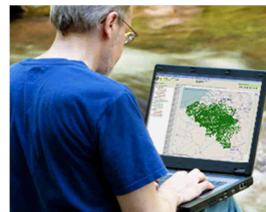


COMP@s

USER'S GUIDE



Chapter 1 – About this guide	8
Chapter 2 – Overview	9
2.1 Architecture and Features	9
2.1.1 General Features:	10
2.2 Block Diagram of Energy Systems managed by Comp@s	11
2.3 DC System Overview	12
2.3.1 DC Power System Principles	12
2.3.2 General Information on MCU	13
2.3.3 Mode Of Operation	14
2.3.4 Battery Temperature Compensation	14
2.3.5 Battery Charge Current Control	15
2.3.6 Battery Low Voltage Disconnect Operation (LVD)	16
2.3.7 DC System Alarms Overview	17
2.3.8 Battery Test	19
2.3.9 Boost Mode	20
2.3.10 List Of Possible Events	20
2.4 Some Comp@s Compatible Devices and Equipments	21
2.4.1 Site Controller	21
2.4.2 DC Systems	21
2.4.3 Remote Power Feeding Systems	21
2.4.4 Inverter Systems	22
Chapter 3 – Getting Started	24
3.1 Connecting the Comp@s Web Server over Ethernet	24
3.2 Connecting the Comp@s Web Server over USB	25
3.3 The Web Interface	27
3.3.1 Site	29
3.3.2 Dashboard	48
3.3.3 Reporting	49
3.3.4 Alarms/Events	51
3.3.5 Inventory	51
3.3.6 Files	53
3.3.7 Controller	53
3.3.8 Modifying values	56
3.3.9 Changing the Network Configuration	58
3.3.10 Saving The Changes	61

3.3.11	Getting some help about the elements	62
3.4	The Comp@s SNMP Agent	64
Chapter 4	– Functionalities	69
4.1	User Access Management	69
4.2	Save / Load configuration	71
4.3	Automatic events saving	71
4.4	Date and Time Management	71
4.4.1	Real Time Clock	72
4.4.2	Time zone and Daylight Saving Time	72
4.4.3	(S)NTP Time Protocol	73
4.5	Software Upgrade Management	73
4.5.1	Upgrading the Comp@s Software	73
4.5.2	Upgrading a Firmware with Comp@s	78
4.5.3	Upgrading The Operating System	80
4.6	Reset Factory Settings	82
4.7	Copying configuration from a system to another	83
4.8	PLC Functionalities	84
4.8.1	Syntax	84
4.8.2	Examples of Boolean Conditions	86
4.8.3	Examples of Mathematical Expressions	86
4.8.4	PLC License Package	86
4.9	Translating The Web Interface	87
4.10	Replacing a Rectifier in a DC System	88
4.11	Mobile Compliant	89
4.12	Alarm Acknowledgement	90
4.13	Email	90
Chapter 5	– Software Interfaces	93
5.1	Web Server	93
5.1.1	ETSI Protocol	93
5.1.2	Retrieving XML files	97
5.1.3	Retrieving data records in CSV format	99
5.1.4	HTTP GET of any description, data, configuration, etc.	99
5.1.5	HTTP POST to configure and control	100
5.2	FTP Server	102
5.2.1	Connecting the Comp@s FTP Server	103

5.2.2	Changing default login and password	103
5.3	Modbus Slave	104
5.3.1	Discrete Inputs (Read Only)	104
5.3.2	Input Registers (Read Only)	105
5.3.3	Discrete Coils Table (Command)	108
5.4	SNMP Agent	108
5.4.1	Using and Configuring SNMP traps	108
5.5	XML Event Posting (ETSI)	110
Chapter 6	Third-Party Equipment Interfaces	115
6.1	Energy Meters (modbus over RS485)	115
6.1.1	Requirements :	115
6.1.2	Configure the energy meter	116
6.1.3	Connecting the energy meter to Comp@s	116
6.1.4	Configuring comp@s	116
6.1.5	Discover your new device	117
6.1.6	Case studies : adding an overload current alarm via PLC system	118
6.2	CE+T Inverters (CANOpen)	119
Chapter 7	CAN Bus related information	121
7.1	CAN Bus - The internal field bus	121
7.2	Connecting multiple rectifier shelves together	121
7.2.1	Multiple Shelves working in parallel	122
7.2.2	Multiple Shelves Independent	123
Chapter 8	Equipment Tables	124
8.1	Site Tables	124
8.1.1	COMPAS	124
8.2	DC System Tables	135
8.2.1	ADIO 10 For Cordex Control	135
8.2.2	ADIO 12 AS MCU	149
8.2.3	MCU1X6	160
8.2.4	MCU1X6M3	172
8.2.5	MCU0024	183
8.2.6	MCU0348LP	196
8.2.7	MCU0348M4	206
8.2.8	MCU0348M4 / MCU0348LP	217
8.2.9	MCU0548M4	229

