvement of the SVG API
- Fix javascript bug introduced in version 2.21.0.4
- * Improvement of emulation capabilities
- * Wizard Sync With My Computer
- * Responsive design improvement
- * Better firmware files check before a firmware update
- * Better language multi-language support

Revision 2.21.0.4 (5/06/2015) - SOFT 000031 56

- Battery test : Alarm is no more active during the test (with more than one battery string)

Revision 2.21.0.3 (2/06/2015) - SOFT 000031 55

- * Identity of user is now registered when there is an alarm acknowledgement
- * Add a link to the default page on logout
- * Memory size estimation improved into the record configuration wizard
- * Defining a start-up language is now possible by changing the default page
- + Beta support of remote system with LPS36
- + Beta support of linking ADIO7 in Remote Power Feeding System
- * Improvement of the SVG and JSON API - to be documented soon
- Fixed voltage alarms on specific systems with CAR rectifier and no MCU

Revision 2.20.0.3 (29/04/2015)

- + Support of Https XML Posting

Revision 2.19.0.3 (23/04/2015) - SOFT 000031 54

- * Memory Usage Optimization
- * Track names improved
- * New production Release using BSP 4.2

Revision 2.18.0.3 (1/04/2015) - SOFT 000031 53

- * Memory Usage Optimization
- * Default value of CF92 LSS id : 50-80
- * Visual validation of changes : Orange if modified, green if saved, red if not saved.
- * Site -> AL2 (CAN Bus Addressing Error) now trigger the alarm AL11 (Controller Re-boot Required)
- * DC System -> AL20 (Battery Temperature Sensor Fail) now also triggered if the battery probe is shorted
- + Possibilities to change the green/red led behavior on UCC
- + Support of ECOR1048TN
- + Support of new rectifier using SOFT 000133 XX
- IE11: Upgrade of compas is fixed
- IE11: Alarm ack spinner blocked if double click is fixed.
- IE11: Inventory update is fixed
- IE11: file upload box now with right size
- XML post event enable parameter (site-> CF41) is now working as expected
- In some case, a rectifier in remote off can trigger AL10 (One Rectifier Failure)
- * Update OS now visible in file system
- * Download a file to user-upload folder directly in file manager
- * States (of data) can be saved automatically to be kept after reboot (used for Battery test end voltage and Discharged Ratios)
- * DC System -> DA82 (Minutes since last test battery) is reset when a battery test is ended
- * Checking and creating user folders at startup
- + Beta Radius Authentication Support (with new Premium License)
- + Beta release of HTTPS (SSL) (with new Premium License)

Revision 2.17.0.5 (17/03/2015) - SOFT 000031 52

- Battery - Last test failed alarm now working when used with Peukert test.

Revision 2.17.0.3 (30/01/2015) - SOFT 000031 51

- Excel - site.xml.xls (excel conversion of site.xml) had some compatibility issues with Excel. Fixed.
- Excel - site.xml.xls quick link in top bar was returning site.xml.zip
- + Excel - site.xml.xls - XSLT conversion supports now inverter systems, remote power feeding systems and energy meter
- + Diagnostics.xml - site.xml - only site level was saved - now all levels
- Records - Recording was disabled when the can node was removed for some time (rare condition).
- + Records - Records wizard added to help you to understand and configure the record system.
- + Added wizards for admin and user configuration (login/password) - was not very user friendly
- + SNTP - Time Server - New configuration element to change the refresh time and refresh time recovery (CF15-16)
- * Energy Meters - Summary is now available in dashboard
- * Improved string validation of some configuration elements
- Fix Chrome display error (control button)

Revision 2.16.0.3 (3/11/2014) - SOFT 000031 50

- + Changes for Operanet Project
- Dc System - Bug introduced in 2.14.3 canceled all control executions
- Fixed small memory leak in rare circumstance (when adding and removing a device 100 times a day)
- * Improvement of 300V DC system features with 2 strings and 2 LVDs
- * Minor improvements of the Modbus Interface
- + Modbus Interface - Support for Inverter System, Site, Sensors and Actuators (Only Dc Systems previously)
- Web Interface - Equipment in 'critical' alarm were not in red in the site tree, warning, minor, major were correctly managed.
- Fixed possible deadlock when manually clearing the events.
- + New Metering License - Support Different Energy Meters over RS485, with UCC or SAM0X48 boards - See User Guide
- + Web Interface - New tab - Controller -> Licenses gives information about your licensing options
- + License - Multiple licenses can be installed. This allows to buy upgrade more easily

Revision 2.15.0.3 (2/10/2014) - SOFT 000031 49

- * Remote Power Feeding - Changes to display Power instead of Current with new Remote All In One
- + Documentation - documentation.xml.xls allow to get the documentation of a live system in Excel.

Revision 2.14.0.3 (25/09/2014)

- + Support of CAR30300TP
- + Support of Controller 300Vdc
- + Support of PMM0824FP02
- Remote Power Feeding - Remote Site - Number of Configured Power Lines was always 0
- * Remote Power Feeding - Remote Site - Record of current enabled by default
- + DC-System : Better Algorithm for Battery Autonomy Calculation - New configuration parameters: CF30,38,39
- + Dc-System: Battery Test - When peukert number is configured, the battery test is done by defining a time instead of a ratio of the capacity
- + Support of Remote All In One - 250W

Revision 2.13.0.3 (2/09/2014)

- + Initial Support of CAR30300TP
- + Initial Support of Controller 300Vdc
- + Initial Support of PMM0824FP02
- + Support Of Remote All In one - Rev1

Revision 2.12.0.3 (20/08/2014) - SOFT 000031 48

- + Initial Support of SAM0348

Revision 2.11.0.4 (24/07/2014) - SOFT 000031 47

- Event name was not correct for alarm related events. 'Alarm Clear/Set/Ack : ' was missing - Bug introduced in 2.9.0.3.
- The fix introduced in 2.9.0.3 about event memory leak had broken the correct behavior of the event_flat.xml log cleaner.
- * Bootloader - Improved 'Upgrade All' Bootloading reliability. (The sequence could get stuck with a race condition on the node reset)
- * Bootloader - Improved Can Bootloading reliability on old hardware without interrupt line for the can driver
- * Bootloader - No need to reboot after Cordex Rectifier Upgrade
- + New alarm 'Running CAN Firmware Upgrade' (AL5) at site level during any CAN Bootloading
- + New events are generated with information about the bootloading start and stop.
- + New description 'CPU Info' (DE93) at site level to help support in case of investigation

Revision 2.10.0.3 (16/07/2014) - SOFT 000031 46

Revision 2.10.0.3 (16/07/2014) - SOFT 000031 46

- * Removed unused alarms for 300W rectifier
- * Edit mode is not anymore accessible for rectifier and inverter equipment (Because change is not saved)

Revision 2.9.0.3 (11/07/2014) - SOFT 000031 45

- Memory - Fixed small memory leak critical for systems generating many events (>5000/day)
- * Emulator - Each emulator option store now 'flash files' in a subfolder corresponding to emulation id
- * Emulator - Possibility to define the FlashPath for integration and unit testing

Revision 2.8.0.5 (26/06/2014) - SOFT 000031 44

- * Data records - Memory Usage optimization, some records vector could be duplicated
- * Data records - Support for disabling data record enabled by default, and check for some critical records
- Web Interface - Elements Entries under development, with license 'underdev' where shown in the interface since version 2.X (but not usable)
- XML Event Posting - Fixed memory leak if XML POST is configured to inexistent server for a long period of time, with a small timeout
- Data Records - Sometimes, the tooltip displaying the value on mouse over did not disappeared when mouse was removed.
- + Data Records - Support of Zoom in/out and span in charts.
- + Data Records - Start/Stop Auto Refresh of the charts.(to allow zooming)
- Site Alarm 'XML Heartbeat Post Failure' was not working as expected.
- Email Support - Automated mail was sending too many emails
- + Web Interface - Waiting popup is now shown for long operations (Save Configuration, Upload file, Send mail, etc). It avoids clicking somewhere else when request is not complete.
- * Bootloader - Support of 'Upgrade All Compatible' with file format with comments like 'SOFT_0000YY_XX_some_comments.txt'
- + Support - New zip file 'diagnostics.zip' can be generated on the fly for investigation by Alpha Technologies SA in case of issue. (Available in Files menu)
- Web Server - 'ContentEncoding: gzip' was sent in header when downloading .xml.zip files. This was an error. (Fix issue with IE, it was ok with firefox and Chrome)
- * File Manager - Displaying now 'Write Time' instead of 'Creation Time'.
- * Debug - Internal generic object counters allows detecting possible memory leaks at runtime.
- Memory - Fixed memory leak when equipment's are powered and unpowered many times a day, like with alternative energy sources. (Could slow down or event reboot the Comp@s after a few weeks)

Revision 2.7.0.5 (13/06/2014) - SOFT 000031 43

- CAN Bus - New Alarm 'CAN Bus Addressing Error' was too sensitive (race condition).
- * Dashboard - Data records shown for Cordex 4kW and 2.4kW Systems

Revision 2.7.0.4 (11/06/2014) - SOFT 000031 42

- + Email Support - On event with a configured minimal severity, summary mail can be sent to multiple recipients. (need 'asset' License)
- + CAN Bus - New alarm 'CAN Bus Addressing Error'. This helps detecting configuration problems. The alarm will disappear only if you remove all the node that are related to the duplication. (See inventory to know which one is duplicated)
- + Controller Upgrade - Support of zip file upgrade, with possible MD5 Checksum validation (if file compas.exe.md5 available in zip.)
- + Debug - All the debug files can be retrieved in one text file (for issue investigation)
- Webpage - DC System - Dashboard diagram box was too big with Chrome Browser

Revision 2.6.0.5 (17/04/2014) - SOFT 000031 41

- + Alarms - Acknowledgement feature. Each alarm can be acknowledged. This will allow smart filtering in Arm@da between new alarms and managed alarms.
- + Alarms - Acknowledgement feature - Generation of events on ack/unack of an alarm (type= alarm ack / alarm unack).
- * Web UI : Alarms/Events - Long event names are now split in multiple lines
- Delta Data Record : solved bug in XML generation (Wrong write format used for RAM records)
- PLC equation with @(alarmXX) on relay boolean condition was broken on ADIO10
- * Web UI: Solved top menu Drop Down issue with Internet Explorer 9
- Web UI: Alarms/Events - Event name button link was always referring to site level instead of the right equipment
- * API - ProcessXml.cgi : if clear/set delay, relay, severity_level/type is not defined, the default value is not reset anymore. Only the sent attributes are updated.

Revision 2.5.0.3 (9/04/2014) - SOFT 000031 40

- Web UI - CSS: with some webpage width smaller than 980px but larger than mobile version, some menu was hidden.
- Web UI - javascript: Solved possible race condition on initial load
- Web Server Socket - Under some very rare race conditions, socket could reply twice with the same response to different requests

Revision 2.4.0.3 (4/04/2014) - SOFT 000031 39

- 1-Wire humidity sensor: under some rare circumstance, corrupted value could be read - timing issue solved.
- * Data Record - Delta record is now immediately available after configuration change.

Revision 2.4.0.3 (4/04/2014) - SOFT 000031 39

Previously, a least one append to file was required

+ PLC - support of equations with strings. Example to link dc system relays with inverter system 1, to define in the alternate condition:

@(es1_invs1_severity_type)="major" || @(es1_invs1_severity_type)="critical"

- CanOpen - Inventory - LSS CAN id range configuration was broken, required to mix T2S with CAR systems (Mixing static and dynamic CanOpen addressing)

* Inverter System: Improvement of the group and subgroup strings to have a more user friendly user interface. It is needed to reset default Name/Groups/Subgroups if there is already a saved configuration.

Revision 2.3.0.3 (31/03/2014) - SOFT 000031 38

* Improved Speed of Can Node type detection

+ SNMP - Possibility to modify the trap content, by sending additional site description.

+ SNMP - Developers have the possibility to link data to alarms, to send them with the trap.

+ SNMP - Some data Mib entries described as Integer32 were transmitted as OctetString

+ TCP/Ip - New configuration element allows to define the Maximum Transmission Unit (MTU)

Revision 2.2.0.3 (12/03/2014) - SOFT 000031 37

- Web server redirection could loop if the default web page was forced to blank.

- Logout page link was pointing to old version of webpage

+ Support of Data Record on PLC Data

+ Support of \$iif(condition, val if true, val if false) and \$case(condition, val, condition2, val2, ...) functions in PLC equations

+ Dashboard support multiple dc systems

* Summary renamed to Reports

* Site --> in tab view, 'All' selection will also select the Description, Data, Alarm, Config and Control to understand the concept easily

- Renaming tool in the web interface was buggy because the page was self-refreshing while editing

* Schneider PM9C and IEM3150 RS485-devices are now seen as Energy Meter in the ETSI structure

* SNMP - Get of site data date and time was returning empty value. (Datetime format was not correctly supported)

- XML Post - Seconds between two XML Post was not correctly handled)

* Better Factory Testing support for UCC (RS485 and RS232 are now automatically tested)

* When saving configuration, old element ids of live equipment are removed, this allows to clean if another type of ADIO has been installed, with different features

Revision 2.2.0.3 (12/03/2014) - SOFT 000031 37

* New Control element 'Clean and Save XML User Configuration' allows to remove from configuration information about devices that are not present anymore.

Revision 2.1.0.3 (25/02/2014)

* Improved can drivers

* Minor changes

* Refactoring code for future improvements

Revision 2.0.0.3 (19/02/2014)

* FIRST RELEASE OF COMPAS '2.0.' - SUBJECT TO MINOR CHANGES

* New web interface - for old, go to index_old.html

* Major CPU and Memory Usage Optimization

* Group and Subgroup allows filtering

* Support of SP0155/01 and SP0155/02

* Many other new features

Revision 0.126.0.4 (3/09/2013)

* Emulation - added configuration 54, UCC + 15 x Adio7

Revision 0.126.0.3 (23/08/2013) - SOFT 000031 36

* Sensors and Actuators - SAM0948 - Added hysteresis parameter on some alarms related to temperature, humidity and tilt

- CAN Driver is now compatible (was broken for 1 year) with first generation of compas board (blue card)

+ DC System - Support of scheduled battery test (based on CRON rules)

+ Support of wizards (first used to help defining the cron rule)

* Site: Drop-box for the configuration of the Time Zone

* XML Posting - Possibility to select which table must be sent on event. (description, alarm, data, configuration, control)

* ADIO - Support up to 16 ADIO board as sensors and actuators by default

Revision 0.125.0.3 (5/08/2013) - SOFT 000031 35

+ Remote Power Feeding: Support of new Module 60W/190V

- Set/Clear delays of alarms were divided by factor 2 because the alarm calculation was called twice.

Revision 0.124.0.3 (28/06/2013)

+ Allow to set MCU specific configuration id. (Done in production, but allow to

Revision 0.124.0.3 (28/06/2013)

change in case of misconfigured MCU)

Revision 0.123.0.4 (13/06/2013) - SOFT 000031 34

* Table documentation generator for T2s (Inverter), Cordex Rectifiers and Cordex Dc System

Revision 0.123.0.3 (30/05/2013)

+ Remote Power Feeding : Support of new Module REC009

* XML Events and Armada: Alarm table was not sent completely. Real time for alarm clear events is now ok.

* XML Events and Armada: Alarms are now correctly cleared for CAR rectifier, and sent also in realtime

* XML Events and Armada: After equipment creation, data sync is done for descriptions, alarms, data, events and configs

- Rack ACE102FALP - Module position issue with 2-slot distribution.

Revision 0.122.0.3 (9/04/2013) - SOFT 000031 33

- SNMP - Walk was not going anymore inside the dc system. Broken in 0.113.0.3

* SNMP - GlobalAlarmSeverityLevel of each equipment is now sent as an Integer (OctetString previously)

* SNMP - renamed Mitra to Atsa in Mib due to company name change.

* SNMP - Get next will now work from base oid iso.org.dod.internet

* SNMP - New oid entry 'xxxxGlobalAlarmSeverityTypeInt' for each equipment level. It is the same as the 'xxxxGlobalAlarmSeverityType' but as an integer (critical=4, major=3, minor=2, warning=1, none=0)

Revision 0.121.0.3 (21/03/2013) - SOFT 000031 32

+ Remote Power Feeding: Support of new 120W remote module.

- Cordex DC System: Solved transient dc mode changed to safe mode (bug introduced in 0.120.0.3)

Revision 0.120.0.3 (8/03/2013) - SOFT 000031 31

* Cordex DC-System: Check that the voltage measurement has been refreshed recently, before regulating bus voltage.

* Cordex DC-System: Improved bus voltage regulation - reduce possible 100mV oscillation with ADIO10

* Inverter System - Optimization of the bandwidth usage to allow more inverter systems (up to 20 T2S - More should be possible after validation)

* Inverter System - The system id is now saved with the CAN LSS information - allows

Revision 0.120.0.3 (8/03/2013) - SOFT 000031 31

to keep the same system order after a reboot

* Inverter System - Added a 1 minute delay before creating the inverters to avoid id transient.

Revision 0.119.0.3 (19/02/2013) - SOFT 000031 30

- Fix bug: element change event where not added to the correct equipment.

* Optimized version of the XML posting to Armada. Description, Data, Alarm, Config of the equipment are also sent.

* Remote Site - New control to copy address from the top site level (not the street).

* Remote Site - Address is copied from Top Site on first creation

* Up Converter System: Set/Clear Delay of the slot alarm increased to 15

* Default Post XML timeout changed to 100 seconds (was 2 seconds)

Revision 0.118.0.3 (23/01/2013) - SOFT 000031 29

- Fix bug introduced in 0.113.0.3 - If the site id is changed to anything starting with 1 like 11, 1021, etc. A stack overflow can happen at next reboot.

* Inverter system - Support of ETSI XML posting for real time events in Armada.

Revision 0.117.0.3 (21/01/2013) - SOFT 000031 28

- Fix bug introduced in 0.116.0.3 about the data record xml generation)

* Remote Site: Alarms list is updated depending on remote system (no fan alarm with 60W module for example)

* Remote Power System: Alarms are now grouped

+ Web Server: Display the Site Name as title of the web page

+ Display the Serial Number of Cordex Rectifier and Inverters in the left menu and on top of the element tables, display the reference for systems

Revision 0.116.0.3 (16/01/2013) - SOFT 000031 27

- Fix for relay control problem on ADIO10 (introduced in 0.115.0.3 changes)

* New control elements to calibrate voltage and currents on ADIO10

+ When the Site Name is configured, it is now the title of the web page. This needs a complete refresh of the web page (Ctrl-F5)

- Inverter system with T2S - Save to T2s is now more reliable

+ Inverter system with T2S - New control element to Turn On/Off all modules

* New parameters for site.xml, allowing to downloading only some resolutions of the records (day, hour, minute, second). By default, it retrieves only daily and hourly data records

* Finalization of the equalize feature for Cordex dc systems

+ Implementation of the periodic automatic battery test

Revision 0.115.0.3 (20/12/2012) - SOFT 000031 26

- Reworked relay boolean condition on ADIOs. Possibility to configure normal condition as 'Energized' or 'De-Energized'.
- Some Alarm Set delay were not reloaded correctly after reboot, like the bus voltage sense failure
- * Better support of T2S alarms
- * Support of the T2S with Media Inverters
- * Relay of Alarm 'Missing Rectifiers' can now be saved in MCU

Revision 0.114.0.7 (17/12/2012) - SOFT 000031 25

- Randomly, system could reboot at midnight during data records saving
- If events.xml was corrupted, the system could never start without deleting the file
- * Better implementation of the data_record management. Thread safe and faster.
- * Improvement of the DC bus voltage sense failure detection on Cordex
- Digital Input alarm logic was inverted on ADIO 7-8-9-10. If you are using it, care required when upgrading.
- * More robust and faster startup
- * Reboot improved to reply to request, delayed by 10 seconds to allow events to be sent to Arm@da
- After a 'Clear All Events' or 'Clear Events', the events were not rewritten to flash, and were present again at reboot. (broken in 0.113.0.3)
- * Optimization of the Web Server - Faster and uses less memory when files are posted
- * Better support of zip files generation (site.xml.zip). The files are now fully compliant (before, it was a compressed stream)
- PLC functions without arguments like \$second() were broken unless used as \$second(0)

Revision 0.113.0.3 (15/11/2012) - SOFT 000031 24

- SNMP walk was not working from top snmp node
- + Introduced group possibilities for the alarm table
- + Events are now automatically saved in a flat file : events_flat.xml. events.xml is converted on first boot.
- + Group is now loaded from configuration.xml for any element, allowing total customization of name/group of elements
- + Possibility to rename Name and Group of any element from the web interface
- + Initial limited support of Cordex Converters
- + Support of energy meter IEM3150 on RS485 bus
- * Improved RS485 modbus driver allowing different types of device on the same bus
- * CEM03 - Remote Site can now have an id > 100 (up to 1000)

Revision 0.113.0.3 (15/11/2012) - SOFT 000031 24

- * Better implementation of the battery test for Cordex DC Systems
- * SNMP - Improved MIB compliance - Some oid related name were too long
- SNMP - Traps content oids where shifted of 1
- + Cordex - Initial support of firmware upgrade

Revision 0.111.0.5 (12/10/2012)

- Corrected bugs in Cordex regulation, load sharing was wrong if canid did not match rectifier id

Revision 0.111.0.3 (31/07/2012) - SOFT 000031 23

- + Support of multiple Inverter System (T2S)
- * Allow to limit the request of one CAN message at the time (for T2S)
- + Initial support of Alpha CXC over SNMP

Revision 0.110.0.3 (11/07/2012) - SOFT 000031 22

- + SNMP - Initial Support of monitoring of SNMP device like the Cordex CXC
- + Added possibilities to store a fix information about alarms
- + Support of 850W/1000W systems with embedded distribution.
- + Auto detection of the rectifier model for smart energy
- + Introduction of 'Absent' status for Cordex Rectifiers
- + New site control to remove absent equipment's
- + New alarm at the site level to notify that the last configuration changes are not saved
- * Remote Power Feeding - Added customer description element at the Remote Power Feeding System level
- * Remote Power Feeding - Possibility to define the number of CEM03 by rack, in master/slave configuration --> up to 64 racks
- * Better support of T2S inverter monitoring
- * Better conversion from XML to XLS. (site.xml.xls) Can be used to generate a system user guide with the request : site.xml.xls?help=true&control=true
- CAN Driver - Randomly, a can message was corrupted because of an OS interrupt during SPI communication
- CAN Driver - The can driver was crashing when there was only one node on the bus and it was removed
- It was no possible to reset to empty the list of required node on the can bus (config Required CAN Bus Node IDs)
- Changed unit of Rectifier Cordex 'Service Time'(s->m) and 'Converted Energy'(KJ->kwh)

Revision 0.106.0.3 (22/03/2012) - SOFT 000031 21

* Changed the versioning method to allow modifications of release - 0.106.0.3 is the version after 0.1.0.104

Revision 0.1.0.104 (15/03/2012)

- CET Inverter were not detected anymore correctly -broken with 1.0.96
 - Remote Powering System was not detected anymore correctly - broken with 1.0.96
 * Remote Power Feeding system - New alarm is generated 'Configuration problem' when the slot is empty but there is a configuration

Revision 0.1.0.102 (23/02/2012)

* Modbus Slave – Do not reply anymore until modbus variable are updated on dc system creation. This avoids to send transient 'fake' data

Revision 0.1.0.100 (15/02/2012)

- Modbus Slave – Socket was closed if the device id did not exist. Comp@s will now send a Modbus exception according to the standard.
 - In remote Site in relation of a remote power feeding system, the latitude position parameter was not set correctly. (And changed the longitude).

Revision 0.1.0.98 (30/11/2011)

- In configurations with multiple independent racks, Modbus data were not correctly updated when multiple request on different racks were processed during one second.

Revision 0.1.0.96 (21/11/2011)

+ First official release supporting cordex 4kw rectifier, with new UCC
 + CanOpen Node definition is now managed to avoid any interference between new development and old qualified developments. (Thanks to better use of the polymorphism)
 + Complete support of LSS devices (Dynamic CanOpen node addressing for Cordex rectifiers)
 + Optimization of the CAN and CANOpen layer to reduce cpu usage. Great result achieved, CPU usage reduced by more than 20%. This allows better reactivity through the communications interfaces.
 + Web interface allows minimizing parts of the tables, by group.

Revision 0.1.0.88 (11/09/2011) - SOFT 000031 20

* Added debug features to analyze Modbus problems (connection timeout, new sockets, etc.)
 * Support of rack 300W, with specific battery configuration possibilities with the help

Revision 0.1.0.88 (11/09/2011) - SOFT 000031 20

of the front button (electronic LVD)

Revision 0.1.0.86 (12/07/2011) - SOFT 000031 19

* The auto-save of records happening at midnight is now running in a separated thread to avoid any loss of communication and any problem in the main loop.

Revision 0.1.0.84 (21/06/2011)

* Support of up to 4 master racks on the modbus interface. (Previously 4). Modbus id 1-->4 are reserved for the 4 first DC Systems. If a request is sent to another id, the dc system 1 will reply.

Revision 0.1.0.82 (16/06/2011) - SOFT 000031 18

- Problem with reload of current limitation regulation parameter (because development test on going with hard coded values)

Revision 0.1.0.80 (16/06/2011)

+ Initial support for Alpha Cordex Rectifiers regulation of the dc system

+ Support of rack CAPTIN 300W

- Modbus Slave communication could fail when there are socket problems. (Cable disconnection, timeout, etc.) - This problems appeared with the new Ethernet drivers of BSP 3.9.

Revision 0.1.0.78 (30/05/2011) - SOFT 00031 17

+ Added support of PLC functions for es1 device.

Revision 0.1.0.76 (27/05/2011) - SOFT 00031 17

* RS485 communications was corrupted when interrupted by another task with higher priority.

Revision 0.1.0.74 (24/05/2011)

* New CAN driver – reduced CPU usage by up to 30%.

* New operating system – BSP 3.9

* New production tool – display instructions also in English

- BSP 3.9 new Ethernet driver is now synchronous to solve problems when communication is very high – Microsoft bug (Modbus fast request in loop for instance)

Revision 0.1.0.72 (20/05/2011)

Revision 0.1.0.72 (20/05/2011)

+ Added hidden function to clear registry (may be required after OS update)

Revision 0.1.0.70 (10/05/2011)

+ Possibilities to auto save records in xml, download files from web interface, and delete files.

+ Possibilities to rename descriptions, alarms, data, configuration and control elements with the configuration.xml file

+ Initial support of independent LVD

+ Initial support of predefined configurations

Revision 0.1.0.68 (20/04/2011)

- Hardware watchdog – forgot to uncomment after test.

Revision 0.1.0.66 (20/04/2011)

+ Added zip extraction functions : Extract Zip File in user-upload

- Records of the energy system pulse counter were loaded twice with a PM9C device

Revision 0.1.0.64 (16/04/2011)

+ Support of remote upgrade of the operating system and boot loader. (very advanced, necessary only for specific new functionalities)

+ Added data at site level: 'CPU Percentage Usage' and 'Free Flash Memory Space', with associated records.

+ Added description at site level : Operating System Revision

+ Support for the http post of files

+ New web page accessible from "Advanced" : manage_files.html

+ The exe file are analyzed to retrieve the software revision

+ The zip files are analyzed to discover the compressed file. (Only one file by zip is allowed to avoid unmanageable folder structure)

+ Added advanced functions in site/control: (used by the manage files web-page) (Flash Binary, Download File From Url, Delete User Uploaded File, Move User Uploaded File)

Revision 0.1.0.62 (10/04/2011)

* Support of snmp get bulk

* Added possibilities to rename all the variable names. Change the name in the xml configuration file and the related id will be updated on start. (for description, data, alarm, config and control)

- Snmp walk was buggy with some PLC data configurations

Revision 0.1.0.60 (6/04/2011)

- + Added configuration parameters to force the Ethernet mode (10-100Mb – Half-full duplex. (Require OS 3.5 at least)
- + Initial support of snmp get bulk
- + Improved support of default snmp oid (1.3.6.1.2.1.1.4,5,6,9.1.3)

Revision 0.1.0.58 (5/04/2011)

- Rewrite of the Modbus RTU Master driver to solve random crash after a few days (windows serial driver bug)

Revision 0.1.0.56 (9/03/2011)

- + Support of additional extensions for Opera Net Project (sensors and actuators)
- + Support of PM9C energy counter over RS485

Revision 0.1.0.54 (21/02/2011)

- + Initial support of Alpha rectifiers
- + CANOpen LSS master implementation
- * Added PLC functions to get site level info

Revision 0.1.0.52 (6/01/2011)

- + Initial support of RS485 Modbus Master
- * Added entry 151 in Modbus

Revision 0.1.0.50 (29/10/2010) - SOFT 000031 16

- * Improved support of 300W rack family

Revision 0.1.0.48 (18/10/2010)

- + Initial support of 300W rack family

Revision 0.1.0.46 (29/06/2010)

- * Support of 3 dc-system over Modbus interface

Revision 0.1.0.44 (3/06/2010)

- * Added concept of dc system and rectifier models (for smart functions)

Revision 0.1.0.42 (20/04/2010)

- * Improved support of CET inverters

Revision 0.1.0.42 (20/04/2010)

- Bug correction of removed rectifiers if not declared in large systems

Revision 0.1.0.40 (21/01/2010) - SOFT 000031 14

- + Minor support of CET inverters
- * Change of OS, minor security updates (BSP 0.5)
- Correction of Ethernet bug with HUB (drivers was switching of the Ethernet devices if disconnected from hub)

Revision 0.1.0.38 (19/01/2010)

- * Review of the logic for ac fail conditions

Revision 0.1.0.34 (24/11/2009)

- * Increased reliability of the CAN bootloader reset algorithm

Revision 0.1.0.32 (19/11/2009)

- + Support of large system with CAN regulation (up to 90x2600W rectifiers)

Revision 0.1.0.30 (19/10/2009)

- + Support of MCU0548
- * Changed remote system type name (3x120w, etc)

Revision 0.1.0.28 (19/10/2009) - SOFT 000031 13

- * Data records are now stored in XML, and are auto-saved
- * Data records are reloaded on startup
- * Optimization of the XML file generation
- * Support of compressed XML file in ZIP (xml.zip)
- * Full support of SNMP V3 traps
- * Added support of energy consumption measurement at the energy system level (pulse counter)
- * Added cold start type event (to be able to rediscover the site in XML after power outage – according to ES 202 336 standard change request)
- Modification of one registry parameter, to disable the “auto sense mode” of Ethernet, which was disabling the Ethernet when connected to a hub.

Revision 0.1.0.26 (16/06/2009)

- * Added support for SNMP V3, with updated libraries
- * Added support of remote power feeding systems

Revision 0.1.0.26 (16/06/2009)

- * Compilation in VS2008
- * Web page layout changed from Cherokee to Mitra E&I
- * Updated version of operation system, with latest windows update and latest drivers. (in production with SOFT 000031 12)
- Bug in the data record queue for last days and last hours records.

Revision 0.1.0.24 (27/03/2009)

- * Added support of MCU3048M6
- * Optimization of the CAN driver

Revision 0.1.0.22 (1/10/2008) - SOFT 000031 12

- * (Updated OS drivers on 25 March 2009, because of new bootloader on Comp@s card.)
- DC System Refresh Task buggy if only one rectifier in current limitation --> nothing was refreshed

Revision 0.1.0.20 (1/09/2008) - SOFT 000031 11

- * With the Modbus interface, the currents are now given in 0.1A as unit.
- * Support of XXXXconfigurationYYYY.xml files in Factory folder. This allows naming easily the configuration files.
- With a very low probability, the application could crash during startup. (It restarted correctly after 5 minutes thanks to the watchdog).

Revision 0.1.0.18 (1/08/2008)

- * New configuration parameter: XML Event Posting To Secondary Only If Primary Failure (Set to True by default). This allows sending XML events to the redundant server only if the first fails.
- * New configuration parameter: XML Heartbeat Time (minute): Define the time in minutes between two heartbeats. It is now possible to request the monitoring to send heartbeat in order to check the communication availability. This XML heartbeat looks like: <site id="1" status="alarms" severity_type="major" severity_level="6" /> Note that the same behavior with primary/secondary server is used.
- * Modbus compatibility improvements
- * No current limitation by default (1000A by default, must be set correctly).
- * Functional battery test is configured (1000A as discharge current, 0% of discharge capacity, duration of 10 minutes). --> Must be correctly configured with the battery parameters for reliable battery test.
- * PLC license is now included in the Asset license.

Revision 0.1.0.16 (1/07/2008)

Revision 0.1.0.16 (1/07/2008)

- * New Modbus license option
- * MCU30110 support
- * Comp@s Display Module Support (CDM)
- * CSV Log file of battery tests can be downloaded from web interface
- Firmware boot loading may fail under some circumstances
- The web server function 'ProcessXML.cgi' processed only site level configuration
- On system reboot, for alarm related events, the datetime is not parsed correctly
- On system reboot, the set delay of the alarms was replaced by the clear delay.

Revision 0.1.0.14 (28/05/2008) - SOFT 000031 10

- * Web interface compatible with older browser (Internet Explorer 6)
- * Web page generation 4x faster
- + Time Zone support
- + Daylight Saving Time
- The system time could be badly loaded during booting
- XML event posting locked when server answers badly
- Possible web server crash if socket not correctly closed

Revision 0.1.0.12 (14/02/2008) - SOFT 000031 09

- + Support of multi-language web interface
- + Support of 2x6x1800W DC systems (with 2 MCU1848)
- + PLC module added (customization of data and alarm)
- The severity_type attribute in the XML syntax was not correctly encoded

Revision 0.1.0.8 (6/01/2008) - SOFT 000031 06

- * The default value of the minimal number of rectifier is 0, to avoid alarm by default.
- + Support of 3U rack with up to 8 CAR0948TN.
- * Improvement of the logic of the site access control with SAM0948. Any digital input can be associated with a door.
- DC system alarm relay configuration was not saved if configured on '0'.
- Problem with reload of customized alarm related to the digital inputs of the dc system.

Revision 0.1.0.2 (1/11/2007)

- + Support of MCU1848
- * Added alarm "Missing Rectifiers" at DC system level
- * Added configuration parameter "Minimal number of rectifier" at DC system level
- Configuration of the SAM0948 was not kept after system reboot

Revision 0.1.0.1 (1/06/2007) - SOFT 000031 01

- + First official version
- + Support of MCU0948
- + Support of CAR0948TN
- + Support of SAM0948

2. CAN Bus related information

- [CAN Bus - The internal field bus](#)
- [Connecting multiple rectifier shelves together.](#)

2.1. CAN Bus - The internal field bus

Comp@s systems use the CAN bus to communicate with the equipment. The CAN bus Controller Area Network (CAN) is an ISO approved standard for a low cost real time communication protocol. It is a fault tolerant and robust system. It is commonly used in automobiles, automated robots, airplanes, etc. In our application if using dedicated 120 ohms cables, the maximal bus length is 500m. The monitoring application is able to detect BUS problems like a short between the lines of the bus or devices which are unreachable.

Each node connected on the CAN Bus has an id. These ids are defined as shown in the following table:

Equipment Type	Range	Comments
Node Rectifier	[1,100]	Each rectifier with CAN capabilities has an address comprised between 1 and 100.
Node MCU Remote Central	[100,1]	
Node MCU	[101,110]	Up to 10 shelves monitoring (MCU)
Node Extension	[111,126]	Up to 10 extension card.
Node_CDM	[126]	Comp@s display module
Node Comp@s	[127]	The Comp@s node id. (used by CDM)

To see the list of the nodes connected on a Comp@s System, browse to Site -> Data. There, you can view the "CAN Bus Node IDs" list.

2.2. Connecting multiple rectifier shelves together

It is possible to interconnect multiple shelves to increase the system power. If the DC outputs are interconnected, the shelves are working in parallel. If the DC outputs of the shelves are independent, the shelves are independent.

In both situations, the CAN bus has to be connected between the shelves. Each MCU must have a unique CAN Id.

On MCU1848, the DIP Switch use is described in the following table:

Switches	Parameter	Description
1-3	CAN Id	Unique identifier of the MCU on the CAN bus. MCU CAN Id range begins at 101 and switch [1-3] represents a LSB encoded binary value that defines 8 successive Id's from 101 to 109.
4-6	-	Reserved for future use
7	Master/Slave	OFF: this MCU behaves as the master of the system ON: this MCU behaves as a slave of master MCU
8	Termination	OFF: external CAN bus termination must be used ON: CAN bus is internally terminated by a 147Ω resistor

- [Multiple Shelves working in parallel](#)
- [Multiple Shelves Independent.](#)

2.2.1. Multiple Shelves working in parallel

The CAN bus, VPROG and Sharing signals must be interconnected between the shelves. The whole system is seen as only one DC system by Comp@s. Here follows two typical configurations:

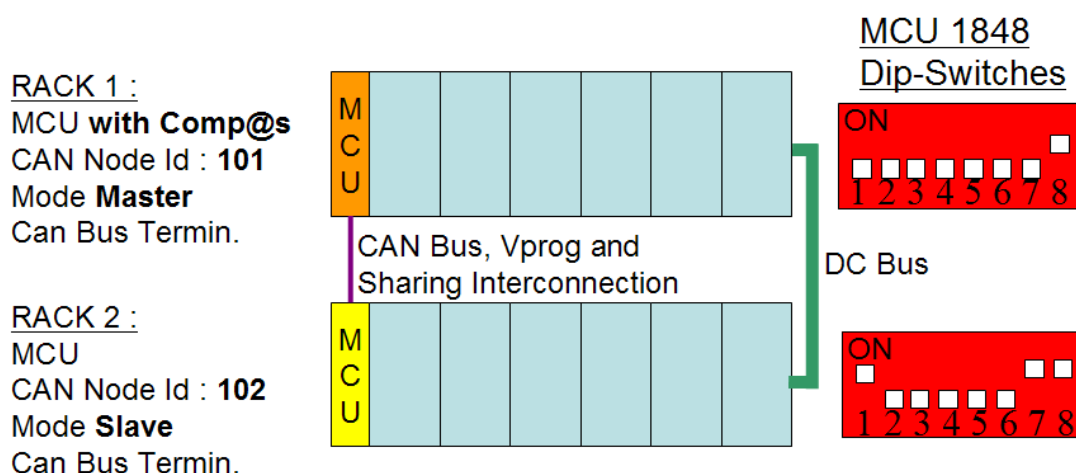


Figure 149 Example with a system with 2 shelves of 6x1800W rectifiers

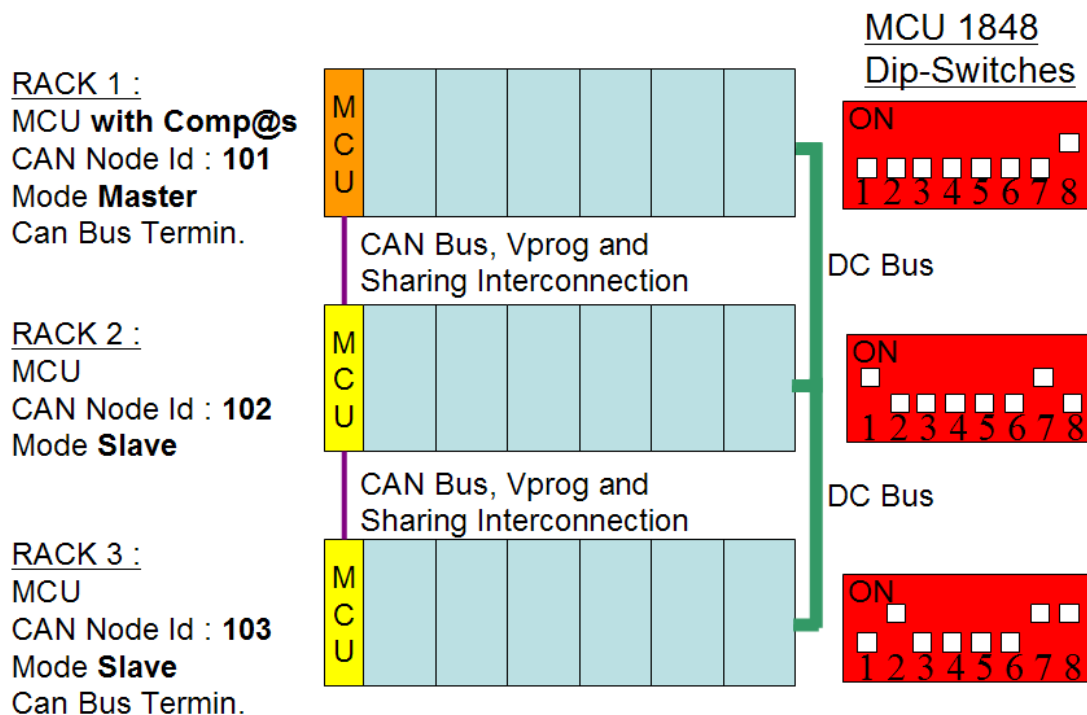


Figure 150 Example with a system of 3 shelves of 6x1800W rectifiers

2.2.2. Multiple Shelves Independent

An independent shelf will manage the bus voltage, the alarms, the LVD, etc. Multiple DC systems are seen by Comp@s:

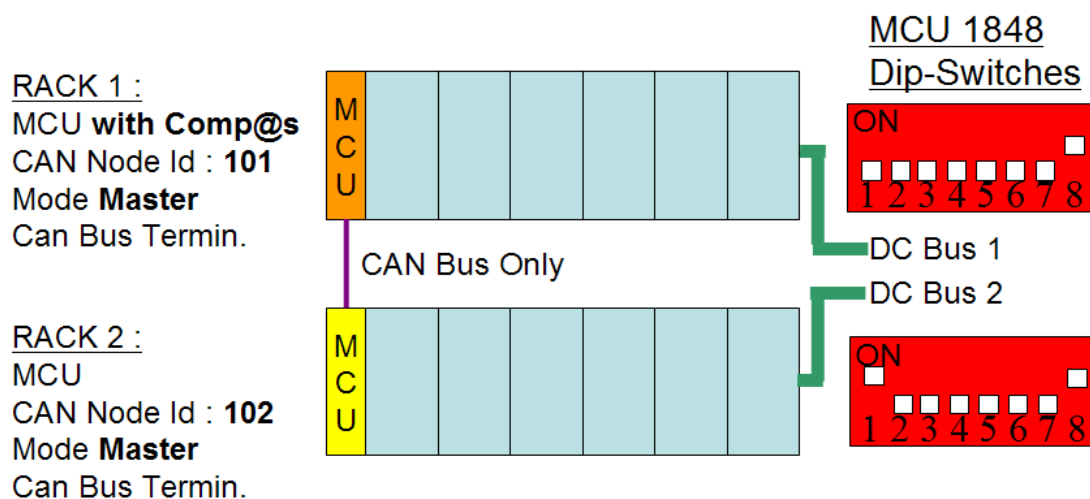


Figure 151 Example with a system with 2 shelves of 6x1800W rectifiers

3. ETSI Protocol

3.1. Overview

The XML files described in [XML files](#) are compliant with ETSI standard ES 202 336: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure

Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks)".

This chapter provides a summary about the structure of this file.

3.2. The Hierarchy of the devices/equipments

Equipment's and devices connected to the monitoring are structured in a hierarchic way. The root level is the site, it corresponds to a cabinet, a building, or any place where is located a system. Each site must have a different id to distinguish the sites from the management office center.

A site can have multiple energy systems. Cabinets usually have only one energy system, but this structure allows flexibility for other complex sites. Sensors and actuators related to the whole site, like access control, will be also reported under the site level.

An energy system comprises one or more dc system. A DC System comprises one or more rectifier.

All these equipment are described with a common XML structure. This common structure allows retrieving information and configuring all the system/equipment in a same way.

3.3. Common structure of any system/equipment

Any equipment XML node can have the following attributes:

Attribute	Description	Datatype	Optional/Mandatory
id	The id of the equipment, system or subsystem.	xs:integer	M
status	"normal" or "alarms" or "unknown".	xs:string	M
severity_type	If status is "alarms", this attribute gives the more severe "severity type" of the table of alarm. This attribute shall be present only when the attribute status is "alarms".	xs:string	M
severity_level	If status is "alarms", this attribute gives the more severe "severity level" of the table of alarm. This attribute shall be present only when the attribute status is "alarms".	xs:integer	M
datetime	The datetime attribute can be used to know the date and the time at which the element was refreshed. It is possible to have different datetime in different elements because all the equipment/systems cannot provide the data at the same time.	xs:datetime	O

For each equipment, system or subsystem, child elements that can be used are described in the following table:

Child Element	Description	Datatype	O/M
<description_table>	A table with description elements of the equipment/system.	xs:complexType	O
<alarm_table>	The table of alarms related to the equipment/system	xs:complexType	O
<event_table>	A log of events related to the equipment/system	xs:complexType	O
<data_table>	The table of the data (measurements, states and calculated values) related to the equipment/system	xs:complexType	O
<data_record_table>	Records of the historic of some data present in the data table	xs:complexType	O
<config_table>	The table of configuration of the equipment	xs:complexType	O
<control_table>	The table of control of the equipment	xs:complexType	O

3.3.1. The <description_table> element

This element contains multiple <description> elements. It corresponds to the the description elements of the system/equipment.

The inner text of the <description> element is the data of the description.

The allowed attributes of the <description> element are:

Attribute	Description	Datatype
id	The id of the description, it shall be different for all the description, it correspond at the key of the table.	xs:integer
name	The name in English of the description element	xs:string
group	This attribute provide a way to group descriptions of a same category when they are displayed. By example, description related to the manufacturer of equipment could be grouped with the attribute value "Manufacturer".	xs:string
subgroup	This attribute allows to group data under the parent group	xs:string
unit	When a physical data must be represented, it is useful to know the unit of the data. By example, to describe the maximum output power of a dc system, the value of the attribute unit can be "watt". The units allowed by the present document are the same as the one of the International System Units.	xs:string
info	Short additional information on the parameter	xs:string

3.3.2. The <alarm_table> element

This element contains multiple <alarm> elements. It corresponds to the table of all the possible alarms, with the associated severity type and severity level.

The information about the alarm is included in the attributes of the <alarm> element:

Attribute	Description	Datatype	O/M
id	The identification number of the alarm	xs:integer	M
active	This value is "true" if the alarm is active or "false" if the alarm is not active.	xs:boolean	M
name	The name of the alarm	xs:string	M
severity_type	Can be: critical, major, minor, warning or information	xs:string	M
severity_level	Value from 0 to 9	xs:integer	M
start_time	The date and time at which the alarm has started	xs:datetime	O
stop_time	The date and time at which the last active alarm has stopped. (When an alarm is active, this attribute cannot be present as it is nonsense).	xs:datetime	O

3.3.3. The <event_table> element

The <event_table> element is the parent of <event> elements, described as follows: an <event> element can only exist as a child of an <event_table>.

The inner text of the <event> element is a string ([xs:string](#)) describing the event.

The event element has the followings attributes:

Attribute	Description	Datatype	O/M
id	The id of the event	xs:integer	M
type	The type of event, can be: alarm set, alarm clear or information	xs:string	M
datetime	The date and time at which the event has happened	xs:datetime	M
severity_type	This attribute exist if the event concern an alarm. Than, the severity type value is the one of the corresponding alarm.	xs:string	O/M
severity_level	This attribute exist if the event concern an alarm. Than, the severity level value is the one of the corresponding alarm.	xs:integer	O/M
alarm_id	This attribute exist if the event concern an alarm. Than, the alarm_id value is id of the alarm in the alarm table of the equipment.	xs:integer	O/M
info	Any additional information	xs:string	O

3.3.4. The <data_table> element

This child contains multiple <data> elements. Each of these elements is identified by a unique id. The table is specific for each equipment, and describes by itself the all the available data related to this equipment.

The inner text of the <data> element is the value ([xs:string](#)) corresponding to the data.

The <data> element has the followings attributes:

Attribute	Description	Datatype	O/M
name	The English name of the data	xs:string	M
group	This attribute provide a way to group data of a same category when they are displayed. By example, data related to the output of equipment could be grouped with the attribute value "output". All the temperature measurements could be grouped under "temperature".	xs:string	O
subgroup	This attribute allows to group data under the parent group	xs:string	O
type	The type of data, this can be "measurement" or "calculated_value"	xs:string	O
unit	When a physical data must be represented, it is useful to know the unit of the data. The units allowed by the present document are the same as the one of the International System Units.	xs:string	O
info	Short additional information on the parameter	xs:string	O
name_XX	Where XX is correspond to the abbreviation of a language. By example, name_FR represents the translation in French of the name attribute.	xs:string	O

3.3.5. The <config_table> element

This child contains multiple <config> elements. Each of these elements is identified by a unique id. The table is specific for each equipment, and describes by itself the entire available configurable element related to this equipment.

The inner text of a <config> element is the value (xs:string) corresponding to the config parameter.

The <config> element has the followings attributes:

Attribute	Description	Datatype	O/M
id	The unique id of the config element, it corresponds at the key of the table.	xs:integer	M
name	The English name of the configuration parameter	xs:string	M
group	This attribute provide a way to group config element, like for the <data> elements	xs:string	O
subgroup	This attribute allows to group data under the parent group	xs:string	O

Attribute	Description	Datatype	O/M
unit	The unit of the config parameter	xs:string	O
info	Short additional information on the config parameter	xs:string	O

3.3.6. The <control_table> element

This child contains multiple <control> elements. Each of these elements is identified by a unique id. The table is specific for each equipment/system, and describes by itself the entire available control element related to this equipment.

Writing to a control element is similar to start a function of the equipment. For example it can be used to start a battery test, to reboot an equipment, etc. The target of the write is the inner text of the <config> element.

The inner text of a <control> is always empty in the read xml document, but is used to pass arguments to the control function.

The <config> element has the followings attributes:

Attribute	Description	Datatype	O/M
id	The unique id of the config element, it corresponds at the key of the table.	xs:integer	M
name	The English name of control function	xs:string	M
group	This attribute provide a way to group function element, like for the <data> elements	xs:string	O
subgroup	This attribute allows to group data under the parent group	xs:string	O
info	Short information on the control function	xs:string	O

4. Third Party

4.1. Convert a T2S Usb to CANOpen

In this guide you will upgrade the T2S firmware in order to use CANOpen communication.



Communication information

You must know that the USB communication will not work anymore with the CANOpen Firmware.

If this is the first time that you do update a CE+T inverter, you have to install the driver (see below) otherwise you can directly go to the update procedure

1. Download and uncompress the necessary files available here :
http://customer.alphatechnologies.eu/compas/third_party/CET/T2S_Canopen_Conversion.zip
2. **Installation of drivers**
 - In the folder "DriversT2S", Follow the instructions given by the file in the folder for your version of windows.
 - For Windows 7
 - Install HyperTerminal (*htpe63.exe*)
 - Install VCP_Application (*VCP_V1.3.1_Setup_x64.exe*)
 - Connect the CE+T on your computer via the usb cable
 - Configure the driver in the device manager (Right click on computer -> "Manage" -> "Device Manager" -> "Other Device" -> "T2SVirtualPortCom")
 - Select "Update driver" -> "Browse my computer for driver software" -> **"Let me pick from a list"**
 - "Ports (COM and LPT)"
 - Select the **"ST Microelectronics > STMicroelectronics Virtual COM Port"** driver
 - Dismiss the warnings by accepting the driver
3. **Update of CE+T Inverter to CANOpen Mode**
 - Go to the *FirmwareUpdater* folder
 - Unplug the CE+T controller from the rack
 - Plug the USB cable between your computer and the CE+T controller
 - Plug the rack with at least one inverter
 - Now, this is the tricky part :
 - You have to plug-in the controller **and** launch immediately the file *dwld_T2S.bat*. (Within 10 seconds after connecting the controller)
 - You have to retry until it works (don't forget to unplug and replug the CE+T controller inside the rack : the firmware is writeable only during the 10 firsts seconds.)
 - The program need to show **"Download was successful"**
 - Unplug the usb cable from the controller
 - Unplug and Replug the CE+T controller

We even made [a video](#) in order to help you to reprogram the device.

4.2. Handling sys saturated alarm on Inverter System

Cause

System saturated or Module non configured

symptoms

- Sys saturated alarm
- *Number Of Module Configured (DA10) < Number Of Module seen by T2S(DA19)*

Fix

1. Change Number Of Module (CF101) to the number of module seen by T2S (DA10)
2. Save configuration into the T2S (CT2)
3. After a few seconds, reload configuration (CT1)
4. Check in Data if Number of Configured modules is equal to Number of Modules seen by T2S
5. Sys Saturated alarm should be gone

Visual help

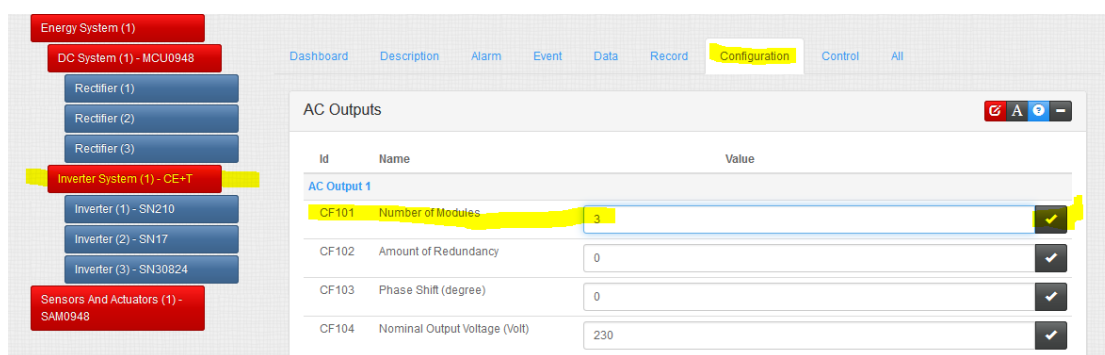


Figure 152 Change the number of modules

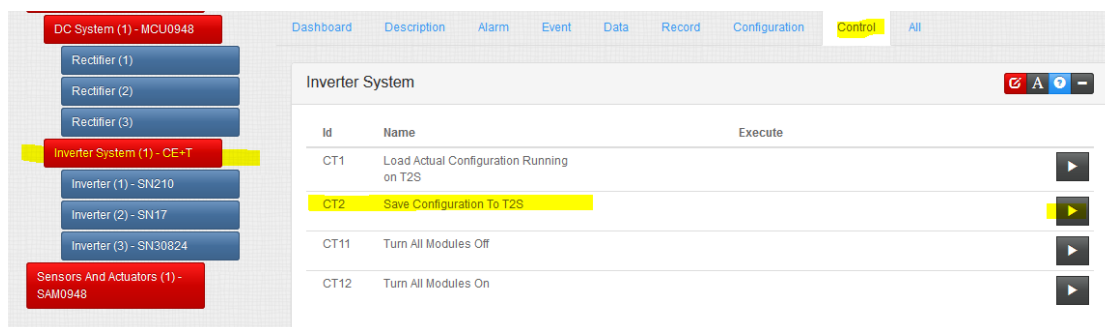


Figure 153 Save configuration into T2S

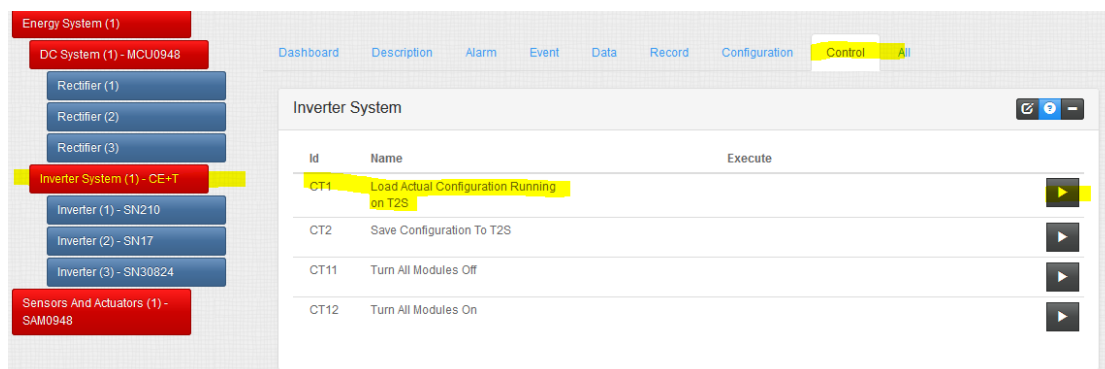


Figure 154 T2S : Reload configuration

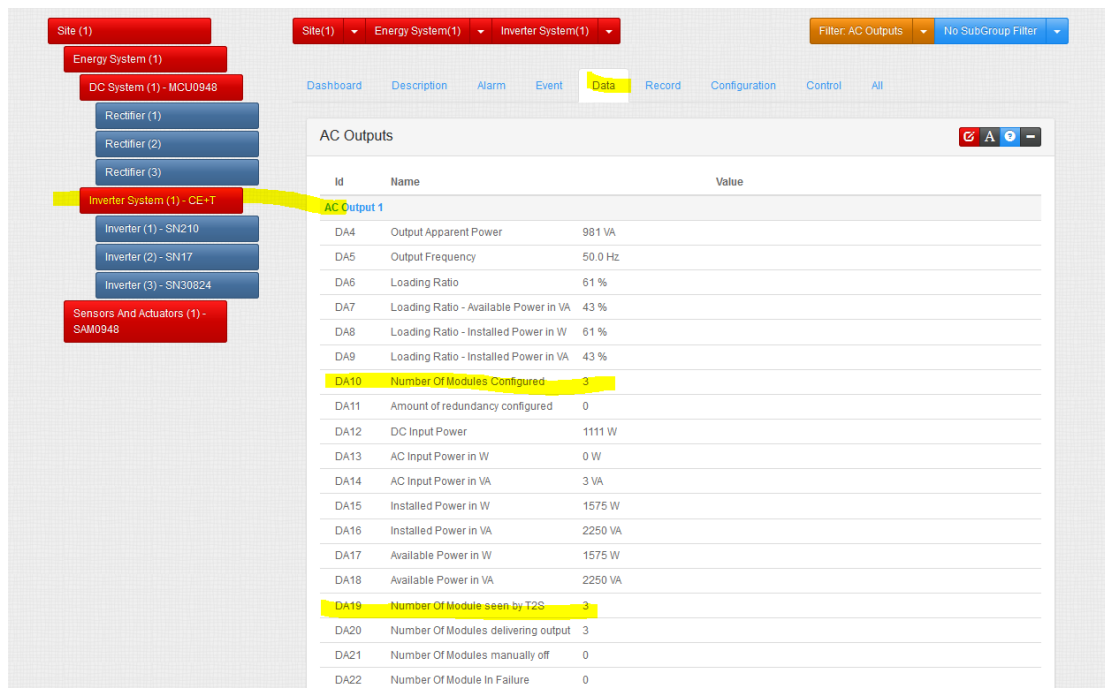


Figure 155 T2S check number of modules

Chapter 14 : Acknowledgements

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Chapter 15 : Equipment Tables

The following chapters list the description, data, alarm, configuration and control tables that will be available in Comp@s for most of the supported devices. (Rectifier, MCU, Extension board, etc.)

1. Site Tables

1.1. COMPAS

Device Information	
Name	COMPAS
Short Description	Comp@s Platform Card
Long Description	
Hardware Reference	4004 110 96531
Software Reference	SOFT 000031 XX
Equipment Type	General for all Comp@s
ETSI Level	/site/

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Site Number	Description	Site Information	basic
	The identification number of the site			
2	Site Name	Description	Site Information	basic
	The name of the site			
3	Short Description	Description	Site Information	basic
	A short description of the site			
4	Info	Description	Site Information	basic
	Some more information about the site			
5	Description	Description	Custom Description	basic
	A free text zone to write a system description			
6	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
7	Contact Name	Description	Contact	basic
	Contact Name			
8	Phone Number	Description	Contact	basic
	Phone Number			
11	Street	Description	Address	basic
	Street part of the site address			
12	City	Description	Address	basic

Description Table				
	City part of the site address			
13	Province	Description	Address	basic
	Province part of the site address			
14	Postal Code	Description	Address	basic
	Postal Code part of the site address			
15	Region	Description	Address	basic
	Region part of the site address			
16	Country	Description	Address	basic
	Country part of the site address			
21	Group 1	Description	Clustering	basic
	Group Level 1 (For Armada Clustering)			
22	Group 2	Description	Clustering	basic
	Group Level 2 (For Armada Clustering)			
23	Group 3	Description	Clustering	basic
	Group Level 3 (For Armada Clustering)			
24	Group 4	Description	Clustering	basic
	Group Level 4 (For Armada Clustering)			
25	Group 5	Description	Clustering	basic
	Group Level 5 (For Armada Clustering)			
31	Latitude	Description	GPS Position	asset
	The latitude of the site			
32	Longitude	Description	GPS Position	asset
	The longitude of the site			
33	Altitude	Description	GPS Position	asset
	The altitude of the site			
91	Software Revision	Controller	Product Info	basic
	The software revision of Comp@s (read only)			
92	Operating System Revision	Controller	Operating System Info	basic
	The operating system of Comp@s (read only)			
93	CPU	Controller	Hardware Info	basic
	Information about the CPU			
94	Card	Controller	Hardware Info	underdev
	Information about the hardware system containing Compas			
100	Starter Version	Controller	Operating System Info	basic
	Information about the starter component of Compas			
105	Factory Compas Version	Controller	Operating System Info	basic
	Information about the revision of Compas in Factory folder			
106	User Compas Version	Controller	Operating System Info	basic
	Information about the revision of Compas in user folder			
110	Factory FTPServer Version	Controller	Operating System Info	basic

Description Table

	Information about the revision of Ftp Server in Factory folder			
111	User FTPServer Version	Controller	Operating System Info	basic
	Information about the revision of Ftp Server in Factory folder			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	CAN Bus Failure	Inventory	CAN Bus	major (0)	5 / 2
	This alarm is active when there is a problem with the CAN Bus.				
2	CAN Bus Addressing Error	Inventory	CAN Bus	major (0)	5 / 2
	This alarm is active if 2 devices or more are using the same CAN address. You need to remove the duplication problem and reboot the compas to avoid a possible strange behavior. If the duplicated nodes are rectifier, you can try to solve the problem remotly. Be aware that the rectifier will be shutted down during this operation so you need a battery if you don't want a power outage (2 to 10 seconds) on your load. Reset devices with duplicated node id using the control CT81 in site level then reboot compas controller.If the problem persist you probably have a material configuration problem.				
3	Missing CAN Bus Node IDs	Inventory	CAN Bus	major (6)	10 / 2
	This alarm is active if configured node ids are not detected on the bus				
4	Running CAN LSS Device Detection	Inventory	CAN Bus	warning (0)	5 / 2
	This alarm is active when new devices are beeing detected.				
5	Running CAN Firmware Upgrade	Inventory	CAN Bus	warning (0)	5 / 2
	This alarm is active when the bootloader is upgrading a can device, or when the queue of upgrade is not empty				
11	Controller Reboot Required	Controller	Reboot	major (0)	5 / 2
	This alarm is active if the system should be rebooted for one of these reason - Timezone changed - Duplicate node ID - Duplicate node ID - Specific id of MCU changed - OS update - CAN related change ...				
15	Last Configuration Changes Unsaved	Controller	Save	warning (2)	1 / 2
	This alarm is active if the configuration has been modified but not yet saved.				
21	XML Heartbeat Post Failure	XML	XML Event Posting	major (0)	5 / 2
	This alarm is active when the heartbeat is not accepted by the primary or the secondary post server. Please note that this alarm is inactive if the heartbeat mechanism is inactive.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Current IP Address	Network			basic
	This is the actual IP address of the Comp@s platform. If the Ethernet cable is not correctly connected, the address will be 0.0.0.0.				
2	Current IP Mask	Network			basic
	This is the actual IP address of the Comp@s platform. If the Ethernet cable is not correctly connected, the address will be 0.0.0.0.				
3	Current MAC Address	Network			basic
	This is the MAC address of IP interface.				
11	Licensed Options	Controller	License		basic
	This is the options of the actual license.				
21	Date And Time Local	Time			basic
	This is the local time of the monitoring.				
22	Date And Time UTC	Time			basic
	This is the UTC time of the monitoring.				
31	Monitoring Memory Used	Controller	Operating System Info	Kb	basic
	This is actual amount of RAM memory used by the application.				
32	CPU Percentage Usage	Controller	Operating System Info	%	basic
	This is actual percentage of CPU used				
33	Free Flash Memory Space	Controller	Operating System Info	MBytes	basic
	This is free flash memory available on the Comp@s card, in Megabytes				
35	FTP Server Status	Controller	Others		basic
	Status of the FTP Server. Compatible only with version > = 2.26.X.X. The configuration is available at controller -> FTP Server page.				
41	Total Fifo Size Of Second Records	Data Records			basic
42	Total Fifo Size Of Minute Records	Data Records			basic
43	Total Fifo Size Of Hour Records	Data Records			basic
44	Total Fifo Size Of Day Records	Data Records			basic
51	CAN Bus Node IDs	Inventory	CAN Bus		basic

Data Table

	The coma separated list of the node ids present on the CAN bus.				
166 Cloud Link State	Cloud Link				basic
	Cloud Link State				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DHCP Enabled	Network			True/False (False)	basic
	The monitoring will try to get an IP with the DHCP protocol if this parameter is set to True. By default, this parameter is set to False.					
2	IP Address If Static	Network			192.168.45.1	basic
	The static IP address of the monitoring. This configuration parameter is not used if the DHCP is enabled. The default IP is 192.168.45.2.					
3	Subnet Mask If Static	Network			255.255.255.0	basic
	The static Subnet Mask of the monitoring. This configuration parameter is not used if the DHCP is enabled. The default mask is 255.255.255.0.					
4	Default Gate-way If Static	Network			192.168.45.1	basic
	The static Default Gateway of the monitoring. This configuration parameter is not used if DHCP is enabled. This is only useful if the monitoring have to use a gate-way, this is generally not necessary. The default gateway is 192.168.45.1.					
5	DNS If Static	Network			192.168.45.1	basic
	The static DNS of the monitoring. This configuration parameter is used to resolve URI and server name. This is not necessary if you are only IP address as target server. The default DNS server is 192.168.45.1.					
8	Maximum Transmission Unit	Network				basic
	Specifies the TCP/IP MTU for the network interface					
9	Ethernet Mode	Network			True/False (False)	basic
	You can choose the ethernet network mode if needed. By default this option is set to automatic.					
11	SNTP Time Server	Time			192.168.45.1	basic
	The address of the server acting as SNTP timer server. If this server is not valid, the monitoring cannot update automatically his time. You can use several time server by usin a coma separator without space.					
14	Time Zone Name	Time			((GMT+01:00) Brussels, Copenhagen, Madrid, Paris)	basic

Config Table

	The Time Zone of the site					
15	SNTP Time Refresh	Time		hour	178	basic
	Set the time between synchronisation with the SNTP server (max 1000 hours, by default 178)					
16	SNTP Time Recovery Refresh	Time		hour	24	basic
	Set the time to wait before retry if a synchronisation fail (max 1000 hours, by default 24)					
22	Web Server Security Enabled	Web Server			True/False (True)	basic
	This is a True/False parameter used to activate or deactivate the access control to the web server.					
23	Web Server Port	Web Server			0/65535 (80)	basic
	This is an unsigned integer parameter used to configure the port at which the web server is accessible. By default, the port is 80. If you change this port, you must be sure that the traffic is allowed by your switches and routers on this port.					
24	Web Authentication Method	Web Server				basic
	The web access security can be managed with 3 authentication methods: Basic Access, Digest Access or Basic with Radius.					
26	Https Web Server Port	Web Server				premium
	This is a port number to activate or deactivate the https web server - 0 or 443 by default					
31	Default Page	Web Server				basic
	The default page displayed on logon (dashboard, site, summary, alarm_event, ...)					
41	XML Event Posting Activated	XML	XML Event Posting		True/False (True)	basic
	This is a True/False parameter used to activate or deactivate the XML event posting.					
42	XML Event Posting Refresh Time	XML	XML Event Posting	second	1/3600 (2)	basic
	The minimal time in second between to calculation of the XML events to send. By default, this is done every two seconds.					
43	XML Event Posting Timeout	XML	XML Event Posting	millisecond	500/600000 (100000)	basic
	The timeout in millisecond when trying to post XML data to a Web Server.					

Config Table						
45	XML Event Posting To Secondary Only If Primary Failure	XML	XML Event Posting		True/False (True)	basic
If this parameter is set to true, the events will be sent to secondary only if primary server is not available. If this parameter is set to false, all the events will be sent to primary and secondary server						
46	XML Tables To Post On XML Event	XML	XML Event Posting		description, alarm, data, config, control	basic
The list of the tables to send when an event is generated. (description,alarm,data,config,control). This allows to have armada database updated on event.						
51	XML Heartbeat Time	XML	Heart-beat	minute	0-2880	basic
This is the time between 2 XML Post of heartbeat. If set to 0, no heartbeat.						
61	SNMP Activated	SNMP			True/False (True)	basic
This is a True/False parameter used to activate or deactivate the SNMP agent.						
63	SNMP Trap Version	SNMP				basic
Traps/Notification can be sent with SNMP V1, V2c or V3 format.						
64	SNMP GET Minimum Security Level	SNMP				basic
4 choices are available: No Authentication, V1 Community, V2c Community or V3.						
65	SNMP SET Minimum Security Level	SNMP				basic
4 choices are available: No Authentication, V1 Community, V2c Community or V3.						
66	SNMP V3 Auth Algorithm	SNMP				basic
3 choices are available: MD5, SHA, Any						
67	SNMP V3 Privacy Algorithm	SNMP				basic
3 choices are available: DES, AES, 3DES						
68	SNMP V3 Privacy Password	SNMP				basic
The global SNMP V3 Encryption Password. This one is common for all the users to avoid complexity						
69	SNMP V3 En-	SNMP				basic

Config Table						
	Engine ID					
	The SNMP V3 Local Engine ID string					
72	SNMP V3 Trap Auth Algorithm	SNMP				basic
	2 choices are available: MD5, SHA					
73	SNMP V3 Trap Privacy Algorithm	SNMP				basic
	3 choices are available: DES, AES, 3DES					
74	SNMP V3 Trap Username	SNMP				basic
	The SNMP V3 Trap UserName used for all the SNMP V3 traps					
75	SNMP V3 Trap Auth Password	SNMP				basic
	The SNMP V3 Trap Authentication Password					
76	SNMP V3 Trap Privacy Password	SNMP				basic
	The SNMP V3 Trap Privacy Password					
77	Site Description Ids Included In Traps	SNMP				basic
	List of site Description Elements to send on traps. (to have the site reference and the city in each trap for example). The list is separated with ';'.					
81	Generate Event On Configuration Changes	Generic	Events		True/False (True)	basic
	This is a True/False parameter used to activate or deactivate the tracking of configuration changes					
82	Auto Archive Period Data Record	Data Records		hour		basic
	Period in hour to auto save records (when detailed and long duration records are needed). 0 means disabled.					
83	Generate Event On Control Execution	Generic	Events		True/False (True)	basic
	This is a True/False parameter used to activate or deactivate the tracking of control execution					
84	Generate Event On Alarm Acknowledge	Generic	Events		True/False (True)	basic

Config Table

	This is a True/False parameter used to activate or deactivate the tracking of alarm acknowledgment					
91	Required CAN Bus Node IDs	Inventory	CAN Bus			basic
	This is a coma separated list with the required CAN bus node ids					
92	LSS CAN id range	Inventory	CAN Bus			basic
	By default 50-100, means up to 50 Can Nodes like rectifiers with CAN Id 50 to 100. To support up to 100 rectifiers, change it to 1-100.					
93	System Nodes Definition	Inventory	CAN Bus			basic
	dc3(30-100)					
95	LSS CANOpen Saved Configuration	Inventory	CAN Bus			basic
101	Administrator Log-in:Password	Users			(admin:compas)	basic
	This is the login and the password of the administrator. It is saved with a special syntax. First the login in clear, followed of 2 points, followed of the MD5 hashed password. If you change the login:password by entering a non hashed password, this last is automatically hashed.					
102	User 1 Log-in:Password	Users			(user1:compas)	basic
	This is the login and the password of the user number 1.					
103	User 2 Log-in:Password	Users			(user2:compas)	basic
	This is the login and the password of the user number 2.					
104	User 3 Log-in:Password	Users			(user3:compas)	basic
	This is the login and the password of the user number 3.					
105	User 4 Log-in:Password	Users			(user4:compas)	basic
	This is the login and the password of the user number 4.					
106	User 5 Log-in:Password	Users			(user5:compas)	basic
	This is the login and the password of the user number 5.					
111	Radius Server	Radius Authentication				premium
	Radius Server address. If you have a secondary server, you could use a coma to separate it.					
11	Radius Port	Radius Au-				premium

Config Table						
2		thentication				
	Radius Port. If you have a secondary server, you could use a coma to separate it.					
11	Radius Secret	Radius Au-				premium
3		thentication				
	Radius PassPhrase					
12	Enable Email	Email			True/False (False)	asset
0	Feature					
	Enable/Disable the email feature					
12	Smtpt Server	Email				basic
1	Smtpt Server. If you are using a domain name, make sure you configured the network Dns (CF5)					
12	Smtpt Domain	Email				basic
2	Smtpt Domain. (Required by some servers.)					
12	Smtpt User	Email				basic
3	Log-in:Password					
	Smtpt Login and Password. The password is encrypted. To enter a new login and password, enter login:password and validate, the password will be encrypted.					
13	Mail Sender	Email				basic
0	Mail Sender (The 'From' of the emails you will receive)					
13	Mail Recipients	Email				basic
1	Mail Recipients, separated with semicolon ';'.					
13	Minimal Sever-ity Type To Send Mail	Email			(minor)	basic
5	This is the minimal severity of the event to send a Summary Mail					
16	Cloud Enabled	Cloud Link				under-dev
1	Enable Cloud Connection					
16	Cloud Server	Cloud Link				under-dev
2	Cloud Server					
16	Cloud Port	Cloud Link				under-dev
3	Cloud Port					
16	Cloud Creden-tial	Cloud Link				basic
4	Enter Credential of your AlphaCloud account in order to connect. You have to enter username:password in order to save your credential.					
16	Cloud Cluster	Cloud Link				under-dev
5	Cloud Cluster					

Config Table						
210	RS485 Extensions Configuration	Inventory	RS485 Bus		PM9C(1)	metering
The configuration string for RS485 Extensions						
220	Ethernet Extensions Configuration	Inventory	Ethernet		AXS(192.168.45.3)	asset
The configuration string for Ethernet Extensions						
250	Enabled scripts	Scripting				ultimate
This parameter enable all CompasLua Scripting capabilities. You can control scripts in Files -> Files manager > scripting tab.						
251	Number of Errors before triggering alarm	Scripting			0-2147483647	ultimate
Number of errors before triggering the scripting error alarm. When number of error is higher than this parameter, the alarm is triggered. If 0 is set, the alarm is deactivated						
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4						
522	Write Access User Numbers	Generic	Allowed Users		()	basic
The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4						
601	Event Table Length	Generic	Events		10/4000 (100)	basic
The maximum length of the table. The value must be comprised between 10 and 4000						
611	SNMP Trap Targets IP	SNMP			192.168.45.1	basic
One or multiple target IP to send traps, coma separated. Ex: 130.145.23.1, 130.23.12.45						
612	Minimal Event Severity For Traps	SNMP			(none)	basic
This is the minimal severity of the event to send a SNMP trap						
651	XML Events Primary Post URL	XML	XML Event Posting			basic
This is the first URL at which the events related to this equipment must be post-						

Config Table

	ed. The XML ETSI standard is used in the posted data content.				
65 2	XML Events Primary Post Login	XML	XML Event Posting		basic
	The login which must be used when posting events to the primary server				
65 3	XML Events Primary Post Password	XML	XML Event Posting		basic
	The password which must be used when posting events to the primary server				
66 1	XML Events Secondary Post URL	XML	XML Event Posting		basic
	This is the second URL at which the events related to this equipment must be posted. The XML ETSI standard is used in the posted data content. This allows having redundancy with the management server.				
66 2	XML Events Secondary Post Login	XML	XML Event Posting		basic
	The login which must be used when posting events to the secondary server				
66 3	XML Events Secondary Post Password	XML	XML Event Posting		basic
	The password which must be used when posting events to the secondary server				
90 1	Number Of PLC Data	PLC		(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configura-tion parameters are added to set the PLC Data Name and the PLC Data Mathe-matical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
90 2	Number Of PLC Alarm	PLC		(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Bool-ean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Reboot Controller	Controller	Reboot	basic
	Writing a '1' to this control element will reboot the monitoring. Events and Rec-ords will be saved.			

Control Table				
2	Save Configuration And Re-boot Controller	Controller	Reboot	basic
	Writing a '1' to this control element will first save the actual configuration and will reboot the monitoring after.			
3	Reboot Monitoring Without Saving Records	Controller	Reboot	basic
	Writing a '1' to this control element will reboot the monitoring without saving records			
6	Apply Network Configuration	Network		basic
	Writing a '1' to this control element will reconfigure the ethernet according to the Network Configuration. If you change the IP address in the config table without using this command after, the configuration is not applied.			
11	Force SNTP Time Refresh	Time		basic
	Writing a '1' to this control element will force the monitoring to try to refresh his time with the configured SNTP Time Server.			
12	Set Local Time	Time		basic
	Writing a date and time to this control element allows to manually change the local time of the monitoring. The syntax of the date and the time is: 2007-11-19T13:02:34			
13	Set UTC Time	Time		basic
	Writing a date and time to this control element allows to manually change the UTC time of the monitoring. The syntax of the date and the time is: 2007-11-19T13:02:34			
14	Reset Uptime	Time		basic
	Writing a '1' to this control element will reset the uptime of the monitoring.			
20	Clean and Save XML User Configuration	Controller	Save	basic
	Writing a '1' to this control element will remove the configuration sections related to missing equipments, than save all the configuration of all the connected equipment in a XML format. This file is read when the monitoring is starting in order to configure the monitoring. This file is also accessible trough the FTP server or can be downloaded trough the web interface.			
21	Save XML User Configuration	Controller	Save	basic
	Writing a '1' to this control element will save all the configuration of all the connected (or previously connected) equipment in a XML format. This file is read when the monitoring is starting in order to configure the monitoring. This file is also accessible trough the FTP server or can be downloaded trough the web interface.			
22	Save Inventory	Controller	Save	underdev
	Writing a '1' to this control element will save the inventory in a XML format. This file is read when the monitoring is starting in order to configure the monitoring. This file is also accessible trough the FTP server or can be downloaded trough the web interface.			
33	Save Data Records	Data Records		basic

Control Table			
	Writing a '1' to this control element will force the monitoring to save all the data records. This is useful if you want to unpower the Comp@s monitoring. This function is called automatically everyday.		
34	Export Data Records in CSV	Data Records	basic
	Writing a '1' to this control element will force the monitoring to save all the CVS records files. The CSV files are stored in the records folder.		
35	Archive Data Records	Data Records	basic
	Writing a '1' to this control element will force the monitoring to save all the data records. This is useful if you want to unpower the Comp@s monitoring. This function is called automatically everyday.		
36	Delete All Data Records	Data Records	basic
	Writing a '1' to this control element will force the monitoring to save all the data records. This is useful if you want to unpower the Comp@s monitoring. This function is called automatically everyday.		
40	Emulate Records	Controller	Emulation underdev
41	Reload Translations	Controller	Translation basic
	Writing a '1' to this control element will reload all the csv translation files		
51	Reload License	Controller	License basic
	Writing a '1' to this control element will reload the license file		
55	Manage FTP Server	Controller	Others basic
	This Control is used to manage the FTP Server		
61	Remove Absent Equipments	Inventory	basic
81	Reset CAN Bus Node	Inventory	CAN Bus basic
	Writing a valid CAN bus node id to this control element will reset the correspondent device.		
82	Save CANOpen LSS Configuration	Inventory	CAN Bus basic
83	Start New Inventory	Inventory	CAN Bus basic
91	Upgrade Node Firmware	Inventory	CAN Bus basic
	This control element is used to start the firmware upgrade of a CAN bus Node. You need to upload first the firmware trough ftp in the /user/firmware path. Then you need to write the id number of the CAN Node, followed by a coma, followed by the file name. Example : '101,SOFT_0000030_01.txt'.		
92	Cancel Firmware Upgrade	Inventory	CAN Bus basic
	This control element is used to cancel the running firmware upgrade of a CAN bus Node.		
103	Flash Binary	Files	basic
	This control element is used to start a binary flash update. You need to upload		

Control Table			
	first the firmware trough ftp in the /user/firmware path.		
110 Download File From Url	Files		basic
	This control element is used to download a file wiht HTTP get, the argument is an url. The file is saved in the upload folder		
111 Delete User Uploaded File	Files		basic
	This control element is used to delete a file in the user-upload folder. This is risk-less as these files are not used, they are temporary files.		
112 Move User Uploaded File	Files		basic
	This control element is used to copy a file from the user-upload folder to another one. Be aware of what your are doing !		
113 Extract Zip File in user-upload	Files		basic
	This control element is used to delete a file in the user-upload folder. This is risk-less as these files are not used, they are temporary files.		
120 Send Summary Email	Email		asset
	This control element is used to force the sending of a summary to the configured mail address		
250 Control Lua Script	Scripting		ultimate
	This control element is used to control the lua scripting system. Available command are: enable[Enable Lua Capabilities], disable[Disable Lua Capabilities], restart[Restart All Lua Capabilities], refresh[Read the folder script (if you added a file when system is running)], enable filename[enable filename.lua located in folder user/scripts], disable filename[disable filename.lua located in folder user/scripts], restart filename : Restart fileName[file must be enabled], reseterrors[Reset all errors counters], reseterrors filename[Reset errors from filename		
300 Generic Command Execution	Controller Advanced Function		basic
	This control is used to perform advanced operation.		
501 Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.		
502 Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.		
511 Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element		
512 Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element		
521 Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment		

Control Table

522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2. DC System Tables

2.1. ADIO 10 For Cordex Control

Device Information	
Name	ADIO 10 For Cordex Control
Short Description	Standard I/O module DC systems used as dc system
Long Description	I/O module with 2 inputs for temperature measurement, 4 voltage measurements, 2 current measurements, 8 digital inputs and 8 relays
Hardware Reference	9413 060 05101
Software Reference	SOFT 000099 XX
Equipment Type	ADIO use as controller for Cordex (UCC)
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2

Alarm Table				
	The bus voltage is extra high			
5	DC Bus Voltage Sense Failure	DC Bus		major (6) 4 / 2
	The DC bus voltage sense is defect or unconnected			
6	Mains Failure	AC Bus		minor (4) 5 / 2
	All the phases are down			
7	Mains Partial Failure	AC Bus		minor (4) 10 / 2
	Some rectifiers are in AC Failure			
8	Mains Low	AC Bus		warning (2) 10 / 2
	The main voltage is low on one or more phases			
9	Mains High	AC Bus		warning (2) 10 / 2
	The main voltage is high on one or more phases			
10	One Rectifier Failure	Rectifiers		minor (4) 5 / 2
	One rectifier must be replaced			
11	More Than One Rectifier Failure	Rectifiers		major (6) 5 / 2
	More than one rectifier must be replaced			
12	Missing Rectifiers - Comm Lost	Rectifiers		major (6) 5 / 2
	There is not enough rectifier according to the minimal number of rectifier configuration element. It can also a problem of communication with some rectifiers			
13	Battery Last Test Failed	Battery		minor (4) 5 / 2
	The last battery test did not succeed. Maybe the battery should be replaced.			
14	Battery On Discharge	Battery		minor (4) 5 / 2
	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test.			
18	Battery Temperature Too High	Battery		minor (4) 5 / 2
	The temperature of the battery is too high. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.			
19	Battery Temperature Too Low	Battery		minor (4) 5 / 2
	The temperature of the battery is too low. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.			
20	Battery Temperature Sensor Fail	Battery		minor (4) 5 / 2
	The battery temperature sensor (NTC) is not working properly.			
30	Digital Input 1	Adio 1	Digital Input 1	warning (0) 5 / 2
	The name of the digital input 1 alarm.			
31	Digital Input 2	Adio 1	Digital Input	warning (0) 5 / 2

Alarm Table					
			2		
The name of the digital input 2 alarm.					
32	Digital Input 3	Adio 1	Digital Input 3	warning (0)	5 / 2
The name of the digital input 3 alarm.					
33	Digital Input 4	Adio 1	Digital Input 4	warning (0)	5 / 2
The name of the digital input 4 alarm.					
34	Digital Input 5	Adio 1	Digital Input 5	warning (0)	5 / 2
The name of the digital input 5 alarm.					
35	Digital Input 6	Adio 1	Digital Input 6	warning (0)	5 / 2
The name of the digital input 6 alarm.					
36	Digital Input 7	Adio 1	Digital Input 7	warning (0)	5 / 2
The name of the digital input 7 alarm.					
37	Digital Input 8	Adio 1	Digital Input 8	warning (0)	5 / 2
The name of the digital input 8 alarm.					

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	General			basic
	The DC system can have 4 values: 'FLOAT', 'BOOST', 'BATTERY_TEST' or 'AC_FAILURE'				
2	Previous DC Mode	General			basic
	The previous value of the DC Mode				
11	Bus Voltage	General		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	General		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	General		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	General		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				

Data Table					
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max Nominal	Rectifiers		Watt	basic
	The sum of the deliverable rectifier nominal power.				
24	Rectifiers Output Current Max Nominal	Rectifiers		Ampere	basic
	The sum of the deliverable nominal rectifier current.				
25	Rectifiers Output Power Max Live	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power, taking into account any rectifier power limitation due to temperature, manual defined limitation, etc.				
26	Rectifiers Output Current Max Live	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current. If the system is in battery test, in battery current limitation or in temperature derating, that value will be lower than the nominal.				
27	Average Output Voltage	Rectifier Output		Volt	basic
	The average output voltage of all communicating and non-failed rectifiers.				
32	Number Of Present Rectifier	Rectifiers			basic
	The actual number of present rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers			basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers			basic
	The actual number of rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers			basic
	The actual number of rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers			basic
	The actual number of rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers			basic
	The actual number of rectifier in Over Temperature.				
39	Number Of Comm Fail Rectifier	Rectifiers			basic
	The actual number of rectifier with communication failure.				
41	Mains Phase 1 Voltage	Mains		Volt	basic

Data Table					
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	Mains		Volt	basic
	The voltage on AC phase 2				
43	Mains Phase 3 Voltage	Mains		Volt	basic
	The voltage on AC phase 3				
44	Average AC Mains Input Voltage	Mains		Volt	basic
	The average AC mains input voltage of all communicating and non-failed rectifiers.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery		degree C	basic
	The battery temperature				
72	Battery Test State	Battery			basic
	This is about the result of the last battery test. 9 values are possible : NEVER_TESTED, SUCCESS, ON_GOING, FAILED_TIMEOUT, FAILED_VBUS_TOO_LOW, FAILED_LOAD_TOO_LOW, FAILED_AC_FAILURE, FAILED_CANCELED, FAILED_LVD_OPENED				
73	Battery Test Discharged Capacity Ratio	Battery		%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Battery Test Discharged Capacity	Battery		Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Battery Test Final Voltage	Battery		Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
81	Previous Battery Test State	Battery			basic
	The result of the previous battery test				
82	Days Since Last Test Battery	Battery		day	basic
	The number of hour since the last battery test ended. 0 means never or running.				

Data Table					
84	Next Scheduled Battery Test	Battery			basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery		%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery		minute	basic
	Calculation of the remaining autonomy				
94	Battery Current Integration	Battery		Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	Equalize Live Status	Battery			basic
	General status of the Equalize Feature				
102	Equalize Remaining Time	Battery		minute	basic
	Remaining time in equalize mode				
121	Efficiency Optimized Number Of Rectifier	Asset Data			asset
	The optimal number of ON rectifier for Efficiency Optimization				
201	Voltage 1	Adio 1	Voltage 1	Volt	basic
	Module 1 Voltage Measurement 1				
202	Voltage 2	Adio 1	Voltage 2	Volt	basic
	Module 1 Voltage Measurement 2				
203	Voltage 3	Adio 1	Voltage 3	Volt	basic
	Module 1 Voltage Measurement 3				
204	Voltage 4	Adio 1	Voltage 4	Volt	basic
	Module 1 Voltage Measurement 4				
205	Shunt 1	Adio 1	Shunt 1	Ampere	basic
	Module 1 Shunt Measurement 1				
206	Shunt 2	Adio 1	Shunt 2	Ampere	basic
	Module 1 Shunt Measurement 2				
207	Temperature 1	Adio 1	Temperature 1	degree C	basic
	Module 1 Temperature Measurement 1				
208	Temperature 2	Adio 1	Temperature 2	degree C	basic
	Module 1 Temperature Measurement 2				
219	Relay 1 State	Adio 1	Relay 1		basic
	Actual state of the Relay				
221	Relay 2 State	Adio 1	Relay 2		basic
	Actual state of the Relay				
223	Relay 3 State	Adio 1	Relay 3		basic
	Actual state of the Relay				
225	Relay 4 State	Adio 1	Relay 4		basic
	Actual state of the Relay				

Data Table

227	Relay 5 State	Adio 1	Relay 5		basic
	Actual state of the Relay				
229	Relay 6 State	Adio 1	Relay 6		basic
	Actual state of the Relay				
231	Relay 7 State	Adio 1	Relay 7		basic
	Actual state of the Relay				
233	Relay 8 State	Adio 1	Relay 8		basic
	Actual state of the Relay				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (de- fault)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	Bus Voltage		Volt	47.5/58.2 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	Bus Voltage	Alarm Pa- rameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	Bus Voltage	Alarm Pa- rameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	Bus Voltage	Alarm Pa- rameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	Bus Voltage	Alarm Pa- rameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	Bus Voltage	Alarm Pa- rameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	Bus Voltage	Alarm Pa- rameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	Bus Voltage	Alarm Pa- rameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Volt-	Bus Voltage	Alarm Pa-	Volt	0/5 (0.5)	basic

Config Table						
	age Extra High Hysteresis		rameters			
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					
21	Temperature Compensation Slope	Temperature Compensation		mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Temperature Compensation		Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Temperature Compensation		Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
24	Enable Temperature Compensation In Float Mode	Temperature Compensation			True/False (True)	battery
25	Enable Temperature Compensation In Equalize Mode	Temperature Compensation			True/False (False)	battery
30	Number of Battery String	Battery			0/4 (1)	basic
	This is the number of battery string you want to monitor. If you have a battery, it must be set to at least 1. If not, the battery features like the battery temperature compensation won't be enabled. You are able to specify current limitation globally at the dc system level, and string by string at the battery level.					
31	Battery Charge Current Limit	Battery		Ampere	0.5/5000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10. This limitation applies to the sum of the battery current strings. It is also possible to specify a limitation by string in the Battery Equipment					
32	Battery String Capacity	Battery		Ah	3/10000 (100)	basic
	The battery capacity in Ah.					

Config Table						
33	Battery Temperature Low	Battery		degree C	-100/20 (0)	basic
The temperature under which the alarm 'Battery Temperature Too Low' must be set.						
34	Battery Temperature High	Battery		degree C	5/100 (40)	basic
The temperature over which the alarm 'Battery Temperature Too High' must be set.						
35	Battery Temperature Hysteresis	Battery		degree C	0/10 (2)	basic
The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.						
36	Minimal Current For Discharging Alarm	Battery		Ampere	0/5000 (3)	basic
The minimal discharging current to set the 'Battery On Discharge' alarm.						
37	Current Hysteresis For Discharging Alarm	Battery		Ampere	0/500 (1)	basic
The hysteresis on the 'Battery On Discharge' alarm.						
38	Peukert Number	Battery			1/2 (1)	basic
The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$						
51	Equalize Voltage	Equalize		Volt	49.8/60.2 (56.4)	battery
The Equalize voltage						
52	Equalize Duration	Equalize		minute	10/240 (120)	battery
The timeout in minute after which a system in equalize mode must go back in floating mode.						
55	Enable Periodic Equalize	Equalize			False/True (False)	underdev
The equalize mode must be started periodically						
56	Periodic Equalize Interval	Equalize		day	1/1000 (30)	underdev
The number of days between two periodic started equalize mode.						
59	Enable Auto	Equalize			False/False	battery

Config Table

	Equalize				(False)	
	The equalize mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Arming Low Voltage'. This allows charging the battery faster.					
60	Equalize Arming Voltage Threshold	Equalize		Volt	43/50 (46)	battery
	The voltage under which the equalize mode must be armed.					
61	Equalize Activation Voltage Threshold	Equalize		Volt	42/60.2 (53)	battery
	The voltage at which the equalize mode must be started (when armed)					
64	Enable Equalize Battery Current Terminated	Equalize			False/True (False)	battery
	The equalize mode must be stopped based on battery current conditions					
65	Equalize Battery Current Terminated Threshold	Equalize		Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode when in equalize. (after some duration)					
66	Equalize Battery Current Terminated Duration	Equalize		minute	5/1000 (20)	battery
	The timeout in minute after which a system in equalize mode must go back in floating mode after the Battery Current Terminated is achieved					
70	Battery Test End Voltage	Battery	Battery Test	Volt	44/54 (46)	battery
	The voltage at which any battery test must be stopped.					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Cur-	Battery	Battery Test	Ampere	0/6000 (0)	battery

Config Table

	rent					
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter. If the parameter is set to 0, no regulation will be done					
74	Battery Test Minimal Dis-charge Current	Battery	Battery Test	Ampere	2/200 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Time Out	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Rectifiers	Power Save			asset
	This is the boolean condition which allows or not to automatically enable the Power Save feature					
84	Number Of Redundant Rectifiers	Rectifiers	Power Save		0-100	asset
	Specify the number of extra rectifiers to turn on when power save is enabled					
85	Maximum Power Usage	Rectifiers	Power Save		30-100	asset
	Specify the percentage (of maximum power usage) per rectifier module used in the computation of the Power Save feature.					
91	Minimal Number Of Present Rectifiers	Rectifiers			0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
92	Forced Remote Off Rectifiers	Rectifiers				basic

Config Table

	A list of rectifier which are forced in remote off. The id of the rectifiers must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
101	System Start Delay	Rectifiers		second	0/300 (1)	basic
102	Module Start Delay	Rectifiers		second	0/300 (1)	basic
103	Safe Voltage	Rectifiers		Volt	46/56 (51.4)	basic
141	AC Voltage Low	Mains		Volt		basic
		The AC voltage under which the alarm AC Low is set.				
142	AC Voltage High	Mains		Volt		basic
		The AC voltage over which the alarm AC High is set.				
143	AC Voltage Hysteresis	Mains		Volt		basic
		The AC voltage hysteresis on alarms AC High and AC Low.				
151	Bus Voltage Variable Pointer	Alternate Regulation Pointer Settings				basic
		PLC Pointer to variable related to Bus Voltage				
152	Battery Temperature Variable Pointer	Alternate Regulation Pointer Settings				basic
		PLC Pointer to variable related to Battery Temperature				
201	Shunt 1 Rating At 60mV	Adio 1	Shunt 1	Ampere		basic
		The rating of the shunt 1 at 60mV.				
202	Shunt 2 Rating At 60mV	Adio 1	Shunt 2	Ampere		basic
		The rating of the shunt 2 at 60mV.				
203	Digital Input 1 Name	Adio 1	Digital Input 1		Adio 1	basic
		The name of the digital input 1.				
204	Digital Input 1 Normally Closed	Adio 1	Digital Input 1		True/False (True)	basic
		True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.				
205	Digital Input 2 Name	Adio 1	Digital Input 2		Adio 1	basic

Config Table						
	The name of the digital input 2.					
206	Digital Input 2 Normally Closed	Adio 1	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
207	Digital Input 3 Name	Adio 1	Digital Input 3		Adio 1	basic
	The name of the digital input 3.					
208	Digital Input 3 Normally Closed	Adio 1	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
209	Digital Input 4 Name	Adio 1	Digital Input 4		Adio 1	basic
	The name of the digital input 4.					
210	Digital Input 4 Normally Closed	Adio 1	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
211	Digital Input 5 Name	Adio 1	Digital Input 5		Adio 1	basic
	The name of the digital input 5.					
212	Digital Input 5 Normally Closed	Adio 1	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
213	Digital Input 6 Name	Adio 1	Digital Input 6		Adio 1	basic
	The name of the digital input 6.					
214	Digital Input 6 Normally Closed	Adio 1	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
215	Digital Input 7 Name	Adio 1	Digital Input 7		Adio 1	basic
	The name of the digital input 7.					
216	Digital Input 7 Normally Closed	Adio 1	Digital Input 7		True/False (True)	basic

Config Table

	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
217	Digital Input 8 Name	Adio 1	Digital Input 8		Adio 1	basic
	The name of the digital input 8.					
218	Digital Input 8 Normally Closed	Adio 1	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
219	Relay 1 Change State Boolean Condition	Adio 1	Relay 1		(False)	basic
	Relay 1 Boolean Condition					
220	Relay 1 Normal State	Adio 1	Relay 1		(Energized / De-energized)	basic
	Relay 1 Normal State					
221	Relay 2 Change State Boolean Condition	Adio 1	Relay 2		(False)	basic
	Relay 2 Boolean Condition					
222	Relay 2 Normal State	Adio 1	Relay 2		(Energized / De-energized)	basic
	Relay 2 Normal State					
223	Relay 3 Change State Boolean Condition	Adio 1	Relay 3		(False)	basic
	Relay 3 Boolean Condition					
224	Relay 3 Normal State	Adio 1	Relay 3		(Energized / De-energized)	basic
	Relay 3 Normal State					
225	Relay 4 Change State Boolean Condition	Adio 1	Relay 4		(False)	basic
	Relay 4 Boolean Condition					
226	Relay 4 Normal State	Adio 1	Relay 4		(Energized / De-energized)	basic
	Relay 4 Normal State					
227	Relay 5 Change State Boolean	Adio 1	Relay 5		(False)	basic

Config Table						
	Condition					
	Relay 5 Boolean Condition					
228	Relay 5 Normal State	Adio 1	Relay 5		(Energized / De-energized)	basic
	Relay 5 Normal State					
229	Relay 6 Change State Boolean Condition	Adio 1	Relay 6		(False)	basic
	Relay 6 Boolean Condition					
230	Relay 6 Normal State	Adio 1	Relay 6		(Energized / De-energized)	basic
	Relay 6 Normal State					
231	Relay 7 Change State Boolean Condition	Adio 1	Relay 7		(False)	basic
	Relay 7 Boolean Condition					
232	Relay 7 Normal State	Adio 1	Relay 7		(Energized / De-energized)	basic
	Relay 7 Normal State					
233	Relay 8 Change State Boolean Condition	Adio 1	Relay 8		(False)	basic
	Relay 8 Boolean Condition					
234	Relay 8 Normal State	Adio 1	Relay 8		(Energized / De-energized)	basic
	Relay 8 Normal State					
235	Default Output Relay Binary Vector	Adio 1			(0b11111111)	basic
	This configuration is stored inside the module in case of communication failure					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					

Config Table						
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	DC Mode		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	DC Mode		battery
	The dc system must start a battery test. It will be canceled if the system is not in float mode or if the number of minutes Since Last Ac Fail End is less than the configured minimum time without mains failure			
3	Force Battery Test	DC Mode		battery
	The dc system must force a battery test.			
4	Start Equalize Mode	DC Mode		battery
	The dc system must go in equalize mode.			
21	Locate Rectifier Clear	Locate		basic
22	Locate Rectifier On Phase	Locate		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			

Control Table				
201	Calibrate V1	Adio 1		basic
202	Calibrate V2	Adio 1		basic
203	Calibrate V3	Adio 1		basic
204	Calibrate V4	Adio 1		basic
219	Invert Relay 1 State For X Seconds	Adio 1	Relay 1	basic
	Generate Pulse on relay			
221	Invert Relay 2 State For X Seconds	Adio 1	Relay 2	basic
	Generate Pulse on relay			
223	Invert Relay 3 State For X Seconds	Adio 1	Relay 3	basic
	Generate Pulse on relay			
225	Invert Relay 4 State For X Seconds	Adio 1	Relay 4	basic
	Generate Pulse on relay			
227	Invert Relay 5 State For X Seconds	Adio 1	Relay 5	basic
	Generate Pulse on relay			
229	Invert Relay 6 State For X Seconds	Adio 1	Relay 6	basic
	Generate Pulse on relay			
231	Invert Relay 7 State For X Seconds	Adio 1	Relay 7	basic
	Generate Pulse on relay			
233	Invert Relay 8 State For X Seconds	Adio 1	Relay 8	basic
	Generate Pulse on relay			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic

Control Table

	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments

2.2. ADIO 12 AS MCU

Device Information	
Name	ADIO 12 AS MCU
Short Description	ADIO Module used as MCU for hybrid systems
Long Description	
Hardware Reference	9413 060 05121
Software Reference	SOFT 000121 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2

Alarm Table

	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'			
3 DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'			
4 DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'			
5 DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.			
6 Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.			
7 Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.			
8 Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit			
10 One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'			
11 More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.			
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'			
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
	The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.			
14 Battery On Discharge	Battery		minor (4)	10 / 2
	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery			

Alarm Table

	test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.			
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
2	Previous DC Mode	System			basic
The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
11	Bus Voltage	DC Bus		Volt	basic
The DC bus voltage in volt.					
12	Ratio Delivered On Available Power	System		%	basic
This is the ratio of the delivered power divided by the installed power, in %.					
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
The number of minute since the last AC Failure begin					
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
The number of minute since the last AC Failure end					
21	Rectifiers Output Power	Rectifiers		Watt	basic
The sum of the delivered rectifier power					
22	Rectifiers Output Current	Rectifiers		Ampere	basic

Data Table					
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				

Data Table					
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				

Data Table					
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				

Data Table					
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
211	Battery 1 LVD State	Battery	Battery 1		basic
212	Battery 2 LVD State	Battery	Battery 2		basic
213	Battery 3 LVD State	Battery	Battery 3		basic
214	Battery 4 LVD State	Battery	Battery 4		basic
221	Battery 1 Current	Battery	Battery 1	Ampere	basic
222	Battery 2 Current	Battery	Battery 2	Ampere	basic
223	Battery 3 Current	Battery	Battery 3	Ampere	basic
224	Battery 4 Current	Battery	Battery 4	Ampere	basic
231	Battery 1 Capacity	Battery	Battery 1	Ah	basic
232	Battery 2 Capacity	Battery	Battery 2	Ah	basic
233	Battery 3 Capacity	Battery	Battery 3	Ah	basic
234	Battery 4 Capacity	Battery	Battery 4	Ah	basic

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic

Config Table

	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					

Config Table						
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.						
26	Rectifier Model	Rectifiers				basic
The rectifier model						
27	Forced Remote Off Rectifiers	Rectifiers				basic
A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.						
28	Rectifier CAN Node IDs Range	Rectifiers				basic
29	Rectifier Ids Declared	Rectifiers				basic
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the automony calculation algorithm to detect that the battery is fully charged.						
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.						
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
The battery capacity in Ah.						
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
The temperature under which the alarm 'Battery Temperature Too Low' must be set.						
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
The temperature over which the alarm 'Battery Temperature Too High' must be set.						
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.						
36	Minimal Current For Discharging	Battery	Alarm Parameters	Ampere	0/1000 (2)	basic

Config Table						
	Alarm					
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (0.5)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
40	Number of Battery String	Battery			1-3 or 0-2	basic
	The Number of Battery String in the system					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (2)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					

Config Table						
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Dis-charge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Inter-val	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Dis-charge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
111	Dry Alarm 1 Al-	Relays	Relay 1			plc

Config Table						
	ternative Boolean Condition					
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 AI-ternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 AI-ternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 AI-ternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathe-matical calculation. In order to use these functionalities, you need a license with the 'PLC' module					

Config Table

902	Number Of PLC Alarm	PLC			(0)	plc
The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module						

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
The dc system must go back in floating mode.				
2	Start Battery Test	System		battery
The dc system must start a battery test.				
3	Force Battery Test	System		battery
The dc system must force a battery test.				
4	Start Boost Mode	System		battery
The dc system must go in boost mode.				
11	Open The LVD	LVD		basic
Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.				
12	Close The LVD	LVD		basic
The LVD must be closed				
21	Correct Battery Current Offset	Battery		basic
31	Reset Battery Current Integration	Battery		basic
Reset the integration of the battery current.				
41	Reset Last Battery Test State	Battery		battery
Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.				
51	Save Configuration In MCU	Save		basic
Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.				
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example				
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
Generate Pulse on relay 1				
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
Generate Pulse on relay 2				
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic

Control Table				
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
200	Enable Multi String Management	Battery		battery
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.3. MCU1X6

Device Information	
Name	MCU1X6
Short Description	Controller without LCD display
Long Description	Monitoring and control unit with USB and Ethernet port - ACE186 and ACE106 (+24V) lines
Hardware Reference	9413 060 10121
Software Reference	SOFT 000069 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC				

Alarm Table				
	failure is greater than 0.			
7 Mains Partial Failure	AC Bus		minor (4)	10 / 2
The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8 Mains Low	AC Bus		warning (2)	10 / 2
The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10 One Rectifier Failure	Rectifiers		minor (4)	5 / 2
One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11 More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
There is no mains failure and number of rectifier failures is greater than 1.				
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2

Alarm Table				
	The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.			
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.			
25 Distribution Breaker Open	Digital In-puts		major (6)	5 / 2
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
26 Battery Breaker Open	Digital In-puts		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
27 Digital Input 3	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
28 Digital Input 4	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
29 Digital Input 5	Digital In-puts		disabled (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
30 Digital Input 6	Digital In-puts		disabled (0)	5 / 2
	This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
31 Digital Input 7	Digital In-puts		disabled (0)	5 / 2

Alarm Table

This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
32 Digital Input 8	Digital Inputs		disabled (0)	5 / 2
This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
2	Previous DC Mode	System			basic
The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
11	Bus Voltage	DC Bus		Volt	basic
The DC bus voltage in volt.					
12	Ratio Delivered On Available Power	System		%	basic
This is the ratio of the delivered power divided by the installed power, in %.					
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
The number of minute since the last AC Failure begin					
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
The number of minute since the last AC Failure end					
21	Rectifiers Output Power	Rectifiers		Watt	basic
The sum of the delivered rectifier power					
22	Rectifiers Output Current	Rectifiers		Ampere	basic
The sum of the delivered rectifier current					
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
The sum of the deliverable rectifier power					
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
The sum of the deliverable rectifier current					
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
The maximum possible number of rectifier in this dc system					
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
The actual number of present rectifier in this dc system					

Data Table					
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery				

Data Table					
	test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic

Data Table

	Actual value of the integration of the current, in Ampere * hour				
101 LVD State	LVD				basic
	Actual state of the LVD				
111 Relay 1 State	Relays	Relay 1			basic
	Actual state of the Relay 1				
112 Relay 2 State	Relays	Relay 2			basic
	Actual state of the Relay 2				
113 Relay 3 State	Relays	Relay 3			basic
	Actual state of the Relay 3				
114 Relay 4 State	Relays	Relay 4			basic
	Actual state of the Relay 3				
121 Efficiency Optimized Number Of Rectifier	Smart Energy				asset
	The optimal number of ON rectifier for Efficiency Optimization				
122 System Loss Without Optimisation	Smart Energy			Watt	underdev
	Estimation of the losses without optimisation				
123 System Loss With Optimisation	Smart Energy			Watt	underdev
	Estimation of the losses with optimisation				
124 Rectifier Model Used For Calculation	Smart Energy				asset
	The rectifier model used				
125 Smart Energy Savings	Smart Energy			Watt	asset
	Estimation of the losses with optimisation				
151 Ambient Temperature	Sensors	Temperature		degree C	basic
	The ambient temperature (second temperature sense)				
161 Voltage 1	Sensors	Voltage 1		Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162 Voltage 2	Sensors	Voltage 2		Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163 Voltage 3	Sensors	Voltage 3		Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204 Pulse Counter 4	Sensors	Pulse Counter 4			basic
	The counter value of the digital input 4.				