8.2.10	MCU0948DW	241
8.2.11	MCU0948M4 / MCU0948M4LP	253
8.2.12	MCU1848M3 / MCU1848M3D	265
8.2.13	MCU1848M6	276
8.2.14	MCU3048M6	287
8.2.15	MCU3096M6	301
8.2.16	MCU30110M6	315
8.2.17	MCU30125M6	328
8.2.18	MCU 300V DC	340
8.3	Rectifier Tables	354
8.3.1	CAR0548TN	354
8.3.2	CAR0948TN-1A / CAR0948TN-2A	355
8.3.3	CAR0948TN-3A	357
8.3.4	CAR1024TP	359
8.3.5	CAR1048TN-1A	360
8.3.6	CAR1048TN-2A	362
8.3.7	CAR1548TN	364
8.3.8	CAR1848TN-1A	365
8.3.9	CAR1848TN-2A	366
8.3.10	CAR2648TN	367
8.3.11	CAR30110TP	368
8.3.12	CAR30125TP	369
8.3.13	CAR30300TP	371
8.3.14	CDC1548TN	373
8.3.15	Cordex 2.4KW	374
8.3.16	Cordex 4KW	376
8.3.17	CXRF48-4kW	378
8.3.18	CXRF 48-300W	379
8.3.19	ECOR0348	381
8.3.20	PMM0854FP02	383
8.4	Sensors And Actuators Tables	385
8.4.1	ADIO 7	385
8.4.2	ADIO 8	394
8.4.3	ADIO 9	400
8.4.4	ADIO 10	405
8.4.5	ADIO 12	411

8.4.6	ADIO 13	416
8.4.7	ADIO SP0151	420
8.4.8	ADIO SP0155/01	427
8.4.9	ADIO SP0155/02	438
8.4.10	BIOM	455
8.4.11	SAM0348	460
8.4.12	SAM0948	467
8.5	Remote Power Feeding System Tables	474
8.5.1	CEM03_Remote_Power_Feeding_System	474
8.5.2	CEM03 Remote Power Feeding_System	475
8.6	Up Converter System Tables	475
8.6.1	CEM03_Up_Converter_System	475
8.6.2	CEM03 Up Converter_System	480
8.7	Remote Site Tables	485
8.7.1	CEM03_Remote_Site	485
8.7.2	CEM03 Remote Site	488
8.8	Inverter Tables	491
8.8.1	Inverter Module (T2S)	491
8.9	Inverter System Tables	494
8.9.1	Inverter System (T2S)	494
Chapter 9	– Licenses	514
9.1	The Comp@s license packages	514
9.1.1	The Battery Package	514
9.1.2	The Asset Package	514
9.1.3	The PLC Package	515
9.1.4	The Modbus Package	515
9.1.5	License currently in use	515
9.2	How can I upgrade my license?	515
9.3	How is the license stored?	516
Chapter 10	– Software Release Components	517
10.1	System bootloader	517
10.2	The Operating System	517
10.3	Comp@s Starter Executable	518
10.4	Comp@s Executable	518
10.4.1	C Drivers	519

10.4.2	Environment Configuration	519
10.4.3	License	520
10.4.4	Translation Dictionary	520
10.4.5	Site Object	520
10.4.6	Decode CAN Msg	520
10.4.7	Web Server Interface	521
10.4.8	SNMP Management	521
10.4.9	Process Scheduled Tasks	521
10.4.10	Inventory Management and Equipment Mounting	522
10.4.11	Alarm Set-up and Clearance	522
10.4.12	System and Application Configuration	522
10.4.13	Data Record Management	522
10.4.14	Equipment Emulation	523
10.5	Comp@s FTP Server Executable	523
Chapter 11 – Software Changelog		524
11.1	.NET Executable Versioning	524
11.2	Comp@s Changelog	525
Chapter 12 – Emulation Capabilities		541
12.1	What is the Comp@s emulator?	541
12.2	What are the requirements?	541
12.3	How to run the emulator?	542
12.4	How to use the emulator?	542
12.5	Simulating a network of Comp@s system	542
12.6	Where can I get the emulator?	542
12.7	Remarks	543
Chapter 13 – Frequently Asked Questions		544
13.1	USB Connection Troubles	544
Chapter 14 – Support		547
Chapter 15 – Appendix		548
15.1	Convert a CE+T to CANOpen	548

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
15 May 2008	01	First Edition
26 June 2008	02	Typo corrections, added Modbus chapter and information about PLC functions
09 July 2008	03	Added chapter "Connecting multiple shelves together".
15 July 2009	05	Added section 6.8 with firmware upgrades instructions. Added information about SNMP V3 in section 5.5. and updated tables at section 8.1.
11 June 2010	06	Added canid function (plc)
20 February 2012	07	New Alpha Technologies template and structure improvement.
16 May 2012	08	Major rewrite and reorganization - New writing tool
12 November 2012	09	DC system overview Updated equipment tables
17 December 2012	10	Updated for release 0.114.0.7
16 January 2013	11	Updated for release 0.116.0.3
21 January 2013	12	Updated for release 0.117.0.3
21 February 2013	13	Updated for release 0.119.0.3
13 June 2013	14	Updated for release 0.123.0.3
04 August 2014	15	Updated for release 2.11.0.3 (First official version for 2.x)
30 January 2015	16	Updated for release 2.17.0.3

Contact information

Alpha Technologies S.A.
 Boulevard de l'Europe 131
 1301 Wavre
 Belgium
 Tel: +32 (0)10 438 510
 Fax: +32 (0)10 438 213
 Web: www.alphatechnologies.eu

Chapter 2 – Overview

- [Architecture and Features](#)
- [Block Diagram of Energy Systems managed by Comp@s](#)
- [DC System Overview.](#)

2.1 Architecture and Features

Magell@n Comp@s is the product name of our new controller. It consists in a new platform extending the range of applications of a traditional dc-system shelf controller. Comp@s product is a “site” monitoring, 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
- Whatever you may need, just ask us.

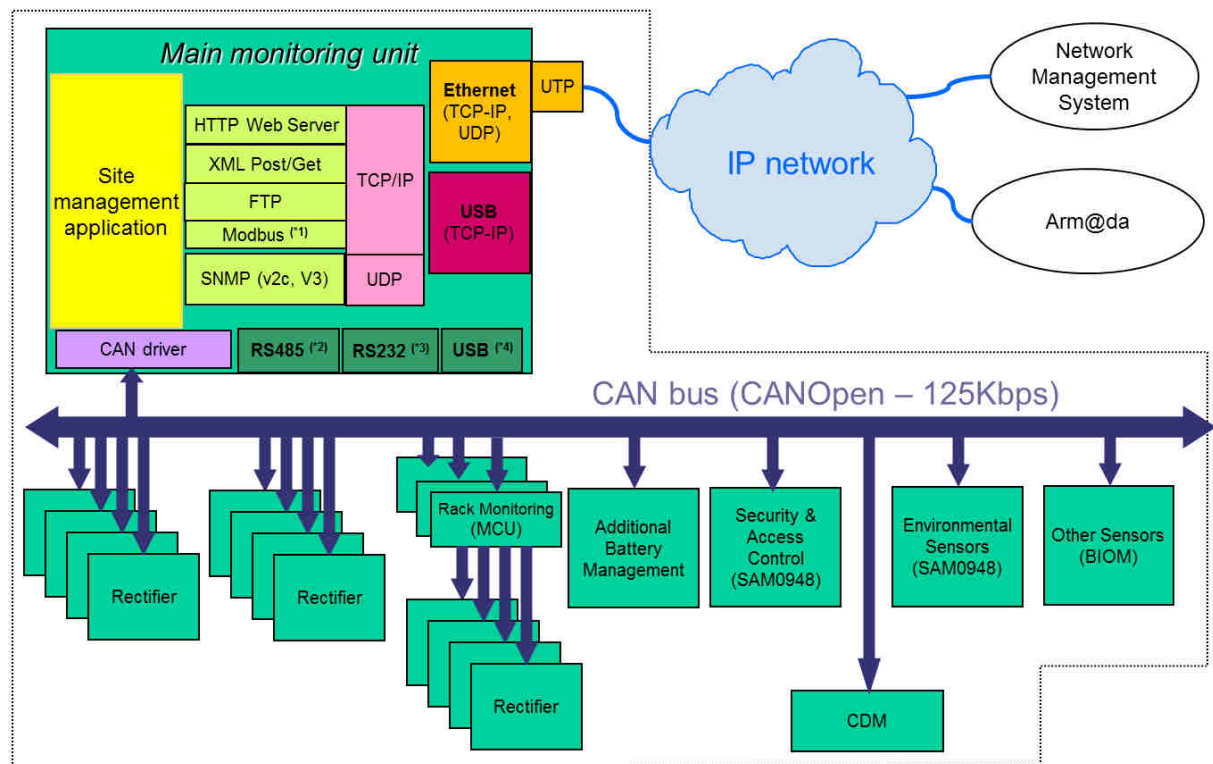
This solution targets large network infrastructure, also with heterogeneous architecture. It is the ideal solution for access networks cabinet monitoring and control. This platform allows customization to satisfy your needs.