Config Table

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low'					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High'					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					

Config Table						
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.						
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
The maximal allowed positive compensation.						
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
The maximal allowed negative compensation.						
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.						
26	Rectifier Model	Rectifiers				basic
The rectifier model						
27	Forced Remote Off Rectifiers	Rectifiers				basic
A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.						
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.						
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.						
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
The battery capacity in Ah.						
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
The temperature under which the alarm 'Battery Temperature Too Low' must be set.						
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
The temperature over which the alarm 'Battery Temperature Too High' must be						

Config Table						
	set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
	The rating of the battery shunt at 60mV.					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					

Config Table						
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy	Smart				asset

Config Table

	Boolean Condition	Energy				
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital					

Config Table

	input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					
104	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic

Config Table						
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132 Ambient Temperature High	Sensors	Temperature	degree C			basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133 Ambient Temperature Hysteresis	Sensors	Temperature	degree C			basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
521 Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)		basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522 Write Access User Numbers	Generic	Allowed Users		()		basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601 Event Table Length	Generic	Events		10/4000 (100)		basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602 Event Table Length By Rectifier	Generic	Events		10/4000 (100)		basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901 Number Of PLC Data	PLC			(0)		plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902 Number Of PLC Alarm	PLC			(0)		plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			

Control Table				
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.4. MCU1X6M3

Device Information	
Name	MCU1X6M3
Short Description	MCU for rack 3x1800W
Long Description	
Hardware Reference	9413 061 85051
Software Reference	SOFT 000082 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7	Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8	Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10	One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11	More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.				
12	Missing Rectifiers	Rectifiers		major (6)	5 / 2

Alarm Table

	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'			
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
25 Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26 Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27 Digital Input 3	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28 Digital Input 4	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 4. This alarm is activated if digital input value				

Alarm Table

is different to configuration parameter 'Digital Input Alarm Value'

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rec-				

Data Table					
	tifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic

Data Table					
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				

Data Table					
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic

Config Table

	High		ters			
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High'					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic

Config Table

	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where tx is the autonomy in hours at a constant discharge current of ix Amps. Often, we use t1 = 1h and t2 = 10h					
39	Max Depth Of Discharge for Autonomy Estima-	Battery	Autonomy		10/100 (100)	basic

Config Table

	tion					
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					

Config Table						
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
The battery current under which the battery test must be stopped because the load is too low.						
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
The timeout in minute after which the battery test must be stopped.						
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.						
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.						
86	Battery LVD Node Id	LVD			True/False (False)	basic
This is a list of the node id of the Smart Electronic LVDs, coma separated						
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
The name of the digital input 1						
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.						
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
The name of the digital input 2						
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.						
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic

Config Table

	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic

Config Table

	The maximum length of the table. The value must be comprised between 10 and 4000				
602 Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
901 Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902 Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			

Control Table				
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.5. MCU0024

Device Information	
Name	MCU0024
Short Description	MCU for rack 6x1500W +24V
Long Description	
Hardware Reference	9413 000 XXXX
Software Reference	SOFT 000042 XX

Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2

Alarm Table				
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.			
6 Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.			
7 Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.			
8 Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit			
10 One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'			
11 More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.			
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'			
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
	The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.			
14 Battery On Discharge	Battery		minor (4)	10 / 2
	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.			
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
	The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD			
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
	The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.			
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2

Alarm Table				
	The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.			
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
	The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.			
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.			
25 Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
26 Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
27 Digital Input 3	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
28 Digital Input 4	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
29 Digital Input 5	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
30 Digital Input 6	Digital Inputs		none (0)	5 / 2

Alarm Table

This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
31 Digital Input 7	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
32 Digital Input 8	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
2	Previous DC Mode	System			basic
The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
11	Bus Voltage	DC Bus		Volt	basic
The DC bus voltage in volt.					
12	Ratio Delivered On Available Power	System		%	basic
This is the ratio of the delivered power divided by the installed power, in %.					
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
The number of minute since the last AC Failure begin					
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
The number of minute since the last AC Failure end					
21	Rectifiers Output Power	Rectifiers		Watt	basic
The sum of the delivered rectifier power					
22	Rectifiers Output Current	Rectifiers		Ampere	basic
The sum of the delivered rectifier current					
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
The sum of the deliverable rectifier power					
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
The sum of the deliverable rectifier current					
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
The maximum possible number of rectifier in this dc system					

Data Table					
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
41	Mains Phase 1 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 2				
43	Mains Phase 3 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 3				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never				

Data Table					
	Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery	Battery	Battery Test		basic

Data Table					
	Test				
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic

Data Table

	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	20/30 (27)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	20/30 (22)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/2 (0)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	20/30 (24)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/2 (0.25)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	20/30 (28.25)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/2 (0.25)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	20/30 (29)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/2 (0.25)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					

Config Table						
10	LVD Disconnect Voltage	LVD		Volt	0/25 (21.6)	basic
The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)						
11	LVD Disconnect Delay	LVD		second	1/1000 (1)	basic
The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.						
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-500/0 (-36)	basic
The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.						
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/5 (1)	basic
The maximal allowed positive compensation.						
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-5/0 (-1)	basic
The maximal allowed negative compensation.						
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.						
26	Rectifier Model	Rectifiers				basic
The rectifier model						
27	Forced Remote Off Rectifiers	Rectifiers				basic
A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.						
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.						
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.						

Config Table						
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
	The rating of the battery shunt at 60mV.					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					

Config Table						
52	Boost Activation Low Voltage	Battery	Boost	Volt	21/25 (23)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	25/29 (28.2)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	15/30 (23)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Re-	Battery	Battery Test	minute	0/5000	battery

Config Table

	requested Minutes Without Mains Failure				(1440)	
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4	Digital	Digital Input 4		True/False	basic

Config Table

	Normally Closed	Inputs			(True)	
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					
104	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc

Config Table						
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114 Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4				plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131 Ambient Temperature Low	Sensors	Temperature	degree C			basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132 Ambient Temperature High	Sensors	Temperature	degree C			basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133 Ambient Temperature Hysteresis	Sensors	Temperature	degree C			basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
521 Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)		basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522 Write Access User Numbers	Generic	Allowed Users		()		basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601 Event Table Length	Generic	Events			10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602 Event Table Length By Rectifier	Generic	Events			10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901 Number Of PLC Data	PLC				(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with					

Config Table

	the 'PLC' module				
902	Number Of PLC Alarm	PLC		(0)	plc
The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
The dc system must go back in floating mode.				
2	Start Battery Test	System		battery
The dc system must start a battery test.				
3	Force Battery Test	System		battery
The dc system must force a battery test.				
4	Start Boost Mode	System		battery
The dc system must go in boost mode.				
11	Open The LVD	LVD		basic
Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.				
12	Close The LVD	LVD		basic
The LVD must be closed				
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.				
51	Save Configuration In MCU	Save		basic
Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.				
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example				
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
Set Counter Value				
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
Generate Pulse on relay 1				
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
Generate Pulse on relay 2				

Control Table				
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.6. MCU0348LP

Device Information	
Name	MCU0348LP
Short Description	Low profile controller (1/2U high)
Long Description	Low profile monitoring and control unit for CAPTIN300 line
Hardware 12NC	9413 060 10141
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table			
<u>Id</u>	<u>Name</u>	<u>Group</u>	<u>License</u>
1	Description	Customer	basic
	A free text zone to write a system description		
2	Reference	Customer	basic
	A free text zone to write the customer reference of the system		
11	Product Name	Monitoring	basic

Description Table

	The product name of the DC system monitoring		
12	Hardware Reference	Monitoring	basic
	The hardware reference of the DC system monitoring		
14	Software Reference	Monitoring	asset
	The serial number of the DC system monitoring		
16	Serial Number	Monitoring	asset
	The serial number of the DC system monitoring		
17	Manufacturing ID	Monitoring	asset
	The batch id of the DC system monitoring		
18	Manufacturing Date	Monitoring	asset
	The production date of the DC system monitoring		

Alarm Table

<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Severity Type (Level)</i></u>
1	DC Bus Extra Low	major (6)
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is BATTERY TEST	
2	DC Bus Low	minor (4)
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'	
3	DC Bus High	minor (4)
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'	
4	DC Bus Extra High	major (6)
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'	
5	DC Bus Voltage Sense Failure	major (6)
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.	
6	Mains Failure	minor (4)
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.	
7	Mains Partial Failure	minor (4)
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.	
8	Mains Low	warning (2)

Alarm Table

	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit
10 One Rectifier Failure	minor (4)
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'
11 More Than One Rectifier Failure	major (6)
	There is no mains failure and number of rectifier failures is greater than 1.
12 Missing Rectifiers	major (6)
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'
13 Battery Last Test Failed	minor (4)
	The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced.
14 Battery On Discharge	minor (4)
	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.
17 Battery LVD Relay Open	major (6)
	The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD
18 Battery Temperature Too High	minor (4)
	The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.
19 Battery Temperature Too Low	minor (4)
	The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.
20 Battery Temperature Sensor Fail	minor (4)
	The battery temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.
21 Ambient Temperature Too High	minor (4)
	The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.
22 Ambient Temperature Too Low	minor (4)
	The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.

Alarm Table

23 Ambient Temperature Sensor Fail	minor (4)
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.	
25 Distribution Breaker Open	major (6)
This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
26 Battery Breaker Open	minor (4)
This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
27 Digital Input 3	none (0)
This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
28 Digital Input 4	none (0)
This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
29 Digital Input 5	none (0)
This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
30 Digital Input 6	none (0)
This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	

Data Table

<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>Unit</i></u>	<u><i>License</i></u>
1	DC Mode	General		basic
The DC system can have 4 values: 'FLOAT', 'BOOST', 'BATTERY_TEST', 'AC_FAILURE' or SAFE				
2	Previous DC Mode	General		basic
The previous value of the DC Mode				
11	Bus Voltage	General	Volt	basic
The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	General	%	basic
This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	General	minute	basic
The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	General	minute	basic
The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers	Watt	basic
The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers	Ampere	basic
The sum of the delivered rectifier current				

Data Table				
23	Rectifiers Output Power Max	Rectifiers	Watt	basic
	The sum of the deliverable rectifier power			
24	Rectifiers Output Current Max	Rectifiers	Ampere	basic
	The sum of the deliverable rectifier current			
31	Number Of Rectifier Max	Rectifiers		basic
	The maximum possible number of rectifier in this dc system			
32	Number Of Present Rectifier	Rectifiers		basic
	The actual number of present rectifier in this dc system			
33	Number Of Absent Rectifier	Rectifiers		basic
	The actual number of absent rectifier in this dc system			
34	Number Of Active Rectifier	Rectifiers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.			
35	Number Of AC-Fail Rectifier	Rectifiers		basic
	The actual number or rectifier in AC Failure.			
36	Number Of DC-Fail Rectifier	Rectifiers		basic
	The actual number or rectifier with DC Failure.			
37	Number Of Remote Off Rectifier	Rectifiers		basic
	The actual number or rectifier in remote off.			
38	Number Of Over Temperature Rectifier	Rectifiers		basic
	The actual number or rectifier in Over Temperature.			
51	Load Power	Load	Watt	basic
	Estimation of the load power consumption			
52	Load Current	Load	Ampere	basic
	Estimation of the load current consumption			
61	Battery Input Current	Battery	Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging			
62	Battery Input Power	Battery	Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging			
71	Battery Temperature	Battery	degree C	basic
	The battery temperature			
72	Battery Test State	Battery		basic
	This is about the result of the last battery test. 9 values are possible : NEVER_TESTED, SUCCESS, ON_GOING, FAILED_TIMEOUT, FAILED_VBUS_TOO_LOW, FAILED_LOAD_TOO_LOW, FAILED_AC_FAILURE, FAILED_CANCELED, FAILED_LVD_OPENED			
73	Battery Test Discharged Capacity	Battery	%	basic
	This is the battery capacity, in percent, discharged during the last battery test.			

Data Table

	This value is updated at the end of the battery test.			
74	Battery Test Discharged Capacity Ah	Battery	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.			
75	Battery Test Final Voltage	Battery	%	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.			
81	Previous Battery Test State	Battery		basic
	The result of the previous battery test			
82	Minutes Since Last Test Battery	Battery		basic
	The number of minute without battery test			
91	Battery Charge Capacity	Battery	%	basic
	The battery charge capacity, calculated by integration of the current.			
92	Calculated Autonomy	Battery	minute	basic
	Calculation of the remaining autonomy			
93	Battery Current Integration As	Battery	As	basic
	Actual value of the integration of the current, in Ampere * second			
94	Battery Current Integration Ah	Battery	Ah	basic
	Actual value of the integration of the current, in Ampere * hour			
101	LVD State	LVD		basic
	Actual state of the LVD			
121	Efficiency Optimized Number Of Rectifier	Asset Data		asset
	The optimal number of ON rectifier for Efficiency Optimization			
122	System Loss Without Optimisation	Asset Data	Watt	asset
	The optimal number of ON rectifier for Efficiency Optimization			
123	System Loss With Optimisation	Asset Data	Watt	asset
	The optimal number of ON rectifier for Efficiency Optimization			
151	Ambient Temperature	Sensors	degree C	basic
	The ambient temperature (second temperature sense)			
204	Digital Input 4 Counter	Sensors		basic
	The counter value of the digital input 4.			

Config Table

<u>Id</u>	<u>Name</u>	<u>Group</u>	<u>Unit</u>	<u>Range: Min/Max (default)</u>	<u>License</u>
1	DC Bus Float Voltage at 25 degC	Bus Voltage	Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree				
2	DC Bus Voltage Extra Low	Bus Voltage	Volt	40/60 (45)	basic

Config Table					
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.				
3	DC Bus Voltage Extra Low Hysteresis	Bus Voltage	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.				
4	DC Bus Voltage Low	Bus Voltage	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.				
5	DC Bus Voltage Low Hysteresis	Bus Voltage	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low				
6	DC Bus Voltage High	Bus Voltage	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.				
7	DC Bus Voltage High Hysteresis	Bus Voltage	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High				
8	DC Bus Voltage Extra High	Bus Voltage	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.				
9	DC Bus Voltage Extra High Hysteresis	Bus Voltage	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High				
10	LVD Disconnect Voltage	Bus Voltage	Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered.				
11	LVD Disconnect Delay	Bus Voltage	second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.				
21	Temperature Compensation Slope	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.				
22	Maximum Positive Temperature Compensation	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.				
23	Maximum Negative Temperature Compensation	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.				
25	Minimal Number Of Present Rectifiers	Rectifiers		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present				

Config Table

	rectifiers, the alarm 'Missing Rectifiers' is set.				
26	Rectifier Model	Rectifiers			basic
	The rectifier model				
27	Forced Remote Off Rectifiers	Rectifiers			basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.				
31	Battery Charge Current Limit	Battery	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.				
32	Battery String Capacity	Battery	Ah	3/1000 (100)	basic
	The battery capacity in Ah.				
33	Battery Temperature Low	Battery	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.				
34	Battery Temperature High	Battery	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.				
35	Battery Temperature Hysteresis	Battery	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.				
36	Minimal Current For Discharging Alarm	Battery	Ampere	0/1000 (0.5)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.				
37	Current Hysteresis For Discharging Alarm	Battery	Ampere	0/50 (0.2)	basic
	The hysteresis on the 'Battery On Discharge' alarm.				
51	Boost Automatic	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.				
52	Boost Activation Low Voltage	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.				
53	Boost Termination Voltage	Boost	Volt	50/58 (56.4)	battery

Config Table					
	The voltage over which the system must go back to floating mode.				
54	Boost Termination Current	Boost	Ampere	0/100 (2)	battery
	The battery charging current under which the system must go back to floating mode.				
55	Boost Termination Time	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.				
70	Battery Test End Voltage	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped.				
71	Battery Test Discharge Ratio	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test				
72	Battery Test Interval	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.				
73	Battery Test Discharge Current	Battery Test	Ampere	0.5/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.				
74	Battery Test Minimal Discharge Current	Battery Test	Ampere	0.2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.				
75	Battery Test Time Out	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.				
76	Battery Test Requested Minutes Without Mains Failure	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.				
83	Smart Energy Boolean Condition	Smart Energy		121-125	asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.				
86	Battery LVD Node Id	LVD		True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated				
91	Digital Input 1 Name	Digital Inputs		Distribution	basic

Config Table					
				Breaker Open	
	The name of the digital input 1				
92	Digital Input 1 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.				
93	Digital Input 2 Name	Digital Inputs		Battery Breaker Open	basic
	The name of the digital input 2				
94	Digital Input 2 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.				
95	Digital Input 3 Name	Digital Inputs		Digital Input 3	basic
	The name of the digital input 3				
96	Digital Input 3 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.				
97	Digital Input 4 Name	Digital Inputs		Digital Input 4	basic
	The name of the digital input 4				
98	Digital Input 4 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.				
99	Digital Input 5 Name	Digital Inputs		Digital Input 5	basic
	The name of the digital input 5				
100	Digital Input 5 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.				
101	Digital Input 6 Name	Digital Inputs		Digital Input 6	basic
	The name of the digital input 6				
102	Digital Input 6 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.				
111	Dry Alarm 1 Alternative Boolean Condition	Dry Alarms		False	plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.				
112	Dry Alarm 2 Alternative	Dry Alarms		False	plc

Config Table					
	tive Boolean Condition				
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.				
113	Dry Alarm 3 Alternative Boolean Condition	Dry Alarms		False	plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.				
114	Dry Alarm 4 Alternative Boolean Condition	Dry Alarms		False	plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.				
131	Ambient Temperature Low	Sensors	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.				
132	Ambient Temperature High	Sensors	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.				
133	Ambient Temperature Hysteresis	Sensors	degree C		basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.				
521	Read Access User Numbers	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4				
522	Write Access User Numbers	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601	Event Table Length	Event		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
611	SNMP Trap Targets IP	Event		192.168.45.1	basic
	One or multiple target IP to send traps, coma separated. Ex: 130.145.23.1, 130.23.12.45				
612	Minimal Event Severity For Traps	Event		(none)	basic

Config Table

	This is the minimal severity of the event to send a SNMP trap			
651 XML Events Primary Post URL	Event			basic
	This is the first URL at which the events related to this equipment must be posted. The XML ETSI standard is used in the posted data content.			
652 XML Events Primary Post Login	Event			basic
	The login which must be used when posting events to the primary server			
653 XML Events Primary Post Password	Event			basic
	The password which must be used when posting events to the primary server			
661 XML Events Secondary Post URL	Event			basic
	This is the second URL at which the events related to this equipment must be posted. The XML ETSI standard is used in the posted data content. This allows having redundancy with the management server.			
662 XML Events Secondary Post Login	Event			basic
	The login which must be used when posting events to the secondary server			
663 XML Events Secondary Post Password	Event			basic
	The password which must be used when posting events to the secondary server			
901 Number Of PLC Data	PLC		(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module			
902 Number Of PLC Alarm	PLC		(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module			

Control Table

<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
1	Back To Float	DC Mode	basic
	The dc system must go back in floating mode.		
2	Start Battery Test	DC Mode	battery
	The dc system must start a battery test.		
3	Force Battery Test	DC Mode	battery

Control Table			
	The dc system must force a battery test.		
4	Start Boost Mode	DC Mode	battery
	The dc system must go in boost mode.		
11	Open The LVD	LVD	basic
	The LVD must be opened		
12	Close The LVD	LVD	basic
	The LVD must be closed		
21	Correct Battery Current Offset	Battery	basic
	No information		
31	Reset Battery Current Integration	Battery	basic
	Reset the integration of the battery current.		
41	Reset Last Battery Test State	Battery	battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.		
51	Save Configuration In MCU	Save	basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.		
61	Set Digital Input 4 Counter Value	Counters	basic
	Set Counter Value		
501	Clear My Events	Event	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.		
502	Clear All Events	Event	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.		
511	Add Event	Event	basic
	This control element adds an event of severity none. The event name is the text written to this control element		
512	Add Major Event	Event	basic
	This control element adds an event of severity major. The event name is the text written to this control element		
521	Reset Default Names	Event	basic
	This control element adds an event of severity major. The event name is the text written to this control element		

2.7. MCU0348M4

Device Information	
Name	MCU0348M4
Short Description	1U high controller with LCD display
Long Description	Monitoring and control unit, 1U high with LCD display, USB and

tion	Ethernet port - Captin300 line
Hardware 12NC	9413 060 10131
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
1	Description A free text zone to write a system description	Customer	basic
2	Reference A free text zone to write the customer reference of the system	Customer	basic
11	Product Name The product name of the DC system monitoring	Monitoring	basic
12	Hardware Reference The hardware reference of the DC system monitoring	Monitoring	basic
14	Software Reference The serial number of the DC system monitoring	Monitoring	asset
16	Serial Number The serial number of the DC system monitoring	Monitoring	asset
17	Manufacturing ID The batch id of the DC system monitoring	Monitoring	asset
18	Manufacturing Date The production date of the DC system monitoring	Monitoring	asset

Alarm Table

<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Severity Type (Level)</i></u>
1	DC Bus Extra Low The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is BATTERY TEST	major (6)
2	DC Bus Low The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'	minor (4)
3	DC Bus High The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'	minor (4)
4	DC Bus Extra High	major (6)

Alarm Table

	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'	
5	DC Bus Voltage Sense Failure	major (6)
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.	
6	Mains Failure	minor (4)
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.	
7	Mains Partial Failure	minor (4)
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.	
8	Mains Low	warning (2)
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit	
10	One Rectifier Failure	minor (4)
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'	
11	More Than One Rectifier Failure	major (6)
	There is no mains failure and number of rectifier failures is greater than 1.	
12	Missing Rectifiers	major (6)
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'	
13	Battery Last Test Failed	minor (4)
	The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced.	
14	Battery On Discharge	minor (4)
	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.	
17	Battery LVD Relay Open	major (6)
	The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD	
18	Battery Temperature Too High	minor (4)
	The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.	
19	Battery Temperature Too Low	minor (4)
	The temperature of the battery is too low and is greater than -600 units. There is	

Alarm Table	
	an hysteresis corresponding to battery parameter 'Temperature hysteresis'.
20 Battery Temperature Sensor Fail	minor (4)
The battery temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.	
21 Ambient Temperature Too High	minor (4)
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.	
22 Ambient Temperature Too Low	minor (4)
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.	
23 Ambient Temperature Sensor Fail	minor (4)
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.	
25 Distribution Breaker Open	major (6)
This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
26 Battery Breaker Open	minor (4)
This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
27 Digital Input 3	none (0)
This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
28 Digital Input 4	none (0)
This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
29 Digital Input 5	none (0)
This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	
30 Digital Input 6	none (0)
This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'	

Data Table				
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>Unit</i></u>	<u><i>License</i></u>
1	DC Mode	General		basic
	The DC system can have 4 values: 'FLOAT', 'BOOST', 'BATTERY_TEST', 'AC_FAILURE' or SAFE			
2	Previous DC Mode	General		basic

Data Table				
	The previous value of the DC Mode			
11	Bus Voltage	General	Volt	basic
	The DC bus voltage in volt.			
12	Ratio Delivered On Available Power	General	%	basic
	This is the ratio of the delivered power divided by the installed power, in %.			
13	Minutes Since Last AC Failure Begin	General	minute	basic
	The number of minute since the last AC Failure begin			
14	Minutes Since Last AC Failure End	General	minute	basic
	The number of minute since the last AC Failure end			
21	Rectifiers Output Power	Rectifiers	Watt	basic
	The sum of the delivered rectifier power			
22	Rectifiers Output Current	Rectifiers	Ampere	basic
	The sum of the delivered rectifier current			
23	Rectifiers Output Power Max	Rectifiers	Watt	basic
	The sum of the deliverable rectifier power			
24	Rectifiers Output Current Max	Rectifiers	Ampere	basic
	The sum of the deliverable rectifier current			
31	Number Of Rectifier Max	Rectifiers		basic
	The maximum possible number of rectifier in this dc system			
32	Number Of Present Rectifier	Rectifiers		basic
	The actual number of present rectifier in this dc system			
33	Number Of Absent Rectifier	Rectifiers		basic
	The actual number of absent rectifier in this dc system			
34	Number Of Active Rectifier	Rectifiers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.			
35	Number Of AC-Fail Rectifier	Rectifiers		basic
	The actual number or rectifier in AC Failure.			
36	Number Of DC-Fail Rectifier	Rectifiers		basic
	The actual number or rectifier with DC Failure.			
37	Number Of Remote Off Rectifier	Rectifiers		basic
	The actual number or rectifier in remote off.			
38	Number Of Over Temperature Rectifier	Rectifiers		basic
	The actual number or rectifier in OVER Temperature.			
51	Load Power	Load	Watt	basic
	Estimation of the load power consumption			
52	Load Current	Load	Ampere	basic
	Estimation of the load current consumption			
61	Battery Input Current	Battery	Ampere	basic

Data Table				
	Measurement of the battery input current. A negative value means that the battery is discharging			
62	Battery Input Power	Battery	Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging			
71	Battery Temperature	Battery	degree C	basic
	The battery temperature			
72	Battery Test State	Battery		basic
	This is about the result of the last battery test. 9 values are possible : NEVER_TESTED, SUCCESS, ON_GOING, FAILED_TIMEOUT, FAILED_VBUS_TOO_LOW, FAILED_LOAD_TOO_LOW, FAILED_AC_FAILURE, FAILED_CANCELED, FAILED_LVD_OPENED			
73	Battery Test Discharged Capacity	Battery	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.			
74	Battery Test Discharged Capacity Ah	Battery	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.			
75	Battery Test Final Voltage	Battery	%	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.			
81	Previous Battery Test State	Battery		basic
	The result of the previous battery test			
82	Minutes Since Last Test Battery	Battery		basic
	The number of minute without battery test			
91	Battery Charge Capacity	Battery	%	basic
	The battery charge capacity, calculated by integration of the current.			
92	Calculated Autonomy	Battery	minute	basic
	Calculation of the remaining autonomy			
93	Battery Current Integration As	Battery	As	basic
	Actual value of the integration of the current, in Ampere * second			
94	Battery Current Integration Ah	Battery	Ah	basic
	Actual value of the integration of the current, in Ampere * hour			
101	LVD State	LVD		basic
	Actual state of the LVD			
121	Efficiency Optimized Number Of Rectifier	Asset Data		asset
	The optimal number of ON rectifier for Efficiency Optimization			
122	System Loss Without Optimisation	Asset Data	Watt	asset
	The optimal number of ON rectifier for Efficiency Optimization			
123	System Loss With Optimisation	Asset Data	Watt	asset
	The optimal number of ON rectifier for Efficiency Optimization			

Data Table

151	Ambient Temperature	Sensors	degree C	basic
	The ambient temperature (second temperature sense)			
204	Digital Input 4 Counter	Sensors		basic
	The counter value of the digital input 4.			

Config Table

<i><u>Id</u></i>	<i><u>Name</u></i>	<i><u>Group</u></i>	<i><u>Unit</u></i>	<i><u>Range: Min/Max</u></i> <i><u>(default)</u></i>	<i><u>License</u></i>
1	DC Bus Float Voltage at 25 degC	Bus Voltage	Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree				
2	DC Bus Voltage Extra Low	Bus Voltage	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.				
3	DC Bus Voltage Extra Low Hysteresis	Bus Voltage	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.				
4	DC Bus Voltage Low	Bus Voltage	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.				
5	DC Bus Voltage Low Hysteresis	Bus Voltage	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low				
6	DC Bus Voltage High	Bus Voltage	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.				
7	DC Bus Voltage High Hysteresis	Bus Voltage	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High				
8	DC Bus Voltage Extra High	Bus Voltage	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.				
9	DC Bus Voltage Extra High Hysteresis	Bus Voltage	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High				
10	LVD Disconnect Voltage	Bus Voltage	Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered.				
11	LVD Disconnect Delay	Bus Voltage	second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.				
21	Temperature Com-	Temperature	mV/degree	-1000/0 (-72)	basic

Config Table

	Compensation Slope	Compensation			
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.				
22	Maximum Positive Temperature Compensation	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.				
23	Maximum Negative Temperature Compensation	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.				
25	Minimal Number Of Present Rectifiers	Rectifiers		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.				
26	Rectifier Model	Rectifiers			basic
	The rectifier model				
27	Forced Remote Off Rectifiers	Rectifiers			basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.				
31	Battery Charge Current Limit	Battery	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.				
32	Battery String Capacity	Battery	Ah	3/1000 (100)	basic
	The battery capacity in Ah.				
33	Battery Temperature Low	Battery	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.				
34	Battery Temperature High	Battery	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.				
35	Battery Temperature Hysteresis	Battery	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.				
36	Minimal Current For Discharging Alarm	Battery	Ampere	0/1000 (0.5)	basic

Config Table

	The minimal discharging current to set the 'Battery On Discharge' alarm.				
37	Current Hysteresis For Discharging Alarm	Battery	Ampere	0/50 (0.2)	basic
	The hysteresis on the 'Battery On Discharge' alarm.				
51	Boost Automatic	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.				
52	Boost Activation Low Voltage	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.				
53	Boost Termination Voltage	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.				
54	Boost Termination Current	Boost	Ampere	0/100 (2)	battery
	The battery charging current under which the system must go back to floating mode.				
55	Boost Termination Time	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.				
70	Battery Test End Voltage	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped.				
71	Battery Test Discharge Ratio	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test				
72	Battery Test Interval	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.				
73	Battery Test Discharge Current	Battery Test	Ampere	0.5/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.				
74	Battery Test Minimal Discharge Current	Battery Test	Ampere	0.2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.				
75	Battery Test Time Out	Battery Test	minute	1/5000 (10)	battery

Config Table

	The timeout in minute after which the battery test must be stopped.				
76	Battery Test Requested Minutes Without Mains Failure	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.				
83	Smart Energy Boolean Condition	Smart Energy		121-125	asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.				
86	Battery LVD Node Id	LVD		True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated				
91	Digital Input 1 Name	Digital Inputs		Distribution Breaker Open	basic
	The name of the digital input 1				
92	Digital Input 1 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.				
93	Digital Input 2 Name	Digital Inputs		Battery Breaker Open	basic
	The name of the digital input 2				
94	Digital Input 2 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.				
95	Digital Input 3 Name	Digital Inputs		Digital Input 3	basic
	The name of the digital input 3				
96	Digital Input 3 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.				
97	Digital Input 4 Name	Digital Inputs		Digital Input 4	basic
	The name of the digital input 4				
98	Digital Input 4 Normally Closed	Digital Inputs		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.				
99	Digital Input 5 Name	Digital Inputs		Digital Input 5	basic
	The name of the digital input 5				
100	Digital Input 5 Normally Closed	Digital Inputs		True/False (True)	basic

Config Table

	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.				
101 Digital Input 6 Name	Digital Inputs		Digital Input 6	basic	
	The name of the digital input 6				
102 Digital Input 6 Normally Closed	Digital Inputs		True/False (True)	basic	
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.				
111 Dry Alarm 1 Alternative Boolean Condition	Dry Alarms		False	plc	
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.				
112 Dry Alarm 2 Alternative Boolean Condition	Dry Alarms		False	plc	
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.				
113 Dry Alarm 3 Alternative Boolean Condition	Dry Alarms		False	plc	
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.				
114 Dry Alarm 4 Alternative Boolean Condition	Dry Alarms		False	plc	
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.				
131 Ambient Temperature Low	Sensors	degree C		basic	
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.				
132 Ambient Temperature High	Sensors	degree C		basic	
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.				
133 Ambient Temperature Hysteresis	Sensors	degree C		basic	
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.				
521 Read Access User Numbers	Allowed Users		(1,2,3,4,5)	basic	
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4				

Config Table					
522	Write Access User Numbers	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601	Event Table Length	Event		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
611	SNMP Trap Targets IP	Event		192.168.45.1	basic
	One or multiple target IP to send traps, coma separated. Ex: 130.145.23.1, 130.23.12.45				
612	Minimal Event Severity For Traps	Event		(none)	basic
	This is the minimal severity of the event to send a SNMP trap				
651	XML Events Primary Post URL	Event			basic
	This is the first URL at which the events related to this equipment must be posted. The XML ETSI standard is used in the posted data content.				
652	XML Events Primary Post Login	Event			basic
	The login which must be used when posting events to the primary server				
653	XML Events Primary Post Password	Event			basic
	The password which must be used when posting events to the primary server				
661	XML Events Secondary Post URL	Event			basic
	This is the second URL at which the events related to this equipment must be posted. The XML ETSI standard is used in the posted data content. This allows having redundancy with the management server.				
662	XML Events Secondary Post Login	Event			basic
	The login which must be used when posting events to the secondary server				
663	XML Events Secondary Post Password	Event			basic
	The password which must be used when posting events to the secondary server				
901	Number Of PLC Data	PLC		(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902	Number Of PLC Alarm	PLC		(0)	plc

Config Table

	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module

Control Table

<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
1	Back To Float	DC Mode	basic
	The dc system must go back in floating mode.		
2	Start Battery Test	DC Mode	battery
	The dc system must start a battery test.		
3	Force Battery Test	DC Mode	battery
	The dc system must force a battery test.		
4	Start Boost Mode	DC Mode	battery
	The dc system must go in boost mode.		
11	Open The LVD	LVD	basic
	The LVD must be opened		
12	Close The LVD	LVD	basic
	The LVD must be closed		
21	Correct Battery Current Offset	Battery	basic
	No information		
31	Reset Battery Current Integration	Battery	basic
	Reset the integration of the battery current.		
41	Reset Last Battery Test State	Battery	battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.		
51	Save Configuration In MCU	Save	basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.		
61	Set Digital Input 4 Counter Value	Counters	basic
	Set Counter Value		
501	Clear My Events	Event	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.		
502	Clear All Events	Event	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.		
511	Add Event	Event	basic
	This control element adds an event of severity none. The event name is the text written to this control element		

Control Table

512 Add Major Event	Event	basic
This control element adds an event of severity major. The event name is the text written to this control element		
521 Reset Default Names	Event	basic
This control element adds an event of severity major. The event name is the text written to this control element		

2.8. MCU0348M4 / MCU0348LP

Device Information	
Name	MCU0348M4 / MCU0348LP
Short Description	1U high controller with LCD display / Low profile controller (1/2U high)
Long Description	Monitoring and control unit, 1U high with LCD display, USB and Ethernet port - Captin300 line / Low profile monitoring and control unit for CAPTIN300 line
Hardware Reference	9413 060 10131 / 9413 060 10141
Software Reference	SOFT 000081 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
A free text zone to write a system description				
2	Reference	Description	Custom Description	basic
A free text zone to write the customer reference of the system				
11	Product Name	Description	Product Info	basic
The product name of the DC system monitoring				
12	Hardware Reference	Description	Product Info	basic
The hardware reference of the DC system monitoring				
14	Software Reference	Description	Product Info	asset
The serial number of the DC system monitoring				
16	Serial Number	Description	Product Info	asset
The serial number of the DC system monitoring				
18	Manufacturing Date	Description	Product Info	asset
The production date of the DC system monitoring				

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7	Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8	Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10	One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11	More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.				
12	Missing Rectifiers	Rectifiers		major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				

Alarm Table				
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
25 Distribution Breaker	Digital In-		major (6)	5 / 2

Alarm Table

	Open	puts			
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26	Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27	Digital Input 3	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28	Digital Input 4	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
29	Digital Input 5	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
30	Digital Input 6	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic

Data Table					
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				

Data Table					
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic

Data Table

	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset

Data Table

	Estimation of the losses with optimisation				
151 Ambient Temperature	Sensors	Temperature	degree C	basic	
	The ambient temperature (second temperature sense)				
204 Pulse Counter 4	Sensors	Pulse Counter 4		basic	
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low'					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High'					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic

Config Table

	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic

Config Table

	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (0.5)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (0.2)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery

Config Table

	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (2)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	0.5/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	0.2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					

Config Table						
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic

Config Table

	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133	Ambient Temperature Hysteresis	Sensors	Temperature	degree C		basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					

Config Table						
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery

Control Table				
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			

Control Table

522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.9. MCU0548M4**Device Information**

Name	MCU0548M4
Short Description	Controller with basic site monitoring functions (4x500W)
Long Description	Monitoring and control unit with front connector for site monitoring - ACE054 line
Hardware Reference	9413 060 55101
Software Reference	SOFT 000080 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2

Alarm Table

	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'			
2 DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'			
3 DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'			
4 DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'			
5 DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.			
6 Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.			
7 Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.			
8 Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit			
10 One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'			
11 More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.			
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'			
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
	The last battery test did not succeed and was not cancelled. Maybe the battery			

Alarm Table

	should be replaced. Check inside the dc system data for more information about the last test.			
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
24 Humidity Out Of Range	Sensors	Humidity	major (0)	5 / 2
The humidity is not comprised between a lower limit, corresponding to configuration parameter 'Humidity Low', and a upper limit, corresponding to configuration				

Alarm Table

	parameter 'Humidity High'. There is an hysteresis corresponding to configuration parameter 'Humidity Hysteresis'. This alarm is only active in MCU master types 0548.			
25 Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26 Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27 Digital Input 3	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28 Digital Input 4	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
29 Digital Input 5	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
30 Digital Input 6	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
2	Previous DC Mode	System			basic
The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
11	Bus Voltage	DC Bus		Volt	basic
The DC bus voltage in volt.					
12	Ratio Delivered On Available Power	System		%	basic
This is the ratio of the delivered power divided by the installed power, in %.					
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic

Data Table					
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				

Data Table					
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the				

Data Table					
	battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset

Data Table

	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
152	Relative Humidity	Sensors	Humidity Sensor	%	basic
	The relative humidity in the cabinet				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low'					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High'					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic

Config Table						
	Extra High Hysteresis		ters			
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic

Config Table

	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (2)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (0.5)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					

Config Table						
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (2)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Re-	Battery	Battery Test	minute	0/5000	battery

Config Table						
	requested Minutes Without Mains Failure				(1440)	
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4	Digital	Digital Input 4		True/False	basic

Config Table

	Normally Closed	Inputs			(True)	
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be					

Config Table						
	set.					
133 Ambient Temperature Hysteresis	Sensors	Temperature	degree C			basic
The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.						
135 Cabinet Humidity High	Sensors	Humidity Sensor	%	0/100 (80)		basic
The relative humidity over which the cabinet humidity is too high						
136 Cabinet Humidity Low	Sensors	Humidity Sensor	%	0/100 (0)		basic
The relative humidity over which the cabinet humidity is too low						
521 Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)		basic
The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4						
522 Write Access User Numbers	Generic	Allowed Users		()		basic
The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4						
601 Event Table Length	Generic	Events		10/4000 (100)		basic
The maximum length of the table. The value must be comprised between 10 and 4000						
602 Event Table Length By Rectifier	Generic	Events		10/4000 (100)		basic
The maximum length of the table. The value must be comprised between 10 and 4000						
901 Number Of PLC Data	PLC			(0)		plc
The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module						
902 Number Of PLC Alarm	PLC			(0)		plc
The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module						

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic

Control Table

	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.		
511 Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element		
512 Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element		
521 Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment		
522 Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments		

2.10. MCU0948DW

Device Information	
Name	MCU0948DW
Short Description	MCU for rack 2x850W -54V
Long Description	
Hardware Reference	9413 000 XXXXX
Software Reference	SOFT 000076 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			

Description Table

18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7	Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8	Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10	One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11	More Than One Recti-	Rectifiers		major (6)	10 / 2

Alarm Table				
	fier Failure			
	There is no mains failure and number of rectifier failures is greater than 1.			
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'			
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
	The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.			
14 Battery On Discharge	Battery		minor (4)	10 / 2
	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.			
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
	The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD			
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
	The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.			
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
	The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.			
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
	The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.			
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			

Alarm Table					
23	Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
25	Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26	Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27	Digital Input 3	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28	Digital Input 4	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
29	Digital Input 5	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
30	Digital Input 6	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
31	Digital Input 7	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
32	Digital Input 8	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic

Data Table

	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off	Rectifiers	Numbers		basic

Data Table					
	Rectifier				
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
41	Mains Phase 1 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 2				
43	Mains Phase 3 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 3				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the bat-				

Data Table					
	tery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				

Data Table					
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage	DC Bus	Alarm Parame-	Volt	40/60 (45)	basic

Config Table

	Extra Low		ters			
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic

Config Table

	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (2)	basic

Config Table

	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (0.5)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (2)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					

Config Table						
71	Battery Test Dis-charge Ratio	Battery	Battery Test	%	0/100 (0)	battery
The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test						
72	Battery Test In-terval	Battery	Battery Test	day	0/3000 (0)	battery
The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.						
73	Battery Test Dis-charge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.						
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
The battery current under which the battery test must be stopped because the load is too low.						
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
The timeout in minute after which the battery test must be stopped.						
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.						
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.						
86	Battery LVD Node Id	LVD			True/False (False)	basic
This is a list of the node id of the Smart Electronic LVDs, coma separated						
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
The name of the digital input 1						

Config Table						
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					

Config Table						
104	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133	Ambient Temperature Hysteresis	Sensors	Temperature	degree C		basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
521	Read Access User	Generic	Allowed Users		(1,2,3,4,5)	basic

Config Table						
	Numbers					
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			

Control Table				
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups	Generic	Renaming	basic

Control Table

	Recursive			
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.11. MCU0948M4 / MCU0948M4LP**Device Information**

Name	MCU0948M4 / MCU0948M4LP
Short Description	1U high controller with LCD display / Low profile controller (1/2U high)
Long Description	Monitoring and control unit, 1U high with LCD display, USB and Ethernet port - Captin FA, Captin BW, ACE102FALP and ACE094 lines / Low profile monitoring and control unit, 0.5U high, USB and Ethernet port - CAPTIN FA, CAPTIN BW lines
Hardware Reference	9413 060 95051 / 9413 060 95081
Software Reference	SOFT 000030 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type</i>	<i>Set/Clear</i>

Alarm Table					
				(Level)	Delay
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7	Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8	Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10	One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11	More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.				
12	Missing Rectifiers	Rectifiers		major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				

Alarm Table				
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
25 Distribution Breaker	Digital In-		major (6)	5 / 2

Alarm Table

	Open	puts			
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26	Battery Breaker Open	Digital In-puts		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27	Digital Input 3	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28	Digital Input 4	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				

Data Table					
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
41	Mains Phase 1 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 2				
43	Mains Phase 3 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 3				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the bat-				

Data Table					
	tery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd				

Data Table					
	Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				

Data Table

161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low'					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High'					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					

Config Table						
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
The voltage hysteresis on the alarm 'DC Bus Voltage Extra High						
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)						
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.						
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.						
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
The maximal allowed positive compensation.						
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
The maximal allowed negative compensation.						
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.						
26	Rectifier Model	Rectifiers				basic
The rectifier model						
27	Forced Remote Off Rectifiers	Rectifiers				basic
A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.						
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.						
31	Battery Charge	Battery	Battery Charge	Ampere	0.5/1000	basic

Config Table

	Current Limit		Parameters		(1000)	
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (2)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (0.5)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This					

Config Table

	allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (2)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					

Config Table						
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.						
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.						
86	Battery LVD Node Id	LVD			True/False (False)	basic
This is a list of the node id of the Smart Electronic LVDs, coma separated						
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
The name of the digital input 1						
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.						
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
The name of the digital input 2						
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.						
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
The name of the digital input 3						
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.						
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
The name of the digital input 4						

Config Table						
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.						
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.						
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.						
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.						
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.						
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.						
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.						
133	Ambient Temperature Hysteresis	Sensors	Temperature	degree C		basic
The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.						
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4						
522	Write Access User Numbers	Generic	Allowed Users		()	basic
The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings						

Config Table

	and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic

Control Table				
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.12. MCU1848M3 / MCU1848M3D

Device Information	
Name	MCU1848M3 / MCU1848M3D
Short Description	Controller without LCD display / Controller with LCD display
Long Description	Monitoring and control unit with USB and Ethernet port, no LCD display - ACE153 and ACE156 lines / Monitoring and control unit with LCD display, USB and Ethernet port - ACE153 and ACE156 line
Hardware Reference	9413 061 85041 / 9413 061 85051
Software Reference	SOFT 000066 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				

Alarm Table				
2	DC Bus Low	DC Bus	minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'			
3	DC Bus High	DC Bus	minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'			
4	DC Bus Extra High	DC Bus	major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'			
5	DC Bus Voltage Sense Failure	DC Bus	major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.			
6	Mains Failure	AC Bus	minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.			
7	Mains Partial Failure	AC Bus	minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.			
8	Mains Low	AC Bus	warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit			
10	One Rectifier Failure	Rectifiers	minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'			
11	More Than One Rectifier Failure	Rectifiers	major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.			
12	Missing Rectifiers	Rectifiers	major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'			
13	Battery Last Test Failed	Battery	Battery Test	minor (3) 5 / 2
	The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.			
14	Battery On Discharge	Battery	minor (4)	10 / 2

Alarm Table

	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2	
	The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2	
	The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2	
	The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2	
	The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
25 Distribution Breaker Open	Digital Inputs		major (6)	5 / 2	
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26 Battery Breaker Open	Digital Inputs		minor (4)	5 / 2	
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27 Digital Input 3	Digital Inputs		none (0)	5 / 2	
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28 Digital Input 4	Digital Inputs		none (0)	5 / 2	
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				

Data Table					
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off	Rectifiers	Numbers		basic

Data Table					
	Rectifier				
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic

Data Table

	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				

Data Table

122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic

Config Table

	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					

Config Table						
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure,					

Config Table

	the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery

Config Table

	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Re-requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic

Config Table

	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					

Config Table

901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic

Control Table				
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.13. MCU1848M6

Device Information	
Name	MCU1848M6
Short Description	Controller without LCD display
Long Description	Monitoring and control unit with USB and Ethernet port - ACE186 line
Hardware Reference	9413 061 85001
Software Reference	SOFT 000033 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC				

Alarm Table				
	failure is greater than 0.			
7 Mains Partial Failure	AC Bus		minor (4)	10 / 2
The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8 Mains Low	AC Bus		warning (2)	10 / 2
The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10 One Rectifier Failure	Rectifiers		minor (4)	5 / 2
One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11 More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
There is no mains failure and number of rectifier failures is greater than 1.				
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2

Alarm Table

	The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.			
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
25 Distribution Breaker Open	Digital In-puts		major (6)	5 / 2
This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26 Battery Breaker Open	Digital In-puts		minor (4)	5 / 2
This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27 Digital Input 3	Digital In-puts		none (0)	5 / 2
This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28 Digital Input 4	Digital In-puts		none (0)	5 / 2
This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
2	Previous DC Mode	System			basic
The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					

Data Table					
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				

Data Table					
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				

Data Table					
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Op-	Smart Ener-		Watt	underdev

Data Table

	timisation	gy			
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic

Config Table

	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low'					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High'					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'					
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present					

Config Table

	rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where tx is the autonomy					

Config Table

	in hours at a constant discharge current of ix Amps. Often, we use t1 = 1h and t2 = 10h					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
	The rating of the battery shunt at 60mV.					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery

Config Table

	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker	basic

Config Table						
					Open	
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					

Config Table						
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133	Ambient Temperature Hysteresis	Sensors	Temperature	degree C		basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>

Control Table				
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic

Control Table

	This control element adds an event of severity none. The event name is the text written to this control element		
512 Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element		
521 Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment		
522 Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments		

2.14. MCU3048M6

Device Information	
Name	MCU3048M6
Short Description	MCU3048M6
Long Description	
Hardware Reference	9413 063 05001
Software Reference	SOFT 000070 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7	Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8	Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
9	Mains High	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. The alarm is only active if MCU master type is 30110, 3096 or 3048M6. Therefore, an hysteresis _phase123Hysteresis is subtracted to the voltage lower limit.				
10	One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11	More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2

Alarm Table

	There is no mains failure and number of rectifier failures is greater than 1.			
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23 Ambient Temperature	Sensors	Temperature	minor (0)	5 / 2

Alarm Table

	Sensor Fail				
	The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
25	Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26	Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27	Digital Input 3	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28	Digital Input 4	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
29	Digital Input 5	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
30	Digital Input 6	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
31	Digital Input 7	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
32	Digital Input 8	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac				

Data Table					
	Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic

Data Table					
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
41	Mains Phase 1 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 2				
43	Mains Phase 3 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 3				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
63	Battery String 1 Input Current	Battery		Ampere	basic
	Measurement of the battery 1 input current. A negative value means that the battery is discharging				
64	Battery String 2 Input Current	Battery		Ampere	basic
	Measurement of the battery 2 input current. A negative value means that the battery is discharging				
65	Battery String 3 Input Current	Battery		Ampere	basic
	Measurement of the battery 3 input current. A negative value means that the battery is discharging				
67	Voltage Offset For Shunt regulation	Battery		Volt	basic
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				

Data Table					
73	Last Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic

Data Table					
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement.				

Data Table

	urement. Calculation can be done with the PLC				
204 Pulse Counter 4	Sensors	Pulse Counter 4		basic	
The counter value of the digital input 4.					

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	40/60 (54)	basic
The floating dc bus voltage of the system at 25 Celsius degree						
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	40/60 (45)	basic
The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.						
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (1)	basic
The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.						
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	40/60 (48)	basic
The bus voltage under which the alarm 'DC Bus Voltage Low' is set.						
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
The voltage hysteresis on the alarm 'DC Bus Voltage Low						
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	40/60 (56.5)	basic
The bus voltage over which the alarm 'DC Bus Voltage High' is set.						
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
The voltage hysteresis on the alarm 'DC Bus Voltage High						
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	40/60 (58)	basic
The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.						
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/5 (0.5)	basic
The voltage hysteresis on the alarm 'DC Bus Voltage Extra High						
10	LVD Disconnect Voltage	LVD		Volt	0/50 (43.2)	basic
The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has						

Config Table

	to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/2000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-1000/0 (-72)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/10 (3)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-10/0 (-3)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
28	Rectifier CAN Node IDs Range	Rectifiers				basic
29	Rectifier Ids Declared	Rectifiers				basic
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/3250 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regu-					

Config Table

	lates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/6500 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/5000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/500 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
40	Number of Battery String	Battery			1-3 or 0-2	basic
	The Number of Battery String in the system					
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
	The rating of the battery shunt at 60mV.					

Config Table						
42	Battery 2 Charge Current Limit	Battery		Ampere	0.5/3250 (1000)	basic
The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.						
43	Battery 2 String Capacity	Battery		Ah	3/6500 (100)	basic
The battery capacity in Ah.						
44	Shunt Rating At 60mV	Battery		Ampere	25/5000 (250)	basic
The rating of the battery shunt at 60mV.						
45	Battery 3 Charge Current Limit	Battery		Ampere	0.5/3250 (1000)	basic
The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.						
46	Battery 3 String Capacity	Battery		Ah	3/6500 (100)	basic
The battery capacity in Ah.						
47	Shunt Rating At 60mV	Battery		Ampere	25/5000 (250)	basic
The rating of the battery shunt at 60mV.						
51	Boost Automatic	Battery	Boost		False/False (False)	battery
The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.						
52	Boost Activation Low Voltage	Battery	Boost	Volt	43/50 (46)	battery
The voltage under which the boost mode can be activated.						
53	Boost Termination Voltage	Battery	Boost	Volt	50/58 (56.4)	battery
The voltage over which the system must go back to floating mode.						
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
The battery charging current under which the system must go back to floating mode.						
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
The time in minute after which the system must go back in floating mode.						
69	Battery Test Type	Battery	Battery Test			battery
Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery						

Config Table						
	must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (46)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Dis-charge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test In-terval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Dis-charge Current	Battery	Battery Test	Ampere	3/5000 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic

Config Table

	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic

Config Table

	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					
104	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					

Config Table						
133 Ambient Temperature Hysteresis	Sensors	Temperature	degree C			basic
The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.						
141 AC Voltage Low	Mains		Volt	0/240 (180)		basic
The AC voltage under which the alarm AC Low is set.						
142 AC Voltage High	Mains		Volt	80/600 (250)		basic
The AC voltage over which the alarm AC High is set.						
143 AC Voltage Hysteresis	Mains		Volt	0/40 (5)		basic
The AC voltage hysteresis on alarms AC High and AC Low.						
144 AC Phase 1 PLC	AC Bus					basic
This is the mathematical expression of the calculation of AC phase 1. If empty, the rectifiers are used. The syntax for writing mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.						
145 AC Phase 2 PLC	AC Bus					basic
This is the mathematical expression of the calculation of AC phase 2. If empty, the rectifiers are used. The syntax for writing mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.						
146 AC Phase 3 PLC	AC Bus					basic
This is the mathematical expression of the calculation of AC phase 3. If empty, the rectifiers are used. The syntax for writing mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.						
151 PLD Condition	PLD					basic
The PLC condition to enable the PLD command						
521 Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)		basic
The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4						
522 Write Access User Numbers	Generic	Allowed Users		()		basic
The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4						
601 Event Table Length	Generic	Events		10/4000 (100)		basic
The maximum length of the table. The value must be comprised between 10 and 4000						
602 Event Table Length By Rectifier	Generic	Events		10/4000 (100)		basic
The maximum length of the table. The value must be comprised between 10 and						

Config Table

	4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			

Control Table				
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.15. MCU3096M6

Device Information	
Name	MCU3096M6
Short Description	MCU for rack 6x3000W +96V
Long Description	
Hardware Reference	9413 063 07041
Software Reference	SOFT 000091 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC				

Alarm Table				
	failure is greater than 0.			
7 Mains Partial Failure	AC Bus		minor (4)	10 / 2
The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8 Mains Low	AC Bus		warning (2)	10 / 2
The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
9 Mains High	AC Bus		warning (2)	10 / 2
The main voltage is low on one or more phases. No rectifier is in AC failure. The alarm is only active if MCU master type is 30110, 3096 or 3048M6. Therefore, an hysteresis _phase123Hysteresis is subtracted to the voltage lower limit.				
10 One Rectifier Failure	Rectifiers		minor (4)	5 / 2
One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11 More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
There is no mains failure and number of rectifier failures is greater than 1.				
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2

Alarm Table				
	The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.			
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
	The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.			
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.			
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.			
25 Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
26 Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
27 Digital Input 3	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
28 Digital Input 4	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
29 Digital Input 5	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
30 Digital Input 6	Digital Inputs		none (0)	5 / 2

Alarm Table

	This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
31 Digital Input 7	Digital Inputs		none (0)	5 / 2	
	This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
32 Digital Input 8	Digital Inputs		none (0)	5 / 2	
	This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				

Data Table					
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
41	Mains Phase 1 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 2				
43	Mains Phase 3 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 3				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never				

Data Table

	Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Dis-charged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Dis-charged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery	Battery	Battery Test		basic

Data Table					
	Test				
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic

Data Table

	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	65/105 (94.5)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	65/105 (78.75)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0.5/10 (2)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	65/105 (84)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0.5/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	70/105 (98.875)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0.5/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	70/105 (101.5)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0.5/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					

Config Table						
10	LVD Disconnect Voltage	LVD		Volt	65/87.5 (75.6)	basic
The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)						
11	LVD Disconnect Delay	LVD		second	1/4000 (1)	basic
The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.						
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-2000/0 (-126)	basic
The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.						
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/20 (6)	basic
The maximal allowed positive compensation.						
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-20/0 (-6)	basic
The maximal allowed negative compensation.						
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.						
26	Rectifier Model	Rectifiers				basic
The rectifier model						
27	Forced Remote Off Rectifiers	Rectifiers				basic
A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.						
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.						
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.						