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

This site monitoring is a powerful tool for OPEX (**O**Perating **E**Xpenditures) 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 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 and SNMP. 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 Comp@s Bloc Diagram



2.1.1 General Features:

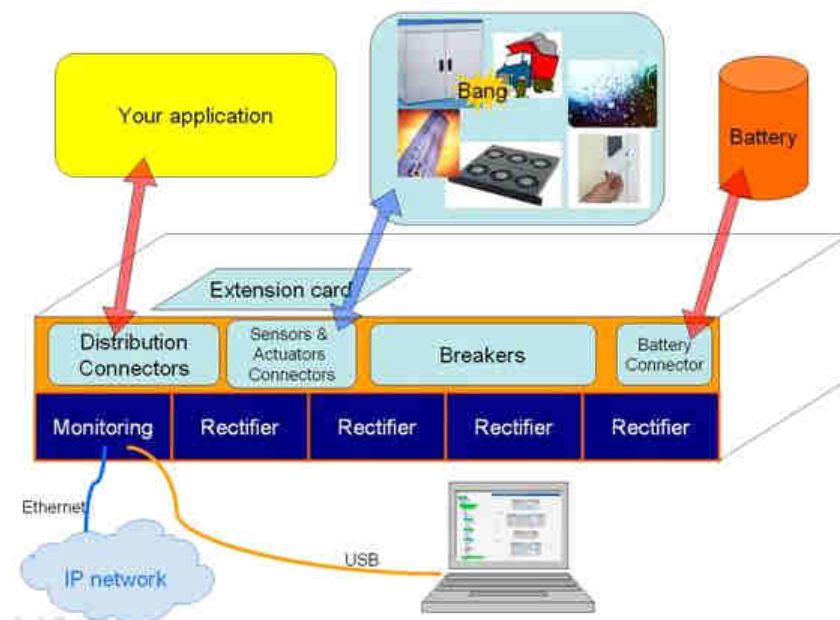
- User Interfaces (Ethernet / USB)
 - o Web Interface
 - o SNMP V1, V2c, V3
 - o XML API - ETSI compliant
 - o Modbus
 - o FTP
- Field Bus Interfaces : CAN, RS485, USB, RS232
- User Management
- Time Management (NTP)
- Change Traceability
- Translation
- Data Recording (Second, Minute, Hours, Days, Delta)
- 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 on Upgrade
- Factory Configuration
- License Model (You pay what you need)
- Ready for customization on specific projects

2.2 Block Diagram of Energy Systems managed by Comp@s

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 2 Schematic of the inside of a cabinet



2.3 DC System Overview

- [DC Power System Principles](#)
- [General Information on MCU](#)
- [Mode Of Operation](#)
- [Battery Temperature Compensation](#)
- [Battery Charge Current Control](#)
- [Battery Low Voltage Disconnect Operation \(LVD\)](#)
- [DC System Alarms Overview](#)
- [Battery Test](#)
- [Boost Mode](#)
- [List Of Possible Events.](#)

2.3.1 DC Power System Principles

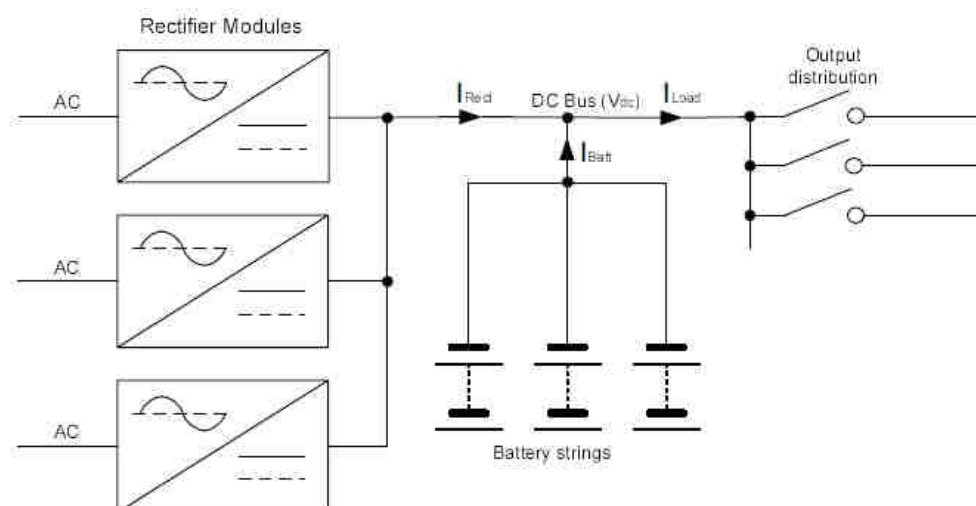
A DC system is a system converting AC power to DC power.

It is composed of:

- Rectifiers
- AC distribution
- DC distribution
- Battery(ies), avoiding application interruption.
- MCU (Monitoring Control Unit).

The following diagram is a classical representation of a DC system:

Figure 3 DC System



The following sub-chapters include a high level description of generic functionalities. More information should be available on the user manual of the specific system you are using.

2.3.2 General Information on MCU

A Monitoring Control Unit (MCU) is a micro controller-based monitoring system intended for use to monitor DC Systems, including rectifiers, batteries, and other modules.

The MCU has generally a Comp@s card on it, allowing the human and machine to machine interfaces (over Ethernet/USB). It also extends the functionalities.

If Comp@s is not available, the MCU will control the system with the configuration saved in the Flash.

On most of the systems, the controller is a hot-pluggable, hot-swappable unit that fits into the rectifier rack.

There is often the followings Leds on the front plate :

- Status Led (Green) :
 - o Steady : Monitoring is OK
 - o 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)
 - o Slow Blinking (1Hz): Battery test is running
 - o 800 ms On, 200 ms Off : System is in boost mode
- LVD OK (Green) : Is steady on when the LVD is closed
- 4 Leds 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 1-5 sec : Save configuration
- Pressed for 5-10 sec : Start Battery Test
- Pressed for > 10 sec: Force Battery Test
- Pressed during battery test cancel the test.

2.3.3 Mode Of Operation

The DC system can be in one of the following mode:

- **Float** : the output voltage is set to the float voltage setting. It can be automatically adjusted by the temperature compensation or the current limitation.
- **Boost** : the output voltage is set to the boost voltage setting. It can be automatically adjusted by the temperature compensation or the current limitation.
- **Battery Test** : the battery is being tested. The voltage is going down. Alarm like "Bus Voltage Low" can be generated.
- **Ac Failure** : all the rectifiers are not powered. The battery is discharging.
- **Safe** : the system can go to safe when when there is communication problems or when the voltage/current/temperature sense are not connected correctly.

2.3.4 Battery Temperature Compensation

- [BTC: General Overview](#)
- [BTC: Configuration Parameters](#)
- [Theory Of Battery Temperature Compensation.](#)

BTC: General Overview

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 maximum compensation can be configured.

The Battery Temperature Compensation is regulated by the MCU. The configuration is stored in the MCU, and is updated by Comp@s if present.

BTC: Configuration Parameters

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

- Temperature Compensation Slope
- Maximum Positive Temperature Compensation
- Maximum Negative Temperature Compensation.

Theory Of 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.

Temp Comp 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.

The Temp Comp 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 or equalize mode, breakpoints should be set with this in mind.

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

2.3.5 Battery Charge Current Control

- [BCCC: General Overview](#)
- [BCCC: Configuration Parameters.](#)

BCCC: General Overview

The Battery Monitor feature enhances the controller's capability to provide information about the battery to the User. Charge Current Control will help increase battery longevity by keeping the battery current to within specified limits. Charge current 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.

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.

BCCC: Configuration Parameters

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

- Battery Charge Current Limit
- Shunt Rating At 60mV.

2.3.6 Battery Low Voltage Disconnect Operation (LVD)

- [LVD: General Overview](#)
- [LVD: Configuration Parameters.](#)

LVD: General Overview

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

In most of the systems, there is an hardware and a software LVD. The hardware should be lower than the software.

For 54V systems, the hardware is around 42V. The software will be configured around 46V.

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".

LVD: Configuration Parameters

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.

2.3.7 DC System Alarms Overview

- [Alarms Related To DC Output Bus Voltage](#)
- [Alarms Related To Rectifiers](#)
- [Alarms Related To The Input AC Power Of The Rectifiers](#)
- [Alarms Related To Battery](#)
- [Alarms Related To General Input.](#)

Alarms Related To DC Output Bus Voltage

Here are follows the most common alarms name related to DC output bus voltage. More information can be found in the detailed equipment table of this guide:

- *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.*

It is only related to the Bus voltage measurement. There are different hystereses to avoid changing alarm state around borders values.