Config Table						
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
	The rating of the battery shunt at 60mV.					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					

Config Table						
52	Boost Activation Low Voltage	Battery	Boost	Volt	75.25/87.5 (80.5)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	87.5/101.5 (98.7)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	52.5/105 (80.5)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	10/5000 (2000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Re-	Battery	Battery Test	minute	0/5000	battery

Config Table

	requested Minutes Without Mains Failure				(1440)	
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4	Digital	Digital Input 4		True/False	basic

Config Table

	Normally Closed	Inputs			(True)	
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					
104	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc

Config Table

	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114 Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4				plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131 Ambient Temperature Low	Sensors	Temperature	degree C			basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132 Ambient Temperature High	Sensors	Temperature	degree C			basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133 Ambient Temperature Hysteresis	Sensors	Temperature	degree C			basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
141 AC Voltage Low	Mains		Volt	0/240 (180)		basic
	The AC voltage under which the alarm AC Low is set.					
142 AC Voltage High	Mains		Volt	80/600 (250)		basic
	The AC voltage over which the alarm AC High is set.					
143 AC Voltage Hysteresis	Mains		Volt	0/40 (5)		basic
	The AC voltage hysteresis on alarms AC High and AC Low.					
144 AC Phase 1 PLC	AC Bus					basic
	This is the mathematical expression of the calculation of AC phase 1. If empty, the rectifiers are used. The syntax for writting mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.					
145 AC Phase 2 PLC	AC Bus					basic
	This is the mathematical expression of the calculation of AC phase 2. If empty, the rectifiers are used. The syntax for writting mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.					
146 AC Phase 3 PLC	AC Bus					basic
	This is the mathematical expression of the calculation of AC phase 3. If empty, the rectifiers are used. The syntax for writting mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.					
521 Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)		basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522 Write Access User	Generic	Allowed Users		()		basic

Config Table

	Numbers					
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic

Control Table				
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.16. MCU30110M6

Device Information	
Name	MCU30110M6
Short Description	Controller without LCD display (6x3kW - 110V)
Long Description	Monitoring and control unit with USB and Ethernet port - ACE306 (+110V & +125V) line
Hardware Reference	9413 063 07051
Software Reference	SOFT 000040 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the				

Alarm Table

	configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'			
3 DC Bus High	DC Bus		minor (4)	5 / 2
The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4 DC Bus Extra High	DC Bus		major (6)	5 / 2
The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5 DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6 Mains Failure	AC Bus		minor (4)	5 / 2
The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7 Mains Partial Failure	AC Bus		minor (4)	10 / 2
The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8 Mains Low	AC Bus		warning (2)	10 / 2
The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
9 Mains High	AC Bus		warning (2)	10 / 2
The main voltage is low on one or more phases. No rectifier is in AC failure. The alarm is only active if MCU master type is 30110, 3096 or 3048M6. Therefore, an hysteresis _phase123Hysteresis is subtracted to the voltage lower limit.				
10 One Rectifier Failure	Rectifiers		minor (4)	5 / 2
One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11 More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
There is no mains failure and number of rectifier failures is greater than 1.				
12 Missing Rectifiers	Rectifiers		major (6)	5 / 2
There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				

Alarm Table				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
25 Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26 Battery Breaker Open	Digital Inputs		minor (4)	5 / 2

Alarm Table

	This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
27 Digital Input 3	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
28 Digital Input 4	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
29 Digital Input 5	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
30 Digital Input 6	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
31 Digital Input 7	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			
32 Digital Input 8	Digital Inputs		none (0)	5 / 2
	This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic

Data Table

	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				
41	Mains Phase 1 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 2				

Data Table					
43	Mains Phase 3 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 3				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final	Battery	Battery Test	Volt	basic

Data Table					
	Voltage				
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev

Data Table

	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	60/120 (108)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	60/120 (90)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (2)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	60/120 (96)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					

Config Table						
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low'					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	60/120 (113)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High'					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	60/120 (116)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'					
10	LVD Disconnect Voltage	LVD		Volt	0/100 (86.4)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/4000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-2000/0 (-144)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/20 (6)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-20/0 (-6)	basic
	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					

Config Table						
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and t_2					

Config Table

	= 10h					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
	The rating of the battery shunt at 60mV.					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	86/100 (92)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	100/116 (112.8)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	60/120 (92)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this pa-					

Config Table

	parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	10/5000 (2000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic

Config Table

	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					
104	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					

Config Table						
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133	Ambient Temperature Hysteresis	Sensors	Temperature	degree C		basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
141	AC Voltage Low	Mains		Volt	0/240 (180)	basic
	The AC voltage under which the alarm AC Low is set.					
142	AC Voltage High	Mains		Volt	80/600 (250)	basic
	The AC voltage over which the alarm AC High is set.					
143	AC Voltage Hysteresis	Mains		Volt	0/40 (5)	basic
	The AC voltage hysteresis on alarms AC High and AC Low.					
144	AC Phase 1 PLC	AC Bus				basic

Config Table

	This is the mathematical expression of the calculation of AC phase 1. If empty, the rectifiers are used. The syntax for writing mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.				
145 AC Phase 2 PLC	AC Bus				basic
	This is the mathematical expression of the calculation of AC phase 2. If empty, the rectifiers are used. The syntax for writing mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.				
146 AC Phase 3 PLC	AC Bus				basic
	This is the mathematical expression of the calculation of AC phase 3. If empty, the rectifiers are used. The syntax for writing mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.				
521 Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4				
522 Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601 Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
602 Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
901 Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902 Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			

Control Table				
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

2.17. MCU30125M6

Device Information	
Name	MCU30125M6
Short Description	MCU for rack 6x3000W +125V
Long Description	
Hardware Reference	9413 000 XXXX
Software Reference	SOFT 000057 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or un-configured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7	Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8	Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10	One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11	More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.				
12	Missing Rectifiers	Rectifiers		major (6)	5 / 2

Alarm Table

	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'			
13 Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14 Battery On Discharge	Battery		minor (4)	10 / 2
The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17 Battery LVD Relay Open	LVD		major (6)	5 / 2
The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18 Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19 Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20 Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
21 Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22 Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambiant temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23 Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
The ambient temperature sensor (NTC) value is inferior to -500 units meaning that				

Alarm Table

	it is not connected or defective.			
25 Distribution Breaker Open	Digital Inputs		major (6)	5 / 2
This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26 Battery Breaker Open	Digital Inputs		minor (4)	5 / 2
This alarm is related to digital input 2. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
27 Digital Input 3	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28 Digital Input 4	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
29 Digital Input 5	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
30 Digital Input 6	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
31 Digital Input 7	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
32 Digital Input 8	Digital Inputs		none (0)	5 / 2
This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
2	Previous DC Mode	System			basic
The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)					
11	Bus Voltage	DC Bus		Volt	basic

Data Table

	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
31	Number Of Rectifier Max	Rectifiers	Numbers		basic
	The maximum possible number of rectifier in this dc system				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
33	Number Of Absent Rectifier	Rectifiers	Numbers		basic
	The actual number of absent rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temper-	Rectifiers	Numbers		basic

Data Table					
	ature Rectifier				
	The actual number or rectifier in Over Temperature.				
41	Mains Phase 1 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 1				
42	Mains Phase 2 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 2				
43	Mains Phase 3 Voltage	AC Bus		Volt	basic
	The voltage on AC phase 3				
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic

Data Table					
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shifted at the end of the battery test.				
80	Previous Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
81	Previous Battery Test State	Battery	Battery Test		basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
82	Minutes Since Last Test Battery	Battery	Battery Test	minute	basic
	The number of minute since the end of last battery test				
84	Next Scheduled Battery Test	Battery	Battery Test		basic
	The date and time of the next time the scheduled battery test will run				
91	Battery Charge Capacity	Battery	Autonomy	%	basic
	The battery charge capacity, calculated by integration of the current.				
92	Calculated Autonomy	Battery	Autonomy	minute	basic
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).				
94	Battery Current Integration	Battery	Autonomy	Ah	basic
	Actual value of the integration of the current, in Ampere * hour				
101	LVD State	LVD			basic
	Actual state of the LVD				
111	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay 1				
112	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay 2				
113	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay 3				
114	Relay 4 State	Relays	Relay 4		basic

Data Table

	Actual state of the Relay 3				
121	Efficiency Optimized Number Of Rectifier	Smart Energy			asset
	The optimal number of ON rectifier for Efficiency Optimization				
122	System Loss Without Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses without optimisation				
123	System Loss With Optimisation	Smart Energy		Watt	underdev
	Estimation of the losses with optimisation				
124	Rectifier Model Used For Calculation	Smart Energy			asset
	The rectifier model used				
125	Smart Energy Savings	Smart Energy		Watt	asset
	Estimation of the losses with optimisation				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Voltage 1	Sensors	Voltage 1	Volt	basic
	The voltage measured by the sense 1. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
162	Voltage 2	Sensors	Voltage 2	Volt	basic
	The voltage measured by the sense 2. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC				
204	Pulse Counter 4	Sensors	Pulse Counter 4		basic
	The counter value of the digital input 4.				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	92/138 (125)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	92/138 (103.5)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage	DC Bus	Alarm Parameters	Volt	0/10 (2)	basic

Config Table

	Extra Low Hysteresis		ters			
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	92/138 (110.4)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	92/138 (129.95)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	92/138 (133.4)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					
10	LVD Disconnect Voltage	LVD		Volt	0/115 (99.36)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/4000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-2000/0 (-165)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/20 (6)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-20/0 (-6)	basic

Config Table

	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
	The minimal discharging current to set the 'Battery On Discharge' alarm.					
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic

Config Table

	The hysteresis on the 'Battery On Discharge' alarm.					
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
	The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
	It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery					
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
	The rating of the battery shunt at 60mV.					
51	Boost Automatic	Battery	Boost		False/False (False)	battery
	The boost mode must be automatically after the fact that during a mains failure, the bus voltage went under the configured 'Boost Activation Low Voltage'. This allows charging the battery faster.					
52	Boost Activation Low Voltage	Battery	Boost	Volt	86/100 (92)	battery
	The voltage under which the boost mode can be activated.					
53	Boost Termination Voltage	Battery	Boost	Volt	115/133.4 (129.72)	battery
	The voltage over which the system must go back to floating mode.					
54	Boost Termination Current	Battery	Boost	Ampere	0/100 (4)	battery
	The battery charging current under which the system must go back to floating mode.					
55	Boost Termination Time	Battery	Boost	minute	10/240 (120)	battery
	The time in minute after which the system must go back in floating mode.					
69	Battery Test Type	Battery	Battery Test			battery
	Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	69/138 (105.8)	battery
	The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)					
71	Battery Test Dis-	Battery	Battery Test	%	0/100 (0)	battery

Config Table

	charge Ratio					
	The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test					
72	Battery Test Interval	Battery	Battery Test	day	0/3000 (0)	battery
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	3/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	2/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
83	Smart Energy Boolean Condition	Smart Energy				asset
	This is the boolean condition which allows or not to automatically optimize the number of rectifier in remote off.					
86	Battery LVD Node Id	LVD			True/False (False)	basic
	This is a list of the node id of the Smart Electronic LVDs, coma separated					
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Distribution Breaker Open	basic
	The name of the digital input 1					
92	Digital Input 1	Digital	Digital Input 1		True/False	basic

Config Table

	Normally Closed	Inputs			(True)	
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Battery Breaker Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					
104	Digital Input 7	Digital	Digital Input 7		True/False	basic

Config Table

	Normally Closed	Inputs			(True)	
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define boolean condition is detailed in the PLC chapter.					
112	Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
	Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113	Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
	Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114	Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
	Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131	Ambient Temperature Low	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132	Ambient Temperature High	Sensors	Temperature	degree C		basic
	The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133	Ambient Temperature Hysteresis	Sensors	Temperature	degree C		basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic

Config Table

	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4				
522 Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601 Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
602 Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
901 Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902 Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
4	Start Boost Mode	System		battery
	The dc system must go in boost mode.			
11	Open The LVD	LVD		basic

Control Table				
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
61	Set Digital Input 4 Counter Value	Digital Inputs	Digital Input 4	basic
	Set Counter Value			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay 4			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic

Control Table

	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments

2.18. MCU 300V DC

Device Information	
Name	MCU 300V DC
Short Description	MCU for rack 3x 300V DC
Long Description	MCU for rack 3x 300V DC
Hardware Reference	9413 001 59601
Software Reference	SOFT 000135 XX
Equipment Type	Monitoring Control Unit
ETSI Level	/site/energy_system/dc_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
11	Product Name	Description	Product Info	basic
	The product name of the DC system monitoring			
12	Hardware Reference	Description	Product Info	basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Description	Product Info	asset
	The serial number of the DC system monitoring			
16	Serial Number	Description	Product Info	asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Description	Product Info	asset
	The production date of the DC system monitoring			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	DC Bus Extra Low	DC Bus		major (6)	5 / 2
	The bus voltage is extra low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Extra Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra Low Hysteresis'. The alarm is not activated when DC mode is 'Battery Test'				

Alarm Table					
2	DC Bus Low	DC Bus		minor (4)	5 / 2
	The bus voltage is low. The alarm is set when the bus voltage is lower than the configuration parameter 'DC Bus Voltage Low'. There is an hysteresis on the alarm : 'DC Bus Voltage Low Hysteresis'				
3	DC Bus High	DC Bus		minor (4)	5 / 2
	The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage High'. There is an hysteresis on the alarm : 'DC Bus Voltage High Hysteresis'				
4	DC Bus Extra High	DC Bus		major (6)	5 / 2
	The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration parameter 'DC Bus Voltage Extra High'. There is an hysteresis on the alarm : 'DC Bus Voltage Extra High Hysteresis'				
5	DC Bus Voltage Sense Failure	DC Bus		major (6)	5 / 2
	The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured.				
6	Mains Failure	AC Bus		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
7	Mains Partial Failure	AC Bus		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
8	Mains Low	AC Bus		warning (2)	10 / 2
	The main voltage is low on one or more phases. No rectifier is in AC failure. If MCU master type is 30110, 3096 or 3048M6, an hysteresis _phase123Hysteresis is added to the voltage lower limit				
10	One Rectifier Failure	Rectifiers		minor (4)	5 / 2
	One rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no mains failure, and the 'More Than One Rectifier Failure alarm is not set.'				
11	More Than One Rectifier Failure	Rectifiers		major (6)	10 / 2
	There is no mains failure and number of rectifier failures is greater than 1.				
12	Missing Rectifiers	Rectifiers		major (6)	5 / 2
	There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier'				
13	Battery Last Test Failed	Battery	Battery Test	minor (3)	5 / 2
	The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. Check inside the dc system data for more information about the last test.				
14	Battery On Discharge	Battery		minor (4)	10 / 2

Alarm Table

	The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure or during a battery test. There is an hysteresis corresponding to battery parameter 'Is discharging current hysteresis'.				
17	Battery LVD Relay Open	LVD		major (6)	5 / 2
	The battery Low Voltage Disconnect is open. On Systems without LVD_Status signal, like MCU 1848 or MCU 1x6, the alarm is present only if the signal LVD_COM asks to open the LVD				
18	Battery Temperature Too High	Battery	Temperature	minor (3)	5 / 2
	The temperature of the battery is too high and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
19	Battery Temperature Too Low	Battery	Temperature	minor (3)	5 / 2
	The temperature of the battery is too low and is greater than -600 units. There is an hysteresis corresponding to battery parameter 'Temperature hysteresis'.				
20	Battery Temperature Sensor Fail	Battery	Temperature	minor (3)	5 / 2
	The battery temperature sensor (NTC) value is inferior to -500 units or superior to 300 units meaning that it is not connected or defective.				
21	Ambient Temperature Too High	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too high and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambient temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
22	Ambient Temperature Too Low	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature is too low and is greater than -600 units. There is an hysteresis corresponding to parameter 'Ambient temperature hysteresis'. This alarm is only activated on MCU master types 30110, 3096, 30125, 0024, 0948, 0548, 0348, 0948 and 3048M6.				
23	Ambient Temperature Sensor Fail	Sensors	Temperature	minor (0)	5 / 2
	The ambient temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective.				
25	LVD 1 Open	Digital Inputs		major (6)	5 / 2
	This alarm is related to digital input 1. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
26	LVD 2 Open	Digital Inputs		minor (4)	5 / 2
	This alarm is related to digital input 2. This alarm is activated if digital input val-				

Alarm Table

	ue is different to configuration parameter 'Digital Input Alarm Value'				
27	Digital Input 3	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 3. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
28	Digital Input 4	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 4. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
29	Digital Input 5	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 5. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
30	Digital Input 6	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 6. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
31	Digital Input 7	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 7. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
32	Digital Input 8	Digital In-puts		none (0)	5 / 2
	This alarm is related to digital input 8. This alarm is activated if digital input value is different to configuration parameter 'Digital Input Alarm Value'				
41	Battery 1 Disconnect- ed	Battery		none (0)	5 / 2
42	Battery 2 Disconnect- ed	Battery		none (0)	5 / 2
55	Rescue Branch Failure	Rescue Branch Rec-tifiers		minor (4)	5 / 2
	The number of active rectifiers is equal to 0 and the number of rectifiers in AC failure is greater than 0.				
56	Rescue Branch Partial Failure	Rescue Branch Rec-tifiers		minor (4)	10 / 2
	The number of active rectifiers is greater than 0 and the number of rectifiers in AC failure is greater than 0. Some rectifiers are in AC Failure. It may be caused by an open breaker, a real phase failure, or by a rectifier failure.				
60	One Rescue Branch Rectifier Failure	Rescue Branch Rec-		minor (4)	5 / 2

Alarm Table

		tifiers			
	One dc-powered rectifier must be replaced or is not powered correctly. The DC fail alarm of the rectifier is set. The number of rectifier with DC Failure is higher than 0, there is no input failure, and the 'More Than One Rectifier Failure alarm is not set.'				
61	More Than One Rescue Branch Rectifier Failure	Rescue Branch Rectifiers		major (6)	10 / 2
	There is no input failure and number of rescue branch rectifier failures is greater than 1.				
201	Application Not OK	Specific	Application State	major (6)	0 / 0
	Application is not ok - no Heartbeat				
202	Rescue Branch Disconnection Allowed	Specific	Rescue Branch Disconnection	major (6)	0 / 0
	Rescue Branch Disconnection Allowed				
203	Internal Not OK	Specific	Internal	major (6)	0 / 0
	Internal Not Ok				
204	Battery String 1 Test Failed	Battery	Battery Test	minor (3)	5 / 2
	The last battery string 1 test did not succeed and was not cancelled. Maybe the battery should be replaced.				
205	Battery String 2 Test Failed	Battery	Battery Test	minor (3)	5 / 2
	The last battery string 2 test did not succeed and was not cancelled. Maybe the battery should be replaced.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	DC Mode	System			basic
	The DC system can have 5 values: 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
2	Previous DC Mode	System			basic
	The previous value of the DC Mode : 'Float'(0), 'Equalize'(1), 'Battery Test'(2), 'Ac Failure'(3) or 'Safe'(5)				
11	Bus Voltage	DC Bus		Volt	basic
	The DC bus voltage in volt.				
12	Ratio Delivered On Available Power	System		%	basic
	This is the ratio of the delivered power divided by the installed power, in %.				
13	Minutes Since Last AC Failure Begin	AC Bus		minute	basic
	The number of minute since the last AC Failure begin				

Data Table					
14	Minutes Since Last AC Failure End	AC Bus		minute	basic
	The number of minute since the last AC Failure end				
21	Rectifiers Output Power	Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
22	Rectifiers Output Current	Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
23	Rectifiers Output Power Max	Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
24	Rectifiers Output Current Max	Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
26	Rescue Branch Rectifiers Output Power	Rescue Branch Rectifiers		Watt	basic
	The sum of the delivered rectifier power				
27	Rescue Branch Rectifiers Output Current	Rescue Branch Rectifiers		Ampere	basic
	The sum of the delivered rectifier current				
28	Rescue Branch Rectifiers Output Power Max	Rescue Branch Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
29	Rescue Branch Rectifiers Output Current Max	Rescue Branch Rectifiers		Ampere	basic
	The sum of the deliverable rectifier current				
32	Number Of Present Rectifier	Rectifiers	Numbers		basic
	The actual number of present rectifier in this dc system				
34	Number Of Active Rectifier	Rectifiers	Numbers		basic
	The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
35	Number Of AC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in AC Failure.				
36	Number Of DC-Fail Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier with DC Failure.				
37	Number Of Remote Off Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in remote off.				
38	Number Of Over Temperature Rectifier	Rectifiers	Numbers		basic
	The actual number or rectifier in Over Temperature.				

Data Table					
51	Load Power	Load		Watt	basic
	Estimation of the load power consumption				
52	Load Current	Load		Ampere	basic
	Estimation of the load current consumption				
61	Battery Input Current	Battery		Ampere	basic
	Measurement of the battery input current. A negative value means that the battery is discharging				
62	Battery Input Power	Battery		Watt	basic
	Measurement of the battery input power. A negative value means that the battery is discharging				
71	Battery Temperature	Battery	Temperature	degree C	basic
	The battery temperature				
72	Battery String 1 Test State	Battery	Battery Test		basic
	This is about the result of the last battery test. 10 values are possible : 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled' (7), 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	Last Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test.				
74	Last Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test.				
75	Last Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test.				
76	Battery Test Duration	Battery	Battery Test	minute	basic
	The duration of the last battery test. This value is updated at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).				
77	Previous Battery Test Discharged Capacity Ratio	Battery	Battery Test	%	basic
	This is the battery capacity, in percent, discharged during the previous battery test. This value is shifted at the end of the battery test.				
78	Previous Battery Test Discharged Capacity	Battery	Battery Test	Ah	basic
	This is the battery capacity, in ampere hour, discharged during the previous battery test. This value is shifted at the end of the battery test.				
79	Previous Battery Test Final Voltage	Battery	Battery Test	Volt	basic
	This is the bus voltage at the end of the previous battery test. This value is shift-				

Data Table				
	ed at the end of the battery test.			
80	Previous Battery Test Duration	Battery	Battery Test	minute
	The duration of the previous battery test. This value is shifted at the end of the battery test. This value can't be higher than 1440 minutes (24 hours).			
81	Previous Battery String 1 Test State	Battery	Battery Test	basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)			
82	Minutes Since Last Test Battery	Battery	Battery Test	minute
	The number of minute since the end of last battery test			
84	Next Scheduled Battery Test	Battery	Battery Test	basic
	The date and time of the next time the scheduled battery test will run			
86	Battery String 2 Test State	Battery	Battery Test	basic
	The result of the previous battery test - 10 values are possible: 'Never Tested'(0), 'Success'(1), 'On Going'(2), 'Failed: Timeout'(3), 'Failed: Vbus Too Low'(4), 'Failed: Load Too Low'(5), 'Failed: Ac Failure'(6), 'Failed: Canceled', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)			
87	Previous Battery String 2 Test State	Battery	Battery Test	basic
	The result of the previous battery test			
91	Battery Charge Capacity	Battery	Autonomy	%
	The battery charge capacity, calculated by integration of the current.			
92	Calculated Autonomy	Battery	Autonomy	minute
	Calculation of the remaining autonomy. This value can change following the load of your system and the maximal depth of discharge configuration (CF39).			
94	Battery Current Integration	Battery	Autonomy	Ah
	Actual value of the integration of the current, in Ampere * hour			
101	LVD State	LVD		basic
	Actual state of the LVD			
111	Relay 1 State	Relays	Relay 1	basic
	Actual state of the Relay 1			
112	Relay 2 State	Relays	Relay 2	basic
	Actual state of the Relay 2			
113	Relay 3 State	Relays	Relay 3	basic
	Actual state of the Relay 3			
114	Relay 4 State	Relays	Relay 4	basic
	Actual state of the Relay 3			

Data Table					
142	Nbr Of Present Rescue Branch Rectifier	Rescue Branch Rectifiers	Numbers		basic
	The actual number of present DC-POWERED rectifier in this dc system				
144	Nbr Of Active Rescue Branch Rectifier	Rescue Branch Rectifiers	Numbers		basic
	The actual number of active DC-POWERED rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off.				
145	Nbr Of Input-Fail Rescue Branch Rectifier	Rescue Branch Rectifiers	Numbers		basic
	The actual number or DC-POWERED rectifier in AC Failure.				
146	Nbr Of DC-Fail Rescue Branch Rectifier	Rescue Branch Rectifiers	Numbers		basic
	The actual number or DC-POWERED rectifier with DC Failure.				
147	Nbr Of Remote Off Rescue Branch Rectifier	Rescue Branch Rectifiers	Numbers		basic
	The actual number or DC-POWERED rectifier in remote off.				
148	Number Of Over Temperature Rescue Branch Rectifier	Rescue Branch Rectifiers	Numbers		basic
	The actual number or DC-POWERED rectifier in Over Temperature.				
151	Ambient Temperature	Sensors	Temperature	degree C	basic
	The ambient temperature (second temperature sense)				
161	Battery String 1 Voltage	Sensors	Voltage 1	Volt	basic
	The voltage measured at battery string 1				
162	Battery String 2 Voltage	Sensors	Voltage 2	Volt	basic
	The voltage measured at battery string 2				
163	Voltage 3	Sensors	Voltage 3	Volt	basic
	The voltage measured by the sense 3. Can be used freely				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	DC Bus Float Voltage at 25 degC	DC Bus		Volt	220/330 (300)	basic
	The floating dc bus voltage of the system at 25 Celsius degree					
2	DC Bus Voltage Extra Low	DC Bus	Alarm Parameters	Volt	220/330 (247.5)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.					
3	DC Bus Voltage Extra Low Hyste-	DC Bus	Alarm Parameters	Volt	0/10 (2)	basic

Config Table

	resis					
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	DC Bus	Alarm Parameters	Volt	220/330 (264)	basic
	The bus voltage under which the alarm 'DC Bus Voltage Low' is set.					
5	DC Bus Voltage Low Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low					
6	DC Bus Voltage High	DC Bus	Alarm Parameters	Volt	220/330 (310.75)	basic
	The bus voltage over which the alarm 'DC Bus Voltage High' is set.					
7	DC Bus Voltage High Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage High					
8	DC Bus Voltage Extra High	DC Bus	Alarm Parameters	Volt	220/330 (319)	basic
	The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.					
9	DC Bus Voltage Extra High Hysteresis	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High					
10	LVD Disconnect Voltage	LVD		Volt	0/275 (237.6)	basic
	The dc bus voltage under which the battery must be disconnected of the bus. This allows preserving the battery life. The load will be unpowered. This value has to be lower than the Battery test end voltage (CF70)					
11	LVD Disconnect Delay	LVD		second	1/4000 (1)	basic
	The delay in second before disconnecting the battery if the dc bus voltage is under the configured disconnected voltage. This avoids disconnection during a low bus transient.					
21	Temperature Compensation Slope	Battery	Temperature Compensation	mV/degree	-2000/0 (-396)	basic
	The slope of the battery temperature compensation in mv/degree. For a 48V system, -72mV/degree is often used.					
22	Maximum Positive Temperature Compensation	Battery	Temperature Compensation	Volt	0/20 (6)	basic
	The maximal allowed positive compensation.					
23	Maximum Negative Temperature Compensation	Battery	Temperature Compensation	Volt	-20/0 (-6)	basic

Config Table

	The maximal allowed negative compensation.					
25	Minimal Number Of Present Rectifiers	Rectifiers	Alarm Parameters		0/100 (0)	basic
	The minimal number of rectifier which must be present. If there is less present rectifiers, the alarm 'Missing Rectifiers' is set.					
26	Rectifier Model	Rectifiers				basic
	The rectifier model					
27	Forced Remote Off Rectifiers	Rectifiers				basic
	A list of rectifier which are forced in remote off. The id of the rectifier must be coma separated. Ex: 1,3 will maintain rectifier 1 and 3 off.					
28	Rectifier CAN Node IDs Range	Rectifiers				basic
29	Rectifier Ids Declared	Rectifiers				basic
30	Max Floating Battery Current	Battery	Autonomy	Ampere	0,5/0 (20)	basic
	The maximal current that battery can drain when fully charge. It takes into account measurement errors. This parameter is used by the autonomy calculation algorithm to detect that the battery is fully charged.					
31	Battery Charge Current Limit	Battery	Battery Charge Parameters	Ampere	0.5/1000 (1000)	basic
	The maximal battery current when the battery is charging. The monitoring regulates the bus voltage in order to satisfy this condition. This parameter is often equal to the nominal battery capacity divided by 10.					
32	Battery String Capacity	Battery		Ah	3/1000 (100)	basic
	The battery capacity in Ah.					
33	Battery Temperature Low	Battery	Alarm Parameters	degree C	-100/20 (0)	basic
	The temperature under which the alarm 'Battery Temperature Too Low' must be set.					
34	Battery Temperature High	Battery	Alarm Parameters	degree C	5/100 (40)	basic
	The temperature over which the alarm 'Battery Temperature Too High' must be set.					
35	Battery Temperature Hysteresis	Battery	Alarm Parameters	degree C	0/10 (2)	basic
	The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					

Config Table						
36	Minimal Current For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/1000 (3)	basic
The minimal discharging current to set the 'Battery On Discharge' alarm.						
37	Current Hysteresis For Discharging Alarm	Battery	Alarm Parameters	Ampere	0/50 (1)	basic
The hysteresis on the 'Battery On Discharge' alarm.						
38	Peukert Number	Battery	Autonomy		1/2 (1)	basic
The Peukert number relates to the internal resistance of a battery and provides an indication of the expected capacity. The ideal number is 1. This value can be calculated with the formula: $(\ln(t_2) - \ln(t_1)) / (\ln(i_1) - \ln(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$						
39	Max Depth Of Discharge for Autonomy Estimation	Battery	Autonomy		10/100 (100)	basic
It is generally recommended to discharge maximum 60% of the battery capacity to enhance battery lifetime. By default, 100% is used for autonomy calculation. This parameter can also be used to take into account the age of the battery						
40	Number of Battery String	Battery			1-3 or 0-2	basic
The Number of Battery String in the system						
41	Shunt Rating At 60mV	Current Sensors	Shunt 1	Ampere	25/5000 (250)	basic
The rating of the battery shunt at 60mV.						
61	Rescue Branch Rectifier Ids Declared	Rescue Branch Rectifiers				basic
69	Battery Test Type	Battery	Battery Test			battery
Type of the battery test: Capacity based: The battery must give the requested capacity before falling lower than a value Time Based: The battery must sustain a defined load during a defined time.						
70	Battery Test End Voltage	Battery	Battery Test	Volt	165/330 (253)	battery
The voltage at which any battery test must be stopped. This value has to be higher than the LVD Disconnect voltage (CF10)						
71	Battery Test Discharge Ratio	Battery	Battery Test	%	0/100 (0)	battery
The ratio of the battery capacity to discharge. If 30 is set, 30% of the battery will be discharged during the test						
72	Battery Test In-	Battery	Battery Test	day	0/3000 (0)	battery

Config Table

	terval					
	The number of days between two automatically started battery test. If this parameter is set to 0, the battery test is not started automatically. The user can remotely or locally start or force this test.					
73	Battery Test Discharge Current	Battery	Battery Test	Ampere	0.5/100 (1000)	battery
	The current at which the battery must be discharged during a battery test. The monitoring regulates the bus voltage in order to satisfy this condition. The load current must be of course higher than this parameter.					
74	Battery Test Minimal Discharge Current	Battery	Battery Test	Ampere	0.5/90 (2)	battery
	The battery current under which the battery test must be stopped because the load is too low.					
75	Battery Test Duration	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Test Requested Minutes Without Mains Failure	Battery	Battery Test	minute	0/5000 (1440)	battery
	The minimal time in minute without mains failure in order to allow a battery start. This parameter is not taken into account when the battery test is forced.					
77	Battery Test Scheduler Cron Rule	Battery	Battery Test			basic
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		LVD 1 Open	basic
	The name of the digital input 1					
92	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		LVD 2 Open	basic
	The name of the digital input 2					
94	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					

Config Table						
96	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
98	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Input 5	basic
	The name of the digital input 5					
100	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Input 6	basic
	The name of the digital input 6					
102	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Input 7	basic
	The name of the digital input 7					
104	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Input 8	basic
	The name of the digital input 8					
106	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Dry Alarm 1 Alternative Boolean Condition	Relays	Relay 1			plc
	Another Boolean condition to activate the dry alarm relay 1. The way to define					

Config Table

	boolean condition is detailed in the PLC chapter.				
112 Dry Alarm 2 Alternative Boolean Condition	Relays	Relay 2			plc
Another Boolean condition to activate the dry alarm relay 2. The way to define boolean condition is detailed in the PLC chapter.					
113 Dry Alarm 3 Alternative Boolean Condition	Relays	Relay 3			plc
Another Boolean condition to activate the dry alarm relay 3. The way to define boolean condition is detailed in the PLC chapter.					
114 Dry Alarm 4 Alternative Boolean Condition	Relays	Relay 4			plc
Another Boolean condition to activate the dry alarm relay 4. The way to define boolean condition is detailed in the PLC chapter.					
131 Ambient Temperature Low	Sensors	Temperature	degree C		basic
The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
132 Ambient Temperature High	Sensors	Temperature	degree C		basic
The temperature under which the alarm 'Ambiant Temperature Too Low' must be set.					
133 Ambient Temperature Hysteresis	Sensors	Temperature	degree C		basic
The hysteresis on the 'Battery Temperature Too High' and 'Battery Temperature Too Low' alarms.					
141 AC Voltage Low	Mains		Volt	0/240 (180)	basic
The AC voltage under which the alarm AC Low is set.					
142 AC Voltage High	Mains		Volt	80/600 (250)	basic
The AC voltage over which the alarm AC High is set.					
143 AC Voltage Hysteresis	Mains		Volt	0/40 (5)	basic
The AC voltage hysteresis on alarms AC High and AC Low.					
144 AC Phase 1 PLC	AC Bus				basic
This is the mathematical expression of the calculation of AC phase 1. If empty, the rectifiers are used. The syntax for writting mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.					
145 AC Phase 2 PLC	AC Bus				basic
This is the mathematical expression of the calculation of AC phase 2. If empty, the rectifiers are used. The syntax for writting mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.					

Config Table						
146	AC Phase 3 PLC	AC Bus				basic
	This is the mathematical expression of the calculation of AC phase 3. If empty, the rectifiers are used. The syntax for writing mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation.					
201	Application Timeout	Specific	Application State	second		basic
	If Set to 0, disabled the application timeout, otherwise, after x second, it is not allowed to use control elements					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are comma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are comma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
602	Event Table Length By Rectifier	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>

Control Table				
1	Back To Float	System		basic
	The dc system must go back in floating mode.			
2	Start Battery Test	System		battery
	The dc system must start a battery test.			
3	Force Battery Test	System		battery
	The dc system must force a battery test.			
11	Open The LVD	LVD		basic
	Try to open the LVD. It could not work if the LVD is electronic, and the request will be canceled after 15 sec.			
12	Close The LVD	LVD		basic
	The LVD must be closed			
21	Correct Battery Current Offset	Battery		basic
41	Reset Last Battery Test State	Battery		battery
	Reset the state of the last battery test. If an alarm 'Battery Last Test Failed' is set, the alarm will be cleared.			
47	Start Battery String 1 Test	Battery		battery
	The dc system must start a battery test.			
48	Start Battery String 2 Test	Battery		battery
	The dc system must start a battery test.			
49	Force Battery String 1 Test	Battery		battery
	The dc system must start a battery test.			
50	Force Battery String 2 Test	Battery		battery
	The dc system must start a battery test.			
51	Save Configuration In MCU	Save		basic
	Save configuration parameters in the MCU microcontroller. If comp@s is not present, the system will be correctly managed.			
55	Set MCU Specific Configuration Id	Advanced	Factory	basic
	This control allows to reconfigure the MCU to support specific hardware configuration, with embedded distribution for example			
111	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay 1			
112	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay 2			
113	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay 3			
114	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic

Control Table				
	Generate Pulse on relay 4			
201	Application OK	Specific	Application State	basic
	Used by the application as heartbeat			
202	Application Not OK	Specific	Application State	basic
	Used by the application to disable any control command on the dc system			
203	Rescue Branch Disconnection Allowed	Specific	Rescue Branch Discon- nection	basic
	Used to allow Rescue Branch Disconnection			
204	Rescue Branch Disconnection Not Allowed	Specific	Rescue Branch Discon- nection	basic
	Used to allow Rescue Branch Disconnection			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

3. Rectifier Tables

3.1. CAR0548TN

Device Information	
Name	CAR0548TN
Short Description	500W switched mode rectifier
Long Description	500W switched mode rectifier, -48Vdc fixed output
Hardware Reference	9411 010 55001
Software Reference	NO SOFT

Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				

3.2. CAR0948TN-1A / CAR0948TN-2A

Device Information	
Name	CAR0948TN-1A / CAR0948TN-2A
Short Description	850W switched mode rectifier / 850W switched mode rectifier
Long Description	850W switched mode rectifier, -48Vdc fixed output / 850W switched mode rectifier, -48Vdc fixed output. - non standard front plate
Hardware Reference	9411 010 95001 / 9411 010 95011

Software Reference	SOFT 000092 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				

Alarm Table

12 Fan Error			major (0)	5 / 2
The FAN is defect				
13 Derating Error			major (0)	5 / 2
The rectifier is in derating				
14 AC Derating			major (0)	5 / 2
The rectifier is in AC derating				
15 Thermal Derating			major (0)	5 / 2
The rectifier is in thermal derating				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
The current delivered by the rectifier					
2	Output Power	Output		Watt	basic
The power delivered by the rectifier					
3	Output Voltage	Output		Volt	basic
The output voltage of the rectifier					
4	Output Current Max	Output		Ampere	basic
The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					
5	Output Power Max	Output		Watt	basic
The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					
11	Input Voltage	Input		Volt	asset
The rectifier AC Input voltage (For CAN capable rectifiers)					
12	Temperature	General		degree C	asset
The rectifier temperature (For CAN capable rectifiers)					
13	Fan Speed	General		RPM	asset
The rectifier FAN Speed in RPM. (For CAN capable rectifiers)					
14	Power Rating	General		%	asset
The rectifier power rating (For CAN capable rectifiers)					
15	Service Time	General		second	asset
The rectifier total service time, in second (For CAN capable rectifiers)					
16	Thermal Aging Time	General		second	asset
The rectifier thermal aging time, in second (For CAN capable rectifiers)					
17	Converted Energy	General		kJ	asset
The total energy converted by the rectifier since the production. (For CAN capable rectifiers)					

3.3. CAR0948TN-3A

Device Information	
Name	CAR0948TN-3A
Short Description	850W switched mode rectifier, AC & DC input
Long Description	850W switched mode rectifier, -48Vdc fixed output, AC and DC input
Hardware Reference	9411 010 95031
Software Reference	SOFT 000084 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				

Alarm Table					
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2
	The FAN is defect				
13	Derating Error			major (0)	5 / 2
	The rectifier is in derating				
14	AC Derating			major (0)	5 / 2
	The rectifier is in AC derating				
15	Thermal Derating			major (0)	5 / 2
	The rectifier is in thermal derating				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
11	Input Voltage	Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12	Temperature	General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				
13	Fan Speed	General		RPM	asset
	The rectifier FAN Speed in RPM. (For CAN capable rectifiers)				
14	Power Rating	General		%	asset
	The rectifier power rating (For CAN capable rectifiers)				
15	Service Time	General		second	asset

Data Table

	The rectifier total service time, in second (For CAN capable rectifiers)			
16 Thermal Aging Time	General		second	asset
	The rectifier thermal aging time, in second (For CAN capable rectifiers)			
17 Converted Energy	General		kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)			

3.4. CAR1024TP**Device Information**

Name	CAR1024TP
Short Description	1000W switched mode rectifier
Long Description	1000W switched mode rectifier, +24Vdc fixed output
Hardware Reference	9411 011 02001
Software Reference	NO SOFT
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				

Data Table

4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				

3.5. CAR1048TN-1A

Device Information	
Name	CAR1048TN-1A
Short Description	1000W switched mode rectifier
Long Description	1000W switched mode rectifier, -48Vdc fixed output
Hardware Reference	9411 011 05001
Software Reference	SOFT 000067 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2

Alarm Table

	The rectifier is in AC Failure.			
2	DC Failure		major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.			
3	Over Temperature		major (0)	5 / 2
	The rectifier is too warm.			
4	Remote Off		warning (0)	5 / 2
	The rectifier is in remote off.			
7	Communication Error		warning (0)	5 / 2
	The Communication With the rectifier has been lost.			
10	AC High		minor (0)	5 / 2
	The AC input in too high			
11	Short Error		major (0)	5 / 2
	A short circuit is present on the bus			
12	Fan Error		major (0)	5 / 2
	The FAN is defect			
13	Derating Error		major (0)	5 / 2
	The rectifier is in derating			
14	AC Derating		major (0)	5 / 2
	The rectifier is in AC derating			
15	Thermal Derating		major (0)	5 / 2
	The rectifier is in thermal derating			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
11	Input Voltage	Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12	Temperature	General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				

Data Table				
13 Fan Speed	General		RPM	asset
The rectifier FAN Speed in RPM. (For CAN capable rectifiers)				
14 Power Rating	General		%	asset
The rectifier power rating (For CAN capable rectifiers)				
15 Service Time	General		second	asset
The rectifier total service time, in second (For CAN capable rectifiers)				
16 Thermal Aging Time	General		second	asset
The rectifier thermal aging time, in second (For CAN capable rectifiers)				
17 Converted Energy	General		kJ	asset
The total energy converted by the rectifier since the production. (For CAN capable rectifiers)				

3.6. CAR1048TN-2A

Device Information	
Name	CAR1048TN-2A
Short Description	1000W switched mode rectifier, AC & DC input
Long Description	1000W switched mode rectifier, -48Vdc fixed output, AC & DC input
Hardware Reference	9411 011 05021
Software Reference	SOFT 000083 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
The rectifier product name (With CAN capable rectifiers)				
2	Hardware Reference	Product Info		asset
The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)				
3	Hardware Revision	Product Info		asset
The rectifier hardware revision. (With CAN capable Rectifiers)				
4	Software Reference	Product Info		asset
The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)				
6	Serial Number	Product Info		asset
The rectifier serial number - Wb (With CAN capable rectifiers)				
8	Manufacturing Date	Product Info		asset

Description Table

	The rectifier production date (With CAN capable rectifiers)		
21 CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID		

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2
	The FAN is defect				
13	Derating Error			major (0)	5 / 2
	The rectifier is in derating				
14	AC Derating			major (0)	5 / 2
	The rectifier is in AC derating				
15	Thermal Derating			major (0)	5 / 2
	The rectifier is in thermal derating				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derat-				

Data Table				
	ing for CAN capable rectifiers.			
5	Output Power Max	Output	Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.			
11	Input Voltage	Input	Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)			
12	Temperature	General	degree C	asset
	The rectifier temperature (For CAN capable rectifiers)			
13	Fan Speed	General	RPM	asset
	The rectifier FAN Speed in RPM. (For CAN capable rectifiers)			
14	Power Rating	General	%	asset
	The rectifier power rating (For CAN capable rectifiers)			
15	Service Time	General	second	asset
	The rectifier total service time, in second (For CAN capable rectifiers)			
16	Thermal Aging Time	General	second	asset
	The rectifier thermal aging time, in second (For CAN capable rectifiers)			
17	Converted Energy	General	kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)			

3.7. CAR1548TN

Device Information	
Name	CAR1548TN
Short Description	1500W switched mode rectifier
Long Description	1500W switched mode rectifier, -48Vdc fixed output
Hardware Reference	9411 011 55001
Software Reference	NO SOFT
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2

Alarm Table

	The rectifier is in remote off.			
7	Communication Error		warning (0)	5 / 2
	The Communication With the rectifier has been lost.			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				

3.8. CAR1848TN-1A**Device Information**

Name	CAR1848TN-1A
Short Description	1800W switched mode rectifier
Long Description	1800W switched mode rectifier, -48Vdc fixed output
Hardware Reference	9411 011 85001
Software Reference	NO SOFT
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				

Alarm Table

7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				

3.9. CAR1848TN-2A**Device Information**

Name	CAR1848TN-2A
Short Description	1800W switched mode rectifier extended input range
Long Description	1800W switched mode rectifier, -48Vdc fixed output, 150-280Vac input
Hardware Reference	9411 011 85011
Software Reference	NO SOFT
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				

Alarm Table

4 Remote Off			warning (0)	5 / 2
The rectifier is in remote off.				
7 Communication Error			warning (0)	5 / 2
The Communication With the rectifier has been lost.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
The current delivered by the rectifier					
2	Output Power	Output		Watt	basic
The power delivered by the rectifier					
3	Output Voltage	Output		Volt	basic
The output voltage of the rectifier					
4	Output Current Max	Output		Ampere	basic
The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					
5	Output Power Max	Output		Watt	basic
The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					

3.10. CAR2648TN**Device Information**

Name	CAR2648TN
Short Description	1800W switched mode rectifier extended input range
Long Description	1800W switched mode rectifier, -48Vdc fixed output, 150-280Vac input
Hardware Reference	9411 012 65001
Software Reference	SOFT 000075 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
The rectifier is in AC Failure.					
2	DC Failure			major (0)	5 / 2
The rectifier must be replaced because of a DC Failure.					

Alarm Table

3	Over Temperature		major (0)	5 / 2
	The rectifier is too warm.			
4	Remote Off		warning (0)	5 / 2
	The rectifier is in remote off.			
7	Communication Error		warning (0)	5 / 2
	The Communication With the rectifier has been lost.			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				

3.11. CAR30110TP

Device Information	
Name	CAR30110TP
Short Description	3000W +110V switched mode rectifier
Long Description	3000W switched mode rectifier, +110Vdc fixed output
Hardware Reference	9411 013 07001
Software Reference	SOFT 000065 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			

Description Table				
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2
	The FAN is defect				
13	Derating Error			major (0)	5 / 2
	The rectifier is in derating				
14	AC Derating			major (0)	5 / 2
	The rectifier is in AC derating				
15	Thermal Derating			major (0)	5 / 2
	The rectifier is in thermal derating				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>

Data Table					
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
11	Input Voltage	Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12	Temperature	General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				
13	Fan Speed	General		RPM	asset
	The rectifier FAN Speed in RPM. (For CAN capable rectifiers)				
14	Power Rating	General		%	asset
	The rectifier power rating (For CAN capable rectifiers)				
15	Service Time	General		second	asset
	The rectifier total service time, in second (For CAN capable rectifiers)				
16	Thermal Aging Time	General		second	asset
	The rectifier thermal aging time, in second (For CAN capable rectifiers)				
17	Converted Energy	General		kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)				

3.12. CAR30125TP

Device Information	
Name	CAR30125TP
Short Description	3000W +125V switched mode rectifier
Long Description	3000W switched mode rectifier, +125Vdc fixed output
Hardware Reference	9411 013 07011
Software Reference	SOFT 000068 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2
	The FAN is defect				
13	Derating Error			major (0)	5 / 2
	The rectifier is in derating				
14	AC Derating			major (0)	5 / 2
	The rectifier is in AC derating				

Alarm Table

15 Thermal Derating			major (0)	5 / 2
The rectifier is in thermal derating				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
The current delivered by the rectifier					
2	Output Power	Output		Watt	basic
The power delivered by the rectifier					
3	Output Voltage	Output		Volt	basic
The output voltage of the rectifier					
4	Output Current Max	Output		Ampere	basic
The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					
5	Output Power Max	Output		Watt	basic
The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					
11	Input Voltage	Input		Volt	asset
The rectifier AC Input voltage (For CAN capable rectifiers)					
12	Temperature	General		degree C	asset
The rectifier temperature (For CAN capable rectifiers)					
13	Fan Speed	General		RPM	asset
The rectifier FAN Speed in RPM. (For CAN capable rectifiers)					
14	Power Rating	General		%	asset
The rectifier power rating (For CAN capable rectifiers)					
15	Service Time	General		second	asset
The rectifier total service time, in second (For CAN capable rectifiers)					
16	Thermal Aging Time	General		second	asset
The rectifier thermal aging time, in second (For CAN capable rectifiers)					
17	Converted Energy	General		kJ	asset
The total energy converted by the rectifier since the production. (For CAN capable rectifiers)					

3.13. CAR30300TP**Device Information**

Name	CAR30300TP
Short Description	3000W +300V switched mode rectifier
Long Description	3000W switched mode rectifier, +300Vdc fixed output
Hardware Reference	9411 013 09001

Software Reference	SOFT 000133 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2

Alarm Table

	The FAN is defect			
13 Derating Error			major (0)	5 / 2
	The rectifier is in derating			
14 AC Derating			major (0)	5 / 2
	The rectifier is in AC derating			
15 Thermal Derating			major (0)	5 / 2
	The rectifier is in thermal derating			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1 Output Current		Output		Ampere	basic
	The current delivered by the rectifier				
2 Output Power		Output		Watt	basic
	The power delivered by the rectifier				
3 Output Voltage		Output		Volt	basic
	The output voltage of the rectifier				
4 Output Current Max		Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5 Output Power Max		Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
11 Input Voltage		Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12 Temperature		General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				
13 Fan Speed		General		RPM	asset
	The rectifier FAN Speed in RPM. (For CAN capable rectifiers)				
14 Power Rating		General		%	asset
	The rectifier power rating (For CAN capable rectifiers)				
15 Service Time		General		second	asset
	The rectifier total service time, in second (For CAN capable rectifiers)				
16 Thermal Aging Time		General		second	asset
	The rectifier thermal aging time, in second (For CAN capable rectifiers)				
17 Converted Energy		General		kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)				

3.14. CDC1548TN

Device Information	
Name	CDC1548TN
Short Description	1500W DC/DC converter 110-220Vin/48Vout
Long Description	1500W DC/DC converter 110-220Vin/48Vout
Hardware Reference	9413 000 88001
Software Reference	NO SOFT
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				

3.15. Cordex 2.4KW

Device Information	
Name	Cordex 2.4KW
Short Description	
Long Description	Rectifier Cordex 48V 2.4kW
Hardware Reference	Cordex 2.4KW
Software Reference	
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name			
4	Software Reference	Product Info		asset
	The rectifier software reference			
5	Serial Number	Product Info		asset
	The rectifier serial number			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	Rectifier Fail			major (0)	10 / 2
	The rectifier has at least one fail alarm active and is unable to output any power. It may need to be replaced.				
2	Rectifier Minor			minor (0)	10 / 2
	The rectifier has at least one minor alarm active and may be unable to output full power.				
3	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
4	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
5	Remote Off			warning (0)	10 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	Fan Error			major (0)	5 / 2
	One or more fans has stopped working				

Alarm Table

11 Current Limit			warning (0)	5 / 2
The rectifier output current is at the maximum.				
12 Power Limit			warning (0)	5 / 2
The rectifier output power is at the maximum.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1 Output Current		Output		Ampere	basic
The current delivered by the rectifier					
3 Output Voltage		Output		Volt	basic
The output voltage of the rectifier					
7 Power Ratio		Output		%	basic
This is the ratio power/available power					
8 Rectifier Mode		Mode			basic
The internal mode of the rectifier					
11 Input Voltage		Input		Volt	asset
The rectifier AC Input voltage (For CAN capable rectifiers)					
12 Temperature		General		degree C	asset
The rectifier temperature (For CAN capable rectifiers)					
13 Phase Number		General			basic
The rectifier Phase - 0 means unconfigured					
14 Service Time		General		minute	asset
The rectifier total service time, in second (For CAN capable rectifiers)					
15 Converted Energy		General		kWh	asset
The total energy converted by the rectifier since the production. (For CAN capable rectifiers)					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1 Locate Rectifier		Locate		basic
5 Change Phase Number		Phase		basic

3.16. Cordex 4KW**Device Information**

Name	Cordex 4KW
Short Description	

Long Description	Rectifier Cordex 48V 4kW
Hardware Reference	Cordex 4KW
Software Reference	
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name			
4	Software Reference	Product Info		asset
	The rectifier software reference			
5	Serial Number	Product Info		asset
	The rectifier serial number			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	Rectifier Fail			major (0)	10 / 2
	The rectifier has at least one fail alarm active and is unable to output any power. It may need to be replaced.				
2	Rectifier Minor			minor (0)	10 / 2
	The rectifier has at least one minor alarm active and may be unable to output full power.				
3	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
4	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
5	Remote Off			warning (0)	10 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	Fan Error			major (0)	5 / 2
	One or more fans has stopped working				
11	Current Limit			warning (0)	5 / 2
	The rectifier output current is at the maximum.				
12	Power Limit			warning (0)	5 / 2
	The rectifier output power is at the maximum.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
7	Power Ratio	Output		%	basic
	This is the ratio power/available power				
8	Rectifier Mode	Mode			basic
	The internal mode of the rectifier				
11	Input Voltage	Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12	Temperature	General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				
13	Phase Number	General			basic
	The rectifier Phase - 0 means unconfigured				
14	Service Time	General		minute	asset
	The rectifier total service time, in second (For CAN capable rectifiers)				
15	Converted Energy	General		kWh	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)				

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Locate Rectifier	Locate		basic
5	Change Phase Number	Phase		basic

3.17. CXRF48-4kW

Device Information	
Name	CXRF48-4kW
Short Description	4kW high efficiency rectifier
Long Description	Cordex HP 4kW, high efficiency switched mode rectifier, -48Vdc fixed output
Hardware Reference	D010 623 20040
Software Reference	Unknown
Equipment Type	Rectifier

ETSI Level	/site/energy_system/dc_system/rectifier

Description Table			
<u>Id</u>	<u>Name</u>	<u>Group</u>	<u>License</u>
1	Product Name	Product Info	asset
	The rectifier product name		
4	Software Reference	Product Info	asset
	The rectifier software reference		
5	Serial Number	Product Info	asset
	The rectifier serial number		
21	CAN Node Id	CAN Bus	basic
	The CAN Bus Node ID		

Alarm Table		
<u>Id</u>	<u>Name</u>	<u>Severity Type (Level)</u>
1	Rectifier Fail	major (0)
	The rectifier must be replaced because of a DC Failure.	
2	Minor Problem	minor (0)
	There is a minor problem.	
3	AC Failure	major (0)
	The rectifier is in AC Failure.	
4	Over Temperature	major (0)
	The rectifier is too warm.	
5	Remote Off	warning (0)
	The rectifier is in remote off.	
7	Communication Error	warning (0)
	The Communication With the rectifier has been lost.	
10	Fan Error	major (0)
	The FAN is defect	
11	Current Limitation	warning (0)
	The rectifier is in current limit	
12	Power Limitation	warning (0)
	The rectifier is in power limit	

Data Table				
<u>Id</u>	<u>Name</u>	<u>Group</u>	<u>Unit</u>	<u>License</u>
1	Output Current	Output	Ampere	basic
	The current delivered by the rectifier			
3	Output Voltage	Output	Volt	basic

Data Table				
	The output voltage of the rectifier			
7	Power Ratio	Output	%	basic
	This is the ratio power/available power			
8	Rectifier Mode	Mode		basic
	The internal mode of the rectifier			
11	Input Voltage	Input	Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)			
12	Temperature	General	degree C	asset
	The rectifier temperature (For CAN capable rectifiers)			
13	Phase Number	General		basic
	The rectifier Phase - 0 means unconfigured			
14	Service Time	General	second	asset
	The rectifier total service time, in second (For CAN capable rectifiers)			
15	Converted Energy	General	kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)			

Control Table			
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>License</i>
1	Locate Rectifier	Locate	basic
	No information		
5	Change Phase Number	Phase	basic
	No information		

3.18. CXRF 48-300W

Device Information	
Name	CXRF 48-300W
Short Description	300W high efficiency rectifier
Long Description	Cordex HP 300W, high efficiency switched mode rectifier, -48Vdc fixed output
Hardware Reference	9411 010 35011
Software Reference	SOFT 000101 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2
	The FAN is defect				
13	Derating Error			major (0)	5 / 2
	The rectifier is in derating				
14	AC Derating			major (0)	5 / 2
	The rectifier is in AC derating				

Alarm Table

15 Thermal Derating		major (0)	5 / 2
The rectifier is in thermal derating			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
The current delivered by the rectifier					
2	Output Power	Output		Watt	basic
The power delivered by the rectifier					
3	Output Voltage	Output		Volt	basic
The output voltage of the rectifier					
4	Output Current Max	Output		Ampere	basic
The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					
5	Output Power Max	Output		Watt	basic
The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.					
11	Input Voltage	Input		Volt	asset
The rectifier AC Input voltage (For CAN capable rectifiers)					
12	Temperature	General		degree C	asset
The rectifier temperature (For CAN capable rectifiers)					
13	Fan Speed	General		RPM	asset
The rectifier FAN Speed in RPM. (For CAN capable rectifiers)					
14	Power Rating	General		%	asset
The rectifier power rating (For CAN capable rectifiers)					
15	Service Time	General		second	asset
The rectifier total service time, in second (For CAN capable rectifiers)					
16	Thermal Aging Time	General		second	asset
The rectifier thermal aging time, in second (For CAN capable rectifiers)					
17	Converted Energy	General		kJ	asset
The total energy converted by the rectifier since the production. (For CAN capable rectifiers)					

3.19. ECOR0348**Device Information**

Name	ECOR0348
Short Description	Rectifer 300W -54V
Long Description	Replaced by CXRF 48-300W
Hardware Reference	9411 010 35001

Software Reference	SOFT 000097 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2