Low and extra low alarms happens when the battery is getting discharged.

High and Extra High should never appear with correct configuration, as there is hardware OVP in the rectifiers.

Alarms Related To Rectifiers

The alarms are the following:

- One Rectifier Failure
- More Than One Rectifier Failure
- Missing Rectifiers : with parameter "Minimal Number Of Present Rectifiers".

Note that a rectifier can be considered as in failure when it is not powered, depending of the system configuration. When there is no communication with the rectifier, it is not possible to know if the AC has a problem, or if the rectifier is defect.

Alarms Related To The Input AC Power Of The Rectifiers

The alarms are the following:

- Mains Failure
- Mains Partial Failure
- Mains Low (on some systems)
- Mains High (on some systems).

Alarms Related To Battery

The alarms are the following:

- 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.

Alarms Related To General Input

The alarms are the following:

- Digital Input X
- Battery Breaker Open
- Distribution Breaker Open

- Ambient Temperature Too High
- Ambient Temperature Too Low
- Ambient Temperature Sensor Fail.

These alarms have no consequence on the system regulation by default.

2.3.8 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.

- [Principle](#)
- [Applied Equations](#)

Principle

The test itself consists of programming the required bus voltage down to a low level, which has the effect of discharging the battery into the load. The battery discharge current is then integrated over time, and the integration result is compared to a given Ampere hour value.

During the battery test, the discharge current of the battery is regulated at the configured parameter “Battery Test Discharge Current”. If the output current is greater than the discharge current limit, the rectifiers supply the difference of current. If the output current is too low, according to parameter “Battery Test Minimal Discharge Current”, the test will be canceled.

If the Ampere hour value is reached while the bus voltage is still above the “Battery Test End Voltage”, the battery is considered good and the “Battery Last Test Failed” alarm is not generated.

If the bus voltage reaches the “Battery Test End Voltage” prior to reaching the Ampere hour value, the battery test is considered as failed and the “Battery Last Test Failed” alarm is generated. This alarm remains active until the front panel switch is pressed or reset through a communication interface.

If the front panel switch is pressed during a test, the test is immediately canceled.

After a battery test (succeeded, failed or canceled), the DC system returns in float or boost mode, according to configuration.

Applied Equations

Battery test is based on Peukert's law for discharging a lead-acid battery ([1]), that predicts battery capacity for a given discharge current and discharge time.

Battery String Capacity is the capacity in Ampere-hours given by constructor for a rated discharge time (generally: 10 hours). Peukert Number is a constant comprized between 1.1 and 1.3, according to lead-acid used technology and battery aging.

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: $100 * (\text{battery capacity} + \text{sum}(\text{effective current}(\text{minute}) / 60) / \text{battery capacity})$.

[1] http://en.wikipedia.org/wiki/Peukert%27s_law

2.3.9 Boost Mode

The DC bus voltage can be increased in order to charge the battery faster. This mode can be automatically started after an AC Failure, after a battery test, or remotely. (This mode is recommended only with some kind of battery).

2.3.10 List Of Possible 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 operation has been changed (see: Mode Of Operation). 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

2.4 Some Comp@s Compatible Devices and Equipments

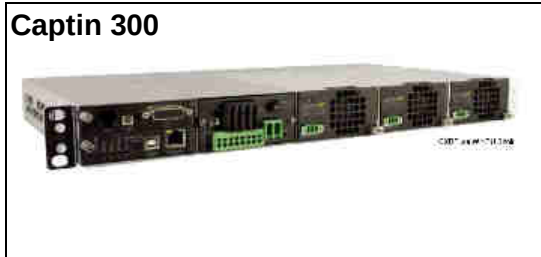
2.4.1 Site Controller

UCC



2.4.2 DC Systems

Captin 300



Captin 850BW



Captin 850FA



ACE186



ACE153



ACE094



2.4.3 Remote Power Feeding Systems

CES48 (with CEM03)

REC006

	
RES24 	RES96 

2.4.4 Inverter Systems

BRAVO 	

Power Meters and other Sensors

PM9C 	IEM3150 
MS-TH	1-Wire Interface



T-SENSE



Chapter 3 – Getting Started

- [Connecting the Comp@s Web Server over Ethernet](#)
- [Connecting the Comp@s Web Server over USB](#)
- [The Web Interface](#)
- [The Comp@s SNMP Agent](#)

3.1 Connecting the Comp@s Web Server over Ethernet

The Comp@s monitoring RJ45 female port provides a standard 10/100 MBit Ethernet connection. The default network configuration is:

Default Ethernet Configuration

IP address: **192.168.45.2**

Sub Mask: **255.255.255.0**

Required material:

- A personal computer with Ethernet capabilities;
- A crossed Ethernet cable if the PC is directly connected to the Comp@s monitoring (Some recent PC have an automatic polarity detection, in this case a straight cable can be used);
- A straight Ethernet cable if the Comp@s monitoring is connected to a switch.