Alarm Table

	The FAN is defect			
13 Derating Error			major (0)	5 / 2
	The rectifier is in derating			
14 AC Derating			major (0)	5 / 2
	The rectifier is in AC derating			
15 Thermal Derating			major (0)	5 / 2
	The rectifier is in thermal derating			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1 Output Current		Output		Ampere	basic
	The current delivered by the rectifier				
2 Output Power		Output		Watt	basic
	The power delivered by the rectifier				
3 Output Voltage		Output		Volt	basic
	The output voltage of the rectifier				
4 Output Current Max		Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5 Output Power Max		Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
11 Input Voltage		Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12 Temperature		General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				
13 Fan Speed		General		RPM	asset
	The rectifier FAN Speed in RPM. (For CAN capable rectifiers)				
14 Power Rating		General		%	asset
	The rectifier power rating (For CAN capable rectifiers)				
15 Service Time		General		second	asset
	The rectifier total service time, in second (For CAN capable rectifiers)				
16 Thermal Aging Time		General		second	asset
	The rectifier thermal aging time, in second (For CAN capable rectifiers)				
17 Converted Energy		General		kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)				

3.20. ECOR1048TN

Device Information	
Name	ECOR1048TN
Short Description	1000W switched mode rectifier, AC & DC input
Long Description	1000W switched mode rectifier, -48Vdc fixed output, AC & DC input
Hardware Reference	9411 011 05101
Software Reference	SOFT 000141 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				

Alarm Table					
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2
	The FAN is defect				
13	Derating Error			major (0)	5 / 2
	The rectifier is in derating				
14	AC Derating			major (0)	5 / 2
	The rectifier is in AC derating				
15	Thermal Derating			major (0)	5 / 2
	The rectifier is in thermal derating				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
11	Input Voltage	Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12	Temperature	General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				
13	Fan Speed	General		RPM	asset
	The rectifier FAN Speed in RPM. (For CAN capable rectifiers)				
14	Power Rating	General		%	asset
	The rectifier power rating (For CAN capable rectifiers)				
15	Service Time	General		second	asset

Data Table

	The rectifier total service time, in second (For CAN capable rectifiers)			
16 Thermal Aging Time	General		second	asset
	The rectifier thermal aging time, in second (For CAN capable rectifiers)			
17 Converted Energy	General		kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)			

3.21. PMM0854FP02

Device Information	
Name	PMM0854FP02
Short Description	850W +48V switched mode rectifier
Long Description	850W switched mode rectifier, +48Vdc fixed output
Hardware Reference	9411 060 82021
Software Reference	SOFT 000134 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
	The rectifier product name (With CAN capable rectifiers)			
2	Hardware Reference	Product Info		asset
	The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
3	Hardware Revision	Product Info		asset
	The rectifier hardware revision. (With CAN capable Rectifiers)			
4	Software Reference	Product Info		asset
	The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)			
6	Serial Number	Product Info		asset
	The rectifier serial number - Wb (With CAN capable rectifiers)			
8	Manufacturing Date	Product Info		asset
	The rectifier production date (With CAN capable rectifiers)			
21	CAN Node Id	CAN Bus		basic
	The CAN Bus Node ID			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2

Alarm Table

	The rectifier is in AC Failure.			
2	DC Failure		major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.			
3	Over Temperature		major (0)	5 / 2
	The rectifier is too warm.			
4	Remote Off		warning (0)	5 / 2
	The rectifier is in remote off.			
7	Communication Error		warning (0)	5 / 2
	The Communication With the rectifier has been lost.			
10	AC High		minor (0)	5 / 2
	The AC input in too high			
11	Short Error		major (0)	5 / 2
	A short circuit is present on the bus			
12	Fan Error		major (0)	5 / 2
	The FAN is defect			
13	Derating Error		major (0)	5 / 2
	The rectifier is in derating			
14	AC Derating		major (0)	5 / 2
	The rectifier is in AC derating			
15	Thermal Derating		major (0)	5 / 2
	The rectifier is in thermal derating			

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
11	Input Voltage	Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)				
12	Temperature	General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)				

Data Table				
13 Fan Speed	General		RPM	asset
The rectifier FAN Speed in RPM. (For CAN capable rectifiers)				
14 Power Rating	General		%	asset
The rectifier power rating (For CAN capable rectifiers)				
15 Service Time	General		second	asset
The rectifier total service time, in second (For CAN capable rectifiers)				
16 Thermal Aging Time	General		second	asset
The rectifier thermal aging time, in second (For CAN capable rectifiers)				
17 Converted Energy	General		kJ	asset
The total energy converted by the rectifier since the production. (For CAN capable rectifiers)				

3.22. SP0164

Device Information	
Name	SP0164
Short Description	1500W Wide output rectifier 53V to 120V
Long Description	1500W Wide output rectifier 53V to 120V
Hardware Reference	9411 001 64001
Software Reference	SOFT 000145 XX
Equipment Type	Rectifier
ETSI Level	/site/energy_system/dc_system/rectifier

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Product Info		asset
The rectifier product name (With CAN capable rectifiers)				
2	Hardware Reference	Product Info		asset
The rectifier hardware reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)				
3	Hardware Revision	Product Info		asset
The rectifier hardware revision. (With CAN capable Rectifiers)				
4	Software Reference	Product Info		asset
The rectifier software reference. This corresponds to the Alpha Technologies 12NC (With CAN capable rectifiers)				
6	Serial Number	Product Info		asset
The rectifier serial number - Wb (With CAN capable rectifiers)				
8	Manufacturing Date	Product Info		asset
The rectifier production date (With CAN capable rectifiers)				
21	CAN Node Id	CAN Bus		basic

Description Table

	The CAN Bus Node ID

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	AC Failure			major (0)	5 / 2
	The rectifier is in AC Failure.				
2	DC Failure			major (0)	5 / 2
	The rectifier must be replaced because of a DC Failure.				
3	Over Temperature			major (0)	5 / 2
	The rectifier is too warm.				
4	Remote Off			warning (0)	5 / 2
	The rectifier is in remote off.				
7	Communication Error			warning (0)	5 / 2
	The Communication With the rectifier has been lost.				
10	AC High			minor (0)	5 / 2
	The AC input in too high				
11	Short Error			major (0)	5 / 2
	A short circuit is present on the bus				
12	Fan Error			major (0)	5 / 2
	The FAN is defect				
13	Derating Error			major (0)	5 / 2
	The rectifier is in derating				
14	AC Derating			major (0)	5 / 2
	The rectifier is in AC derating				
15	Thermal Derating			major (0)	5 / 2
	The rectifier is in thermal derating				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Current	Output		Ampere	basic
	The current delivered by the rectifier				
2	Output Power	Output		Watt	basic
	The power delivered by the rectifier				
3	Output Voltage	Output		Volt	basic
	The output voltage of the rectifier				
4	Output Current Max	Output		Ampere	basic
	The maximal current deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.				
5	Output Power Max	Output		Watt	basic

Data Table				
	The maximal power deliverable by the rectifier. This takes into account the derating for CAN capable rectifiers.			
11 Input Voltage	Input		Volt	asset
	The rectifier AC Input voltage (For CAN capable rectifiers)			
12 Temperature	General		degree C	asset
	The rectifier temperature (For CAN capable rectifiers)			
13 Fan Speed	General		RPM	asset
	The rectifier FAN Speed in RPM. (For CAN capable rectifiers)			
14 Power Rating	General		%	asset
	The rectifier power rating (For CAN capable rectifiers)			
15 Service Time	General		second	asset
	The rectifier total service time, in second (For CAN capable rectifiers)			
16 Thermal Aging Time	General		second	asset
	The rectifier thermal aging time, in second (For CAN capable rectifiers)			
17 Converted Energy	General		kJ	asset
	The total energy converted by the rectifier since the production. (For CAN capable rectifiers)			

4. Sensors And Actuators Tables

4.1. ADIO 7

Device Information	
Name	ADIO 7
Short Description	Standard I/O module D24 T7
Long Description	I/O module with 24 digital inputs and 7 inputs for temperature measurement
Hardware Reference	9413 060 05071
Software Reference	SOFT 000095 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware reference			

Description Table				
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
71	Digital Input 1	Digital Inputs	Digital Input 1	warning (0)	5 / 2
	The name of the digital input 1 alarm.				
72	Digital Input 2	Digital Inputs	Digital Input 2	warning (0)	5 / 2
	The name of the digital input 2 alarm.				
73	Digital Input 3	Digital Inputs	Digital Input 3	warning (0)	5 / 2
	The name of the digital input 3 alarm.				
74	Digital Input 4	Digital Inputs	Digital Input 4	warning (0)	5 / 2
	The name of the digital input 4 alarm.				
75	Digital Input 5	Digital Inputs	Digital Input 5	warning (0)	5 / 2
	The name of the digital input 5 alarm.				
76	Digital Input 6	Digital Inputs	Digital Input 6	warning (0)	5 / 2
	The name of the digital input 6 alarm.				
77	Digital Input 7	Digital Inputs	Digital Input 7	warning (0)	5 / 2
	The name of the digital input 7 alarm.				
78	Digital Input 8	Digital Inputs	Digital Input 8	warning (0)	5 / 2
	The name of the digital input 8 alarm.				
79	Digital Input 9	Digital Inputs	Digital Input 9	warning (0)	5 / 2

Alarm Table					
		puts			
	The name of the digital input 9 alarm.				
80	Digital Input 10	Digital Inputs	Digital Input 10	warning (0)	5 / 2
	The name of the digital input 10 alarm.				
81	Digital Input 11	Digital Inputs	Digital Input 11	warning (0)	5 / 2
	The name of the digital input 11 alarm.				
82	Digital Input 12	Digital Inputs	Digital Input 12	warning (0)	5 / 2
	The name of the digital input 12 alarm.				
83	Digital Input 13	Digital Inputs	Digital Input 13	warning (0)	5 / 2
	The name of the digital input 13 alarm.				
84	Digital Input 14	Digital Inputs	Digital Input 14	warning (0)	5 / 2
	The name of the digital input 14 alarm.				
85	Digital Input 15	Digital Inputs	Digital Input 15	warning (0)	5 / 2
	The name of the digital input 15 alarm.				
86	Digital Input 16	Digital Inputs	Digital Input 16	warning (0)	5 / 2
	The name of the digital input 16 alarm.				
87	Digital Input 17	Digital Inputs	Digital Input 17	warning (0)	5 / 2
	The name of the digital input 17 alarm.				
88	Digital Input 18	Digital Inputs	Digital Input 18	warning (0)	5 / 2
	The name of the digital input 18 alarm.				
89	Digital Input 19	Digital Inputs	Digital Input 19	warning (0)	5 / 2
	The name of the digital input 19 alarm.				
90	Digital Input 20	Digital Inputs	Digital Input 20	warning (0)	5 / 2
	The name of the digital input 20 alarm.				
91	Digital Input 21	Digital Inputs	Digital Input 21	warning (0)	5 / 2
	The name of the digital input 21 alarm.				
92	Digital Input 22	Digital Inputs	Digital Input 22	warning (0)	5 / 2
	The name of the digital input 22 alarm.				
93	Digital Input	Digital In-	Digital Input	warning (0)	5 / 2

Alarm Table

	23	puts	23		
	The name of the digital input 23 alarm.				
94	Digital Input 24	Digital Inputs	Digital Input 24	warning (0)	5 / 2
	The name of the digital input 24 alarm.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Temperature 1	Temperature Sensors	Temperature 1	degree C	basic
	Temperature Measurement 1				
2	Temperature 2	Temperature Sensors	Temperature 2	degree C	basic
	Temperature Measurement 2				
3	Temperature 3	Temperature Sensors	Temperature 3	degree C	basic
	Temperature Measurement 3				
4	Temperature 4	Temperature Sensors	Temperature 4	degree C	basic
	Temperature Measurement 4				
5	Temperature 5	Temperature Sensors	Temperature 5	degree C	basic
	Temperature Measurement 5				
6	Temperature 6	Temperature Sensors	Temperature 6	degree C	basic
	Temperature Measurement 6				
7	Temperature 7	Temperature Sensors	Temperature 7	degree C	basic
	Temperature Measurement 7				
8	Temperature 8	Temperature Sensors	Temperature 8	degree C	basic
	Temperature Measurement 8				
71	Digital Input 1 State	Digital Inputs	Digital Input 1		basic
	The state of the digital input				
72	Digital Input 2 State	Digital Inputs	Digital Input 2		basic
	The state of the digital input				
73	Digital Input 3 State	Digital Inputs	Digital Input 3		basic
	The state of the digital input				
74	Digital Input 4 State	Digital Inputs	Digital Input 4		basic
	The state of the digital input				
75	Digital Input 5 State	Digital Inputs	Digital Input 5		basic
	The state of the digital input				
76	Digital Input 6 State	Digital Inputs	Digital Input 6		basic
	The state of the digital input				
77	Digital Input 7 State	Digital Inputs	Digital Input 7		basic
	The state of the digital input				
78	Digital Input 8 State	Digital Inputs	Digital Input 8		basic
	The state of the digital input				

Data Table					
79	Digital Input 9 State	Digital Inputs	Digital Input 9		basic
	The state of the digital input				
80	Digital Input 10 State	Digital Inputs	Digital Input 10		basic
	The state of the digital input				
81	Digital Input 11 State	Digital Inputs	Digital Input 11		basic
	The state of the digital input				
82	Digital Input 12 State	Digital Inputs	Digital Input 12		basic
	The state of the digital input				
83	Digital Input 13 State	Digital Inputs	Digital Input 13		basic
	The state of the digital input				
84	Digital Input 14 State	Digital Inputs	Digital Input 14		basic
	The state of the digital input				
85	Digital Input 15 State	Digital Inputs	Digital Input 15		basic
	The state of the digital input				
86	Digital Input 16 State	Digital Inputs	Digital Input 16		basic
	The state of the digital input				
87	Digital Input 17 State	Digital Inputs	Digital Input 17		basic
	The state of the digital input				
88	Digital Input 18 State	Digital Inputs	Digital Input 18		basic
	The state of the digital input				
89	Digital Input 19 State	Digital Inputs	Digital Input 19		basic
	The state of the digital input				
90	Digital Input 20 State	Digital Inputs	Digital Input 20		basic
	The state of the digital input				
91	Digital Input 21 State	Digital Inputs	Digital Input 21		basic
	The state of the digital input				
92	Digital Input 22 State	Digital Inputs	Digital Input 22		basic
	The state of the digital input				
93	Digital Input 23 State	Digital Inputs	Digital Input 23		basic
	The state of the digital input				
94	Digital Input 24 State	Digital Inputs	Digital Input 24		basic
	The state of the digital input				
131	Pulse Counter 1	Digital Inputs	Digital Input 19		basic
	Energy Consumption Counter 1				
132	Pulse Counter 2	Digital Inputs	Digital Input 20		basic
	Energy Consumption Counter 2				
133	Pulse Counter 3	Digital Inputs	Digital Input 21		basic
	Energy Consumption Counter 3				
134	Pulse Counter 4	Digital Inputs	Digital Input 22		basic
	Energy Consumption Counter 4				

Data Table					
135	Pulse Counter 5	Digital Inputs	Digital Input 23		basic
	Energy Consumption Counter 5				
136	Pulse Counter 6	Digital Inputs	Digital Input 24		basic
	Energy Consumption Counter 6				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
71	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					
72	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
73	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic
	The name of the digital input 2.					
74	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
75	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Inputs	basic
	The name of the digital input 3.					
76	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
77	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Inputs	basic
	The name of the digital input 4.					
78	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
79	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Inputs	basic
	The name of the digital input 5.					
80	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital					

Config Table

	input is not in this default state, the related alarm is set.				
81	Digital Input 6 Name	Digital Inputs	Digital Input 6	Digital Inputs	basic
	The name of the digital input 6.				
82	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6	True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.				
83	Digital Input 7 Name	Digital Inputs	Digital Input 7	Digital Inputs	basic
	The name of the digital input 7.				
84	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7	True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.				
85	Digital Input 8 Name	Digital Inputs	Digital Input 8	Digital Inputs	basic
	The name of the digital input 8.				
86	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8	True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.				
87	Digital Input 9 Name	Digital Inputs	Digital Input 9	Digital Inputs	basic
	The name of the digital input 9.				
88	Digital Input 9 Normally Closed	Digital Inputs	Digital Input 9	True/False (True)	basic
	True/False value defining if the digital input 9 is normally closed. If this digital input is not in this default state, the related alarm is set.				
89	Digital Input 10 Name	Digital Inputs	Digital Input 10	Digital Inputs	basic
	The name of the digital input 10.				
90	Digital Input 10 Normally Closed	Digital Inputs	Digital Input 10	True/False (True)	basic
	True/False value defining if the digital input 10 is normally closed. If this digital input is not in this default state, the related alarm is set.				
91	Digital Input 11 Name	Digital Inputs	Digital Input 11	Digital Inputs	basic
	The name of the digital input 11.				
92	Digital Input 11 Normally Closed	Digital Inputs	Digital Input 11	True/False (True)	basic
	True/False value defining if the digital input 11 is normally closed. If this digital input is not in this default state, the related alarm is set.				

Config Table						
93	Digital Input 12 Name	Digital Inputs	Digital Input 12		Digital Inputs	basic
	The name of the digital input 12.					
94	Digital Input 12 Normally Closed	Digital Inputs	Digital Input 12		True/False (True)	basic
	True/False value defining if the digital input 12 is normally closed. If this digital input is not in this default state, the related alarm is set.					
95	Digital Input 13 Name	Digital Inputs	Digital Input 13		Digital Inputs	basic
	The name of the digital input 13.					
96	Digital Input 13 Normally Closed	Digital Inputs	Digital Input 13		True/False (True)	basic
	True/False value defining if the digital input 13 is normally closed. If this digital input is not in this default state, the related alarm is set.					
97	Digital Input 14 Name	Digital Inputs	Digital Input 14		Digital Inputs	basic
	The name of the digital input 14.					
98	Digital Input 14 Normally Closed	Digital Inputs	Digital Input 14		True/False (True)	basic
	True/False value defining if the digital input 14 is normally closed. If this digital input is not in this default state, the related alarm is set.					
99	Digital Input 15 Name	Digital Inputs	Digital Input 15		Digital Inputs	basic
	The name of the digital input 15.					
100	Digital Input 15 Normally Closed	Digital Inputs	Digital Input 15		True/False (True)	basic
	True/False value defining if the digital input 15 is normally closed. If this digital input is not in this default state, the related alarm is set.					
101	Digital Input 16 Name	Digital Inputs	Digital Input 16		Digital Inputs	basic
	The name of the digital input 16.					
102	Digital Input 16 Normally Closed	Digital Inputs	Digital Input 16		True/False (True)	basic
	True/False value defining if the digital input 16 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 17 Name	Digital Inputs	Digital Input 17		Digital Inputs	basic
	The name of the digital input 17.					
104	Digital Input 17 Normally Closed	Digital Inputs	Digital Input 17		True/False (True)	basic
	True/False value defining if the digital input 17 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 18	Digital	Digital Input		Digital Inputs	basic

Config Table						
	Name	Inputs	18			
	The name of the digital input 18.					
106	Digital Input 18 Normally Closed	Digital Inputs	Digital Input 18		True/False (True)	basic
	True/False value defining if the digital input 18 is normally closed. If this digital input is not in this default state, the related alarm is set.					
107	Digital Input 19 Name	Digital Inputs	Digital Input 19		Digital Inputs	basic
	The name of the digital input 19.					
108	Digital Input 19 Normally Closed	Digital Inputs	Digital Input 19		True/False (True)	basic
	True/False value defining if the digital input 19 is normally closed. If this digital input is not in this default state, the related alarm is set.					
109	Digital Input 20 Name	Digital Inputs	Digital Input 20		Digital Inputs	basic
	The name of the digital input 20.					
110	Digital Input 20 Normally Closed	Digital Inputs	Digital Input 20		True/False (True)	basic
	True/False value defining if the digital input 20 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Digital Input 21 Name	Digital Inputs	Digital Input 21		Digital Inputs	basic
	The name of the digital input 21.					
112	Digital Input 21 Normally Closed	Digital Inputs	Digital Input 21		True/False (True)	basic
	True/False value defining if the digital input 21 is normally closed. If this digital input is not in this default state, the related alarm is set.					
113	Digital Input 22 Name	Digital Inputs	Digital Input 22		Digital Inputs	basic
	The name of the digital input 22.					
114	Digital Input 22 Normally Closed	Digital Inputs	Digital Input 22		True/False (True)	basic
	True/False value defining if the digital input 22 is normally closed. If this digital input is not in this default state, the related alarm is set.					
115	Digital Input 23 Name	Digital Inputs	Digital Input 23		Digital Inputs	basic
	The name of the digital input 23.					
116	Digital Input 23 Normally Closed	Digital Inputs	Digital Input 23		True/False (True)	basic
	True/False value defining if the digital input 23 is normally closed. If this digital input is not in this default state, the related alarm is set.					
117	Digital Input 24 Name	Digital Inputs	Digital Input 24		Digital Inputs	basic

Config Table

	The name of the digital input 24.				
118 Digital Input 24 Normally Closed	Digital Inputs	Digital Input 24		True/False (True)	basic
	True/False value defining if the digital input 24 is normally closed. If this digital input is not in this default state, the related alarm is set.				
521 Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4				
522 Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601 Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
901 Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902 Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
101 Set Pulse Counter 1		Pulse Counter		basic
	Set Counter 1 Value			
102 Set Pulse Counter 2		Pulse Counter		basic
	Set Counter 2 Value			
103 Set Pulse Counter 3		Pulse Counter		basic
	Set Counter 3 Value			
104 Set Pulse Counter 4		Pulse Counter		basic
	Set Counter 4 Value			

Control Table				
105	Set Pulse Counter 5	Pulse Counter		basic
	Set Counter 5 Value			
106	Set Pulse Counter 6	Pulse Counter		basic
	Set Counter 6 Value			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

4.2. ADIO 8

Device Information	
Name	ADIO 8
Short Description	Standard I/O module 8AC Impulse Relays +2 Relays + 4Di + 1T +2 CM + 2V
Long Description	I/O module with 8 controls for pulse relays (partial Load disconnection, low voltage disconnection), 4 digital inputs, 2 relays, 1 temperature measurements, 2 measurements of 4/20 mA, 2 voltage measurement (0-5V)
Hardware Reference	9413 060 05081
Software Reference	SOFT 000096 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
71	Digital Input 1	Digital In-puts	Digital Input 1	warning (0)	5 / 2
	The name of the digital input 1 alarm.				
72	Digital Input 2	Digital In-puts	Digital Input 2	warning (0)	5 / 2
	The name of the digital input 2 alarm.				
73	Digital Input 3	Digital In-puts	Digital Input 3	warning (0)	5 / 2
	The name of the digital input 3 alarm.				
74	Digital Input 4	Digital In-puts	Digital Input 4	warning (0)	5 / 2
	The name of the digital input 4 alarm.				
150	Impulse Relay 1 Mis-match Desired State	Impulse Relays	Impulse Re-lay 1	warning (0)	5 / 2
	This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.				
155	Impulse Relay 2 Mis-match Desired State	Impulse Relays	Impulse Re-lay 2	warning (0)	5 / 2
	This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.				

Alarm Table

160	Impulse Relay 3 Mismatch Desired State	Impulse Relays	Impulse Relay 3	warning (0)	5 / 2
This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.					
165	Impulse Relay 4 Mismatch Desired State	Impulse Relays	Impulse Relay 4	warning (0)	5 / 2
This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.					
170	Impulse Relay 5 Mismatch Desired State	Impulse Relays	Impulse Relay 5	warning (0)	5 / 2
This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.					
175	Impulse Relay 6 Mismatch Desired State	Impulse Relays	Impulse Relay 6	warning (0)	5 / 2
This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.					
180	Impulse Relay 7 Mismatch Desired State	Impulse Relays	Impulse Relay 7	warning (0)	5 / 2
This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.					
185	Impulse Relay 8 Mismatch Desired State	Impulse Relays	Impulse Relay 8	warning (0)	5 / 2
This alarm happens when there is a defect inside the impulse relay or when it is not well connected. The status is not corresponding to the desired status.					

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Temperature 1	Temperature Sensors	Temperature 1	degree C	basic
Temperature Measurement 1					
71	Digital Input 1 State	Digital Inputs	Digital Input 1		basic
The state of the digital input					
72	Digital Input 2 State	Digital Inputs	Digital Input 2		basic
The state of the digital input					
73	Digital Input 3 State	Digital Inputs	Digital Input 3		basic
The state of the digital input					
74	Digital Input 4 State	Digital Inputs	Digital Input 4		basic
The state of the digital input					
101	Voltage 5V 1	Voltage Sensors	Voltage 5V 1	mVolt	basic
Voltage Measurement 5V 1					
102	Voltage 5V 2	Voltage Sensors	Voltage 5V 2	mVolt	basic
Voltage Measurement 5V 2					
111	Current 4-20mA 1	Current 4-20mA Sen-	Current 4-20mA	mAmpere	basic

Data Table					
		Current 4-20mA Sensor 1	1		
112	Current 4-20mA 2	Current 4-20mA Sensor	Current 4-20mA 2	mAmpere	basic
		Current 4-20mA Sensor 2			
150	Impulse Relay 1 State	Impulse Relays	Impulse Relay 1		basic
		Status of the impulse relay. Open or Closed.			
155	Impulse Relay 2 State	Impulse Relays	Impulse Relay 2		basic
		Status of the impulse relay. Open or Closed.			
160	Impulse Relay 3 State	Impulse Relays	Impulse Relay 3		basic
		Status of the impulse relay. Open or Closed.			
165	Impulse Relay 4 State	Impulse Relays	Impulse Relay 4		basic
		Status of the impulse relay. Open or Closed.			
170	Impulse Relay 5 State	Impulse Relays	Impulse Relay 5		basic
		Status of the impulse relay. Open or Closed.			
175	Impulse Relay 6 State	Impulse Relays	Impulse Relay 6		basic
		Status of the impulse relay. Open or Closed.			
180	Impulse Relay 7 State	Impulse Relays	Impulse Relay 7		basic
		Status of the impulse relay. Open or Closed.			
185	Impulse Relay 8 State	Impulse Relays	Impulse Relay 8		basic
		Status of the impulse relay. Open or Closed.			

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
71	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
		The name of the digital input 1.				
72	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
		True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.				
73	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic

Config Table

	The name of the digital input 2.				
74	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2	True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.				
75	Digital Input 3 Name	Digital Inputs	Digital Input 3	Digital Inputs	basic
	The name of the digital input 3.				
76	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3	True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.				
77	Digital Input 4 Name	Digital Inputs	Digital Input 4	Digital Inputs	basic
	The name of the digital input 4.				
78	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4	True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.				
121	Relay 1 Change State Boolean Condition	Relays	Relay 1	(False)	basic
	Relay 1 Boolean Condition				
122	Relay 1 Normal State	Relays	Relay 1	(Energized / De-energized)	basic
	Relay 1 Normal State				
123	Relay 2 Change State Boolean Condition	Relays	Relay 2	(False)	basic
	Relay 2 Boolean Condition				
124	Relay 2 Normal State	Relays	Relay 2	(Energized / De-energized)	basic
	Relay 2 Normal State				
150	Impulse Relay 1 Enabled	Impulse Relays	Impulse Relay 1	True/False (False)	basic
	If the impulse relay is disable, the controller do not try to impose the state.				
151	Impulse Relay 1 Desired State	Impulse Relays	Impulse Relay 1	(False)	basic
	PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.				
152	Impulse Relay 1 Default Desired State	Impulse Relays	Impulse Relay 1	True/False (False)	basic
	The desired state of the impulse relay when communication is lost (10 min) be-				

Config Table

	tween Compas and the ADIO.				
153 Impulse Relay 1 Aux Contact Type	Impulse Relays	Impulse Relay 1			basic
On wich contact type is the digital input recorded: NO or NC					
155 Impulse Relay 2 Enabled	Impulse Relays	Impulse Relay 2		True/False (False)	basic
If the impulse relay is disable, the contrler do not try to impose the state.					
156 Impulse Relay 2 Desired State	Impulse Relays	Impulse Relay 2		(False)	basic
PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.					
157 Impulse Relay 2 Default Desired State	Impulse Relays	Impulse Relay 2		True/False (False)	basic
The desired state of the impulse relay when communication is lost (10 min) between Compas and the ADIO.					
158 Impulse Relay 2 Aux Contact Type	Impulse Relays	Impulse Relay 2			basic
On wich contact type is the digital input recorded: NO or NC					
160 Impulse Relay 3 Enabled	Impulse Relays	Impulse Relay 3		True/False (False)	basic
If the impulse relay is disable, the contrler do not try to impose the state.					
161 Impulse Relay 3 Desired State	Impulse Relays	Impulse Relay 3		(False)	basic
PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.					
162 Impulse Relay 3 Default Desired State	Impulse Relays	Impulse Relay 3		True/False (False)	basic
The desired state of the impulse relay when communication is lost (10 min) between Compas and the ADIO.					
163 Impulse Relay 3 Aux Contact Type	Impulse Relays	Impulse Relay 3			basic
On wich contact type is the digital input recorded: NO or NC					
165 Impulse Relay 4 Enabled	Impulse Relays	Impulse Relay 4		True/False (False)	basic
If the impulse relay is disable, the contrler do not try to impose the state.					
166 Impulse Relay 4 Desired State	Impulse Relays	Impulse Relay 4		(False)	basic
PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.					
167 Impulse Relay 4 Default Desired State	Impulse Relays	Impulse Relay 4		True/False (False)	basic
The desired state of the impulse relay when communication is lost (10 min) between Compas and the ADIO.					

Config Table						
168	Impulse Relay 4 Aux Contact Type	Impulse Relays	Impulse Relay 4			basic
	On wich contact type is the digital input recorded: NO or NC					
170	Impulse Relay 5 Enabled	Impulse Relays	Impulse Relay 5		True/False (False)	basic
	If the impulse relay is disable, the controler do not try to impose the state.					
171	Impulse Relay 5 Desired State	Impulse Relays	Impulse Relay 5		(False)	basic
	PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.					
172	Impulse Relay 5 Default Desired State	Impulse Relays	Impulse Relay 5		True/False (False)	basic
	The desired state of the impulse relay when communication is lost (10 min) between Compas and the ADIO.					
173	Impulse Relay 5 Aux Contact Type	Impulse Relays	Impulse Relay 5			basic
	On wich contact type is the digital input recorded: NO or NC					
175	Impulse Relay 6 Enabled	Impulse Relays	Impulse Relay 6		True/False (False)	basic
	If the impulse relay is disable, the controler do not try to impose the state.					
176	Impulse Relay 6 Desired State	Impulse Relays	Impulse Relay 6		(False)	basic
	PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.					
177	Impulse Relay 6 Default Desired State	Impulse Relays	Impulse Relay 6		True/False (False)	basic
	The desired state of the impulse relay when communication is lost (10 min) between Compas and the ADIO.					
178	Impulse Relay 6 Aux Contact Type	Impulse Relays	Impulse Relay 6			basic
	On wich contact type is the digital input recorded: NO or NC					
180	Impulse Relay 7 Enabled	Impulse Relays	Impulse Relay 7		True/False (False)	basic
	If the impulse relay is disable, the controler do not try to impose the state.					
181	Impulse Relay 7 Desired State	Impulse Relays	Impulse Relay 7		(False)	basic
	PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.					
182	Impulse Relay 7 Default Desired State	Impulse Relays	Impulse Relay 7		True/False (False)	basic
	The desired state of the impulse relay when communication is lost (10 min) between Compas and the ADIO.					
183	Impulse Relay 7 Aux	Impulse	Impulse Re-			basic

Config Table						
	Contact Type	Relays	lay 7			
	On wich contact type is the digital input recorded: NO or NC					
185	Impulse Relay 8 Enabled	Impulse Relays	Impulse Relay 8		True/False (False)	basic
	If the impulse relay is disable, the controler do not try to impose the state.					
186	Impulse Relay 8 Desired State	Impulse Relays	Impulse Relay 8		(False)	basic
	PCL equation for the impulse relay. See Manual to know the syntax to use in order to link the impulse relay with a data or alarms.					
187	Impulse Relay 8 Default Desired State	Impulse Relays	Impulse Relay 8		True/False (False)	basic
	The desired state of the impulse relay when communication is lost (10 min) between Compas and the ADIO.					
188	Impulse Relay 8 Aux Contact Type	Impulse Relays	Impulse Relay 8			basic
	On wich contact type is the digital input recorded: NO or NC					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
121	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay			
122	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay			
150	Invert Impulse Relay 1 State For X Seconds	Impulse Relays	Impulse Relay 1	basic
	Invert the state of the impulse relay for X seconds			
155	Invert Impulse Relay 2 State For X Seconds	Impulse Relays	Impulse Relay 2	basic
	Invert the state of the impulse relay for X seconds			
160	Invert Impulse Relay 3 State For X Seconds	Impulse Relays	Impulse Relay 3	basic
	Invert the state of the impulse relay for X seconds			
165	Invert Impulse Relay 4 State For X Seconds	Impulse Relays	Impulse Relay 4	basic
	Invert the state of the impulse relay for X seconds			
170	Invert Impulse Relay 5 State For X Seconds	Impulse Relays	Impulse Relay 5	basic
	Invert the state of the impulse relay for X seconds			
175	Invert Impulse Relay 6 State For X Seconds	Impulse Relays	Impulse Relay 6	basic
	Invert the state of the impulse relay for X seconds			
180	Invert Impulse Relay 7 State For X Seconds	Impulse Relays	Impulse Relay 7	basic
	Invert the state of the impulse relay for X seconds			
185	Invert Impulse Relay 8 State For X Seconds	Impulse Relays	Impulse Relay 8	basic
	Invert the state of the impulse relay for X seconds			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic

Control Table

	This control element resets all the element Names, Groups and Subgroups to default values for this equipment		
522 Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments		

4.3. ADIO 9

Device Information	
Name	ADIO 9
Short Description	Custom I/O module Operanet
Long Description	
Hardware Reference	9413 060 05091
Software Reference	SOFT 000094 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
71	Digital Input 1	Digital Inputs	Digital Input 1	warning (0)	5 / 2

Alarm Table

	The name of the digital input 1 alarm.				
72 Digital Input 2	Digital Inputs	Digital Input 2	warning (0)	5 / 2	
	The name of the digital input 2 alarm.				
73 Digital Input 3	Digital Inputs	Digital Input 3	warning (0)	5 / 2	
	The name of the digital input 3 alarm.				
74 Digital Input 4	Digital Inputs	Digital Input 4	warning (0)	5 / 2	
	The name of the digital input 4 alarm.				
75 Digital Input 5	Digital Inputs	Digital Input 5	warning (0)	5 / 2	
	The name of the digital input 5 alarm.				
76 Digital Input 6	Digital Inputs	Digital Input 6	warning (0)	5 / 2	
	The name of the digital input 6 alarm.				
77 Digital Input 7	Digital Inputs	Digital Input 7	warning (0)	5 / 2	
	The name of the digital input 7 alarm.				
78 Digital Input 8	Digital Inputs	Digital Input 8	warning (0)	5 / 2	
	The name of the digital input 8 alarm.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Temperature 1	Temperature Sensors	Temperature 1	degree C	basic
	Temperature Measurement 01				
2	Temperature 2	Temperature Sensors	Temperature 2	degree C	basic
	Temperature Measurement 11				
3	Temperature 3	Temperature Sensors	Temperature 3	degree C	basic
	Temperature Measurement 21				
4	Temperature 4	Temperature Sensors	Temperature 4	degree C	basic
	Temperature Measurement 31				
41	Shunt 1	Current Sensors	Shunt 1	Ampere	basic
	Shunt Measurement 1				
42	Shunt 2	Current Sensors	Shunt 2	Ampere	basic
	Shunt Measurement 2				
43	Shunt 3	Current Sensors	Shunt 3	Ampere	basic
	Shunt Measurement 3				
44	Shunt 4	Current Sensors	Shunt 4	Ampere	basic
	Shunt Measurement 4				
45	Shunt 5	Current Sensors	Shunt 5	Ampere	basic
	Shunt Measurement 5				
46	Shunt 6	Current Sensors	Shunt 6	Ampere	basic
	Shunt Measurement 6				
47	Shunt 7	Current Sensors	Shunt 7	Ampere	basic
	Shunt Measurement 7				

Data Table					
48	Shunt 8	Current Sensors	Shunt 8	Ampere	basic
	Shunt Measurement 8				
71	Digital Input 1 State	Digital Inputs	Digital Input 1		basic
	The state of the digital input				
72	Digital Input 2 State	Digital Inputs	Digital Input 2		basic
	The state of the digital input				
73	Digital Input 3 State	Digital Inputs	Digital Input 3		basic
	The state of the digital input				
74	Digital Input 4 State	Digital Inputs	Digital Input 4		basic
	The state of the digital input				
75	Digital Input 5 State	Digital Inputs	Digital Input 5		basic
	The state of the digital input				
76	Digital Input 6 State	Digital Inputs	Digital Input 6		basic
	The state of the digital input				
77	Digital Input 7 State	Digital Inputs	Digital Input 7		basic
	The state of the digital input				
78	Digital Input 8 State	Digital Inputs	Digital Input 8		basic
	The state of the digital input				
91	Voltage 1	Voltage Sensors	Voltage 1	Volt	basic
	Voltage Measurement 1				
131	Pulse Counter 1	Digital Inputs	Digital Input 1		basic
	Energy Consumption Counter 1				
132	Pulse Counter 2	Digital Inputs	Digital Input 2		basic
	Energy Consumption Counter 2				
133	Pulse Counter 3	Digital Inputs	Digital Input 3		basic
	Energy Consumption Counter 3				
134	Pulse Counter 4	Digital Inputs	Digital Input 4		basic
	Energy Consumption Counter 4				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
71	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					
72	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
73	Digital Input 2	Digital In-	Digital Input		Digital Inputs	basic

Config Table

	Name	puts	2			
	The name of the digital input 2.					
74	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
75	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Inputs	basic
	The name of the digital input 3.					
76	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
77	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Inputs	basic
	The name of the digital input 4.					
78	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
79	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Inputs	basic
	The name of the digital input 5.					
80	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
81	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Inputs	basic
	The name of the digital input 6.					
82	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
83	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Inputs	basic
	The name of the digital input 7.					
84	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
85	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Inputs	basic

Config Table

	The name of the digital input 8.				
86	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8	True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.				
521	Read Access User Numbers	Generic	Allowed Users	(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4				
522	Write Access User Numbers	Generic	Allowed Users	()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601	Event Table Length	Generic	Events	10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
901	Number Of PLC Data	PLC		(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902	Number Of PLC Alarm	PLC		(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
101	Set Pulse Counter 1	Pulse Counter	Pulse Counter 1	basic
	Set Counter 01 Value			
102	Set Pulse Counter 2	Pulse Counter	Pulse Counter 2	basic
	Set Counter 11 Value			
103	Set Pulse Counter 3	Pulse Counter	Pulse Counter 3	basic
	Set Counter 21 Value			
104	Set Pulse Counter 4	Pulse Counter	Pulse Counter 4	basic
	Set Counter 31 Value			

Control Table				
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

4.4. ADIO 10

Device Information	
Name	ADIO 10
Short Description	Standard I/O module DC systems used as standard IO module
Long Description	I/O module with 2 inputs for temperature measurement, 4 voltage measurements, 2 current measurements, 8 digital inputs and 8 relays
Hardware Reference	9413 060 05101
Software Reference	SOFT 000099 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware reference			

Description Table				
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
71	Digital Input 1	Digital Inputs	Digital Input 1	warning (0)	5 / 2
	The name of the digital input 1 alarm.				
72	Digital Input 2	Digital Inputs	Digital Input 2	warning (0)	5 / 2
	The name of the digital input 2 alarm.				
73	Digital Input 3	Digital Inputs	Digital Input 3	warning (0)	5 / 2
	The name of the digital input 3 alarm.				
74	Digital Input 4	Digital Inputs	Digital Input 4	warning (0)	5 / 2
	The name of the digital input 4 alarm.				
75	Digital Input 5	Digital Inputs	Digital Input 5	warning (0)	5 / 2
	The name of the digital input 5 alarm.				
76	Digital Input 6	Digital Inputs	Digital Input 6	warning (0)	5 / 2
	The name of the digital input 6 alarm.				
77	Digital Input 7	Digital Inputs	Digital Input 7	warning (0)	5 / 2
	The name of the digital input 7 alarm.				
78	Digital Input 8	Digital Inputs	Digital Input 8	warning (0)	5 / 2
	The name of the digital input 8 alarm.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Temperature 1	Temperature Sensors	Temperature 1	degree C	basic
	Temperature Measurement 1				
2	Temperature 2	Temperature Sensors	Temperature 2	degree C	basic
	Temperature Measurement 2				
71	Shunt 1	Current Sensors	Shunt 1	Ampere	basic

Data Table					
	Shunt Measurement 1				
72	Shunt 2	Current Sensors	Shunt 2	Ampere	basic
	Shunt Measurement 2				
91	Voltage 1	Voltage Sensors	Voltage 1	Volt	basic
	Voltage Measurement 1				
92	Voltage 2	Voltage Sensors	Voltage 2	Volt	basic
	Voltage Measurement 2				
93	Voltage 3	Voltage Sensors	Voltage 3	Volt	basic
	Voltage Measurement 3				
94	Voltage 4	Voltage Sensors	Voltage 4	Volt	basic
	Voltage Measurement 4				
121	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay				
123	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay				
125	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay				
127	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay				
129	Relay 5 State	Relays	Relay 5		basic
	Actual state of the Relay				
131	Relay 6 State	Relays	Relay 6		basic
	Actual state of the Relay				
133	Relay 7 State	Relays	Relay 7		basic
	Actual state of the Relay				
135	Relay 8 State	Relays	Relay 8		basic
	Actual state of the Relay				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
41	Shunt 1 Rating At 60mV	Battery		Ampere		basic
	The rating of the shunt 1 at 60mV.					
42	Shunt 2 Rating At 60mV	Battery		Ampere		basic
	The rating of the shunt 2 at 60mV.					
71	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					

Config Table						
72	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
73	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic
	The name of the digital input 2.					
74	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
75	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Inputs	basic
	The name of the digital input 3.					
76	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
77	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Inputs	basic
	The name of the digital input 4.					
78	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
79	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Inputs	basic
	The name of the digital input 5.					
80	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
81	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Inputs	basic
	The name of the digital input 6.					
82	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
83	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Inputs	basic
	The name of the digital input 7.					
84	Digital Input 7	Digital	Digital In-		True/False (True)	basic

Config Table						
	Normally Closed	Inputs	put 7			
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
85	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Inputs	basic
	The name of the digital input 8.					
86	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
121	Relay 1 Change State Boolean Condition	Relays	Relay 1		(False)	basic
	Relay 1 Boolean Condition					
122	Relay 1 Normal State	Relays	Relay 1		(Energized / De-energized)	basic
	Relay 1 Normal State					
123	Relay 2 Change State Boolean Condition	Relays	Relay 2		(False)	basic
	Relay 2 Boolean Condition					
124	Relay 2 Normal State	Relays	Relay 2		(Energized / De-energized)	basic
	Relay 2 Normal State					
125	Relay 3 Change State Boolean Condition	Relays	Relay 3		(False)	basic
	Relay 3 Boolean Condition					
126	Relay 3 Normal State	Relays	Relay 3		(Energized / De-energized)	basic
	Relay 3 Normal State					
127	Relay 4 Change State Boolean Condition	Relays	Relay 4		(False)	basic
	Relay 4 Boolean Condition					
128	Relay 4 Normal State	Relays	Relay 4		(Energized / De-energized)	basic
	Relay 4 Normal State					
129	Relay 5 Change State Boolean Condition	Relays	Relay 5		(False)	basic
	Relay 5 Boolean Condition					
130	Relay 5 Normal	Relays	Relay 5		(Energized / De-	basic

Config Table						
	State				energized)	
	Relay 5 Normal State					
131	Relay 6 Change State Boolean Condition	Relays	Relay 6		(False)	basic
	Relay 6 Boolean Condition					
132	Relay 6 Normal State	Relays	Relay 6		(Energized / De-energized)	basic
	Relay 6 Normal State					
133	Relay 7 Change State Boolean Condition	Relays	Relay 7		(False)	basic
	Relay 7 Boolean Condition					
134	Relay 7 Normal State	Relays	Relay 7		(Energized / De-energized)	basic
	Relay 7 Normal State					
135	Relay 8 Change State Boolean Condition	Relays	Relay 8		(False)	basic
	Relay 8 Boolean Condition					
136	Relay 8 Normal State	Relays	Relay 8		(Energized / De-energized)	basic
	Relay 8 Normal State					
137	Default Digital Output Binary Vector	Relays			(0b00000000)	basic
	This configuration is stored inside the module in case of configuration failure					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc

Config Table

	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902	Number Of PLC Alarm	PLC		(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
11	Calibrate V1	Calibration		basic
12	Calibrate V2	Calibration		basic
13	Calibrate V3	Calibration		basic
14	Calibrate V4	Calibration		basic
121	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay			
123	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay			
125	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay			
127	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay			
129	Invert Relay 5 State For X Seconds	Relays	Relay 5	basic
	Generate Pulse on relay			
131	Invert Relay 6 State For X Seconds	Relays	Relay 6	basic
	Generate Pulse on relay			
133	Invert Relay 7 State For X Seconds	Relays	Relay 7	basic
	Generate Pulse on relay			
135	Invert Relay 8 State For X Seconds	Relays	Relay 8	basic
	Generate Pulse on relay			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be			

Control Table				
	cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

4.5. ADIO 12

Device Information	
Name	ADIO 12
Short Description	ADIO Module
Long Description	
Hardware Reference	9413 060 05121
Software Reference	SOFT 000121 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
The commercial name of the extension card.				
2	Hardware Reference	Description	Product Info	basic
The hardware refence				
3	Hardware Revision	Description	Product Info	basic
The hardware revision				
4	Software Reference	Description	Product Info	basic
The software reference				
6	Serial Number	Description	Product Info	basic
The serial number.				

Description Table				
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Temperature 1	Temperature Sensors	Temperature 1	degree C	basic
	Temperature Measurement 01				
2	Temperature 2	Temperature Sensors	Temperature 2	degree C	basic
	Temperature Measurement 11				
71	Shunt 1	Current Sensors	Shunt 1	Ampere	basic
	Shunt Measurement 1				
72	Shunt 2	Current Sensors	Shunt 2	Ampere	basic
	Shunt Measurement 2				
73	Shunt 3	Current Sensors	Shunt 3	Ampere	basic
	Shunt Measurement 3				
74	Shunt 4	Current Sensors	Shunt 4	Ampere	basic
	Shunt Measurement 4				
75	Shunt 5	Current Sensors	Shunt 5	Ampere	basic
	Shunt Measurement 5				
76	Shunt 6	Current Sensors	Shunt 6	Ampere	basic
	Shunt Measurement 6				
77	Shunt 7	Current Sensors	Shunt 7	Ampere	basic
	Shunt Measurement 7				
78	Shunt 8	Current Sensors	Shunt 8	Ampere	basic
	Shunt Measurement 8				
91	Voltage 1	Voltage Sensors	Voltage 1	Volt	basic
	Voltage Measurement 01				
92	Voltage 2	Voltage Sensors	Voltage 2	Volt	basic
	Voltage Measurement 11				
93	Voltage 3	Voltage Sensors	Voltage 3	Volt	basic
	Voltage Measurement 21				
94	Voltage 4	Voltage Sensors	Voltage 4	Volt	basic
	Voltage Measurement 31				
121	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay				
123	Relay 2 State	Relays	Relay 2		basic

Data Table					
	Actual state of the Relay				
125	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay				
127	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay				
129	Relay 5 State	Relays	Relay 5		basic
	Actual state of the Relay				
131	Relay 6 State	Relays	Relay 6		basic
	Actual state of the Relay				
133	Relay 7 State	Relays	Relay 7		basic
	Actual state of the Relay				
135	Relay 8 State	Relays	Relay 8		basic
	Actual state of the Relay				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
41	Shunt 1 Rating At 60mV	Current Sensors	Shunt 1	Ampere		basic
	The rating of the shunt 1 at 60mV.					
42	Shunt 2 Rating At 60mV	Current Sensors	Shunt 2	Ampere		basic
	The rating of the shunt 2 at 60mV.					
43	Shunt 3 Rating At 60mV	Current Sensors	Shunt 3	Ampere		basic
	The rating of the shunt 3 at 60mV.					
44	Shunt 4 Rating At 60mV	Current Sensors	Shunt 4	Ampere		basic
	The rating of the shunt 4 at 60mV.					
45	Shunt 5 Rating At 60mV	Current Sensors	Shunt 5	Ampere		basic
	The rating of the shunt 5 at 60mV.					
46	Shunt 6 Rating At 60mV	Current Sensors	Shunt 6	Ampere		basic
	The rating of the shunt 6 at 60mV.					
47	Shunt 7 Rating At 60mV	Current Sensors	Shunt 7	Ampere		basic
	The rating of the shunt 7 at 60mV.					
48	Shunt 8 Rating At 60mV	Current Sensors	Shunt 8	Ampere		basic
	The rating of the shunt 8 at 60mV.					