Required software:

- Any operating system with an up to date web browser. It is recommended to use Firefox >= 2.x or Internet Explorer >= 7.x.

To connect to the system, the personnel computer has to be configured with a static IP address. You can use the IP 192.168.45.1 for example, with 255.255.255.0 as sub mask.

To do this under Windows XP, Access the Network Connections control panel (**Start -> Control Panel -> Network Connections**). Pick the connection you're using, generally Local Area Connection. Right-click on that connection's icon and pick Properties. 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:

Figure 4 Network Configuration

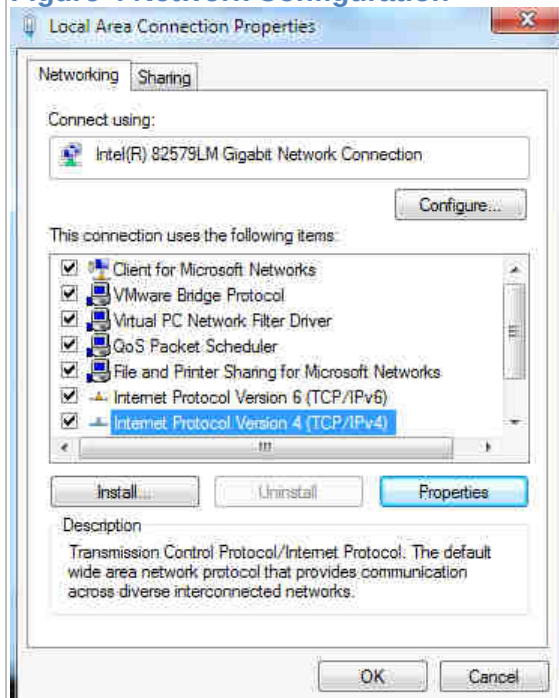
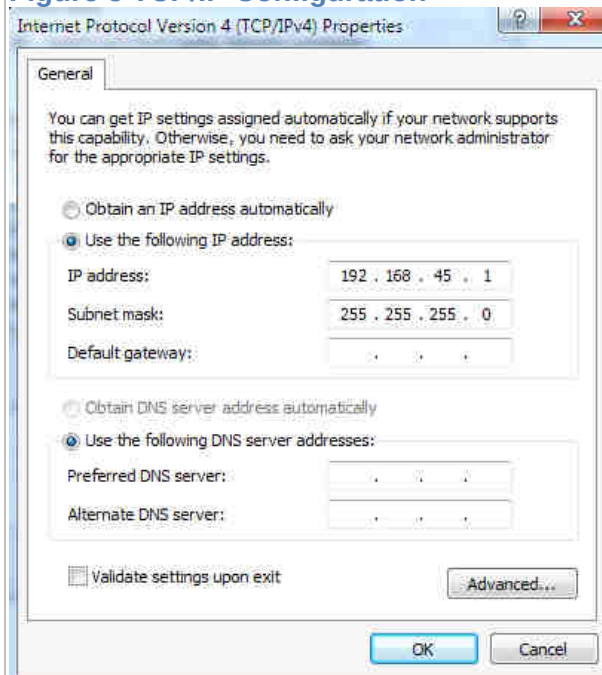


Figure 5 TCP/IP Configuration



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, 192.168.45.1). The subnet mask will automatically become 255.255.255.0, which is correct. Then, click the "OK" button.

You can now start your web browser and browse to the URL <http://192.168.45.2> . The Comp@s web server will ask for a login and a password which are:

Default Admin Password

Login/User Name : **admin**

Password : **compas**

(Please note that login and password are case sensitive)

You are now connected on the web interface as administrator of the system. For the users : refer to [User Access Management](#).

Figure 6 Authentication



3.2 Connecting the Comp@s Web Server over USB

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.