Config Table						
121	Relay 1 Change State Boolean Condition	Relays	Relay 1		(False)	basic
	Relay 1 Boolean Condition					
122	Relay 1 Normal State	Relays	Relay 1		(Energized / De-energized)	basic
	Relay 1 Normal State					
123	Relay 2 Change State Boolean Condition	Relays	Relay 2		(False)	basic
	Relay 2 Boolean Condition					
124	Relay 2 Normal State	Relays	Relay 2		(Energized / De-energized)	basic
	Relay 2 Normal State					
125	Relay 3 Change State Boolean Condition	Relays	Relay 3		(False)	basic
	Relay 3 Boolean Condition					
126	Relay 3 Normal State	Relays	Relay 3		(Energized / De-energized)	basic
	Relay 3 Normal State					
127	Relay 4 Change State Boolean Condition	Relays	Relay 4		(False)	basic
	Relay 4 Boolean Condition					
128	Relay 4 Normal State	Relays	Relay 4		(Energized / De-energized)	basic
	Relay 4 Normal State					
129	Relay 5 Change State Boolean Condition	Relays	Relay 5		(False)	basic
	Relay 5 Boolean Condition					
130	Relay 5 Normal State	Relays	Relay 5		(Energized / De-energized)	basic
	Relay 5 Normal State					
131	Relay 6 Change State Boolean Condition	Relays	Relay 6		(False)	basic
	Relay 6 Boolean Condition					
132	Relay 6 Normal State	Relays	Relay 6		(Energized / De-energized)	basic
	Relay 6 Normal State					
133	Relay 7 Change	Relays	Relay 7		(False)	basic

Config Table						
	State Boolean Condition					
	Relay 7 Boolean Condition					
134	Relay 7 Normal State	Relays	Relay 7		(Energized / De-energized)	basic
	Relay 7 Normal State					
135	Relay 8 Change State Boolean Condition	Relays	Relay 8		(False)	basic
	Relay 8 Boolean Condition					
136	Relay 8 Normal State	Relays	Relay 8		(Energized / De-energized)	basic
	Relay 8 Normal State					
137	Default Digital Output Binary Vector	Relays	General		(0b00000000)	basic
	This configuration is stored inside the module in case of configuration failure					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with					

Config Table

	the 'PLC' module

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
101	Set Pulse Counter 1	Pulse Counter		basic
	Set Counter 1 Value			
102	Set Pulse Counter 2	Pulse Counter		basic
	Set Counter 2 Value			
103	Set Pulse Counter 3	Pulse Counter		basic
	Set Counter 3 Value			
104	Set Pulse Counter 4	Pulse Counter		basic
	Set Counter 4 Value			
105	Set Pulse Counter 5	Pulse Counter		basic
	Set Counter 5 Value			
106	Set Pulse Counter 6	Pulse Counter		basic
	Set Counter 6 Value			
107	Set Pulse Counter 7	Pulse Counter		basic
	Set Counter 7 Value			
108	Set Pulse Counter 8	Pulse Counter		basic
	Set Counter 8 Value			
121	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay			
123	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay			
125	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay			
127	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay			
129	Invert Relay 5 State For X Seconds	Relays	Relay 5	basic
	Generate Pulse on relay			
131	Invert Relay 6 State For X Seconds	Relays	Relay 6	basic
	Generate Pulse on relay			
133	Invert Relay 7 State For X Seconds	Relays	Relay 7	basic
	Generate Pulse on relay			
135	Invert Relay 8 State For X Seconds	Relays	Relay 8	basic
	Generate Pulse on relay			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic

Control Table

	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511 Add Event	Generic	Events	basic	
This control element adds an event of severity none. The event name is the text written to this control element				
512 Add Major Event	Generic	Events	basic	
This control element adds an event of severity major. The event name is the text written to this control element				
521 Reset Default Names And Groups	Generic	Renaming	basic	
This control element resets all the element Names, Groups and Subgroups to default values for this equipment				
522 Reset Default Names And Groups Recursive	Generic	Renaming	basic	
This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments				

4.6. ADIO 13

Device Information	
Name	ADIO 13
Short Description	ADIO Module
Long Description	
Hardware Reference	9413 060 05131
Software Reference	SOFT 000122 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			

Description Table				
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
11	Hybrid Power	Hybrid		Watt	basic
	The Output Power				
71	Shunt 1	Current Sensors	Shunt 1	Ampere	basic
	Shunt Measurement 1				
72	Shunt 2	Current Sensors	Shunt 2	Ampere	basic
	Shunt Measurement 2				
91	Voltage 1	Voltage Sensors	Voltage 1	Volt	basic
	Voltage Measurement 1				
201	Wind Direction	Wind Sensor		degree	basic
	The wind direction				
202	Wind Speed	Wind Sensor			basic
	The wind speed				
203	Wind Sensor Status	Wind Sensor			basic
	The wind sensor status				
301	MPPT GlobalSet Point	Hybrid		Watt	basic
310	MPPT Value 1	Hybrid		Volt	basic
311	MPPT Value 2	Hybrid		Volt	basic
312	MPPT Value 3	Hybrid		Volt	basic
313	MPPT Value 4	Hybrid		Volt	basic
314	MPPT Value 5	Hybrid		Volt	basic
315	MPPT Value 6	Hybrid		Volt	basic
316	MPPT Value 7	Hybrid		Volt	basic
317	MPPT Value 8	Hybrid		Volt	basic
318	MPPT Value 9	Hybrid		Volt	basic

Data Table					
319	MPPT Value 10	Hybrid		Volt	basic
320	MPPT Value 11	Hybrid		Volt	basic
321	MPPT Value 12	Hybrid		Volt	basic
322	MPPT Value 13	Hybrid		Volt	basic
323	MPPT Value 14	Hybrid		Volt	basic
324	MPPT Value 15	Hybrid		Volt	basic
325	MPPT Value 16	Hybrid		Volt	basic
326	MPPT Value 17	Hybrid		Volt	basic
327	MPPT Value 18	Hybrid		Volt	basic
328	MPPT Value 19	Hybrid		Volt	basic
329	MPPT Value 20	Hybrid		Volt	basic

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
41	Shunt 1 Rating At 60mV	Current Sensors		Ampere		basic
	The rating of the shunt 1 at 60mV.					
42	Shunt 2 Rating At 60mV	Current Sensors		Ampere		basic
	The rating of the shunt 2 at 60mV.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings					

Config Table

	and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601 Event Table Length	Generic	Events		10/4000 (100)	basic
The maximum length of the table. The value must be comprised between 10 and 4000					
901 Number Of PLC Data	PLC			(0)	plc
The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902 Number Of PLC Alarm	PLC			(0)	plc
The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
501 Clear My Events		Generic	Events	basic
By writing '1' to this control element, all the events of this equipment will be cleared.				
502 Clear All Events		Generic	Events	basic
By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.				
511 Add Event		Generic	Events	basic
This control element adds an event of severity none. The event name is the text written to this control element				
512 Add Major Event		Generic	Events	basic
This control element adds an event of severity major. The event name is the text written to this control element				
521 Reset Default Names And Groups		Generic	Renaming	basic
This control element resets all the element Names, Groups and Subgroups to default values for this equipment				
522 Reset Default Names And Groups Recursive		Generic	Renaming	basic
This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments				

4.7. ADIO SP0151

Device Information	
Name	ADIO SP0151
Short Description	Standard I/O module : 6 digital inputs, 6 voltages
Long Description	I/O module with 6 digital inputs, 6 voltage measurements (0-3.6Vrms)
Hardware Reference	9413 001 51001
Software Reference	SOFT 000119 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
20	TC 1 Reference	Track Circuits	Track Circuit 1	basic
	The name of the track circuit (linked to the subgroup). TC x by default.			
21	TC 1 Frequency	Track Circuits	Track Circuit 1	basic
	The frequency of the track circuit.			
22	TC 1 Code	Track Circuits	Track Circuit 1	basic
	The coding of the track circuit (AB,CD or EF)			
23	TC1 Length	Track Circuits	Track Circuit 1	basic
	The length of the track circuit			
40	TC 2 Reference	Track Circuits	Track Circuit 2	basic

Description Table				
	The name of the track circuit (linked to the subgroup). TC x by default.			
41	TC 2 Frequency	Track Circuits	Track Circuit 2	basic
	The frequency of the track circuit.			
42	TC 2 Code	Track Circuits	Track Circuit 2	basic
	The coding of the track circuit (AB,CD or EF)			
43	TC2 Length	Track Circuits	Track Circuit 2	basic
	The length of the track circuit			
60	TC 3 Reference	Track Circuits	Track Circuit 3	basic
	The name of the track circuit (linked to the subgroup). TC x by default.			
61	TC 3 Frequency	Track Circuits	Track Circuit 3	basic
	The frequency of the track circuit.			
62	TC 3 Code	Track Circuits	Track Circuit 3	basic
	The coding of the track circuit (AB,CD or EF)			
63	TC3 Length	Track Circuits	Track Circuit 3	basic
	The length of the track circuit			
80	TC 4 Reference	Track Circuits	Track Circuit 4	basic
	The name of the track circuit (linked to the subgroup). TC x by default.			
81	TC 4 Frequency	Track Circuits	Track Circuit 4	basic
	The frequency of the track circuit.			
82	TC 4 Code	Track Circuits	Track Circuit 4	basic
	The coding of the track circuit (AB,CD or EF)			
83	TC4 Length	Track Circuits	Track Circuit 4	basic
	The length of the track circuit			
100	TC 5 Reference	Track Circuits	Track Circuit 5	basic
	The name of the track circuit (linked to the subgroup). TC x by default.			
101	TC 5 Frequency	Track Circuits	Track Circuit 5	basic
	The frequency of the track circuit.			
102	TC 5 Code	Track Circuits	Track Circuit 5	basic
	The coding of the track circuit (AB,CD or EF)			
103	TC5 Length	Track Circuits	Track Circuit 5	basic
	The length of the track circuit			
120	TC 6 Reference	Track Circuits	Track Circuit 6	basic
	The name of the track circuit (linked to the subgroup). TC x by default.			
121	TC 6 Frequency	Track Circuits	Track Circuit 6	basic
	The frequency of the track circuit.			
122	TC 6 Code	Track Circuits	Track Circuit 6	basic
	The coding of the track circuit (AB,CD or EF)			
123	TC6 Length	Track Circuits	Track Circuit 6	basic
	The length of the track circuit			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
20	TC 1 Tx Alarm	Track Circuits	Track Circuit 1	major (6)	0 / 0
	The Tx alarm				
21	TC 1 Rx Alarm A	Track Circuits	Track Circuit 1	major (6)	0 / 0
	Level A Rx Alarm				
22	TC 1 Rx Alarm B	Track Circuits	Track Circuit 1	minor (4)	0 / 0
	Level B Rx Alarm				
23	TC 1 Rx Alarm C	Track Circuits	Track Circuit 1	major (6)	0 / 0
	Level C Rx Alarm				
24	TC 1 Rx Alarm D	Track Circuits	Track Circuit 1	warning (2)	0 / 0
	Level D Rx Alarm				
40	TC 2 Tx Alarm	Track Circuits	Track Circuit 2	major (6)	0 / 0
	The Tx alarm				
41	TC 2 Rx Alarm A	Track Circuits	Track Circuit 2	major (6)	0 / 0
	Level A Rx Alarm				
42	TC 2 Rx Alarm B	Track Circuits	Track Circuit 2	minor (4)	0 / 0
	Level B Rx Alarm				
43	TC 2 Rx Alarm C	Track Circuits	Track Circuit 2	major (6)	0 / 0
	Level C Rx Alarm				
44	TC 2 Rx Alarm D	Track Circuits	Track Circuit 2	warning (2)	0 / 0
	Level D Rx Alarm				
60	TC 3 Tx Alarm	Track Circuits	Track Circuit 3	major (6)	0 / 0
	The Tx alarm				
61	TC 3 Rx Alarm A	Track Circuits	Track Circuit 3	major (6)	0 / 0
	Level A Rx Alarm				
62	TC 3 Rx Alarm B	Track Circuits	Track Circuit 3	minor (4)	0 / 0
	Level B Rx Alarm				
63	TC 3 Rx Alarm C	Track Circuits	Track Circuit 3	major (6)	0 / 0

Alarm Table					
	Level C Rx Alarm				
64	TC 3 Rx Alarm D	Track Circuits	Track Circuit 3	warning (2)	0 / 0
	Level D Rx Alarm				
80	TC 4 Tx Alarm	Track Circuits	Track Circuit 4	major (6)	0 / 0
	The Tx alarm				
81	TC 4 Rx Alarm A	Track Circuits	Track Circuit 4	major (6)	0 / 0
	Level A Rx Alarm				
82	TC 4 Rx Alarm B	Track Circuits	Track Circuit 4	minor (4)	0 / 0
	Level B Rx Alarm				
83	TC 4 Rx Alarm C	Track Circuits	Track Circuit 4	major (6)	0 / 0
	Level C Rx Alarm				
84	TC 4 Rx Alarm D	Track Circuits	Track Circuit 4	warning (2)	0 / 0
	Level D Rx Alarm				
100	TC 5 Tx Alarm	Track Circuits	Track Circuit 5	major (6)	0 / 0
	The Tx alarm				
101	TC 5 Rx Alarm A	Track Circuits	Track Circuit 5	major (6)	0 / 0
	Level A Rx Alarm				
102	TC 5 Rx Alarm B	Track Circuits	Track Circuit 5	minor (4)	0 / 0
	Level B Rx Alarm				
103	TC 5 Rx Alarm C	Track Circuits	Track Circuit 5	major (6)	0 / 0
	Level C Rx Alarm				
104	TC 5 Rx Alarm D	Track Circuits	Track Circuit 5	warning (2)	0 / 0
	Level D Rx Alarm				
120	TC 6 Tx Alarm	Track Circuits	Track Circuit 6	major (6)	0 / 0
	The Tx alarm				
121	TC 6 Rx Alarm A	Track Circuits	Track Circuit 6	major (6)	0 / 0
	Level A Rx Alarm				
122	TC 6 Rx Alarm B	Track Circuits	Track Circuit 6	minor (4)	0 / 0

Alarm Table

	Level B Rx Alarm				
123	TC 6 Rx Alarm C	Track Circuits	Track Circuit 6	major (6)	0 / 0
	Level C Rx Alarm				
124	TC 6 Rx Alarm D	Track Circuits	Track Circuit 6	warning (2)	0 / 0
	Level D Rx Alarm				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
20	TC 1 Rx Voltage	Track Circuits	Track Circuit 1	mVolt	basic
	The actual measured voltage, on RX				
21	TC 1 Tx Level	Track Circuits	Track Circuit 1		basic
	The state of the TX, 1 or 0				
22	TC 1 Status	Track Circuits	Track Circuit 1		basic
	--, Free or Occupied				
25	TC 1 Ref Rx Voltage	Track Circuits	Track Circuit 1	mVolt	basic
	The reference measured voltage, at a certain date, by an operator				
26	TC 1 DateTime Ref Rx Voltage	Track Circuits	Track Circuit 1		basic
	The Date and Time of the reference measured voltage				
27	TC 1 Operator Ref Rx Voltage	Track Circuits	Track Circuit 1		basic
	The operator name who stored the reference measured voltage				
40	TC 2 Rx Voltage	Track Circuits	Track Circuit 2	mVolt	basic
	The actual measured voltage, on RX				
41	TC 2 Tx Level	Track Circuits	Track Circuit 2		basic
	The state of the TX, 1 or 0				
42	TC 2 Status	Track Circuits	Track Circuit 2		basic
	--, Free or Occupied				
45	TC 2 Ref Rx Voltage	Track Circuits	Track Circuit 2	mVolt	basic
	The reference measured voltage, at a certain date, by an operator				
46	TC 2 DateTime Ref Rx Voltage	Track Circuits	Track Circuit 2		basic
	The Date and Time of the reference measured voltage				
47	TC 2 Operator Ref Rx Voltage	Track Circuits	Track Circuit 2		basic
	The operator name who stored the reference measured voltage				
60	TC 3 Rx Voltage	Track Circuits	Track Circuit 3	mVolt	basic
	The actual measured voltage, on RX				
61	TC 3 Tx Level	Track Circuits	Track Circuit 3		basic
	The state of the TX, 1 or 0				
62	TC 3 Status	Track Circuits	Track Circuit 3		basic
	--, Free or Occupied				

Data Table					
65	TC 3 Ref Rx Voltage	Track Circuits	Track Circuit 3	mVolt	basic
	The reference measured voltage, at a certain date, by an operator				
66	TC 3 DateTime Ref Rx Voltage	Track Circuits	Track Circuit 3		basic
	The Date and Time of the reference measured voltage				
67	TC 3 Operator Ref Rx Voltage	Track Circuits	Track Circuit 3		basic
	The operator name who stored the reference measured voltage				
80	TC 4 Rx Voltage	Track Circuits	Track Circuit 4	mVolt	basic
	The actual measured voltage, on RX				
81	TC 4 Tx Level	Track Circuits	Track Circuit 4		basic
	The state of the TX, 1 or 0				
82	TC 4 Status	Track Circuits	Track Circuit 4		basic
	--, Free or Occupied				
85	TC 4 Ref Rx Voltage	Track Circuits	Track Circuit 4	mVolt	basic
	The reference measured voltage, at a certain date, by an operator				
86	TC 4 DateTime Ref Rx Voltage	Track Circuits	Track Circuit 4		basic
	The Date and Time of the reference measured voltage				
87	TC 4 Operator Ref Rx Voltage	Track Circuits	Track Circuit 4		basic
	The operator name who stored the reference measured voltage				
100	TC 5 Rx Voltage	Track Circuits	Track Circuit 5	mVolt	basic
	The actual measured voltage, on RX				
101	TC 5 Tx Level	Track Circuits	Track Circuit 5		basic
	The state of the TX, 1 or 0				
102	TC 5 Status	Track Circuits	Track Circuit 5		basic
	--, Free or Occupied				
105	TC 5 Ref Rx Voltage	Track Circuits	Track Circuit 5	mVolt	basic
	The reference measured voltage, at a certain date, by an operator				
106	TC 5 DateTime Ref Rx Voltage	Track Circuits	Track Circuit 5		basic
	The Date and Time of the reference measured voltage				
107	TC 5 Operator Ref Rx Voltage	Track Circuits	Track Circuit 5		basic
	The operator name who stored the reference measured voltage				
120	TC 6 Rx Voltage	Track Circuits	Track Circuit 6	mVolt	basic
	The actual measured voltage, on RX				
121	TC 6 Tx Level	Track Circuits	Track Circuit 6		basic
	The state of the TX, 1 or 0				
122	TC 6 Status	Track Circuits	Track Circuit 6		basic
	--, Free or Occupied				
125	TC 6 Ref Rx Voltage	Track Circuits	Track Circuit 6	mVolt	basic
	The reference measured voltage, at a certain date, by an operator				
126	TC 6 DateTime Ref Rx Voltage	Track Circuits	Track Circuit 6		basic
	The Date and Time of the reference measured voltage				

Data Table

127	TC 6 Operator Ref Rx Voltage	Track Circuits	Track Circuit 6		basic
	The operator name who stored the reference measured voltage				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	Threshold Over-voltage (A)	Track Circuits	Advanced	mVolt		basic
2	Threshold Critical (C)	Track Circuits	Advanced	mVolt		basic
3	Threshold TC Busy	Track Circuits	Advanced	mVolt		basic
20	Track Circuit Mode 1	Track Circuits	Track Circuit 1		Tx/Rx,Tx,Rx,Disabled	basic
	Allows to select what is cabled and should be monitored by the controller					
21	Track Circuit 1 Control Level Value	Track Circuits	Track Circuit 1	mVolt		basic
	Control Level Value					
22	Track Circuit 1 Integration Time	Track Circuits	Track Circuit 1	second		basic
	Integration Time					
23	Track Circuit 1 Delay	Track Circuits	Track Circuit 1	minute		basic
	TC Delay Time for TC Occupied Alarm (D)					
24	Track Circuit 1 Link	Track Circuits	Track Circuit 1			basic
	Allows to define a link between two TC. The relation is bidirectionnal.					
28	Track Circuit 1 Status Enabled	Track Circuits	Track Circuit 1		True/False (True)	basic
	Allows to enable the monitoring of TC status with ADIO7					
40	Track Circuit Mode 2	Track Circuits	Track Circuit 2		Tx/Rx,Tx,Rx,Disabled	basic
	Allows to select what is cabled and should be monitored by the controller					
41	Track Circuit 2 Control Level Value	Track Circuits	Track Circuit 2	mVolt		basic
	Control Level Value					
42	Track Circuit 2	Track	Track Circuit	second		basic

Config Table						
	Integration Time	Circuits	cuit 2			
	Integration Time					
43	Track Circuit 2 D Delay	Track Circuits	Track Circuit 2	minute		basic
	TC Delay Time for TC Occupied Alarm (D)					
44	Track Circuit 2 Link	Track Circuits	Track Circuit 2			basic
	Allows to define a link between two TC. The relation is bidirectionnal.					
48	Track Circuit 2 Status Enabled	Track Circuits	Track Circuit 2		True/False (True)	basic
	Allows to enable the monitoring of TC status with ADIO7					
60	Track Circuit Mode 3	Track Circuits	Track Circuit 3		Tx/Rx,Tx,Rx,Disabled	basic
	Allows to select what is cabled and should be monitored by the controller					
61	Track Circuit 3 Control Level Value	Track Circuits	Track Circuit 3	mVolt		basic
	Control Level Value					
62	Track Circuit 3 Integration Time	Track Circuits	Track Circuit 3	second		basic
	Integration Time					
63	Track Circuit 3 D Delay	Track Circuits	Track Circuit 3	minute		basic
	TC Delay Time for TC Occupied Alarm (D)					
64	Track Circuit 3 Link	Track Circuits	Track Circuit 3			basic
	Allows to define a link between two TC. The relation is bidirectionnal.					
68	Track Circuit 3 Status Enabled	Track Circuits	Track Circuit 3		True/False (True)	basic
	Allows to enable the monitoring of TC status with ADIO7					
80	Track Circuit Mode 4	Track Circuits	Track Circuit 4		Tx/Rx,Tx,Rx,Disabled	basic
	Allows to select what is cabled and should be monitored by the controller					
81	Track Circuit 4 Control Level Value	Track Circuits	Track Circuit 4	mVolt		basic
	Control Level Value					
82	Track Circuit 4 Integration Time	Track Circuits	Track Circuit 4	second		basic
	Integration Time					
83	Track Circuit 4 D Delay	Track Circuits	Track Circuit 4	minute		basic
	TC Delay Time for TC Occupied Alarm (D)					

Config Table						
84	Track Circuit 4 Link	Track Circuits	Track Circuit 4			basic
	Allows to define a link between two TC. The relation is bidirectionnal.					
88	Track Circuit 4 Status Enabled	Track Circuits	Track Circuit 4		True/False (True)	basic
	Allows to enable the monitoring of TC status with ADIO7					
100	Track Circuit Mode 5	Track Circuits	Track Circuit 5		Tx/Rx,Tx,Rx,Disabled	basic
	Allows to select what is cabled and should be monitored by the controller					
101	Track Circuit 5 Control Level Value	Track Circuits	Track Circuit 5	mVolt		basic
	Control Level Value					
102	Track Circuit 5 Integration Time	Track Circuits	Track Circuit 5	second		basic
	Integration Time					
103	Track Circuit 5 D Delay	Track Circuits	Track Circuit 5	minute		basic
	TC Delay Time for TC Occupied Alarm (D)					
104	Track Circuit 5 Link	Track Circuits	Track Circuit 5			basic
	Allows to define a link between two TC. The relation is bidirectionnal.					
108	Track Circuit 5 Status Enabled	Track Circuits	Track Circuit 5		True/False (True)	basic
	Allows to enable the monitoring of TC status with ADIO7					
120	Track Circuit Mode 6	Track Circuits	Track Circuit 6		Tx/Rx,Tx,Rx,Disabled	basic
	Allows to select what is cabled and should be monitored by the controller					
121	Track Circuit 6 Control Level Value	Track Circuits	Track Circuit 6	mVolt		basic
	Control Level Value					
122	Track Circuit 6 Integration Time	Track Circuits	Track Circuit 6	second		basic
	Integration Time					
123	Track Circuit 6 D Delay	Track Circuits	Track Circuit 6	minute		basic
	TC Delay Time for TC Occupied Alarm (D)					
124	Track Circuit 6 Link	Track Circuits	Track Circuit 6			basic
	Allows to define a link between two TC. The relation is bidirectionnal.					
128	Track Circuit 6 Status Enabled	Track Circuits	Track Circuit 6		True/False (True)	basic

Config Table						
	Allows to enable the monitoring of TC status with ADIO7					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
25	Track Circuit 1 Save Rx Voltage As Reference	Track Circuits	Track Circuit 1	basic
	Writing a			
45	Track Circuit 2 Save Rx Voltage As Reference	Track Circuits	Track Circuit 2	basic
	Writing a			
65	Track Circuit 3 Save Rx Voltage As Reference	Track Circuits	Track Circuit 3	basic
	Writing a			
85	Track Circuit 4 Save Rx Voltage As Reference	Track Circuits	Track Circuit 4	basic

Control Table				
	Writing a			
105	Track Circuit 5 Save Rx Voltage As Reference	Track Circuits	Track Circuit 5	basic
	Writing a			
125	Track Circuit 6 Save Rx Voltage As Reference	Track Circuits	Track Circuit 6	basic
	Writing a			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			
999	Test Emulate Changes	Test		basic
	Control used in development phase to test scenario			

4.8. ADIO SP0155/01

Device Information	
Name	ADIO SP0155/01
Short Description	I/O module : 32 Dig Inputs + 8 Relays
Long Description	I/O module with Standard I/O module : 32 Dig Inputs + 8 Relays
Hardware Reference	9413 001 55011
Software Reference	SOFT 000124 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
101	Digital Input 1	Digital Inputs	Digital Input 1	warning (0)	5 / 2
	The name of the digital input 1 alarm.				
102	Digital Input 2	Digital Inputs	Digital Input 2	warning (0)	5 / 2
	The name of the digital input 2 alarm.				
103	Digital Input 3	Digital Inputs	Digital Input 3	warning (0)	5 / 2
	The name of the digital input 3 alarm.				
104	Digital Input 4	Digital Inputs	Digital Input 4	warning (0)	5 / 2
	The name of the digital input 4 alarm.				
105	Digital Input 5	Digital Inputs	Digital Input 5	warning (0)	5 / 2
	The name of the digital input 5 alarm.				
106	Digital Input 6	Digital Inputs	Digital Input 6	warning (0)	5 / 2
	The name of the digital input 6 alarm.				
107	Digital Input 7	Digital Inputs	Digital Input 7	warning (0)	5 / 2

Alarm Table					
	The name of the digital input 7 alarm.				
108	Digital Input 8	Digital Inputs	Digital Input 8	warning (0)	5 / 2
	The name of the digital input 8 alarm.				
109	Digital Input 9	Digital Inputs	Digital Input 9	warning (0)	5 / 2
	The name of the digital input 9 alarm.				
110	Digital Input 10	Digital Inputs	Digital Input 10	warning (0)	5 / 2
	The name of the digital input 10 alarm.				
111	Digital Input 11	Digital Inputs	Digital Input 11	warning (0)	5 / 2
	The name of the digital input 11 alarm.				
112	Digital Input 12	Digital Inputs	Digital Input 12	warning (0)	5 / 2
	The name of the digital input 12 alarm.				
113	Digital Input 13	Digital Inputs	Digital Input 13	warning (0)	5 / 2
	The name of the digital input 13 alarm.				
114	Digital Input 14	Digital Inputs	Digital Input 14	warning (0)	5 / 2
	The name of the digital input 14 alarm.				
115	Digital Input 15	Digital Inputs	Digital Input 15	warning (0)	5 / 2
	The name of the digital input 15 alarm.				
116	Digital Input 16	Digital Inputs	Digital Input 16	warning (0)	5 / 2
	The name of the digital input 16 alarm.				
117	Digital Input 17	Digital Inputs	Digital Input 17	warning (0)	5 / 2
	The name of the digital input 17 alarm.				
118	Digital Input 18	Digital Inputs	Digital Input 18	warning (0)	5 / 2
	The name of the digital input 18 alarm.				
119	Digital Input 19	Digital Inputs	Digital Input 19	warning (0)	5 / 2
	The name of the digital input 19 alarm.				
120	Digital Input 20	Digital Inputs	Digital Input 20	warning (0)	5 / 2
	The name of the digital input 20 alarm.				
121	Digital Input 21	Digital Inputs	Digital Input 21	warning (0)	5 / 2

Alarm Table					
	The name of the digital input 21 alarm.				
122	Digital Input 22	Digital Inputs	Digital Input 22	warning (0)	5 / 2
	The name of the digital input 22 alarm.				
123	Digital Input 23	Digital Inputs	Digital Input 23	warning (0)	5 / 2
	The name of the digital input 23 alarm.				
124	Digital Input 24	Digital Inputs	Digital Input 24	warning (0)	5 / 2
	The name of the digital input 24 alarm.				
125	Digital Input 25	Digital Inputs	Digital Input 25	warning (0)	5 / 2
	The name of the digital input 25 alarm.				
126	Digital Input 26	Digital Inputs	Digital Input 26	warning (0)	5 / 2
	The name of the digital input 26 alarm.				
127	Digital Input 27	Digital Inputs	Digital Input 27	warning (0)	5 / 2
	The name of the digital input 27 alarm.				
128	Digital Input 28	Digital Inputs	Digital Input 28	warning (0)	5 / 2
	The name of the digital input 28 alarm.				
129	Digital Input 29	Digital Inputs	Digital Input 29	warning (0)	5 / 2
	The name of the digital input 29 alarm.				
130	Digital Input 30	Digital Inputs	Digital Input 30	warning (0)	5 / 2
	The name of the digital input 30 alarm.				
131	Digital Input 31	Digital Inputs	Digital Input 31	warning (0)	5 / 2
	The name of the digital input 31 alarm.				
132	Digital Input 32	Digital Inputs	Digital Input 32	warning (0)	5 / 2
	The name of the digital input 32 alarm.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
101	Digital Input 1 State	Digital Inputs	Digital Input 1		basic
	The state of the digital input				
102	Digital Input 2 State	Digital Inputs	Digital Input 2		basic
	The state of the digital input				

Data Table					
103	Digital Input 3 State	Digital Inputs	Digital Input 3		basic
	The state of the digital input				
104	Digital Input 4 State	Digital Inputs	Digital Input 4		basic
	The state of the digital input				
105	Digital Input 5 State	Digital Inputs	Digital Input 5		basic
	The state of the digital input				
106	Digital Input 6 State	Digital Inputs	Digital Input 6		basic
	The state of the digital input				
107	Digital Input 7 State	Digital Inputs	Digital Input 7		basic
	The state of the digital input				
108	Digital Input 8 State	Digital Inputs	Digital Input 8		basic
	The state of the digital input				
109	Digital Input 9 State	Digital Inputs	Digital Input 9		basic
	The state of the digital input				
110	Digital Input 10 State	Digital Inputs	Digital Input 10		basic
	The state of the digital input				
111	Digital Input 11 State	Digital Inputs	Digital Input 11		basic
	The state of the digital input				
112	Digital Input 12 State	Digital Inputs	Digital Input 12		basic
	The state of the digital input				
113	Digital Input 13 State	Digital Inputs	Digital Input 13		basic
	The state of the digital input				
114	Digital Input 14 State	Digital Inputs	Digital Input 14		basic
	The state of the digital input				
115	Digital Input 15 State	Digital Inputs	Digital Input 15		basic
	The state of the digital input				
116	Digital Input 16 State	Digital Inputs	Digital Input 16		basic
	The state of the digital input				
117	Digital Input 17 State	Digital Inputs	Digital Input 17		basic
	The state of the digital input				
118	Digital Input 18 State	Digital Inputs	Digital Input 18		basic
	The state of the digital input				
119	Digital Input 19 State	Digital Inputs	Digital Input 19		basic
	The state of the digital input				
120	Digital Input 20 State	Digital Inputs	Digital Input 20		basic
	The state of the digital input				
121	Digital Input 21 State	Digital Inputs	Digital Input 21		basic
	The state of the digital input				
122	Digital Input 22 State	Digital Inputs	Digital Input 22		basic
	The state of the digital input				

Data Table					
123	Digital Input 23 State	Digital Inputs	Digital Input 23		basic
	The state of the digital input				
124	Digital Input 24 State	Digital Inputs	Digital Input 24		basic
	The state of the digital input				
125	Digital Input 25 State	Digital Inputs	Digital Input 25		basic
	The state of the digital input				
126	Digital Input 26 State	Digital Inputs	Digital Input 26		basic
	The state of the digital input				
127	Digital Input 27 State	Digital Inputs	Digital Input 27		basic
	The state of the digital input				
128	Digital Input 28 State	Digital Inputs	Digital Input 28		basic
	The state of the digital input				
129	Digital Input 29 State	Digital Inputs	Digital Input 29		basic
	The state of the digital input				
130	Digital Input 30 State	Digital Inputs	Digital Input 30		basic
	The state of the digital input				
131	Digital Input 31 State	Digital Inputs	Digital Input 31		basic
	The state of the digital input				
132	Digital Input 32 State	Digital Inputs	Digital Input 32		basic
	The state of the digital input				
301	Relay 1 State	Relays	Relay 1		basic
	Actual state of the Relay				
303	Relay 2 State	Relays	Relay 2		basic
	Actual state of the Relay				
305	Relay 3 State	Relays	Relay 3		basic
	Actual state of the Relay				
307	Relay 4 State	Relays	Relay 4		basic
	Actual state of the Relay				
309	Relay 5 State	Relays	Relay 5		basic
	Actual state of the Relay				
311	Relay 6 State	Relays	Relay 6		basic
	Actual state of the Relay				
313	Relay 7 State	Relays	Relay 7		basic
	Actual state of the Relay				
315	Relay 8 State	Relays	Relay 8		basic
	Actual state of the Relay				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>

Config Table						
101	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					
102	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
103	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic
	The name of the digital input 2.					
104	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
105	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Inputs	basic
	The name of the digital input 3.					
106	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
107	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Inputs	basic
	The name of the digital input 4.					
108	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
109	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Inputs	basic
	The name of the digital input 5.					
110	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
111	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Inputs	basic
	The name of the digital input 6.					
112	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
113	Digital Input 7	Digital	Digital Input		Digital Inputs	basic

Config Table

	Name	Inputs	7			
	The name of the digital input 7.					
114	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
115	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Inputs	basic
	The name of the digital input 8.					
116	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
117	Digital Input 9 Name	Digital Inputs	Digital Input 9		Digital Inputs	basic
	The name of the digital input 9.					
118	Digital Input 9 Normally Closed	Digital Inputs	Digital Input 9		True/False (True)	basic
	True/False value defining if the digital input 9 is normally closed. If this digital input is not in this default state, the related alarm is set.					
119	Digital Input 10 Name	Digital Inputs	Digital Input 10		Digital Inputs	basic
	The name of the digital input 10.					
120	Digital Input 10 Normally Closed	Digital Inputs	Digital Input 10		True/False (True)	basic
	True/False value defining if the digital input 10 is normally closed. If this digital input is not in this default state, the related alarm is set.					
121	Digital Input 11 Name	Digital Inputs	Digital Input 11		Digital Inputs	basic
	The name of the digital input 11.					
122	Digital Input 11 Normally Closed	Digital Inputs	Digital Input 11		True/False (True)	basic
	True/False value defining if the digital input 11 is normally closed. If this digital input is not in this default state, the related alarm is set.					
123	Digital Input 12 Name	Digital Inputs	Digital Input 12		Digital Inputs	basic
	The name of the digital input 12.					
124	Digital Input 12 Normally Closed	Digital Inputs	Digital Input 12		True/False (True)	basic
	True/False value defining if the digital input 12 is normally closed. If this digital input is not in this default state, the related alarm is set.					
125	Digital Input 13 Name	Digital Inputs	Digital Input 13		Digital Inputs	basic

Config Table

	The name of the digital input 13.				
126	Digital Input 13 Normally Closed	Digital Inputs	Digital Input 13	True/False (True)	basic
	True/False value defining if the digital input 13 is normally closed. If this digital input is not in this default state, the related alarm is set.				
127	Digital Input 14 Name	Digital Inputs	Digital Input 14	Digital Inputs	basic
	The name of the digital input 14.				
128	Digital Input 14 Normally Closed	Digital Inputs	Digital Input 14	True/False (True)	basic
	True/False value defining if the digital input 14 is normally closed. If this digital input is not in this default state, the related alarm is set.				
129	Digital Input 15 Name	Digital Inputs	Digital Input 15	Digital Inputs	basic
	The name of the digital input 15.				
130	Digital Input 15 Normally Closed	Digital Inputs	Digital Input 15	True/False (True)	basic
	True/False value defining if the digital input 15 is normally closed. If this digital input is not in this default state, the related alarm is set.				
131	Digital Input 16 Name	Digital Inputs	Digital Input 16	Digital Inputs	basic
	The name of the digital input 16.				
132	Digital Input 16 Normally Closed	Digital Inputs	Digital Input 16	True/False (True)	basic
	True/False value defining if the digital input 16 is normally closed. If this digital input is not in this default state, the related alarm is set.				
133	Digital Input 17 Name	Digital Inputs	Digital Input 17	Digital Inputs	basic
	The name of the digital input 17.				
134	Digital Input 17 Normally Closed	Digital Inputs	Digital Input 17	True/False (True)	basic
	True/False value defining if the digital input 17 is normally closed. If this digital input is not in this default state, the related alarm is set.				
135	Digital Input 18 Name	Digital Inputs	Digital Input 18	Digital Inputs	basic
	The name of the digital input 18.				
136	Digital Input 18 Normally Closed	Digital Inputs	Digital Input 18	True/False (True)	basic
	True/False value defining if the digital input 18 is normally closed. If this digital input is not in this default state, the related alarm is set.				
137	Digital Input 19 Name	Digital Inputs	Digital Input 19	Digital Inputs	basic
	The name of the digital input 19.				

Config Table						
138	Digital Input 19 Normally Closed	Digital Inputs	Digital Input 19		True/False (True)	basic
	True/False value defining if the digital input 19 is normally closed. If this digital input is not in this default state, the related alarm is set.					
139	Digital Input 20 Name	Digital Inputs	Digital Input 20		Digital Inputs	basic
	The name of the digital input 20.					
140	Digital Input 20 Normally Closed	Digital Inputs	Digital Input 20		True/False (True)	basic
	True/False value defining if the digital input 20 is normally closed. If this digital input is not in this default state, the related alarm is set.					
141	Digital Input 21 Name	Digital Inputs	Digital Input 21		Digital Inputs	basic
	The name of the digital input 21.					
142	Digital Input 21 Normally Closed	Digital Inputs	Digital Input 21		True/False (True)	basic
	True/False value defining if the digital input 21 is normally closed. If this digital input is not in this default state, the related alarm is set.					
143	Digital Input 22 Name	Digital Inputs	Digital Input 22		Digital Inputs	basic
	The name of the digital input 22.					
144	Digital Input 22 Normally Closed	Digital Inputs	Digital Input 22		True/False (True)	basic
	True/False value defining if the digital input 22 is normally closed. If this digital input is not in this default state, the related alarm is set.					
145	Digital Input 23 Name	Digital Inputs	Digital Input 23		Digital Inputs	basic
	The name of the digital input 23.					
146	Digital Input 23 Normally Closed	Digital Inputs	Digital Input 23		True/False (True)	basic
	True/False value defining if the digital input 23 is normally closed. If this digital input is not in this default state, the related alarm is set.					
147	Digital Input 24 Name	Digital Inputs	Digital Input 24		Digital Inputs	basic
	The name of the digital input 24.					
148	Digital Input 24 Normally Closed	Digital Inputs	Digital Input 24		True/False (True)	basic
	True/False value defining if the digital input 24 is normally closed. If this digital input is not in this default state, the related alarm is set.					
149	Digital Input 25 Name	Digital Inputs	Digital Input 25		Digital Inputs	basic
	The name of the digital input 25.					
150	Digital Input 25	Digital	Digital Input		True/False (True)	basic

Config Table

	Normally Closed	Inputs	25			
	True/False value defining if the digital input 25 is normally closed. If this digital input is not in this default state, the related alarm is set.					
151	Digital Input 26 Name	Digital Inputs	Digital Input 26		Digital Inputs	basic
	The name of the digital input 26.					
152	Digital Input 26 Normally Closed	Digital Inputs	Digital Input 26		True/False (True)	basic
	True/False value defining if the digital input 26 is normally closed. If this digital input is not in this default state, the related alarm is set.					
153	Digital Input 27 Name	Digital Inputs	Digital Input 27		Digital Inputs	basic
	The name of the digital input 27.					
154	Digital Input 27 Normally Closed	Digital Inputs	Digital Input 27		True/False (True)	basic
	True/False value defining if the digital input 27 is normally closed. If this digital input is not in this default state, the related alarm is set.					
155	Digital Input 28 Name	Digital Inputs	Digital Input 28		Digital Inputs	basic
	The name of the digital input 28.					
156	Digital Input 28 Normally Closed	Digital Inputs	Digital Input 28		True/False (True)	basic
	True/False value defining if the digital input 28 is normally closed. If this digital input is not in this default state, the related alarm is set.					
157	Digital Input 29 Name	Digital Inputs	Digital Input 29		Digital Inputs	basic
	The name of the digital input 29.					
158	Digital Input 29 Normally Closed	Digital Inputs	Digital Input 29		True/False (True)	basic
	True/False value defining if the digital input 29 is normally closed. If this digital input is not in this default state, the related alarm is set.					
159	Digital Input 30 Name	Digital Inputs	Digital Input 30		Digital Inputs	basic
	The name of the digital input 30.					
160	Digital Input 30 Normally Closed	Digital Inputs	Digital Input 30		True/False (True)	basic
	True/False value defining if the digital input 30 is normally closed. If this digital input is not in this default state, the related alarm is set.					
161	Digital Input 31 Name	Digital Inputs	Digital Input 31		Digital Inputs	basic
	The name of the digital input 31.					
162	Digital Input 31 Normally Closed	Digital Inputs	Digital Input 31		True/False (True)	basic

Config Table

	True/False value defining if the digital input 31 is normally closed. If this digital input is not in this default state, the related alarm is set.				
163	Digital Input 32 Name	Digital Inputs	Digital Input 32	Digital Inputs	basic
	The name of the digital input 32.				
164	Digital Input 32 Normally Closed	Digital Inputs	Digital Input 32	True/False (True)	basic
	True/False value defining if the digital input 32 is normally closed. If this digital input is not in this default state, the related alarm is set.				
200	Default Output Relay Binary Vector	Relays		(0b11111111)	basic
	This configuration is stored inside the module in case of communication failure				
301	Relay 1 Change State Boolean Condition	Relays	Relay 1	(False)	basic
	Relay 1 Boolean Condition				
302	Relay 1 Normal State	Relays	Relay 1	(Energized / De-energized)	basic
	Relay 1 Normal State				
303	Relay 2 Change State Boolean Condition	Relays	Relay 2	(False)	basic
	Relay 2 Boolean Condition				
304	Relay 2 Normal State	Relays	Relay 2	(Energized / De-energized)	basic
	Relay 2 Normal State				
305	Relay 3 Change State Boolean Condition	Relays	Relay 3	(False)	basic
	Relay 3 Boolean Condition				
306	Relay 3 Normal State	Relays	Relay 3	(Energized / De-energized)	basic
	Relay 3 Normal State				
307	Relay 4 Change State Boolean Condition	Relays	Relay 4	(False)	basic
	Relay 4 Boolean Condition				
308	Relay 4 Normal State	Relays	Relay 4	(Energized / De-energized)	basic
	Relay 4 Normal State				
309	Relay 5 Change State Boolean Condition	Relays	Relay 5	(False)	basic

Config Table						
	Relay 5 Boolean Condition					
310	Relay 5 Normal State	Relays	Relay 5		(Energized / De-energized)	basic
	Relay 5 Normal State					
311	Relay 6 Change State Boolean Condition	Relays	Relay 6		(False)	basic
	Relay 6 Boolean Condition					
312	Relay 6 Normal State	Relays	Relay 6		(Energized / De-energized)	basic
	Relay 6 Normal State					
313	Relay 7 Change State Boolean Condition	Relays	Relay 7		(False)	basic
	Relay 7 Boolean Condition					
314	Relay 7 Normal State	Relays	Relay 7		(Energized / De-energized)	basic
	Relay 7 Normal State					
315	Relay 8 Change State Boolean Condition	Relays	Relay 8		(False)	basic
	Relay 8 Boolean Condition					
316	Relay 8 Normal State	Relays	Relay 8		(Energized / De-energized)	basic
	Relay 8 Normal State					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with					

Config Table

	the 'PLC' module				
902	Number Of PLC Alarm	PLC		(0)	plc
The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
301	Invert Relay 1 State For X Seconds	Relays	Relay 1	basic
	Generate Pulse on relay			
303	Invert Relay 2 State For X Seconds	Relays	Relay 2	basic
	Generate Pulse on relay			
305	Invert Relay 3 State For X Seconds	Relays	Relay 3	basic
	Generate Pulse on relay			
307	Invert Relay 4 State For X Seconds	Relays	Relay 4	basic
	Generate Pulse on relay			
309	Invert Relay 5 State For X Seconds	Relays	Relay 5	basic
	Generate Pulse on relay			
311	Invert Relay 6 State For X Seconds	Relays	Relay 6	basic
	Generate Pulse on relay			
313	Invert Relay 7 State For X Seconds	Relays	Relay 7	basic
	Generate Pulse on relay			
315	Invert Relay 8 State For X Seconds	Relays	Relay 8	basic
	Generate Pulse on relay			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to			

Control Table

	default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments				

4.9. ADIO SP0155/02**Device Information**

Name	ADIO SP0155/02
Short Description	I/O module : 64 Dig Inputs
Long Description	I/O module with Standard I/O module : 64 Dig Inputs
Hardware Reference	9413 001 55021
Software Reference	SOFT 000125 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
101	Digital Input 1	Digital In-	Digital Input 1	warning (0)	5 / 2

Alarm Table					
		puts			
	The name of the digital input 1 alarm.				
102	Digital Input 2	Digital In-puts	Digital Input 2	warning (0)	5 / 2
	The name of the digital input 2 alarm.				
103	Digital Input 3	Digital In-puts	Digital Input 3	warning (0)	5 / 2
	The name of the digital input 3 alarm.				
104	Digital Input 4	Digital In-puts	Digital Input 4	warning (0)	5 / 2
	The name of the digital input 4 alarm.				
105	Digital Input 5	Digital In-puts	Digital Input 5	warning (0)	5 / 2
	The name of the digital input 5 alarm.				
106	Digital Input 6	Digital In-puts	Digital Input 6	warning (0)	5 / 2
	The name of the digital input 6 alarm.				
107	Digital Input 7	Digital In-puts	Digital Input 7	warning (0)	5 / 2
	The name of the digital input 7 alarm.				
108	Digital Input 8	Digital In-puts	Digital Input 8	warning (0)	5 / 2
	The name of the digital input 8 alarm.				
109	Digital Input 9	Digital In-puts	Digital Input 9	warning (0)	5 / 2
	The name of the digital input 9 alarm.				
110	Digital Input 10	Digital In-puts	Digital Input 10	warning (0)	5 / 2
	The name of the digital input 10 alarm.				
111	Digital Input 11	Digital In-puts	Digital Input 11	warning (0)	5 / 2
	The name of the digital input 11 alarm.				
112	Digital Input 12	Digital In-puts	Digital Input 12	warning (0)	5 / 2
	The name of the digital input 12 alarm.				
113	Digital Input 13	Digital In-puts	Digital Input 13	warning (0)	5 / 2
	The name of the digital input 13 alarm.				
114	Digital Input 14	Digital In-puts	Digital Input 14	warning (0)	5 / 2
	The name of the digital input 14 alarm.				
115	Digital Input	Digital In-	Digital Input	warning (0)	5 / 2

Alarm Table					
	15	puts	15		
	The name of the digital input 15 alarm.				
116	Digital Input 16	Digital In-puts	Digital Input 16	warning (0)	5 / 2
	The name of the digital input 16 alarm.				
117	Digital Input 17	Digital In-puts	Digital Input 17	warning (0)	5 / 2
	The name of the digital input 17 alarm.				
118	Digital Input 18	Digital In-puts	Digital Input 18	warning (0)	5 / 2
	The name of the digital input 18 alarm.				
119	Digital Input 19	Digital In-puts	Digital Input 19	warning (0)	5 / 2
	The name of the digital input 19 alarm.				
120	Digital Input 20	Digital In-puts	Digital Input 20	warning (0)	5 / 2
	The name of the digital input 20 alarm.				
121	Digital Input 21	Digital In-puts	Digital Input 21	warning (0)	5 / 2
	The name of the digital input 21 alarm.				
122	Digital Input 22	Digital In-puts	Digital Input 22	warning (0)	5 / 2
	The name of the digital input 22 alarm.				
123	Digital Input 23	Digital In-puts	Digital Input 23	warning (0)	5 / 2
	The name of the digital input 23 alarm.				
124	Digital Input 24	Digital In-puts	Digital Input 24	warning (0)	5 / 2
	The name of the digital input 24 alarm.				
125	Digital Input 25	Digital In-puts	Digital Input 25	warning (0)	5 / 2
	The name of the digital input 25 alarm.				
126	Digital Input 26	Digital In-puts	Digital Input 26	warning (0)	5 / 2
	The name of the digital input 26 alarm.				
127	Digital Input 27	Digital In-puts	Digital Input 27	warning (0)	5 / 2
	The name of the digital input 27 alarm.				
128	Digital Input 28	Digital In-puts	Digital Input 28	warning (0)	5 / 2
	The name of the digital input 28 alarm.				
129	Digital Input	Digital In-	Digital Input	warning (0)	5 / 2

Alarm Table					
	29	puts	29		
	The name of the digital input 29 alarm.				
130	Digital Input 30	Digital In-puts	Digital Input 30	warning (0)	5 / 2
	The name of the digital input 30 alarm.				
131	Digital Input 31	Digital In-puts	Digital Input 31	warning (0)	5 / 2
	The name of the digital input 31 alarm.				
132	Digital Input 32	Digital In-puts	Digital Input 32	warning (0)	5 / 2
	The name of the digital input 32 alarm.				
133	Digital Input 33	Digital In-puts	Digital Input 33	warning (0)	5 / 2
	The name of the digital input 33 alarm.				
134	Digital Input 34	Digital In-puts	Digital Input 34	warning (0)	5 / 2
	The name of the digital input 34 alarm.				
135	Digital Input 35	Digital In-puts	Digital Input 35	warning (0)	5 / 2
	The name of the digital input 35 alarm.				
136	Digital Input 36	Digital In-puts	Digital Input 36	warning (0)	5 / 2
	The name of the digital input 36 alarm.				
137	Digital Input 37	Digital In-puts	Digital Input 37	warning (0)	5 / 2
	The name of the digital input 37 alarm.				
138	Digital Input 38	Digital In-puts	Digital Input 38	warning (0)	5 / 2
	The name of the digital input 38 alarm.				
139	Digital Input 39	Digital In-puts	Digital Input 39	warning (0)	5 / 2
	The name of the digital input 39 alarm.				
140	Digital Input 40	Digital In-puts	Digital Input 40	warning (0)	5 / 2
	The name of the digital input 40 alarm.				
141	Digital Input 41	Digital In-puts	Digital Input 41	warning (0)	5 / 2
	The name of the digital input 41 alarm.				
142	Digital Input 42	Digital In-puts	Digital Input 42	warning (0)	5 / 2
	The name of the digital input 42 alarm.				
143	Digital Input	Digital In-	Digital Input	warning (0)	5 / 2

Alarm Table					
	43	puts	43		
	The name of the digital input 43 alarm.				
144	Digital Input 44	Digital In-puts	Digital Input 44	warning (0)	5 / 2
	The name of the digital input 44 alarm.				
145	Digital Input 45	Digital In-puts	Digital Input 45	warning (0)	5 / 2
	The name of the digital input 45 alarm.				
146	Digital Input 46	Digital In-puts	Digital Input 46	warning (0)	5 / 2
	The name of the digital input 46 alarm.				
147	Digital Input 47	Digital In-puts	Digital Input 47	warning (0)	5 / 2
	The name of the digital input 47 alarm.				
148	Digital Input 48	Digital In-puts	Digital Input 48	warning (0)	5 / 2
	The name of the digital input 48 alarm.				
149	Digital Input 49	Digital In-puts	Digital Input 49	warning (0)	5 / 2
	The name of the digital input 49 alarm.				
150	Digital Input 50	Digital In-puts	Digital Input 50	warning (0)	5 / 2
	The name of the digital input 50 alarm.				
151	Digital Input 51	Digital In-puts	Digital Input 51	warning (0)	5 / 2
	The name of the digital input 51 alarm.				
152	Digital Input 52	Digital In-puts	Digital Input 52	warning (0)	5 / 2
	The name of the digital input 52 alarm.				
153	Digital Input 53	Digital In-puts	Digital Input 53	warning (0)	5 / 2
	The name of the digital input 53 alarm.				
154	Digital Input 54	Digital In-puts	Digital Input 54	warning (0)	5 / 2
	The name of the digital input 54 alarm.				
155	Digital Input 55	Digital In-puts	Digital Input 55	warning (0)	5 / 2
	The name of the digital input 55 alarm.				
156	Digital Input 56	Digital In-puts	Digital Input 56	warning (0)	5 / 2
	The name of the digital input 56 alarm.				
157	Digital Input	Digital In-	Digital Input	warning (0)	5 / 2

Alarm Table					
	57	puts	57		
	The name of the digital input 57 alarm.				
158	Digital Input 58	Digital Inputs	Digital Input 58	warning (0)	5 / 2
	The name of the digital input 58 alarm.				
159	Digital Input 59	Digital Inputs	Digital Input 59	warning (0)	5 / 2
	The name of the digital input 59 alarm.				
160	Digital Input 60	Digital Inputs	Digital Input 60	warning (0)	5 / 2
	The name of the digital input 60 alarm.				
161	Digital Input 61	Digital Inputs	Digital Input 61	warning (0)	5 / 2
	The name of the digital input 61 alarm.				
162	Digital Input 62	Digital Inputs	Digital Input 62	warning (0)	5 / 2
	The name of the digital input 62 alarm.				
163	Digital Input 63	Digital Inputs	Digital Input 63	warning (0)	5 / 2
	The name of the digital input 63 alarm.				
164	Digital Input 64	Digital Inputs	Digital Input 64	warning (0)	5 / 2
	The name of the digital input 64 alarm.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
101	Digital Input 1 State	Digital Inputs	Digital Input 1		basic
	The state of the digital input				
102	Digital Input 2 State	Digital Inputs	Digital Input 2		basic
	The state of the digital input				
103	Digital Input 3 State	Digital Inputs	Digital Input 3		basic
	The state of the digital input				
104	Digital Input 4 State	Digital Inputs	Digital Input 4		basic
	The state of the digital input				
105	Digital Input 5 State	Digital Inputs	Digital Input 5		basic
	The state of the digital input				
106	Digital Input 6 State	Digital Inputs	Digital Input 6		basic
	The state of the digital input				
107	Digital Input 7 State	Digital Inputs	Digital Input 7		basic
	The state of the digital input				
108	Digital Input 8 State	Digital Inputs	Digital Input 8		basic

Data Table					
	The state of the digital input				
109	Digital Input 9 State	Digital Inputs	Digital Input 9		basic
	The state of the digital input				
110	Digital Input 10 State	Digital Inputs	Digital Input 10		basic
	The state of the digital input				
111	Digital Input 11 State	Digital Inputs	Digital Input 11		basic
	The state of the digital input				
112	Digital Input 12 State	Digital Inputs	Digital Input 12		basic
	The state of the digital input				
113	Digital Input 13 State	Digital Inputs	Digital Input 13		basic
	The state of the digital input				
114	Digital Input 14 State	Digital Inputs	Digital Input 14		basic
	The state of the digital input				
115	Digital Input 15 State	Digital Inputs	Digital Input 15		basic
	The state of the digital input				
116	Digital Input 16 State	Digital Inputs	Digital Input 16		basic
	The state of the digital input				
117	Digital Input 17 State	Digital Inputs	Digital Input 17		basic
	The state of the digital input				
118	Digital Input 18 State	Digital Inputs	Digital Input 18		basic
	The state of the digital input				
119	Digital Input 19 State	Digital Inputs	Digital Input 19		basic
	The state of the digital input				
120	Digital Input 20 State	Digital Inputs	Digital Input 20		basic
	The state of the digital input				
121	Digital Input 21 State	Digital Inputs	Digital Input 21		basic
	The state of the digital input				
122	Digital Input 22 State	Digital Inputs	Digital Input 22		basic
	The state of the digital input				
123	Digital Input 23 State	Digital Inputs	Digital Input 23		basic
	The state of the digital input				
124	Digital Input 24 State	Digital Inputs	Digital Input 24		basic
	The state of the digital input				
125	Digital Input 25 State	Digital Inputs	Digital Input 25		basic
	The state of the digital input				
126	Digital Input 26 State	Digital Inputs	Digital Input 26		basic
	The state of the digital input				
127	Digital Input 27 State	Digital Inputs	Digital Input 27		basic
	The state of the digital input				
128	Digital Input 28 State	Digital Inputs	Digital Input 28		basic

Data Table					
	The state of the digital input				
129	Digital Input 29 State	Digital Inputs	Digital Input 29		basic
	The state of the digital input				
130	Digital Input 30 State	Digital Inputs	Digital Input 30		basic
	The state of the digital input				
131	Digital Input 31 State	Digital Inputs	Digital Input 31		basic
	The state of the digital input				
132	Digital Input 32 State	Digital Inputs	Digital Input 32		basic
	The state of the digital input				
133	Digital Input 33 State	Digital Inputs	Digital Input 33		basic
	The state of the digital input				
134	Digital Input 34 State	Digital Inputs	Digital Input 34		basic
	The state of the digital input				
135	Digital Input 35 State	Digital Inputs	Digital Input 35		basic
	The state of the digital input				
136	Digital Input 36 State	Digital Inputs	Digital Input 36		basic
	The state of the digital input				
137	Digital Input 37 State	Digital Inputs	Digital Input 37		basic
	The state of the digital input				
138	Digital Input 38 State	Digital Inputs	Digital Input 38		basic
	The state of the digital input				
139	Digital Input 39 State	Digital Inputs	Digital Input 39		basic
	The state of the digital input				
140	Digital Input 40 State	Digital Inputs	Digital Input 40		basic
	The state of the digital input				
141	Digital Input 41 State	Digital Inputs	Digital Input 41		basic
	The state of the digital input				
142	Digital Input 42 State	Digital Inputs	Digital Input 42		basic
	The state of the digital input				
143	Digital Input 43 State	Digital Inputs	Digital Input 43		basic
	The state of the digital input				
144	Digital Input 44 State	Digital Inputs	Digital Input 44		basic
	The state of the digital input				
145	Digital Input 45 State	Digital Inputs	Digital Input 45		basic
	The state of the digital input				
146	Digital Input 46 State	Digital Inputs	Digital Input 46		basic
	The state of the digital input				
147	Digital Input 47 State	Digital Inputs	Digital Input 47		basic
	The state of the digital input				
148	Digital Input 48 State	Digital Inputs	Digital Input 48		basic

Data Table					
	The state of the digital input				
149	Digital Input 49 State	Digital Inputs	Digital Input 49		basic
	The state of the digital input				
150	Digital Input 50 State	Digital Inputs	Digital Input 50		basic
	The state of the digital input				
151	Digital Input 51 State	Digital Inputs	Digital Input 51		basic
	The state of the digital input				
152	Digital Input 52 State	Digital Inputs	Digital Input 52		basic
	The state of the digital input				
153	Digital Input 53 State	Digital Inputs	Digital Input 53		basic
	The state of the digital input				
154	Digital Input 54 State	Digital Inputs	Digital Input 54		basic
	The state of the digital input				
155	Digital Input 55 State	Digital Inputs	Digital Input 55		basic
	The state of the digital input				
156	Digital Input 56 State	Digital Inputs	Digital Input 56		basic
	The state of the digital input				
157	Digital Input 57 State	Digital Inputs	Digital Input 57		basic
	The state of the digital input				
158	Digital Input 58 State	Digital Inputs	Digital Input 58		basic
	The state of the digital input				
159	Digital Input 59 State	Digital Inputs	Digital Input 59		basic
	The state of the digital input				
160	Digital Input 60 State	Digital Inputs	Digital Input 60		basic
	The state of the digital input				
161	Digital Input 61 State	Digital Inputs	Digital Input 61		basic
	The state of the digital input				
162	Digital Input 62 State	Digital Inputs	Digital Input 62		basic
	The state of the digital input				
163	Digital Input 63 State	Digital Inputs	Digital Input 63		basic
	The state of the digital input				
164	Digital Input 64 State	Digital Inputs	Digital Input 64		basic
	The state of the digital input				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
102	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					

Config Table

103	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
104	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic
	The name of the digital input 2.					
105	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
106	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Inputs	basic
	The name of the digital input 3.					
107	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
108	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Inputs	basic
	The name of the digital input 4.					
109	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
110	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Inputs	basic
	The name of the digital input 5.					
111	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
112	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Inputs	basic
	The name of the digital input 6.					
113	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
114	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Inputs	basic
	The name of the digital input 7.					
115	Digital Input 7	Digital	Digital Input		True/False (True)	basic

Config Table						
	Normally Closed	Inputs	7			
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
116	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Inputs	basic
	The name of the digital input 8.					
117	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
118	Digital Input 9 Name	Digital Inputs	Digital Input 9		Digital Inputs	basic
	The name of the digital input 9.					
119	Digital Input 9 Normally Closed	Digital Inputs	Digital Input 9		True/False (True)	basic
	True/False value defining if the digital input 9 is normally closed. If this digital input is not in this default state, the related alarm is set.					
120	Digital Input 10 Name	Digital Inputs	Digital Input 10		Digital Inputs	basic
	The name of the digital input 10.					
121	Digital Input 10 Normally Closed	Digital Inputs	Digital Input 10		True/False (True)	basic
	True/False value defining if the digital input 10 is normally closed. If this digital input is not in this default state, the related alarm is set.					
122	Digital Input 11 Name	Digital Inputs	Digital Input 11		Digital Inputs	basic
	The name of the digital input 11.					
123	Digital Input 11 Normally Closed	Digital Inputs	Digital Input 11		True/False (True)	basic
	True/False value defining if the digital input 11 is normally closed. If this digital input is not in this default state, the related alarm is set.					
124	Digital Input 12 Name	Digital Inputs	Digital Input 12		Digital Inputs	basic
	The name of the digital input 12.					
125	Digital Input 12 Normally Closed	Digital Inputs	Digital Input 12		True/False (True)	basic
	True/False value defining if the digital input 12 is normally closed. If this digital input is not in this default state, the related alarm is set.					
126	Digital Input 13 Name	Digital Inputs	Digital Input 13		Digital Inputs	basic
	The name of the digital input 13.					
127	Digital Input 13 Normally Closed	Digital Inputs	Digital Input 13		True/False (True)	basic

Config Table

	True/False value defining if the digital input 13 is normally closed. If this digital input is not in this default state, the related alarm is set.				
128	Digital Input 14 Name	Digital Inputs	Digital Input 14	Digital Inputs	basic
	The name of the digital input 14.				
129	Digital Input 14 Normally Closed	Digital Inputs	Digital Input 14	True/False (True)	basic
	True/False value defining if the digital input 14 is normally closed. If this digital input is not in this default state, the related alarm is set.				
130	Digital Input 15 Name	Digital Inputs	Digital Input 15	Digital Inputs	basic
	The name of the digital input 15.				
131	Digital Input 15 Normally Closed	Digital Inputs	Digital Input 15	True/False (True)	basic
	True/False value defining if the digital input 15 is normally closed. If this digital input is not in this default state, the related alarm is set.				
132	Digital Input 16 Name	Digital Inputs	Digital Input 16	Digital Inputs	basic
	The name of the digital input 16.				
133	Digital Input 16 Normally Closed	Digital Inputs	Digital Input 16	True/False (True)	basic
	True/False value defining if the digital input 16 is normally closed. If this digital input is not in this default state, the related alarm is set.				
134	Digital Input 17 Name	Digital Inputs	Digital Input 17	Digital Inputs	basic
	The name of the digital input 17.				
135	Digital Input 17 Normally Closed	Digital Inputs	Digital Input 17	True/False (True)	basic
	True/False value defining if the digital input 17 is normally closed. If this digital input is not in this default state, the related alarm is set.				
136	Digital Input 18 Name	Digital Inputs	Digital Input 18	Digital Inputs	basic
	The name of the digital input 18.				
137	Digital Input 18 Normally Closed	Digital Inputs	Digital Input 18	True/False (True)	basic
	True/False value defining if the digital input 18 is normally closed. If this digital input is not in this default state, the related alarm is set.				
138	Digital Input 19 Name	Digital Inputs	Digital Input 19	Digital Inputs	basic
	The name of the digital input 19.				
139	Digital Input 19 Normally Closed	Digital Inputs	Digital Input 19	True/False (True)	basic
	True/False value defining if the digital input 19 is normally closed. If this digital				

Config Table

	input is not in this default state, the related alarm is set.				
140	Digital Input 20 Name	Digital Inputs	Digital Input 20	Digital Inputs	basic
	The name of the digital input 20.				
141	Digital Input 20 Normally Closed	Digital Inputs	Digital Input 20	True/False (True)	basic
	True/False value defining if the digital input 20 is normally closed. If this digital input is not in this default state, the related alarm is set.				
142	Digital Input 21 Name	Digital Inputs	Digital Input 21	Digital Inputs	basic
	The name of the digital input 21.				
143	Digital Input 21 Normally Closed	Digital Inputs	Digital Input 21	True/False (True)	basic
	True/False value defining if the digital input 21 is normally closed. If this digital input is not in this default state, the related alarm is set.				
144	Digital Input 22 Name	Digital Inputs	Digital Input 22	Digital Inputs	basic
	The name of the digital input 22.				
145	Digital Input 22 Normally Closed	Digital Inputs	Digital Input 22	True/False (True)	basic
	True/False value defining if the digital input 22 is normally closed. If this digital input is not in this default state, the related alarm is set.				
146	Digital Input 23 Name	Digital Inputs	Digital Input 23	Digital Inputs	basic
	The name of the digital input 23.				
147	Digital Input 23 Normally Closed	Digital Inputs	Digital Input 23	True/False (True)	basic
	True/False value defining if the digital input 23 is normally closed. If this digital input is not in this default state, the related alarm is set.				
148	Digital Input 24 Name	Digital Inputs	Digital Input 24	Digital Inputs	basic
	The name of the digital input 24.				
149	Digital Input 24 Normally Closed	Digital Inputs	Digital Input 24	True/False (True)	basic
	True/False value defining if the digital input 24 is normally closed. If this digital input is not in this default state, the related alarm is set.				
150	Digital Input 25 Name	Digital Inputs	Digital Input 25	Digital Inputs	basic
	The name of the digital input 25.				
151	Digital Input 25 Normally Closed	Digital Inputs	Digital Input 25	True/False (True)	basic
	True/False value defining if the digital input 25 is normally closed. If this digital input is not in this default state, the related alarm is set.				