Required software:

- A Windows XP / Vista / Seven operating system.
- A web browser: it is recommended to use Firefox >= 2.x or Internet Explorer >=7.x.
- With XP, use the free Microsoft Active Sync application : <http://www.microsoft.com/en-us/download/details.aspx?id=15>
- With vista, the “Sync Center” is already installed and is enough (In this case, you can skip step 2.) . If you want you can update it:
 - o <http://www.microsoft.com/download/en/details.aspx?id=14> (32-bit)
 - o <http://www.microsoft.com/download/en/details.aspx?id=3182> (64-bit)
- With Windows 7 you can skip step 2

STEP 1: Do not connect the USB cable yet

STEP 2: Install the Active Sync application. A computer reboot may be asked at the end of the installation.

STEP 3: Activate the port forwarding over USB. To do this, a small modification in the registry must be done. You can use the windows registry editor “Regedit”, and add the following entry:

In HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows CE Services\ProxyPorts, add the “HTTP PORT FORWARDING” DWORD value, with data: 00000050.

STEP 4 (facultative): If you need to redeploy on several client, open a new text file and write the followings 3 lines:

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

Then, save the file as “Compas.reg” and execute it (double-click).

STEP 5: Connect the USB cable between the personal computer and the Comp@s monitoring.

STEP 6: Active Sync application should detect the connection and ask to “Set Up a PartnerShip”. Just click on “No” and afterwards on “Next”.

STEP 7: 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).

STEP 8: Start your Web Browser and enter the URL address <http://127.0.0.1> or <http://localhost>.

STEP 9: The Comp@s web server will ask for a login and a password which are:

Default admin password

Login/User Name: **admin**

Password: **compas**

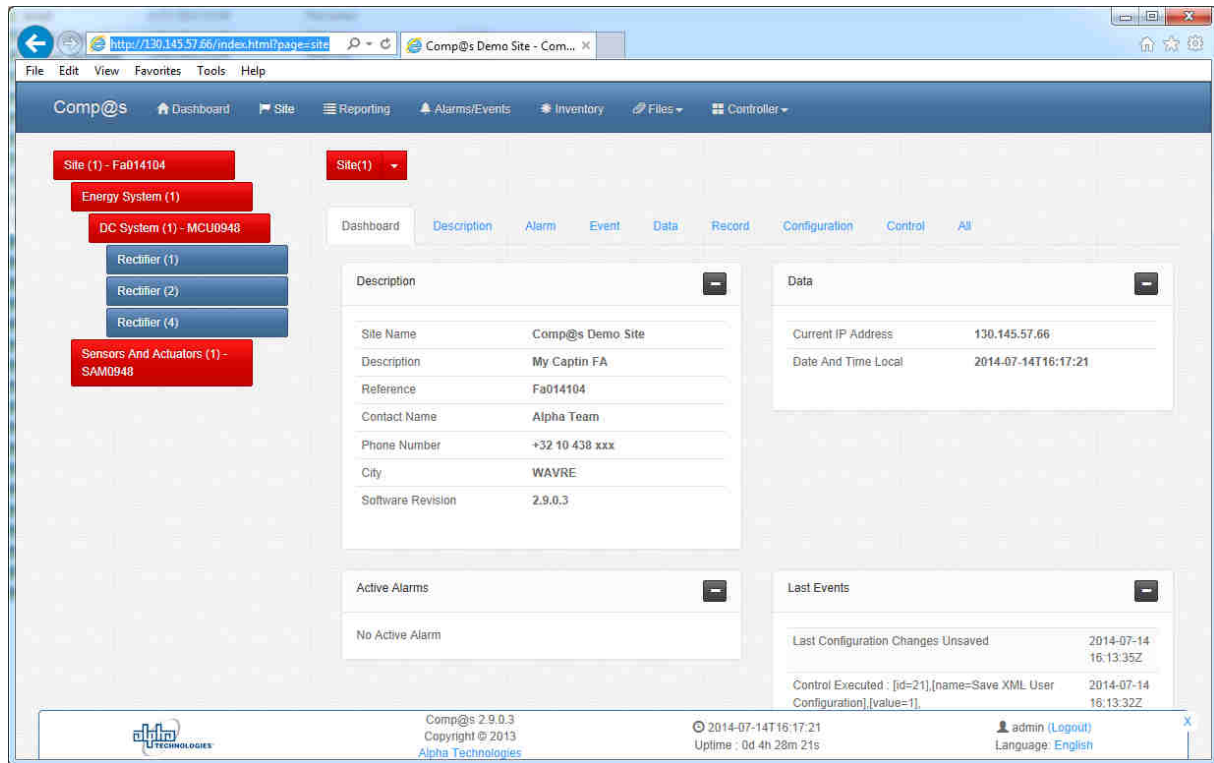
(Please note that login and password are case sensitive)

You are now connected on the web interface as administrator of the system.

3.3 The Web Interface