Config Table						
152	Digital Input 26 Name	Digital Inputs	Digital Input 26		Digital Inputs	basic
	The name of the digital input 26.					
153	Digital Input 26 Normally Closed	Digital Inputs	Digital Input 26		True/False (True)	basic
	True/False value defining if the digital input 26 is normally closed. If this digital input is not in this default state, the related alarm is set.					
154	Digital Input 27 Name	Digital Inputs	Digital Input 27		Digital Inputs	basic
	The name of the digital input 27.					
155	Digital Input 27 Normally Closed	Digital Inputs	Digital Input 27		True/False (True)	basic
	True/False value defining if the digital input 27 is normally closed. If this digital input is not in this default state, the related alarm is set.					
156	Digital Input 28 Name	Digital Inputs	Digital Input 28		Digital Inputs	basic
	The name of the digital input 28.					
157	Digital Input 28 Normally Closed	Digital Inputs	Digital Input 28		True/False (True)	basic
	True/False value defining if the digital input 28 is normally closed. If this digital input is not in this default state, the related alarm is set.					
158	Digital Input 29 Name	Digital Inputs	Digital Input 29		Digital Inputs	basic
	The name of the digital input 29.					
159	Digital Input 29 Normally Closed	Digital Inputs	Digital Input 29		True/False (True)	basic
	True/False value defining if the digital input 29 is normally closed. If this digital input is not in this default state, the related alarm is set.					
160	Digital Input 30 Name	Digital Inputs	Digital Input 30		Digital Inputs	basic
	The name of the digital input 30.					
161	Digital Input 30 Normally Closed	Digital Inputs	Digital Input 30		True/False (True)	basic
	True/False value defining if the digital input 30 is normally closed. If this digital input is not in this default state, the related alarm is set.					
162	Digital Input 31 Name	Digital Inputs	Digital Input 31		Digital Inputs	basic
	The name of the digital input 31.					
163	Digital Input 31 Normally Closed	Digital Inputs	Digital Input 31		True/False (True)	basic
	True/False value defining if the digital input 31 is normally closed. If this digital input is not in this default state, the related alarm is set.					
164	Digital Input 32	Digital	Digital Input		Digital Inputs	basic

Config Table						
	Name	Inputs	32			
	The name of the digital input 32.					
165	Digital Input 32 Normally Closed	Digital Inputs	Digital Input 32		True/False (True)	basic
	True/False value defining if the digital input 32 is normally closed. If this digital input is not in this default state, the related alarm is set.					
166	Digital Input 33 Name	Digital Inputs	Digital Input 33		Digital Inputs	basic
	The name of the digital input 33.					
167	Digital Input 33 Normally Closed	Digital Inputs	Digital Input 33		True/False (True)	basic
	True/False value defining if the digital input 33 is normally closed. If this digital input is not in this default state, the related alarm is set.					
168	Digital Input 34 Name	Digital Inputs	Digital Input 34		Digital Inputs	basic
	The name of the digital input 34.					
169	Digital Input 34 Normally Closed	Digital Inputs	Digital Input 34		True/False (True)	basic
	True/False value defining if the digital input 34 is normally closed. If this digital input is not in this default state, the related alarm is set.					
170	Digital Input 35 Name	Digital Inputs	Digital Input 35		Digital Inputs	basic
	The name of the digital input 35.					
171	Digital Input 35 Normally Closed	Digital Inputs	Digital Input 35		True/False (True)	basic
	True/False value defining if the digital input 35 is normally closed. If this digital input is not in this default state, the related alarm is set.					
172	Digital Input 36 Name	Digital Inputs	Digital Input 36		Digital Inputs	basic
	The name of the digital input 36.					
173	Digital Input 36 Normally Closed	Digital Inputs	Digital Input 36		True/False (True)	basic
	True/False value defining if the digital input 36 is normally closed. If this digital input is not in this default state, the related alarm is set.					
174	Digital Input 37 Name	Digital Inputs	Digital Input 37		Digital Inputs	basic
	The name of the digital input 37.					
175	Digital Input 37 Normally Closed	Digital Inputs	Digital Input 37		True/False (True)	basic
	True/False value defining if the digital input 37 is normally closed. If this digital input is not in this default state, the related alarm is set.					
176	Digital Input 38 Name	Digital Inputs	Digital Input 38		Digital Inputs	basic

Config Table

	The name of the digital input 38.				
177	Digital Input 38 Normally Closed	Digital Inputs	Digital Input 38	True/False (True)	basic
	True/False value defining if the digital input 38 is normally closed. If this digital input is not in this default state, the related alarm is set.				
178	Digital Input 39 Name	Digital Inputs	Digital Input 39	Digital Inputs	basic
	The name of the digital input 39.				
179	Digital Input 39 Normally Closed	Digital Inputs	Digital Input 39	True/False (True)	basic
	True/False value defining if the digital input 39 is normally closed. If this digital input is not in this default state, the related alarm is set.				
180	Digital Input 40 Name	Digital Inputs	Digital Input 40	Digital Inputs	basic
	The name of the digital input 40.				
181	Digital Input 40 Normally Closed	Digital Inputs	Digital Input 40	True/False (True)	basic
	True/False value defining if the digital input 40 is normally closed. If this digital input is not in this default state, the related alarm is set.				
182	Digital Input 41 Name	Digital Inputs	Digital Input 41	Digital Inputs	basic
	The name of the digital input 41.				
183	Digital Input 41 Normally Closed	Digital Inputs	Digital Input 41	True/False (True)	basic
	True/False value defining if the digital input 41 is normally closed. If this digital input is not in this default state, the related alarm is set.				
184	Digital Input 42 Name	Digital Inputs	Digital Input 42	Digital Inputs	basic
	The name of the digital input 42.				
185	Digital Input 42 Normally Closed	Digital Inputs	Digital Input 42	True/False (True)	basic
	True/False value defining if the digital input 42 is normally closed. If this digital input is not in this default state, the related alarm is set.				
186	Digital Input 43 Name	Digital Inputs	Digital Input 43	Digital Inputs	basic
	The name of the digital input 43.				
187	Digital Input 43 Normally Closed	Digital Inputs	Digital Input 43	True/False (True)	basic
	True/False value defining if the digital input 43 is normally closed. If this digital input is not in this default state, the related alarm is set.				
188	Digital Input 44 Name	Digital Inputs	Digital Input 44	Digital Inputs	basic
	The name of the digital input 44.				

Config Table						
189	Digital Input 44 Normally Closed	Digital Inputs	Digital Input 44		True/False (True)	basic
	True/False value defining if the digital input 44 is normally closed. If this digital input is not in this default state, the related alarm is set.					
190	Digital Input 45 Name	Digital Inputs	Digital Input 45		Digital Inputs	basic
	The name of the digital input 45.					
191	Digital Input 45 Normally Closed	Digital Inputs	Digital Input 45		True/False (True)	basic
	True/False value defining if the digital input 45 is normally closed. If this digital input is not in this default state, the related alarm is set.					
192	Digital Input 46 Name	Digital Inputs	Digital Input 46		Digital Inputs	basic
	The name of the digital input 46.					
193	Digital Input 46 Normally Closed	Digital Inputs	Digital Input 46		True/False (True)	basic
	True/False value defining if the digital input 46 is normally closed. If this digital input is not in this default state, the related alarm is set.					
194	Digital Input 47 Name	Digital Inputs	Digital Input 47		Digital Inputs	basic
	The name of the digital input 47.					
195	Digital Input 47 Normally Closed	Digital Inputs	Digital Input 47		True/False (True)	basic
	True/False value defining if the digital input 47 is normally closed. If this digital input is not in this default state, the related alarm is set.					
196	Digital Input 48 Name	Digital Inputs	Digital Input 48		Digital Inputs	basic
	The name of the digital input 48.					
197	Digital Input 48 Normally Closed	Digital Inputs	Digital Input 48		True/False (True)	basic
	True/False value defining if the digital input 48 is normally closed. If this digital input is not in this default state, the related alarm is set.					
198	Digital Input 49 Name	Digital Inputs	Digital Input 49		Digital Inputs	basic
	The name of the digital input 49.					
199	Digital Input 49 Normally Closed	Digital Inputs	Digital Input 49		True/False (True)	basic
	True/False value defining if the digital input 49 is normally closed. If this digital input is not in this default state, the related alarm is set.					
200	Digital Input 50 Name	Digital Inputs	Digital Input 50		Digital Inputs	basic
	The name of the digital input 50.					
201	Digital Input 50	Digital	Digital Input		True/False (True)	basic

Config Table						
	Normally Closed	Inputs	50			
	True/False value defining if the digital input 50 is normally closed. If this digital input is not in this default state, the related alarm is set.					
202	Digital Input 51 Name	Digital Inputs	Digital Input 51		Digital Inputs	basic
	The name of the digital input 51.					
203	Digital Input 51 Normally Closed	Digital Inputs	Digital Input 51		True/False (True)	basic
	True/False value defining if the digital input 51 is normally closed. If this digital input is not in this default state, the related alarm is set.					
204	Digital Input 52 Name	Digital Inputs	Digital Input 52		Digital Inputs	basic
	The name of the digital input 52.					
205	Digital Input 52 Normally Closed	Digital Inputs	Digital Input 52		True/False (True)	basic
	True/False value defining if the digital input 52 is normally closed. If this digital input is not in this default state, the related alarm is set.					
206	Digital Input 53 Name	Digital Inputs	Digital Input 53		Digital Inputs	basic
	The name of the digital input 53.					
207	Digital Input 53 Normally Closed	Digital Inputs	Digital Input 53		True/False (True)	basic
	True/False value defining if the digital input 53 is normally closed. If this digital input is not in this default state, the related alarm is set.					
208	Digital Input 54 Name	Digital Inputs	Digital Input 54		Digital Inputs	basic
	The name of the digital input 54.					
209	Digital Input 54 Normally Closed	Digital Inputs	Digital Input 54		True/False (True)	basic
	True/False value defining if the digital input 54 is normally closed. If this digital input is not in this default state, the related alarm is set.					
210	Digital Input 55 Name	Digital Inputs	Digital Input 55		Digital Inputs	basic
	The name of the digital input 55.					
211	Digital Input 55 Normally Closed	Digital Inputs	Digital Input 55		True/False (True)	basic
	True/False value defining if the digital input 55 is normally closed. If this digital input is not in this default state, the related alarm is set.					
212	Digital Input 56 Name	Digital Inputs	Digital Input 56		Digital Inputs	basic
	The name of the digital input 56.					
213	Digital Input 56 Normally Closed	Digital Inputs	Digital Input 56		True/False (True)	basic

Config Table

	True/False value defining if the digital input 56 is normally closed. If this digital input is not in this default state, the related alarm is set.				
214	Digital Input 57 Name	Digital Inputs	Digital Input 57	Digital Inputs	basic
	The name of the digital input 57.				
215	Digital Input 57 Normally Closed	Digital Inputs	Digital Input 57	True/False (True)	basic
	True/False value defining if the digital input 57 is normally closed. If this digital input is not in this default state, the related alarm is set.				
216	Digital Input 58 Name	Digital Inputs	Digital Input 58	Digital Inputs	basic
	The name of the digital input 58.				
217	Digital Input 58 Normally Closed	Digital Inputs	Digital Input 58	True/False (True)	basic
	True/False value defining if the digital input 58 is normally closed. If this digital input is not in this default state, the related alarm is set.				
218	Digital Input 59 Name	Digital Inputs	Digital Input 59	Digital Inputs	basic
	The name of the digital input 59.				
219	Digital Input 59 Normally Closed	Digital Inputs	Digital Input 59	True/False (True)	basic
	True/False value defining if the digital input 59 is normally closed. If this digital input is not in this default state, the related alarm is set.				
220	Digital Input 60 Name	Digital Inputs	Digital Input 60	Digital Inputs	basic
	The name of the digital input 60.				
221	Digital Input 60 Normally Closed	Digital Inputs	Digital Input 60	True/False (True)	basic
	True/False value defining if the digital input 60 is normally closed. If this digital input is not in this default state, the related alarm is set.				
222	Digital Input 61 Name	Digital Inputs	Digital Input 61	Digital Inputs	basic
	The name of the digital input 61.				
223	Digital Input 61 Normally Closed	Digital Inputs	Digital Input 61	True/False (True)	basic
	True/False value defining if the digital input 61 is normally closed. If this digital input is not in this default state, the related alarm is set.				
224	Digital Input 62 Name	Digital Inputs	Digital Input 62	Digital Inputs	basic
	The name of the digital input 62.				
225	Digital Input 62 Normally Closed	Digital Inputs	Digital Input 62	True/False (True)	basic
	True/False value defining if the digital input 62 is normally closed. If this digital input				

Config Table

	input is not in this default state, the related alarm is set.				
226	Digital Input 63 Name	Digital Inputs	Digital Input 63	Digital Inputs	basic
	The name of the digital input 63.				
227	Digital Input 63 Normally Closed	Digital Inputs	Digital Input 63	True/False (True)	basic
	True/False value defining if the digital input 63 is normally closed. If this digital input is not in this default state, the related alarm is set.				
228	Digital Input 64 Name	Digital Inputs	Digital Input 64	Digital Inputs	basic
	The name of the digital input 64.				
229	Digital Input 64 Normally Closed	Digital Inputs	Digital Input 64	True/False (True)	basic
	True/False value defining if the digital input 64 is normally closed. If this digital input is not in this default state, the related alarm is set.				
521	Read Access User Numbers	Generic	Allowed Users	(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4				
522	Write Access User Numbers	Generic	Allowed Users	()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4				
601	Event Table Length	Generic	Events	10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000				
901	Number Of PLC Data	PLC		(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module				
902	Number Of PLC Alarm	PLC		(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module				

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

4.10. BIOM

Device Information	
Name	BIOM
Short Description	COMP@S BASIC I/O MODULE SYS BIOM
Long Description	12 Digital Inputs, 4 output relay, 2 temperature sensors
Hardware Reference	9413 060 05051
Software Reference	SOFT 000037 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic

Description Table

	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
71	Digital Input 1	Digital Inputs	Digital Input 1	warning (0)	5 / 2
	The name of the digital input 1 alarm.				
72	Digital Input 2	Digital Inputs	Digital Input 2	warning (0)	5 / 2
	The name of the digital input 2 alarm.				
73	Digital Input 3	Digital Inputs	Digital Input 3	warning (0)	5 / 2
	The name of the digital input 3 alarm.				
74	Digital Input 4	Digital Inputs	Digital Input 4	warning (0)	5 / 2
	The name of the digital input 4 alarm.				
75	Digital Input 5	Digital Inputs	Digital Input 5	warning (0)	5 / 2
	The name of the digital input 5 alarm.				
76	Digital Input 6	Digital Inputs	Digital Input 6	warning (0)	5 / 2
	The name of the digital input 6 alarm.				
77	Digital Input 7	Digital Inputs	Digital Input 7	warning (0)	5 / 2
	The name of the digital input 7 alarm.				
78	Digital Input 8	Digital Inputs	Digital Input 8	warning (0)	5 / 2
	The name of the digital input 8 alarm.				
79	Digital Input 9	Digital Inputs	Digital Input 9	warning (0)	5 / 2
	The name of the digital input 9 alarm.				
80	Digital Input	Digital In-	Digital Input	warning (0)	5 / 2

Alarm Table

	10	puts	10		
	The name of the digital input 10 alarm.				
81	Digital Input 11	Digital Inputs	Digital Input 11	warning (0)	5 / 2
	The name of the digital input 11 alarm.				
82	Digital Input 12	Digital Inputs	Digital Input 12	warning (0)	5 / 2
	The name of the digital input 12 alarm.				

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Temperature 1	Temperature Sensors	Temperature 1	degree C	basic
	Temperature Measurement 1				
2	Temperature 2	Temperature Sensors	Temperature 2	degree C	basic
	Temperature Measurement 2				
71	Digital Input 1 State	Digital Inputs	Digital Input 1		basic
	The state of the digital input				
72	Digital Input 2 State	Digital Inputs	Digital Input 2		basic
	The state of the digital input				
73	Digital Input 3 State	Digital Inputs	Digital Input 3		basic
	The state of the digital input				
74	Digital Input 4 State	Digital Inputs	Digital Input 4		basic
	The state of the digital input				
75	Digital Input 5 State	Digital Inputs	Digital Input 5		basic
	The state of the digital input				
76	Digital Input 6 State	Digital Inputs	Digital Input 6		basic
	The state of the digital input				
77	Digital Input 7 State	Digital Inputs	Digital Input 7		basic
	The state of the digital input				
78	Digital Input 8 State	Digital Inputs	Digital Input 8		basic
	The state of the digital input				
79	Digital Input 9 State	Digital Inputs	Digital Input 9		basic
	The state of the digital input				
80	Digital Input 10 State	Digital Inputs	Digital Input 10		basic
	The state of the digital input				
81	Digital Input 11 State	Digital Inputs	Digital Input 11		basic
	The state of the digital input				
82	Digital Input 12 State	Digital Inputs	Digital Input 12		basic
	The state of the digital input				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
71	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					
72	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
73	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic
	The name of the digital input 2.					
74	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
75	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Inputs	basic
	The name of the digital input 3.					
76	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.					
77	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Inputs	basic
	The name of the digital input 4.					
78	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
79	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Inputs	basic
	The name of the digital input 5.					
80	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
81	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Inputs	basic
	The name of the digital input 6.					
82	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital					

Config Table

	input is not in this default state, the related alarm is set.				
83	Digital Input 7 Name	Digital Inputs	Digital Input 7	Digital Inputs	basic
	The name of the digital input 7.				
84	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7	True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.				
85	Digital Input 8 Name	Digital Inputs	Digital Input 8	Digital Inputs	basic
	The name of the digital input 8.				
86	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8	True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.				
87	Digital Input 9 Name	Digital Inputs	Digital Input 9	Digital Inputs	basic
	The name of the digital input 9.				
88	Digital Input 9 Normally Closed	Digital Inputs	Digital Input 9	True/False (True)	basic
	True/False value defining if the digital input 9 is normally closed. If this digital input is not in this default state, the related alarm is set.				
89	Digital Input 10 Name	Digital Inputs	Digital Input 10	Digital Inputs	basic
	The name of the digital input 10.				
90	Digital Input 10 Normally Closed	Digital Inputs	Digital Input 10	True/False (True)	basic
	True/False value defining if the digital input 10 is normally closed. If this digital input is not in this default state, the related alarm is set.				
91	Digital Input 11 Name	Digital Inputs	Digital Input 11	Digital Inputs	basic
	The name of the digital input 11.				
92	Digital Input 11 Normally Closed	Digital Inputs	Digital Input 11	True/False (True)	basic
	True/False value defining if the digital input 11 is normally closed. If this digital input is not in this default state, the related alarm is set.				
93	Digital Input 12 Name	Digital Inputs	Digital Input 12	Digital Inputs	basic
	The name of the digital input 12.				
94	Digital Input 12 Normally Closed	Digital Inputs	Digital Input 12	True/False (True)	basic
	True/False value defining if the digital input 12 is normally closed. If this digital input is not in this default state, the related alarm is set.				

Config Table

121	Relay 1 Change State Boolean Condition	Digital Outputs				basic
PLC Boolean condition to energize the relay 01						
122	Relay 2 Change State Boolean Condition	Digital Outputs				basic
PLC Boolean condition to energize the relay 11						
123	Relay 3 Change State Boolean Condition	Digital Outputs				basic
PLC Boolean condition to energize the relay 21						
124	Relay 4 Change State Boolean Condition	Digital Outputs				basic
PLC Boolean condition to energize the relay 31						
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4						
522	Write Access User Numbers	Generic	Allowed Users		()	basic
The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4						
601	Event Table Length	Generic	Events		10/4000 (100)	basic
The maximum length of the table. The value must be comprised between 10 and 4000						
901	Number Of PLC Data	PLC			(0)	plc
The number of PLC data. Every equipment can manage up to 20 user program-mable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module						
902	Number Of PLC Alarm	PLC			(0)	plc
The number of PLC alarm. Every equipment can manage up to 20 user program-mable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module						

Control Table

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

4.11. SAM0348

Device Information	
Name	SAM0348
Short Description	Site management card
Long Description	Site and infrastructure management card, 2 connections (RJ25) for card reader and door lock and 1 I/O connector (Sub-D26) - 300W systems
Hardware Reference	9413 060 35001
Software Reference	SOFT 000136 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			

Description Table				
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	Cabinet Temperature High			major (6)	5 / 2
	The temperature of the cabinet is too high.				
2	Cabinet Temperature Low			major (6)	5 / 2
	The temperature of the cabinet is too low.				
3	Cabinet Temperature Sensor Fail			minor (4)	5 / 2
	The cabinet temperature sense is defect.				
11	Cabinet Humidity High			major (6)	5 / 2
	The cabinet humidity is too high				
12	Cabinet Humidity Low			major (6)	5 / 2
	The cabinet humidity is too low				
21	Water Detection Alarm			major (6)	5 / 2
	Water is detected by the water sensor.				
31	Tilt X Alarm			major (6)	5 / 2
	The X-tilt absolute value is too high				
32	Tilt Y Alarm			major (6)	5 / 2
	The Y-tilt absolute value is too high				
41	Vandalism Alarm			major (6)	5 / 2
	The vandalism score is too high				
51	Badge Reader Failure			major (6)	5 / 2

Alarm Table				
	The badge reader is defect or not connected			
71	Digital Input 1	Digital Inputs	Digital Input 1	warning (0) 5 / 2
	The name of the digital input 1 alarm.			
72	Digital Input 2	Digital Inputs	Digital Input 2	warning (0) 5 / 2
	The name of the digital input 2 alarm.			
73	Digital Input 3	Digital Inputs	Digital Input 3	warning (0) 5 / 2
	The name of the digital input 3 alarm.			
74	Digital Input 4	Digital Inputs	Digital Input 4	warning (0) 5 / 2
	The name of the digital input 4 alarm.			
75	Digital Input 5	Digital Inputs	Digital Input 5	warning (0) 5 / 2
	The name of the digital input 5 alarm.			
76	Digital Input 6	Digital Inputs	Digital Input 6	warning (0) 5 / 2
	The name of the digital input 6 alarm.			
77	Digital Input 7	Digital Inputs	Digital Input 7	warning (0) 5 / 2
	The name of the digital input 7 alarm.			
78	Digital Input 8	Digital Inputs	Digital Input 8	warning (0) 5 / 2
	The name of the digital input 8 alarm.			
79	Digital Input 9	Digital Inputs	Digital Input 9	warning (0) 5 / 2
	The name of the digital input 9 alarm.			
80	Digital Input 10	Digital Inputs	Digital Input 10	warning (0) 5 / 2
	The name of the digital input 10 alarm.			

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Cabinet Temperature	Sensors		degree C	basic
The temperature in the cabinet					
11	Relative Humidity	Sensors		%	basic
The relative humidity in the cabinet					
21	Tilt X	Sensors		degree	basic
The tilt-X value					
22	Tilt Y	Sensors		degree	basic

Data Table						
	The tilt-Y value					
31	Vandalism Score	Sensors				basic
	The vandalism score. This depends of the cabinet acceleration over time.					
41	Last UID Badge Reader	Badge Reader				basic
	The last uid value read by the badge reader					
42	Last Time Badge Reader	Badge Reader				basic
	The date and time at which the badge reader has been used					
52	Lock 1 Open	Access Control 1				basic
	The lock 1 is mechanically closed					
53	Lock 1 Enabled	Access Control 1				basic
	The access control 1 is enabling the electronic lock 1					
62	Lock 2 Open	Access Control 2				basic
	The lock 2 is mechanically closed					
63	Lock 2 Enabled	Access Control 2				basic
	The access control 2 is enabling the electronic lock 2					
71	Digital Input 1 State	Digital Inputs	Digital Input 1			basic
	The state of the digital input					
72	Digital Input 2 State	Digital Inputs	Digital Input 2			basic
	The state of the digital input					
73	Digital Input 3 State	Digital Inputs	Digital Input 3			basic
	The state of the digital input					
74	Digital Input 4 State	Digital Inputs	Digital Input 4			basic
	The state of the digital input					
75	Digital Input 5 State	Digital Inputs	Digital Input 5			basic
	The state of the digital input					
76	Digital Input 6 State	Digital Inputs	Digital Input 6			basic
	The state of the digital input					
77	Digital Input 7 State	Digital Inputs	Digital Input 7			basic
	The state of the digital input					
78	Digital Input 8 State	Digital Inputs	Digital Input 8			basic
	The state of the digital input					
79	Digital Input 9 State	Digital Inputs	Digital Input 9			basic
	The state of the digital input					
80	Digital Input 10 State	Digital Inputs	Digital Input 10			basic
	The state of the digital input					

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>

Config Table						
1	Cabinet Temperature High	Alarm Parameters		degree C	-50/100 (50)	basic
	The temperature over which the cabinet temperature is too high					
2	Cabinet Temperature Low	Alarm Parameters		degree C	-50/100 (-5)	basic
	The temperature under which the cabinet temperature is too low					
3	Temperature Hysteresis	Alarm Parameters		degree C	0/20 (1)	basic
	The hysteresis on the temperature alarm					
11	Cabinet Humidity High	Alarm Parameters		%	0/100 (80)	basic
	The relative humidity over which the cabinet humidity is too high					
12	Cabinet Humidity Low	Alarm Parameters		%	0/100 (0)	basic
	The relative humidity over which the cabinet humidity is too low					
13	Humidity Alarm Hysteresis	Alarm Parameters		%	0/50 (2)	basic
	The hysteresis on the humidity alarms, in percent					
21	Tilt X High	Alarm Parameters		degree	0/90 (10)	basic
	The maximum absolute tilt-X value allowed for the cabinet					
22	Tilt Y High	Alarm Parameters		degree	0/90 (10)	basic
	The maximum absolute tilt-Y value allowed for the cabinet					
23	Tilt Alarm Hysteresis	Alarm Parameters		degree	0/45 (2)	basic
	The hysteresis on tilt X/Y alarms					
31	Vandalism Detection Threshold	Alarm Parameters				basic
	The maximum vandalism score allowed for the cabinet.					
41	Access Control 1 Enabled	Access Control 1			True/False (False)	basic
	The access control 1 is enabled. The electronic lock 1 must be managed.					
42	Access Control 1 Authorized UID	Access Control 1				basic
	Coma separated list of the UID allowed to disable the electronic lock 1					
43	Access Control 1 Auto Close Time	Access Control 1		second	0/1000 (30)	basic
	Time in second after which the electronic lock 1 must be automatically locked again					
44	Access Control 1 Disabled If Badge Reader Failure	Access Control 1			True/False (True)	basic

Config Table

	The electronic lock 1 must be disabled if the 'Badge reader failure' alarm is set.					
45	Access Control 1 Doors Inputs	Access Control 1			(7,9,10)	basic
	This is the coma separated list of the digital inputs which are door contacts related to the access control 1					
51	Access Control 2 Enabled	Access Control 2			True/False (False)	basic
	The access control 2 is enabled. The electronic lock 2 must be managed.					
52	Access Control 2 Authorized UID	Access Control 2				basic
	Coma separated list of the UID allowed to disable the electronic lock 2					
53	Access Control 2 Auto Close Time	Access Control 2		second	0/1000 (30)	basic
	Time in second after which the electronic lock 2 must be automatically locked again					
54	Access Control 2 Disabled If Badge Reader Failure	Access Control 2			True/False (True)	basic
	The electronic lock 1 must be disabled if the 'Badge reader failure' alarm is set.					
55	Access Control 2 Doors Inputs	Access Control 2			(8)	basic
	This is the coma separated list of the digital inputs which are door contacts related to the access control 2					
71	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					
72	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
73	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic
	The name of the digital input 2.					
74	Digital Input 2 Normally Closed	Digital Inputs	Digital Input 2		True/False (True)	basic
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.					
75	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Inputs	basic
	The name of the digital input 3.					
76	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3		True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital					

Config Table

	input is not in this default state, the related alarm is set.					
77	Digital Input 4 Name	Digital Inputs	Digital Input 4		Digital Inputs	basic
	The name of the digital input 4.					
78	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4		True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.					
79	Digital Input 5 Name	Digital Inputs	Digital Input 5		Digital Inputs	basic
	The name of the digital input 5.					
80	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5		True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.					
81	Digital Input 6 Name	Digital Inputs	Digital Input 6		Digital Inputs	basic
	The name of the digital input 6.					
82	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6		True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.					
83	Digital Input 7 Name	Digital Inputs	Digital Input 7		Digital Inputs	basic
	The name of the digital input 7.					
84	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7		True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.					
85	Digital Input 8 Name	Digital Inputs	Digital Input 8		Digital Inputs	basic
	The name of the digital input 8.					
86	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8		True/False (True)	basic
	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
87	Digital Input 9 Name	Digital Inputs	Digital Input 9		Digital Inputs	basic
	The name of the digital input 9.					
88	Digital Input 9 Normally Closed	Digital Inputs	Digital Input 9		True/False (True)	basic
	True/False value defining if the digital input 9 is normally closed. If this digital input is not in this default state, the related alarm is set.					

Config Table						
89	Digital Input 10 Name	Digital Inputs	Digital Input 10		Digital Inputs	basic
	The name of the digital input 10.					
90	Digital Input 10 Normally Closed	Digital Inputs	Digital Input 10		True/False (True)	basic
	True/False value defining if the digital input 10 is normally closed. If this digital input is not in this default state, the related alarm is set.					
121	Digital Output Relay 1 Energized Boolean Condition	Relays	Relay 1			basic
	PLC Boolean condition to energize the relay 1					
150	RS485 configuration	RS485 configuration	RS485 modbus device			metering
	The list of connected RS485 node. The device need to be supported.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with the 'PLC' module					
902	Number Of PLC Alarm	PLC			(0)	plc
	The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Unlock Door 1	Lock Control		basic
	Electronic lock 1 must be disabled			
2	Unlock Door 2	Lock Control		basic
	Electronic lock 2 must be disabled			
11	Lock Door 1	Lock Control		basic
	Electronic lock 1 must be enabled			
12	Lock Door 2	Lock Control		basic
	Electronic lock 2 must be enabled			
31	Auto Calibrate Tilt Zero	Calibration		basic
	The tilt-X and tilt-Y must be calibrated to 0 with the actual tilt.			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

4.12. SAM0948

Device Information	
Name	SAM0948
Short Description	Site management card
Long Description	Site and infrastructure management card, 2 connections (RJ25) for card reader and door lock and 1 I/O connector (Sub-D26) - Captin FA and Captin BW lines
Hardware Reference	9413 060 95131

Software Reference	SOFT 000003 XX
Equipment Type	System Extension
ETSI Level	/site/sensors_and_actuators

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Product Name	Description	Product Info	basic
	The commercial name of the extension card.			
2	Hardware Reference	Description	Product Info	basic
	The hardware refence			
3	Hardware Revision	Description	Product Info	basic
	The hardware revision			
4	Software Reference	Description	Product Info	basic
	The software reference			
6	Serial Number	Description	Product Info	basic
	The serial number.			
8	Manufacturing Date	Description	Product Info	basic
	The production date.			
11	Description	Description	Custom Description	basic
	A free text zone to write a system description			
12	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	Cabinet Temperature High			major (6)	5 / 2
	The temperature of the cabinet is too high.				
2	Cabinet Temperature Low			major (6)	5 / 2
	The temperature of the cabinet is too low.				
3	Cabinet Temperature Sensor Fail			minor (4)	5 / 2
	The cabinet temperature sense is defect.				
11	Cabinet Humidity High			major (6)	5 / 2
	The cabinet humidity is too high				
12	Cabinet Humidity Low			major (6)	5 / 2
	The cabinet humidity is too low				

Alarm Table				
21 Water Detection Alarm			major (6)	5 / 2
Water is detected by the water sensor.				
31 Tilt X Alarm			major (6)	5 / 2
The X-tilt absolute value is too high				
32 Tilt Y Alarm			major (6)	5 / 2
The Y-tilt absolute value is too high				
41 Vandalism Alarm			major (6)	5 / 2
The vandalism score is too high				
51 Badge Reader Failure			major (6)	5 / 2
The badge reader is defect or not connected				
71 Digital Input 1	Digital Inputs	Digital Input 1	warning (0)	5 / 2
The name of the digital input 1 alarm.				
72 Digital Input 2	Digital Inputs	Digital Input 2	warning (0)	5 / 2
The name of the digital input 2 alarm.				
73 Digital Input 3	Digital Inputs	Digital Input 3	warning (0)	5 / 2
The name of the digital input 3 alarm.				
74 Digital Input 4	Digital Inputs	Digital Input 4	warning (0)	5 / 2
The name of the digital input 4 alarm.				
75 Digital Input 5	Digital Inputs	Digital Input 5	warning (0)	5 / 2
The name of the digital input 5 alarm.				
76 Digital Input 6	Digital Inputs	Digital Input 6	warning (0)	5 / 2
The name of the digital input 6 alarm.				
77 Digital Input 7	Digital Inputs	Digital Input 7	warning (0)	5 / 2
The name of the digital input 7 alarm.				
78 Digital Input 8	Digital Inputs	Digital Input 8	warning (0)	5 / 2
The name of the digital input 8 alarm.				
79 Digital Input 9	Digital Inputs	Digital Input 9	warning (0)	5 / 2
The name of the digital input 9 alarm.				
80 Digital Input 10	Digital Inputs	Digital Input 10	warning (0)	5 / 2
The name of the digital input 10 alarm.				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Cabinet Temperature	Sensors		degree C	basic
	The temperature in the cabinet				
11	Relative Humidity	Sensors		%	basic
	The relative humidity in the cabinet				
21	Tilt X	Sensors		degree	basic
	The tilt-X value				
22	Tilt Y	Sensors		degree	basic
	The tilt-Y value				
31	Vandalism Score	Sensors			basic
	The vandalism score. This depends of the cabinet acceleration over time.				
41	Last UID Badge Reader	Badge Reader			basic
	The last uid value read by the badge reader				
42	Last Time Badge Reader	Badge Reader			basic
	The date and time at which the badge reader has been used				
52	Lock 1 Open	Access Control 1			basic
	The lock 1 is mechanically closed				
53	Lock 1 Enabled	Access Control 1			basic
	The access control 1 is enabling the electronic lock 1				
62	Lock 2 Open	Access Control 2			basic
	The lock 2 is mechanically closed				
63	Lock 2 Enabled	Access Control 2			basic
	The access control 2 is enabling the electronic lock 2				
71	Digital Input 1 State	Digital Inputs	Digital Input 1		basic
	The state of the digital input				
72	Digital Input 2 State	Digital Inputs	Digital Input 2		basic
	The state of the digital input				
73	Digital Input 3 State	Digital Inputs	Digital Input 3		basic
	The state of the digital input				
74	Digital Input 4 State	Digital Inputs	Digital Input 4		basic
	The state of the digital input				
75	Digital Input 5 State	Digital Inputs	Digital Input 5		basic
	The state of the digital input				
76	Digital Input 6 State	Digital Inputs	Digital Input 6		basic
	The state of the digital input				
77	Digital Input 7 State	Digital Inputs	Digital Input 7		basic
	The state of the digital input				
78	Digital Input 8 State	Digital Inputs	Digital Input 8		basic
	The state of the digital input				
79	Digital Input 9 State	Digital Inputs	Digital Input 9		basic

Data Table

	The state of the digital input				
80 Digital Input 10 State	Digital Inputs	Digital Input 10			basic
	The state of the digital input				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	Cabinet Temperature High	Alarm Parameters		degree C	-50/100 (50)	basic
	The temperature over which the cabinet temperature is too high					
2	Cabinet Temperature Low	Alarm Parameters		degree C	-50/100 (-5)	basic
	The temperature under which the cabinet temperature is too low					
3	Temperature Hysteresis	Alarm Parameters		degree C	0/20 (1)	basic
	The hysteresis on the temperature alarm					
11	Cabinet Humidity High	Alarm Parameters		%	0/100 (80)	basic
	The relative humidity over which the cabinet humidity is too high					
12	Cabinet Humidity Low	Alarm Parameters		%	0/100 (0)	basic
	The relative humidity over which the cabinet humidity is too low					
13	Humidity Alarm Hysteresis	Alarm Parameters		%	0/50 (2)	basic
	The hysteresis on the humidity alarms, in percent					
21	Tilt X High	Alarm Parameters		degree	0/90 (10)	basic
	The maximum absolute tilt-X value allowed for the cabinet					
22	Tilt Y High	Alarm Parameters		degree	0/90 (10)	basic
	The maximum absolute tilt-Y value allowed for the cabinet					
23	Tilt Alarm Hysteresis	Alarm Parameters		degree	0/45 (2)	basic
	The hysteresis on tilt X/Y alarms					
31	Vandalism Detection Threshold	Alarm Parameters				basic
	The maximum vandalism score allowed for the cabinet.					
41	Access Control 1 Enabled	Access Control 1			True/False (False)	basic
	The access control 1 is enabled. The electronic lock 1 must be managed.					
42	Access Control 1	Access Control				basic

Config Table

	Authorized UID	1				
	Coma separated list of the UID allowed to disable the electronic lock 1					
43	Access Control 1 Auto Close Time	Access Control 1		second	0/1000 (30)	basic
	Time in second after which the electronic lock 1 must be automatically locked again					
44	Access Control 1 Disabled If Badge Reader Failure	Access Control 1			True/False (True)	basic
	The electronic lock 1 must be disabled if the 'Badge reader failure' alarm is set.					
45	Access Control 1 Doors Inputs	Access Control 1			(7,9,10)	basic
	This is the coma separated list of the digital inputs which are door contacts related to the access control 1					
51	Access Control 2 Enabled	Access Control 2			True/False (False)	basic
	The access control 2 is enabled. The electronic lock 2 must be managed.					
52	Access Control 2 Authorized UID	Access Control 2				basic
	Coma separated list of the UID allowed to disable the electronic lock 2					
53	Access Control 2 Auto Close Time	Access Control 2		second	0/1000 (30)	basic
	Time in second after which the electronic lock 2 must be automatically locked again					
54	Access Control 2 Disabled If Badge Reader Failure	Access Control 2			True/False (True)	basic
	The electronic lock 1 must be disabled if the 'Badge reader failure' alarm is set.					
55	Access Control 2 Doors Inputs	Access Control 2			(8)	basic
	This is the coma separated list of the digital inputs which are door contacts related to the access control 2					
71	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Inputs	basic
	The name of the digital input 1.					
72	Digital Input 1 Normally Closed	Digital Inputs	Digital Input 1		True/False (True)	basic
	True/False value defining if the digital input 1 is normally closed. If this digital input is not in this default state, the related alarm is set.					
73	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Inputs	basic
	The name of the digital input 2.					
74	Digital Input 2	Digital Inputs	Digital In-		True/False	basic

Config Table

	Normally Closed		put 2	(True)	
	True/False value defining if the digital input 2 is normally closed. If this digital input is not in this default state, the related alarm is set.				
75	Digital Input 3 Name	Digital Inputs	Digital Input 3	Digital Inputs	basic
	The name of the digital input 3.				
76	Digital Input 3 Normally Closed	Digital Inputs	Digital Input 3	True/False (True)	basic
	True/False value defining if the digital input 3 is normally closed. If this digital input is not in this default state, the related alarm is set.				
77	Digital Input 4 Name	Digital Inputs	Digital Input 4	Digital Inputs	basic
	The name of the digital input 4.				
78	Digital Input 4 Normally Closed	Digital Inputs	Digital Input 4	True/False (True)	basic
	True/False value defining if the digital input 4 is normally closed. If this digital input is not in this default state, the related alarm is set.				
79	Digital Input 5 Name	Digital Inputs	Digital Input 5	Digital Inputs	basic
	The name of the digital input 5.				
80	Digital Input 5 Normally Closed	Digital Inputs	Digital Input 5	True/False (True)	basic
	True/False value defining if the digital input 5 is normally closed. If this digital input is not in this default state, the related alarm is set.				
81	Digital Input 6 Name	Digital Inputs	Digital Input 6	Digital Inputs	basic
	The name of the digital input 6.				
82	Digital Input 6 Normally Closed	Digital Inputs	Digital Input 6	True/False (True)	basic
	True/False value defining if the digital input 6 is normally closed. If this digital input is not in this default state, the related alarm is set.				
83	Digital Input 7 Name	Digital Inputs	Digital Input 7	Digital Inputs	basic
	The name of the digital input 7.				
84	Digital Input 7 Normally Closed	Digital Inputs	Digital Input 7	True/False (True)	basic
	True/False value defining if the digital input 7 is normally closed. If this digital input is not in this default state, the related alarm is set.				
85	Digital Input 8 Name	Digital Inputs	Digital Input 8	Digital Inputs	basic
	The name of the digital input 8.				
86	Digital Input 8 Normally Closed	Digital Inputs	Digital Input 8	True/False (True)	basic

Config Table

	True/False value defining if the digital input 8 is normally closed. If this digital input is not in this default state, the related alarm is set.					
87	Digital Input 9 Name	Digital Inputs	Digital Input 9		Digital Inputs	basic
	The name of the digital input 9.					
88	Digital Input 9 Normally Closed	Digital Inputs	Digital Input 9		True/False (True)	basic
	True/False value defining if the digital input 9 is normally closed. If this digital input is not in this default state, the related alarm is set.					
89	Digital Input 10 Name	Digital Inputs	Digital Input 10		Digital Inputs	basic
	The name of the digital input 10.					
90	Digital Input 10 Normally Closed	Digital Inputs	Digital Input 10		True/False (True)	basic
	True/False value defining if the digital input 10 is normally closed. If this digital input is not in this default state, the related alarm is set.					
121	Digital Output Relay 1 Energized Boolean Condition	Relays	Relay 1			basic
	PLC Boolean condition to energize the relay 1					
150	RS485 configuration	RS485 configuration	RS485 modbus device			metering
	The list of connected RS485 node. The device need to be supported.					
521	Read Access User Numbers	Generic	Allowed Users		(1,2,3,4,5)	basic
	The list of the user numbers which have read access to this equipment. The user numbers are coma separated. The accepted user id are 1,2,3,4 and 5. Ex: 1,3,4					
522	Write Access User Numbers	Generic	Allowed Users		()	basic
	The list of the user numbers which have write access to this equipment. This means that these users can modify the configuration element, the alarm settings and use the control elements. The user numbers are coma separated. The accepted user ids are 1,2,3,4 and 5. Ex: 1,3,4					
601	Event Table Length	Generic	Events		10/4000 (100)	basic
	The maximum length of the table. The value must be comprised between 10 and 4000					
901	Number Of PLC Data	PLC			(0)	plc
	The number of PLC data. Every equipment can manage up to 20 user programmable data. Data elements are automatically added in the data table. Configuration parameters are added to set the PLC Data Name and the PLC Data Mathematical calculation. In order to use these functionalities, you need a license with					

Config Table

	the 'PLC' module				
902	Number Of PLC Alarm	PLC		(0)	plc
The number of PLC alarm. Every equipment can manage up to 20 user programmable alarms. Alarm elements are automatically added in the alarm table. The alarm parameters are added to set the PLC Alarm Name and the PLC Alarm Boolean condition. In order to use these functionalities, you need a licence with the 'PLC' module					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Unlock Door 1	Lock Control		basic
Electronic lock 1 must be disabled				
2	Unlock Door 2	Lock Control		basic
Electronic lock 2 must be disabled				
11	Lock Door 1	Lock Control		basic
Electronic lock 1 must be enabled				
12	Lock Door 2	Lock Control		basic
Electronic lock 2 must be enabled				
31	Auto Calibrate Tilt Zero	Calibration		basic
The tilt-X and tilt-Y must be calibrated to 0 with the actual tilt.				
501	Clear My Events	Generic	Events	basic
By writing '1' to this control element, all the events of this equipment will be cleared.				
502	Clear All Events	Generic	Events	basic
By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.				
511	Add Event	Generic	Events	basic
This control element adds an event of severity none. The event name is the text written to this control element				
512	Add Major Event	Generic	Events	basic
This control element adds an event of severity major. The event name is the text written to this control element				
521	Reset Default Names And Groups	Generic	Renaming	basic
This control element resets all the element Names, Groups and Subgroups to default values for this equipment				
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments				

5. Remote Power Feeding System Tables

5.1. CEM03 Remote Power Feeding_System

Device Information	
Name	CEM03 Remote Power Feeding_System
Short Description	Monitoring for Central Up Converter system
Long Description	Central monitoring card for 4 down converter cards with CAN IN/CAN OUT and 4 relays
Hardware Reference	9413 044 89421
Software Reference	SOFT 000022 XX
Equipment Type	Monitoring For Remote (About Remote Power Feeding System)
ETSI Level	/site/energy_system/remote_power_feeding_system

6. Up Converter System Tables

6.1. CEM03 Up Converter_System

Device Information	
Name	CEM03 Up Converter_System
Short Description	Monitoring for Central Up Converter system
Long Description	Central monitoring card for 4 down converter cards with CAN IN/CAN OUT and 4 relays
Hardware Reference	9413 044 89421
Software Reference	SOFT 000022 XX
Equipment Type	Monitoring For Remote (About Up Converter System)
ETSI Level	/site/energy_system/remote_power_feeding_system/up_converter_system

Description Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic

Description Table

	A free text zone to write the customer reference of the system			
11	Product Name	Monitoring		basic
	The product name of the DC system monitoring			
12	Hardware Reference	Monitoring		basic
	The hardware reference of the DC system monitoring			
14	Software Reference	Monitoring		asset
	The serial number of the DC system monitoring			
16	Serial Number	Monitoring		asset
	The serial number of the DC system monitoring			
18	Manufacturing Date	Monitoring		asset
	The production date of the DC system monitoring			

Alarm Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	One Up Converter Failure	Up Converters		minor (4)	5 / 2
	One Up converter is defect or not connected to a down converter (and enabled)				
2	More Than One Up Converter Failure	Up Converters		major (6)	5 / 2
	More than one Up converter is defect or not connected to a down converter (and enabled)				
3	More Than One Up Converter Card Failure	Up Converters		major (6)	5 / 2
	More than one up converter card is defect or not connected to a down converter (and enabled)				
11	One FAN Failure	Up Converters		minor (4)	5 / 2
	One FAN has a problem				
12	More Than One FAN Failure	Up Converters		major (6)	5 / 2
	More Than One FAN has a problem				
14	Configuration Problem	Slots		minor (4)	5 / 2
	There is a configuration problem. A card is configured but not available				
20	Slot 0 Alarm	Slots	Slot 0	minor (4)	15 / 15
	Slot 0 is in alarm				
21	Slot 1 Alarm	Slots	Slot 1	minor (4)	15 / 15
	Slot 1 is in alarm				
22	Slot 2 Alarm	Slots	Slot 2	minor (4)	15 / 15
	Slot 2 is in alarm				
23	Slot 3 Alarm	Slots	Slot 3	minor (4)	15 / 15

Alarm Table					
	Slot 3 is in alarm				
24	Slot 4 Alarm	Slots	Slot 4	minor (4)	15 / 15
	Slot 4 is in alarm				
25	Slot 5 Alarm	Slots	Slot 5	minor (4)	15 / 15
	Slot 5 is in alarm				
26	Slot 6 Alarm	Slots	Slot 6	minor (4)	15 / 15
	Slot 6 is in alarm				
27	Slot 7 Alarm	Slots	Slot 7	minor (4)	15 / 15
	Slot 7 is in alarm				
28	Slot 8 Alarm	Slots	Slot 8	minor (4)	15 / 15
	Slot 8 is in alarm				
29	Slot 9 Alarm	Slots	Slot 9	minor (4)	15 / 15
	Slot 9 is in alarm				
30	Slot 10 Alarm	Slots	Slot 10	minor (4)	15 / 15
	Slot 10 is in alarm				
31	Slot 11 Alarm	Slots	Slot 11	minor (4)	15 / 15
	Slot 11 is in alarm				
32	Slot 12 Alarm	Slots	Slot 12	minor (4)	15 / 15
	Slot 12 is in alarm				
33	Slot 13 Alarm	Slots	Slot 13	minor (4)	15 / 15
	Slot 13 is in alarm				
34	Slot 14 Alarm	Slots	Slot 14	minor (4)	15 / 15
	Slot 14 is in alarm				
35	Slot 15 Alarm	Slots	Slot 15	minor (4)	15 / 15
	Slot 15 is in alarm				
36	Slot 16 Alarm	Slots	Slot 16	minor (4)	15 / 15
	Slot 16 is in alarm				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Input Voltage	Rack		Volt	basic
2	Temperature	Rack		degree C	basic
12	Number Of Up Converter NOK	Up Converters			basic
13	Number Of Up Converter Card NOK	Up Converters			basic

Data Table				
20	Status Slot 0	Slots	Slot 0	basic
21	Status Slot 1	Slots	Slot 1	basic
22	Status Slot 2	Slots	Slot 2	basic
23	Status Slot 3	Slots	Slot 3	basic
24	Status Slot 4	Slots	Slot 4	basic
25	Status Slot 5	Slots	Slot 5	basic
26	Status Slot 6	Slots	Slot 6	basic
27	Status Slot 7	Slots	Slot 7	basic
28	Status Slot 8	Slots	Slot 8	basic
29	Status Slot 9	Slots	Slot 9	basic
30	Status Slot 10	Slots	Slot 10	basic
31	Status Slot 11	Slots	Slot 11	basic
32	Status Slot 12	Slots	Slot 12	basic
33	Status Slot 13	Slots	Slot 13	basic
34	Status Slot 14	Slots	Slot 14	basic
35	Status Slot 15	Slots	Slot 15	basic
36	Status Slot 16	Slots	Slot 16	basic
51	Powered Site Ids	Monitoring		basic
52	Monitored Site Ids	Monitoring		basic
53	Powered Site Ids with Possible Line	Monitoring		basic

Data Table

Feed Problem				

Config Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
20	Slot 0	Slots	Slot 0			basic
21	Slot 1	Slots	Slot 1			basic
22	Slot 2	Slots	Slot 2			basic
23	Slot 3	Slots	Slot 3			basic
24	Slot 4	Slots	Slot 4			basic
25	Slot 5	Slots	Slot 5			basic
26	Slot 6	Slots	Slot 6			basic
27	Slot 7	Slots	Slot 7			basic
28	Slot 8	Slots	Slot 8			basic
29	Slot 9	Slots	Slot 9			basic
30	Slot 10	Slots	Slot 10			basic
31	Slot 11	Slots	Slot 11			basic
32	Slot 12	Slots	Slot 12			basic
33	Slot 13	Slots	Slot 13			basic
34	Slot 14	Slots	Slot 14			basic
35	Slot 15	Slots	Slot 15			basic
36	Slot 16	Slots	Slot 16			basic

Config Table					
51	Urgent Relay Energized Boolean Condition	Relays			basic
52	Non Urgent Relay Energized Boolean Condition	Relays			basic

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

7. Remote Site Tables

7.1. CEM03 Remote Site

Device Information	
Name	CEM03 Remote Site
Short Description	Monitoring for Central Up Converter system
Long Description	Central monitoring card for 4 down converter cards with CAN IN/CAN OUT and 4 relays
Hardware Reference	9413 044 89421

Software Reference	SOFT 000022 XX
Equipment Type	Monitoring For Remote (About Remote Site)
ETSI Level	/site/energy_system/remote_power_feeding_system/remote_site

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
2	Site Name	Site		basic
	The name of the site			
3	Short Description	Site		basic
	A short description of the site			
4	Info	Site		basic
	Some more information about the site			
11	Street	Address		basic
	Street part of the site address			
12	City	Address		basic
	City part of the site address			
13	Province	Address		basic
	Province part of the site address			
14	Postal Code	Address		basic
	Postal Code part of the site address			
15	Region	Address		basic
	Region part of the site address			
16	Country	Address		basic
	Country part of the site address			
31	Latitude	GPS Position		asset
	The latitude of the site			
32	Longitude	GPS Position		asset
	The longitude of the site			
33	Altitude	GPS Position		asset
	The altitude of the site			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	One Down Converter Failure	Converters		minor (4)	10 / 2
2	More Than One Down Converter Failure	Converters		major (6)	10 / 2

Alarm Table					
3	One Fan Failure	Converters		minor (4)	30 / 2
4	More Than One FAN Failure	Converters		major (6)	30 / 2
5	Possible Power Feed Reduced	Converters		warning (2)	5 / 2
8	One Down Converter Over Temperature	Converters		minor (4)	10 / 2
9	Output 1 Off	Outputs		major (6)	5 / 2
10	Output 2 Off	Outputs		major (6)	5 / 2
15	Communication Failure	Communication		major (6)	5 / 2
25	Digital Input 1	Digital Inputs	Digital Input 1	major (0)	5 / 2
This alarm is related to digital input 1					
26	Digital Input 2	Digital Inputs	Digital Input 2	major (0)	5 / 2
This alarm is related to digital input 2					
27	Digital Input 3	Digital Inputs	Digital Input 3	major (0)	5 / 2
This alarm is related to digital input 3					
28	Digital Input 4	Digital Inputs	Digital Input 4	minor (0)	5 / 2
This alarm is related to digital input 4					
29	Digital Input 5	Digital Inputs	Digital Input 5	minor (0)	5 / 2
This alarm is related to digital input 5					
30	Digital Input 6	Digital Inputs	Digital Input 6	minor (0)	5 / 2
This alarm is related to digital input 6					

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Number of Configured Power Lines	Lines			basic

Data Table					
2	Line Configured for Monitoring	Lines			basic
11	Remote Type	Remote DC Sys- tem			basic
12	Input Voltage	Remote DC Sys- tem		Volt	basic
13	Input Common Mode Voltage	Remote DC Sys- tem		Volt	basic
	Input Common Mode Voltage with respect to ground				
14	Output Voltage	Remote DC Sys- tem		Volt	basic
15	Temperature	Remote DC Sys- tem		degree C	basic
16	Output Power	Remote DC Sys- tem		Watt	basic
21	Number Of Declared Down Con- verters	Remote DC Sys- tem			basic

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (de- fault)</i>	<i>License</i>
91	Digital Input 1 Name	Digital In- puts	Digital Input 1		Digital Input 1	basic
	The name of the digital input 1					
93	Digital Input 2 Name	Digital In- puts	Digital Input 2		Digital Input 2	basic
	The name of the digital input 2					
95	Digital Input 3 Name	Digital In- puts	Digital Input 3		Digital Input 3	basic
	The name of the digital input 3					
97	Digital Input 4 Name	Digital In- puts	Digital Input 4		Digital Input 4	basic
	The name of the digital input 4					
99	Digital Input 5 Name	Digital In- puts	Digital Input 5		Digital Input 5	basic

Config Table

	The name of the digital input 5				
101	Digital Input 6 Name	Digital Inputs	Digital Input 6	Digital Input 6	basic
	The name of the digital input 6				

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
11	Copy Address From Top Site Level	Address		basic
	Writing a '1' to this control element will copy the Address from the Site level, except the Street Name			
501	Clear My Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment will be cleared.			
502	Clear All Events	Generic	Events	basic
	By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.			
511	Add Event	Generic	Events	basic
	This control element adds an event of severity none. The event name is the text written to this control element			
512	Add Major Event	Generic	Events	basic
	This control element adds an event of severity major. The event name is the text written to this control element			
521	Reset Default Names And Groups	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment			
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

8. Inverter Tables

8.1. Inverter Module (T2S)

Device Information	
Name	Inverter Module (T2S)
Short Description	Inverter (Bravo, Media, Nova, etc.), managed by T2S
Long Description	
Hardware Reference	
Software Reference	
Equipment Type	Missing information

ETSI Level	/site/energy_system/inverter_system/inverter

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
5	Serial Number	Product Info		basic
	Serial Number			
6	Version	Product Info		basic
	Software Revision			
11	Module Number	Live Configuration		basic
	Module Address			
21	AC Output Group	Live Configuration		basic
	Inverter module AC output group			
22	AC Input Group	Live Configuration		basic
	Inverter module AC input group			
23	DC Input Group	Live Configuration		basic
	Inverter module DC input group			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
34	Temp Too High	General		major (6)	5 / 2
	Temperature on heat sink to high				
83	Manually Off	General		minor (4)	5 / 2
	The inverter are seted in manually OFF.				
101	Fan Failure	General		major (6)	5 / 2
	Failed fan or speed inapropriate				
161	Vac In Too Low	AC IN		minor (4)	5 / 2
162	Vac In Too High	AC IN		minor (4)	5 / 2
194	Vdc In Too Low	DC IN		minor (4)	5 / 2
195	Vdc In Too High	DC IN		minor (4)	5 / 2
255	Specific Alarm			major (6)	5 / 2
	Specific manufacturer alarm. Please contact your reseller				

Data Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Module Status	Inverter Sta- tus			basic

Data Table					
	Module Status				
2	AC Output Status	Inverter Status			basic
	Module AC output status				
3	AC Input Status	Inverter Status			basic
	Module AC input status				
4	DC Input Status	Inverter Status			basic
	Module DC input status				
5	Temperature	Inverter Status		degree C	basic
	Temperature				
11	Output Voltage	AC Output		Volt	basic
	Output voltage in volts				
12	Output Current	AC Output		Ampere	basic
	Output current in amperes				
13	Output Power	AC Output		Watt	basic
	Output power in watts				
14	Output Apparent Power	AC Output		VA	basic
	Output apparent power in VA				
16	Load Position regarding input power source	AC Output			basic
	Position of the load regarding input power sources				
17	Loading Ratio in W	AC Output		%	basic
	Loading ratio regarding power un watts				
18	Loading Ratio in VA	AC Output		%	basic
	Loading ratio regarding power un watts				
21	Input Voltage	AC Input		Volt	basic
	AC input voltage				
22	Input Current	AC Input		Ampere	basic
	AC input current				
23	Input Power	AC Input		Watt	basic
	AC input power in watts				
24	Input Apparent Power	AC Input		VA	basic
	AC apparent input power in VA				
25	Input Frequency	AC Input		Hz	basic
	AC Input Frequency				
31	Input Voltage	DC Input		Volt	basic
	DC input voltage				
32	Input Current	DC Input		Ampere	basic

Data Table					
	DC input current				
33	Input Power	DC Input		Watt	basic
	DC input power				
101	Specific Id Alarms	Error List			basic
	List of active manufacturer specific alarms				
102	Alarm Name List	Error List			basic
	List of active manufacturer specific alarms				

Control Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Start Locate Inverter	TSI Inverter		basic
	Locate the inverter module.			
11	Turn On Module	TSI Inverter		basic
	Turn on the inverter module.			
12	Turn Off Module	TSI Inverter		basic
	Turn off the inverter module.			
21	Modify AC Input Group	TSI Inverter		basic
	Modify ...			
22	Modify DC Input Group	TSI Inverter		basic
	Modify ...			
23	Modify AC Output Group	TSI Inverter		basic
	Modify ...			
31	Modify Inverter Id	TSI Inverter		basic
	Modify ...			

9. Inverter System Tables

9.1. Inverter System (T2S)

Device Information	
Name	Inverter System (T2S)
Short Description	Inverter System (With Bravo, Media, Nova, etc.), managed by T2S
Long Description	
Hardware Reference	
Software Reference	
Equipment Type	Missing information
ETSI Level	/site/energy_system/inverter_system

Description Table				
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Description	Description	Custom Description	basic
	A free text zone to write a system description			
2	Reference	Description	Custom Description	basic
	A free text zone to write the customer reference of the system			
10	T2S Serial Number	Description	T2S	basic
	T2S Serial Number			
11	T2S Software Revision	Description	T2S	basic
	T2S Software Revision			

Alarm Table					
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity Type (Level)</i>	<i>Set/Clear Delay</i>
1	One Inverter in Alarm	Inverter Sys-tem		minor (4)	5 / 2
	One Inverter is in alarm. Check specific Inverter Alarm table.				
2	More Than One Inverter in Alarm	Inverter Sys-tem		major (6)	10 / 2
	More than one Inverter are in alarm				
161	Vac In Too Low	AC Inputs		minor (4)	5 / 2
162	Vac In Too High	AC Inputs		minor (4)	5 / 2
194	Vdc In Too Low	DC Inputs		minor (4)	5 / 2
195	Vdc In Too High	DC Inputs		minor (4)	5 / 2
227	Digital Input 1 Failure	Digital In-puts		major (6)	5 / 2
	Give alarm with code 227 and appropriate texte when digital input 1 change is state				
228	Digital Input 2 Failure	Digital In-puts		major (6)	5 / 2
	Give alarm with code 228 and appropriate text when digital input 2 change is state				
229	Redundancy Lost	Inverter Sys-tem		minor (4)	5 / 2
	Give alarm with code 229 and text 'Redudancy Lost' when the condition is true				
230	Redundancy Plus 1 Lost	Inverter Sys-tem		major (6)	5 / 2
	Give alarm with code 230 and text 'Redudancy + 1 Lost' when the condition is				

Alarm Table

	true				
232 Main Source Lost	AC Inputs		major (6)	5 / 2	
Give alarm with code 232 and text 'Mains source lost' when the condition is true					
233 Secondary Source Lost	DC Inputs		minor (4)	5 / 2	
Give alarm with code 233 and 'Sec Source Lost' when the condition is true					
235 T2S Failure	Inverter System		major (6)	5 / 2	
Give alarm with code 235 and text 'T2S FAILURE' when the condition is true					
255 Specific Alarm			major (6)	5 / 2	
Specific manufacturer alarm. Please contact your reseller					

Data Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>License</i>
1	Output Voltage	AC Outputs	AC Output 1	Volt	basic
Output Voltage in volts group 1					
2	Output Power	AC Outputs	AC Output 1	Ampere	basic
Output Current in amperes group 1					
3	Output Power	AC Outputs	AC Output 1	Watt	basic
Output power in watts group 1					
4	Output Apparent Power	AC Outputs	AC Output 1	VA	basic
Output apparent power in VA group 1					
5	Output Frequency	AC Outputs	AC Output 1	Hz	basic
Output Frequency in hertz group 1					
6	Loading Ratio	AC Outputs	AC Output 1	%	basic
Ratio between output load and available power expressed in watts group 1					
7	Loading Ratio - Available Power in VA	AC Outputs	AC Output 1	%	basic
Ratio between output load and available power expressed in VA group 1					
8	Loading Ratio - Installed Power in W	AC Outputs	AC Output 1	%	basic
Ratio between output load and installed power expressed in watts group 1					
9	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 1	%	basic
Ratio between output load and installed power expressed in VA group 1					
10	Number Of Modules Configured	AC Out-	AC Output		basic

Data Table					
		puts	1		
	Number of modules configured for the phase 1				
11	Amount of redundancy configured	AC Out-puts	AC Output 1		basic
	Amount of redundancy configured in the phase 1				
12	DC Input Power	AC Out-puts	AC Output 1	Watt	basic
	DC input power for group 1				
13	AC Input Power in W	AC Out-puts	AC Output 1	Watt	basic
	AC input power (W) for group 1				
14	AC Input Power in VA	AC Out-puts	AC Output 1	VA	basic
	AC input power (VA) for group 1				
15	Installed Power in W	AC Out-puts	AC Output 1	Watt	basic
	Installed power value in watts for group 1				
16	Installed Power in VA	AC Out-puts	AC Output 1	VA	basic
	Installed power value in VA for group 1				
17	Available Power in W	AC Out-puts	AC Output 1	Watt	basic
	Available power value in watts for group 1				
18	Available Power in VA	AC Out-puts	AC Output 1	VA	basic
	Available power value in VA for group 1				
19	Number Of Module seen by T2S	AC Out-puts	AC Output 1		basic
	Number of modules seen by T2S for group 1				
20	Number Of Modules delivering output	AC Out-puts	AC Output 1		basic
	Number of modules delivering output for group 1				
21	Number Of Modules manually off	AC Out-puts	AC Output 1		basic
	Number of modules manually off for group 1				
22	Number Of Module In Failure	AC Out-puts	AC Output 1		basic
	Number of modules in failure for group 1				
23	Number Of Module not seen by T2S	AC Out-puts	AC Output 1		basic
	Number of modules not seen by T2S for group 1				
51	Output Voltage	AC Out-	AC Output	Volt	basic

Data Table					
		puts	2		
	Output Voltage in volts group 2				
52	Output Power	AC Out-puts	AC Output 2	Ampere	basic
	Output Current in amperes group 2				
53	Output Power	AC Out-puts	AC Output 2	Watt	basic
	Output power in watts group 2				
54	Output Apparent Power	AC Out-puts	AC Output 2	VA	basic
	Output apparent power in VA group 2				
55	Output Frequency	AC Out-puts	AC Output 2	Hz	basic
	Output Frequency in hertz group 2				
56	Loading Ratio	AC Out-puts	AC Output 2	%	basic
	Ratio between output load and available power expressed in watts group 2				
57	Loading Ratio - Available Power in VA	AC Out-puts	AC Output 2	%	basic
	Ratio between output load and available power expressed in VA group 2				
58	Loading Ratio - Installed Power in W	AC Out-puts	AC Output 2	%	basic
	Ratio between output load and installed power expressed in watts group 2				
59	Loading Ratio - Installed Power in VA	AC Out-puts	AC Output 2	%	basic
	Ratio between output load and installed power expressed in VA group 2				
60	Number Of Modules Configured	AC Out-puts	AC Output 2		basic
	Number of modules configured for the phase 2				
61	Amount of redundancy configured	AC Out-puts	AC Output 2		basic
	Amount of redundancy configured in the phase 2				
62	DC Input Power	AC Out-puts	AC Output 2	Watt	basic
	DC input power for group 2				
63	AC Input Power in W	AC Out-puts	AC Output 2	Watt	basic
	AC input power (W) for group 2				
64	AC Input Power in VA	AC Out-puts	AC Output 2	VA	basic
	AC input power (VA) for group 2				
65	Installed Power in W	AC Out-	AC Output	Watt	basic

Data Table					
		puts	2		
	Installed power value in watts for group 2				
66	Installed Power in VA	AC Out-puts	AC Output 2	VA	basic
	Installed power value in VA for group 2				
67	Available Power in W	AC Out-puts	AC Output 2	Watt	basic
	Available power value in watts for group 2				
68	Available Power in VA	AC Out-puts	AC Output 2	VA	basic
	Available power value in VA for group 2				
69	Number Of Module seen by T2S	AC Out-puts	AC Output 2		basic
	Number of modules seen by T2S for group 2				
70	Number Of Modules delivering output	AC Out-puts	AC Output 2		basic
	Number of modules delivering output for group 2				
71	Number Of Modules manually off	AC Out-puts	AC Output 2		basic
	Number of modules manually off for group 2				
72	Number Of Module In Failure	AC Out-puts	AC Output 2		basic
	Number of modules in failure for group 2				
73	Number Of Module not seen by T2S	AC Out-puts	AC Output 2		basic
	Number of modules not seen by T2S for group 2				
101	Output Voltage	AC Out-puts	AC Output 3	Volt	basic
	Output Voltage in volts group 3				
102	Output Power	AC Out-puts	AC Output 3	Ampere	basic
	Output Current in amperes group 3				
103	Output Power	AC Out-puts	AC Output 3	Watt	basic
	Output power in watts group 3				
104	Output Apparent Power	AC Out-puts	AC Output 3	VA	basic
	Output apparent power in VA group 3				
105	Output Frequency	AC Out-puts	AC Output 3	Hz	basic
	Output Frequency in hertz group 3				
106	Loading Ratio	AC Out-	AC Output	%	basic

Data Table					
		puts	3		
	Ratio between output load and available power expressed in watts group 3				
107 Loading Ratio - Available Power in VA	AC Out-puts	AC Output 3	%		basic
	Ratio between output load and available power expressed in VA group 3				
108 Loading Ratio - Installed Power in W	AC Out-puts	AC Output 3	%		basic
	Ratio between output load and installed power expressed in watts group 3				
109 Loading Ratio - Installed Power in VA	AC Out-puts	AC Output 3	%		basic
	Ratio between output load and installed power expressed in VA group 3				
110 Number Of Modules Configured	AC Out-puts	AC Output 3			basic
	Number of modules configured for the phase 3				
111 Amount of redundancy configured	AC Out-puts	AC Output 3			basic
	Amount of redundancy configured in the phase 3				
112 DC Input Power	AC Out-puts	AC Output 3	Watt		basic
	DC input power for group 3				
113 AC Input Power in W	AC Out-puts	AC Output 3	Watt		basic
	AC input power (W) for group 3				
114 AC Input Power in VA	AC Out-puts	AC Output 3	VA		basic
	AC input power (VA) for group 3				
115 Installed Power in W	AC Out-puts	AC Output 3	Watt		basic
	Installed power value in watts for group 3				
116 Installed Power in VA	AC Out-puts	AC Output 3	VA		basic
	Installed power value in VA for group 3				
117 Available Power in W	AC Out-puts	AC Output 3	Watt		basic
	Available power value in watts for group 3				
118 Available Power in VA	AC Out-puts	AC Output 3	VA		basic
	Available power value in VA for group 3				
119 Number Of Module seen by T2S	AC Out-puts	AC Output 3			basic
	Number of modules seen by T2S for group 3				
120 Number Of Modules delivering out-	AC Out-	AC Output			basic

Data Table					
	put	puts	3		
	Number of modules delivering output for group 3				
121	Number Of Modules manually off	AC Out-puts	AC Output 3		basic
	Number of modules manually off for group 3				
122	Number Of Module In Failure	AC Out-puts	AC Output 3		basic
	Number of modules in failure for group 3				
123	Number Of Module not seen by T2S	AC Out-puts	AC Output 3		basic
	Number of modules not seen by T2S for group 3				
151	Output Voltage	AC Out-puts	AC Output 4	Volt	basic
	Output Voltage in volts group 4				
152	Output Power	AC Out-puts	AC Output 4	Ampere	basic
	Output Current in amperes group 4				
153	Output Power	AC Out-puts	AC Output 4	Watt	basic
	Output power in watts group 4				
154	Output Apparent Power	AC Out-puts	AC Output 4	VA	basic
	Output apparent power in VA group 4				
155	Output Frequency	AC Out-puts	AC Output 4	Hz	basic
	Output Frequency in hertz group 4				
156	Loading Ratio	AC Out-puts	AC Output 4	%	basic
	Ratio between output load and available power expressed in watts group 4				
157	Loading Ratio - Available Power in VA	AC Out-puts	AC Output 4	%	basic
	Ratio between output load and available power expressed in VA group 4				
158	Loading Ratio - Installed Power in W	AC Out-puts	AC Output 4	%	basic
	Ratio between output load and installed power expressed in watts group 4				
159	Loading Ratio - Installed Power in VA	AC Out-puts	AC Output 4	%	basic
	Ratio between output load and installed power expressed in VA group 4				
160	Number Of Modules Configured	AC Out-puts	AC Output 4		basic
	Number of modules configured for the phase 4				
161	Amount of redundancy configured	AC Out-	AC Output		basic

Data Table					
		puts	4		
	Amount of redundancy configured in the phase 4				
162 DC Input Power	AC Out-puts	AC Output	Watt	basic	
	DC input power for group 4	4			
163 AC Input Power in W	AC Out-puts	AC Output	Watt	basic	
	AC input power (W) for group 4	4			
164 AC Input Power in VA	AC Out-puts	AC Output	VA	basic	
	AC input power (VA) for group 4	4			
165 Installed Power in W	AC Out-puts	AC Output	Watt	basic	
	Installed power value in watts for group 4	4			
166 Installed Power in VA	AC Out-puts	AC Output	VA	basic	
	Installed power value in VA for group 4	4			
167 Available Power in W	AC Out-puts	AC Output	Watt	basic	
	Available power value in watts for group 4	4			
168 Available Power in VA	AC Out-puts	AC Output	VA	basic	
	Available power value in VA for group 4	4			
169 Number Of Module seen by T2S	AC Out-puts	AC Output		basic	
	Number of modules seen by T2S for group 4	4			
170 Number Of Modules delivering output	AC Out-puts	AC Output		basic	
	Number of modules delivering output for group 4	4			
171 Number Of Modules manually off	AC Out-puts	AC Output		basic	
	Number of modules manually off for group 4	4			
172 Number Of Module In Failure	AC Out-puts	AC Output		basic	
	Number of modules in failure for group 4	4			
173 Number Of Module not seen by T2S	AC Out-puts	AC Output		basic	
	Number of modules not seen by T2S for group 4	4			
201 Output Voltage	AC Out-puts	AC Output	Volt	basic	
	Output Voltage in volts group 5	5			
202 Output Power	AC Out-	AC Output	Ampere	basic	

Data Table					
		puts	5		
	Output Current in amperes group 5				
203	Output Power	AC Out-puts	AC Output 5	Watt	basic
	Output power in watts group 5				
204	Output Apparent Power	AC Out-puts	AC Output 5	VA	basic
	Output apparent power in VA group 5				
205	Output Frequency	AC Out-puts	AC Output 5	Hz	basic
	Output Frequency in hertz group 5				
206	Loading Ratio	AC Out-puts	AC Output 5	%	basic
	Ratio between output load and available power expressed in watts group 5				
207	Loading Ratio - Available Power in VA	AC Out-puts	AC Output 5	%	basic
	Ratio between output load and available power expressed in VA group 5				
208	Loading Ratio - Installed Power in W	AC Out-puts	AC Output 5	%	basic
	Ratio between output load and installed power expressed in watts group 5				
209	Loading Ratio - Installed Power in VA	AC Out-puts	AC Output 5	%	basic
	Ratio between output load and installed power expressed in VA group 5				
210	Number Of Modules Configured	AC Out-puts	AC Output 5		basic
	Number of modules configured for the phase 5				
211	Amount of redundancy configured	AC Out-puts	AC Output 5		basic
	Amount of redundancy configured in the phase 5				
212	DC Input Power	AC Out-puts	AC Output 5	Watt	basic
	DC input power for group 5				
213	AC Input Power in W	AC Out-puts	AC Output 5	Watt	basic
	AC input power (W) for group 5				
214	AC Input Power in VA	AC Out-puts	AC Output 5	VA	basic
	AC input power (VA) for group 5				
215	Installed Power in W	AC Out-puts	AC Output 5	Watt	basic
	Installed power value in watts for group 5				
216	Installed Power in VA	AC Out-	AC Output	VA	basic

Data Table					
		puts	5		
	Installed power value in VA for group 5				
217 Available Power in W	AC Out-puts	AC Output	Watt	basic	
		5			
	Available power value in watts for group 5				
218 Available Power in VA	AC Out-puts	AC Output	VA	basic	
		5			
	Available power value in VA for group 5				
219 Number Of Module seen by T2S	AC Out-puts	AC Output		basic	
		5			
	Number of modules seen by T2S for group 5				
220 Number Of Modules delivering output	AC Out-puts	AC Output		basic	
		5			
	Number of modules delivering output for group 5				
221 Number Of Modules manually off	AC Out-puts	AC Output		basic	
		5			
	Number of modules manually off for group 5				
222 Number Of Module In Failure	AC Out-puts	AC Output		basic	
		5			
	Number of modules in failure for group 5				
223 Number Of Module not seen by T2S	AC Out-puts	AC Output		basic	
		5			
	Number of modules not seen by T2S for group 5				
251 Output Voltage	AC Out-puts	AC Output	Volt	basic	
		6			
	Output Voltage in volts group 6				
252 Output Power	AC Out-puts	AC Output	Ampere	basic	
		6			
	Output Current in amperes group 6				
253 Output Power	AC Out-puts	AC Output	Watt	basic	
		6			
	Output power in watts group 6				
254 Output Apparent Power	AC Out-puts	AC Output	VA	basic	
		6			
	Output apparent power in VA group 6				
255 Output Frequency	AC Out-puts	AC Output	Hz	basic	
		6			
	Output Frequency in hertz group 6				
256 Loading Ratio	AC Out-puts	AC Output	%	basic	
		6			
	Ratio between output load and available power expressed in watts group 6				
257 Loading Ratio - Available Power in	AC Out-	AC Output	%	basic	

Data Table					
	VA	puts	6		
	Ratio between output load and available power expressed in VA group 6				
258	Loading Ratio - Installed Power in W	AC Out-puts	AC Output 6	%	basic
	Ratio between output load and installed power expressed in watts group 6				
259	Loading Ratio - Installed Power in VA	AC Out-puts	AC Output 6	%	basic
	Ratio between output load and installed power expressed in VA group 6				
260	Number Of Modules Configured	AC Out-puts	AC Output 6		basic
	Number of modules configured for the phase 6				
261	Amount of redundancy configured	AC Out-puts	AC Output 6		basic
	Amount of redundancy configured in the phase 6				
262	DC Input Power	AC Out-puts	AC Output 6	Watt	basic
	DC input power for group 6				
263	AC Input Power in W	AC Out-puts	AC Output 6	Watt	basic
	AC input power (W) for group 6				
264	AC Input Power in VA	AC Out-puts	AC Output 6	VA	basic
	AC input power (VA) for group 6				
265	Installed Power in W	AC Out-puts	AC Output 6	Watt	basic
	Installed power value in watts for group 6				
266	Installed Power in VA	AC Out-puts	AC Output 6	VA	basic
	Installed power value in VA for group 6				
267	Available Power in W	AC Out-puts	AC Output 6	Watt	basic
	Available power value in watts for group 6				
268	Available Power in VA	AC Out-puts	AC Output 6	VA	basic
	Available power value in VA for group 6				
269	Number Of Module seen by T2S	AC Out-puts	AC Output 6		basic
	Number of modules seen by T2S for group 6				
270	Number Of Modules delivering output	AC Out-puts	AC Output 6		basic
	Number of modules delivering output for group 6				
271	Number Of Modules manually off	AC Out-	AC Output		basic

Data Table					
		puts	6		
	Number of modules manually off for group 6				
272	Number Of Module In Failure	AC Out-puts	AC Output 6		basic
	Number of modules in failure for group 6				
273	Number Of Module not seen by T2S	AC Out-puts	AC Output 6		basic
	Number of modules not seen by T2S for group 6				
301	Output Voltage	AC Out-puts	AC Output 7	Volt	basic
	Output Voltage in volts group 7				
302	Output Power	AC Out-puts	AC Output 7	Ampere	basic
	Output Current in amperes group 7				
303	Output Power	AC Out-puts	AC Output 7	Watt	basic
	Output power in watts group 7				
304	Output Apparent Power	AC Out-puts	AC Output 7	VA	basic
	Output apparent power in VA group 7				
305	Output Frequency	AC Out-puts	AC Output 7	Hz	basic
	Output Frequency in hertz group 7				
306	Loading Ratio	AC Out-puts	AC Output 7	%	basic
	Ratio between output load and available power expressed in watts group 7				
307	Loading Ratio - Available Power in VA	AC Out-puts	AC Output 7	%	basic
	Ratio between output load and available power expressed in VA group 7				
308	Loading Ratio - Installed Power in W	AC Out-puts	AC Output 7	%	basic
	Ratio between output load and installed power expressed in watts group 7				
309	Loading Ratio - Installed Power in VA	AC Out-puts	AC Output 7	%	basic
	Ratio between output load and installed power expressed in VA group 7				
310	Number Of Modules Configured	AC Out-puts	AC Output 7		basic
	Number of modules configured for the phase 7				
311	Amount of redundancy configured	AC Out-puts	AC Output 7		basic
	Amount of redundancy configured in the phase 7				
312	DC Input Power	AC Out-	AC Output	Watt	basic

Data Table					
		puts	7		
	DC input power for group 7				
313	AC Input Power in W	AC Out-puts	AC Output 7	Watt	basic
	AC input power (W) for group 7				
314	AC Input Power in VA	AC Out-puts	AC Output 7	VA	basic
	AC input power (VA) for group 7				
315	Installed Power in W	AC Out-puts	AC Output 7	Watt	basic
	Installed power value in watts for group 7				
316	Installed Power in VA	AC Out-puts	AC Output 7	VA	basic
	Installed power value in VA for group 7				
317	Available Power in W	AC Out-puts	AC Output 7	Watt	basic
	Available power value in watts for group 7				
318	Available Power in VA	AC Out-puts	AC Output 7	VA	basic
	Available power value in VA for group 7				
319	Number Of Module seen by T2S	AC Out-puts	AC Output 7		basic
	Number of modules seen by T2S for group 7				
320	Number Of Modules delivering output	AC Out-puts	AC Output 7		basic
	Number of modules delivering output for group 7				
321	Number Of Modules manually off	AC Out-puts	AC Output 7		basic
	Number of modules manually off for group 7				
322	Number Of Module In Failure	AC Out-puts	AC Output 7		basic
	Number of modules in failure for group 7				
323	Number Of Module not seen by T2S	AC Out-puts	AC Output 7		basic
	Number of modules not seen by T2S for group 7				
351	Output Voltage	AC Out-puts	AC Output 8	Volt	basic
	Output Voltage in volts group 8				
352	Output Power	AC Out-puts	AC Output 8	Ampere	basic
	Output Current in amperes group 8				
353	Output Power	AC Out-	AC Output	Watt	basic

Data Table					
		puts	8		
	Output power in watts group 8				
354	Output Apparent Power	AC Out-puts	AC Output 8	VA	basic
	Output apparent power in VA group 8				
355	Output Frequency	AC Out-puts	AC Output 8	Hz	basic
	Output Frequency in hertz group 8				
356	Loading Ratio	AC Out-puts	AC Output 8	%	basic
	Ratio between output load and available power expressed in watts group 8				
357	Loading Ratio - Available Power in VA	AC Out-puts	AC Output 8	%	basic
	Ratio between output load and available power expressed in VA group 8				
358	Loading Ratio - Installed Power in W	AC Out-puts	AC Output 8	%	basic
	Ratio between output load and installed power expressed in watts group 8				
359	Loading Ratio - Installed Power in VA	AC Out-puts	AC Output 8	%	basic
	Ratio between output load and installed power expressed in VA group 8				
360	Number Of Modules Configured	AC Out-puts	AC Output 8		basic
	Number of modules configured for the phase 8				
361	Amount of redundancy configured	AC Out-puts	AC Output 8		basic
	Amount of redundancy configured in the phase 8				
362	DC Input Power	AC Out-puts	AC Output 8	Watt	basic
	DC input power for group 8				
363	AC Input Power in W	AC Out-puts	AC Output 8	Watt	basic
	AC input power (W) for group 8				
364	AC Input Power in VA	AC Out-puts	AC Output 8	VA	basic
	AC input power (VA) for group 8				
365	Installed Power in W	AC Out-puts	AC Output 8	Watt	basic
	Installed power value in watts for group 8				
366	Installed Power in VA	AC Out-puts	AC Output 8	VA	basic
	Installed power value in VA for group 8				
367	Available Power in W	AC Out-	AC Output	Watt	basic

Data Table					
		puts	8		
	Available power value in watts for group 8				
368 Available Power in VA	AC Out-puts	AC Output 8	VA	basic	
	Available power value in VA for group 8				
369 Number Of Module seen by T2S	AC Out-puts	AC Output 8		basic	
	Number of modules seen by T2S for group 8				
370 Number Of Modules delivering output	AC Out-puts	AC Output 8		basic	
	Number of modules delivering output for group 8				
371 Number Of Modules manually off	AC Out-puts	AC Output 8		basic	
	Number of modules manually off for group 8				
372 Number Of Module In Failure	AC Out-puts	AC Output 8		basic	
	Number of modules in failure for group 8				
373 Number Of Module not seen by T2S	AC Out-puts	AC Output 8		basic	
	Number of modules not seen by T2S for group 8				
401 Input Voltage	AC Inputs	AC Input 1	Volt	basic	
	AC input voltage value (V) group 1				
402 Input Current	AC Inputs	AC Input 1	Ampere	basic	
	AC input current value (A) group 1				
403 Input Power	AC Inputs	AC Input 1	Watt	basic	
	AC input power value (W) group 1				
404 Input Apparent Power	AC Inputs	AC Input 1	VA	basic	
	AC input apparent power value (VA) group 1				
405 Input Frequency	AC Inputs	AC Input 1	Hz	basic	
	AC input frequency (Hz) group 1				
406 Number Of Modules delivering output	AC Inputs	AC Input 1		basic	
	Number of modules that are delivering output in the group 1				
407 Number Of Modules manually off	AC Inputs	AC Input 1		basic	
	Number of modules manually off in the group 1				
408 Number Of Modules in failure	AC Inputs	AC Input 1		basic	
	Number of modules that are not delivering output due to a failure in the group 1				
409 Number Of Modules seen by T2S	AC Inputs	AC Input 1		basic	
	Number of modules seen by T2S in the group 1				
410 Number Of Modules stating AC input OK	AC Inputs	AC Input 1		basic	

Data Table					
	Number of modules stating AC input is OK group 1				
426	Input Voltage	AC Inputs	AC Input 2	Volt	basic
	AC input voltage value (V) group 2				
427	Input Current	AC Inputs	AC Input 2	Ampere	basic
	AC input current value (A) group 2				
428	Input Power	AC Inputs	AC Input 2	Watt	basic
	AC input power value (W) group 2				
429	Input Apparent Power	AC Inputs	AC Input 2	VA	basic
	AC input apparent power value (VA) group 2				
430	Input Frequency	AC Inputs	AC Input 2	Hz	basic
	AC input frequency (Hz) group 2				
431	Number Of Modules delivering out-put	AC Inputs	AC Input 2		basic
	Number of modules that are delivering output in the group 2				
432	Number Of Modules manually off	AC Inputs	AC Input 2		basic
	Number of modules manually off in the group 2				
433	Number Of Modules in failure	AC Inputs	AC Input 2		basic
	Number of modules that are not delivering output due to a failure in the group 2				
434	Number Of Modules seen by T2S	AC Inputs	AC Input 2		basic
	Number of modules seen by T2S in the group 2				
435	Number Of Modules stating AC input OK	AC Inputs	AC Input 2		basic
	Number of modules stating AC input is OK group 2				
451	Input Voltage	AC Inputs	AC Input 3	Volt	basic
	AC input voltage value (V) group 3				
452	Input Current	AC Inputs	AC Input 3	Ampere	basic
	AC input current value (A) group 3				
453	Input Power	AC Inputs	AC Input 3	Watt	basic
	AC input power value (W) group 3				
454	Input Apparent Power	AC Inputs	AC Input 3	VA	basic
	AC input apparent power value (VA) group 3				
455	Input Frequency	AC Inputs	AC Input 3	Hz	basic
	AC input frequency (Hz) group 3				
456	Number Of Modules delivering out-put	AC Inputs	AC Input 3		basic
	Number of modules that are delivering output in the group 3				
457	Number Of Modules manually off	AC Inputs	AC Input 3		basic
	Number of modules manually off in the group 3				
458	Number Of Modules in failure	AC Inputs	AC Input 3		basic
	Number of modules that are not delivering output due to a failure in the group 3				
459	Number Of Modules seen by T2S	AC Inputs	AC Input 3		basic

Data Table					
	Number of modules seen by T2S in the group 3				
460 Number Of Modules stating AC input OK	AC Inputs	AC Input 3			basic
	Number of modules stating AC input is OK group 3				
476 Input Voltage	AC Inputs	AC Input 4	Volt		basic
	AC input voltage value (V) group 4				
477 Input Current	AC Inputs	AC Input 4	Ampere		basic
	AC input current value (A) group 4				
478 Input Power	AC Inputs	AC Input 4	Watt		basic
	AC input power value (W) group 4				
479 Input Apparent Power	AC Inputs	AC Input 4	VA		basic
	AC input apparent power value (VA) group 4				
480 Input Frequency	AC Inputs	AC Input 4	Hz		basic
	AC input frequency (Hz) group 4				
481 Number Of Modules delivering output	AC Inputs	AC Input 4			basic
	Number of modules that are delivering output in the group 4				
482 Number Of Modules manually off	AC Inputs	AC Input 4			basic
	Number of modules manually off in the group 4				
483 Number Of Modules in failure	AC Inputs	AC Input 4			basic
	Number of modules that are not delivering output due to a failure in the group 4				
484 Number Of Modules seen by T2S	AC Inputs	AC Input 4			basic
	Number of modules seen by T2S in the group 4				
485 Number Of Modules stating AC input OK	AC Inputs	AC Input 4			basic
	Number of modules stating AC input is OK group 4				
501 Input Current	DC Inputs	DC Input 1	Ampere		basic
	DC input current value in amperes group 1				
502 Input Power	DC Inputs	DC Input 1	Watt		basic
	DC input power value in watts group 1				
526 Input Current	DC Inputs	DC Input 2	Ampere		basic
	DC input current value in amperes group 2				
527 Input Power	DC Inputs	DC Input 2	Watt		basic
	DC input power value in watts group 2				
551 Input Current	DC Inputs	DC Input 3	Ampere		basic
	DC input current value in amperes group 3				
552 Input Power	DC Inputs	DC Input 3	Watt		basic
	DC input power value in watts group 3				
576 Input Current	DC Inputs	DC Input 4	Ampere		basic
	DC input current value in amperes group 4				
577 Input Power	DC Inputs	DC Input 4	Watt		basic

Data Table					
	DC input power value in watts group 4				
601	Input Current	DC Inputs	DC Input 5	Ampere	basic
	DC input current value in amperes group 5				
602	Input Power	DC Inputs	DC Input 5	Watt	basic
	DC input power value in watts group 5				
626	Input Current	DC Inputs	DC Input 6	Ampere	basic
	DC input current value in amperes group 6				
627	Input Power	DC Inputs	DC Input 6	Watt	basic
	DC input power value in watts group 6				
651	Input Current	DC Inputs	DC Input 7	Ampere	basic
	DC input current value in amperes group 7				
652	Input Power	DC Inputs	DC Input 7	Watt	basic
	DC input power value in watts group 7				
676	Input Current	DC Inputs	DC Input 8	Ampere	basic
	DC input current value in amperes group 8				
677	Input Power	DC Inputs	DC Input 8	Watt	basic
	DC input power value in watts group 8				
701	Alarm Id List	Error List			basic
	List of active manufacturer specific alarms				
702	Alarm Name List	Error List			basic
	List of active manufacturer specific alarms				

Config Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Unit</i>	<i>Range: Min/Max (default)</i>	<i>License</i>
1	Number of AC Output Groups To Configure	Inverter System	Group Config			basic
	Number of AC output groups that must be displayed in configuration					
2	Number of AC Input Groups To Configure	Inverter System	Group Config			basic
	Number of AC input groups that must be displayed in configuration					
3	Number of DC Input Groups To Configure	Inverter System	Group Config			basic
	Number of DC input groups that must be displayed in configuration					
5	Input Ratio On DC	Inverter System				basic
	0-100 : 0 full AC, 100 full DC					
21	AC Input Frequency Low Start	AC Inputs	Input Frequency	Hz	0/1000 (0)	basic
	The AC frequency low start in hertz.					

Config Table						
22	AC Input Frequency Low Stop	AC Inputs	Input Frequency	Hz	0/1000 (0)	basic
	The AC frequency low stop in hertz.					
23	AC Input Frequency High Start	AC Inputs	Input Frequency	Hz	0/1000 (0)	basic
	The AC frequency high start in hertz.					
24	AC Input Frequency High Stop	AC Inputs	Input Frequency	Hz	0/1000 (0)	basic
	The AC frequency high stop in hertz.					
101	Number of Modules	AC Outputs	AC Output 1			basic
	The number of modules in phase 1					
102	Amount of Redundancy	AC Outputs	AC Output 1			basic
	The amount of redundancy in phase 1					
103	Phase Shift	AC Outputs	AC Output 1	degree		basic
	The phase shift in degrees in phase 1					
104	Nominal Output Voltage	AC Outputs	AC Output 1	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 1					
111	Number of Modules	AC Outputs	AC Output 2			basic
	The number of modules in phase 2					
112	Amount of Redundancy	AC Outputs	AC Output 2			basic
	The amount of redundancy in phase 2					
113	Phase Shift	AC Outputs	AC Output 2	degree		basic
	The phase shift in degrees in phase 2					
114	Nominal Output Voltage	AC Outputs	AC Output 2	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 2					
121	Number of Modules	AC Outputs	AC Output 3			basic
	The number of modules in phase 3					
122	Amount of Redundancy	AC Outputs	AC Output 3			basic
	The amount of redundancy in phase 3					
123	Phase Shift	AC Outputs	AC Output 3	degree		basic
	The phase shift in degrees in phase 3					

Config Table						
124	Nominal Output Voltage	AC Outputs	AC Output 3	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 3					
131	Number of Modules	AC Outputs	AC Output 4			basic
	The number of modules in phase 4					
132	Amount of Redundancy	AC Outputs	AC Output 4			basic
	The amount of redundancy in phase 4					
133	Phase Shift	AC Outputs	AC Output 4	degree		basic
	The phase shift in degrees in phase 4					
134	Nominal Output Voltage	AC Outputs	AC Output 4	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 4					
141	Number of Modules	AC Outputs	AC Output 5			basic
	The number of modules in phase 5					
142	Amount of Redundancy	AC Outputs	AC Output 5			basic
	The amount of redundancy in phase 5					
143	Phase Shift	AC Outputs	AC Output 5	degree		basic
	The phase shift in degrees in phase 5					
144	Nominal Output Voltage	AC Outputs	AC Output 5	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 5					
151	Number of Modules	AC Outputs	AC Output 6			basic
	The number of modules in phase 6					
152	Amount of Redundancy	AC Outputs	AC Output 6			basic
	The amount of redundancy in phase 6					
153	Phase Shift	AC Outputs	AC Output 6	degree		basic
	The phase shift in degrees in phase 6					
154	Nominal Output Voltage	AC Outputs	AC Output 6	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 6					
161	Number of Modules	AC Outputs	AC Output 7			basic
	The number of modules in phase 7					

Config Table						
162	Amount of Redundancy	AC Out-puts	AC Output 7			basic
	The amount of redundancy in phase 7					
163	Phase Shift	AC Out-puts	AC Output 7	degree		basic
	The phase shift in degrees in phase 7					
164	Nominal Output Voltage	AC Out-puts	AC Output 7	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 7					
171	Number of Modules	AC Out-puts	AC Output 8			basic
	The number of modules in phase 8					
172	Amount of Redundancy	AC Out-puts	AC Output 8			basic
	The amount of redundancy in phase 8					
173	Phase Shift	AC Out-puts	AC Output 8	degree		basic
	The phase shift in degrees in phase 8					
174	Nominal Output Voltage	AC Out-puts	AC Output 8	Volt	0/250 (120)	basic
	The output voltage 1 in volts phase 8					
201	Vac In Low Start	AC Inputs	AC Input 1	Volt	0/300 (0)	basic
	The AC input low start in volts group 1					
202	Vac In Low Transfer	AC Inputs	AC Input 1	Volt	0/300 (0)	basic
	The AC input low transfer in volts group 1					
203	Vac In Low Stop	AC Inputs	AC Input 1	Volt	0/300 (0)	basic
	The AC input low stop in volts group 1					
204	Vac In High Start	AC Inputs	AC Input 1	Volt	0/300 (0)	basic
	The AC input high start in volts group 1					
205	Vac In High Transfer	AC Inputs	AC Input 1	Volt	0/300 (0)	basic
	The AC input high transfer in volts group 1					
206	Vac In High Stop	AC Inputs	AC Input 1	Volt	0/300 (0)	basic
	The AC input high stop in volts group 1					
211	Vac In Low Start	AC Inputs	AC Input 2	Volt	0/300 (0)	basic
	The AC input low start in volts group 2					
212	Vac In Low Transfer	AC Inputs	AC Input 2	Volt	0/300 (0)	basic
	The AC input low transfer in volts group 2					
213	Vac In Low Stop	AC Inputs	AC Input 2	Volt	0/300 (0)	basic
	The AC input low stop in volts group 2					
214	Vac In High Start	AC Inputs	AC Input 2	Volt	0/300 (0)	basic
	The AC input high start in volts group 2					

Config Table						
215	Vac In High Transfer	AC Inputs	AC Input 2	Volt	0/300 (0)	basic
	The AC input high transfer in volts group 2					
216	Vac In High Stop	AC Inputs	AC Input 2	Volt	0/300 (0)	basic
	The AC input high stop in volts group 2					
221	Vac In Low Start	AC Inputs	AC Input 3	Volt	0/300 (0)	basic
	The AC input low start in volts group 3					
222	Vac In Low Transfer	AC Inputs	AC Input 3	Volt	0/300 (0)	basic
	The AC input low transfer in volts group 3					
223	Vac In Low Stop	AC Inputs	AC Input 3	Volt	0/300 (0)	basic
	The AC input low stop in volts group 3					
224	Vac In High Start	AC Inputs	AC Input 3	Volt	0/300 (0)	basic
	The AC input high start in volts group 3					
225	Vac In High Transfer	AC Inputs	AC Input 3	Volt	0/300 (0)	basic
	The AC input high transfer in volts group 3					
226	Vac In High Stop	AC Inputs	AC Input 3	Volt	0/300 (0)	basic
	The AC input high stop in volts group 3					
231	Vac In Low Start	AC Inputs	AC Input 4	Volt	0/300 (0)	basic
	The AC input low start in volts group 4					
232	Vac In Low Transfer	AC Inputs	AC Input 4	Volt	0/300 (0)	basic
	The AC input low transfer in volts group 4					
233	Vac In Low Stop	AC Inputs	AC Input 4	Volt	0/300 (0)	basic
	The AC input low stop in volts group 4					
234	Vac In High Start	AC Inputs	AC Input 4	Volt	0/300 (0)	basic
	The AC input high start in volts group 4					
235	Vac In High Transfer	AC Inputs	AC Input 4	Volt	0/300 (0)	basic
	The AC input high transfer in volts group 4					
236	Vac In High Stop	AC Inputs	AC Input 4	Volt	0/300 (0)	basic
	The AC input high stop in volts group 4					
301	Vdc In Low Start	DC Inputs	DC Input 1	Volt	0/80 (0)	basic
	The DC input low start in volts group 1					
302	Vdc In Low Transfer	DC Inputs	DC Input 1	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 1					
303	Vdc In Low Stop	DC Inputs	DC Input 1	Volt	0/80 (0)	basic
	The DC input low stop in volts group 1					
304	Vdc In High Start	DC Inputs	DC Input 1	Volt	0/80 (0)	basic
	The DC input high start in volts group 1					
305	Vdc In High Transfer	DC Inputs	DC Input 1	Volt	0/80 (0)	basic
	The DC input high transfer in volts group 1					
306	Vdc In High Stop	DC Inputs	DC Input 1	Volt	0/80 (0)	basic
	The DC input high stop in volts group 1					

Config Table						
311	Vdc In Low Start	DC Inputs	DC Input 2	Volt	0/80 (0)	basic
	The DC input low start in volts group 2					
312	Vdc In Low Transfer	DC Inputs	DC Input 2	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 2					
313	Vdc In Low Stop	DC Inputs	DC Input 2	Volt	0/80 (0)	basic
	The DC input low stop in volts group 2					
314	Vdc In High Start	DC Inputs	DC Input 2	Volt	0/80 (0)	basic
	The DC input high start in volts group 2					
315	Vdc In High Transfer	DC Inputs	DC Input 2	Volt	0/80 (0)	basic
	The DC input high transfer in volts group 2					
316	Vdc In High Stop	DC Inputs	DC Input 2	Volt	0/80 (0)	basic
	The DC input high stop in volts group 2					
321	Vdc In Low Start	DC Inputs	DC Input 3	Volt	0/80 (0)	basic
	The DC input low start in volts group 3					
322	Vdc In Low Transfer	DC Inputs	DC Input 3	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 3					
323	Vdc In Low Stop	DC Inputs	DC Input 3	Volt	0/80 (0)	basic
	The DC input low stop in volts group 3					
324	Vdc In High Start	DC Inputs	DC Input 3	Volt	0/80 (0)	basic
	The DC input high start in volts group 3					
325	Vdc In High Transfer	DC Inputs	DC Input 3	Volt	0/80 (0)	basic
	The DC input high transfer in volts group 3					
326	Vdc In High Stop	DC Inputs	DC Input 3	Volt	0/80 (0)	basic
	The DC input high stop in volts group 3					
331	Vdc In Low Start	DC Inputs	DC Input 4	Volt	0/80 (0)	basic
	The DC input low start in volts group 4					
332	Vdc In Low Transfer	DC Inputs	DC Input 4	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 4					
333	Vdc In Low Stop	DC Inputs	DC Input 4	Volt	0/80 (0)	basic
	The DC input low stop in volts group 4					
334	Vdc In High Start	DC Inputs	DC Input 4	Volt	0/80 (0)	basic
	The DC input high start in volts group 4					
335	Vdc In High Transfer	DC Inputs	DC Input 4	Volt	0/80 (0)	basic
	The DC input high transfer in volts group 4					
336	Vdc In High Stop	DC Inputs	DC Input 4	Volt	0/80 (0)	basic
	The DC input high stop in volts group 4					
341	Vdc In Low Start	DC Inputs	DC Input 5	Volt	0/80 (0)	basic
	The DC input low start in volts group 5					
342	Vdc In Low Transfer	DC Inputs	DC Input 5	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 5					

Config Table						
343	Vdc In Low Stop	DC Inputs	DC Input 5	Volt	0/80 (0)	basic
	The DC input low stop in volts group 5					
344	Vdc In High Start	DC Inputs	DC Input 5	Volt	0/80 (0)	basic
	The DC input high start in volts group 5					
345	Vdc In High Transfer	DC Inputs	DC Input 5	Volt	0/80 (0)	basic
	The DC input high transfer in volts group 5					
346	Vdc In High Stop	DC Inputs	DC Input 5	Volt	0/80 (0)	basic
	The DC input high stop in volts group 5					
351	Vdc In Low Start	DC Inputs	DC Input 6	Volt	0/80 (0)	basic
	The DC input low start in volts group 6					
352	Vdc In Low Transfer	DC Inputs	DC Input 6	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 6					
353	Vdc In Low Stop	DC Inputs	DC Input 6	Volt	0/80 (0)	basic
	The DC input low stop in volts group 6					
354	Vdc In High Start	DC Inputs	DC Input 6	Volt	0/80 (0)	basic
	The DC input high start in volts group 6					
355	Vdc In High Transfer	DC Inputs	DC Input 6	Volt	0/80 (0)	basic
	The DC input high transfer in volts group 6					
356	Vdc In High Stop	DC Inputs	DC Input 6	Volt	0/80 (0)	basic
	The DC input high stop in volts group 6					
361	Vdc In Low Start	DC Inputs	DC Input 7	Volt	0/80 (0)	basic
	The DC input low start in volts group 7					
362	Vdc In Low Transfer	DC Inputs	DC Input 7	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 7					
363	Vdc In Low Stop	DC Inputs	DC Input 7	Volt	0/80 (0)	basic
	The DC input low stop in volts group 7					
364	Vdc In High Start	DC Inputs	DC Input 7	Volt	0/80 (0)	basic
	The DC input high start in volts group 7					
365	Vdc In High Transfer	DC Inputs	DC Input 7	Volt	0/80 (0)	basic
	The DC input high transfer in volts group 7					
366	Vdc In High Stop	DC Inputs	DC Input 7	Volt	0/80 (0)	basic
	The DC input high stop in volts group 7					
371	Vdc In Low Start	DC Inputs	DC Input 8	Volt	0/80 (0)	basic
	The DC input low start in volts group 8					
372	Vdc In Low Transfer	DC Inputs	DC Input 8	Volt	0/80 (0)	basic
	The DC input low transfer in volts group 8					
373	Vdc In Low Stop	DC Inputs	DC Input 8	Volt	0/80 (0)	basic
	The DC input low stop in volts group 8					
374	Vdc In High Start	DC Inputs	DC Input 8	Volt	0/80 (0)	basic
	The DC input high start in volts group 8					

Config Table

375 Vdc In High Transfer	DC Inputs	DC Input 8	Volt	0/80 (0)	basic
The DC input high transfer in volts group 8					
376 Vdc In High Stop	DC Inputs	DC Input 8	Volt	0/80 (0)	basic
The DC input high stop in volts group 8					

Control Table

<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>License</i>
1	Load Actual Configuration Running on T2S	Inverter System		basic
This control will reload the configuration of the T2S inside the Configuration Element of the Inverter System. It returns 'command canceled' if all the information is not yet read				
2	Save Configuration To T2S	Inverter System		basic
Save Configuration To T2S				
11	Turn All Modules Off	Inverter System		basic
Turn All Modules Off				
12	Turn All Modules On	Inverter System		basic
Turn All Modules Off				
501	Clear My Events	Generic	Events	basic
By writing '1' to this control element, all the events of this equipment will be cleared.				
502	Clear All Events	Generic	Events	basic
By writing '1' to this control element, all the events of this equipment and all the events of all the sub-equipments will be cleared.				
511	Add Event	Generic	Events	basic
This control element adds an event of severity none. The event name is the text written to this control element				
512	Add Major Event	Generic	Events	basic
This control element adds an event of severity major. The event name is the text written to this control element				
521	Reset Default Names And Groups	Generic	Renaming	basic
This control element resets all the element Names, Groups and Subgroups to default values for this equipment				
522	Reset Default Names And Groups Recursive	Generic	Renaming	basic
This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments				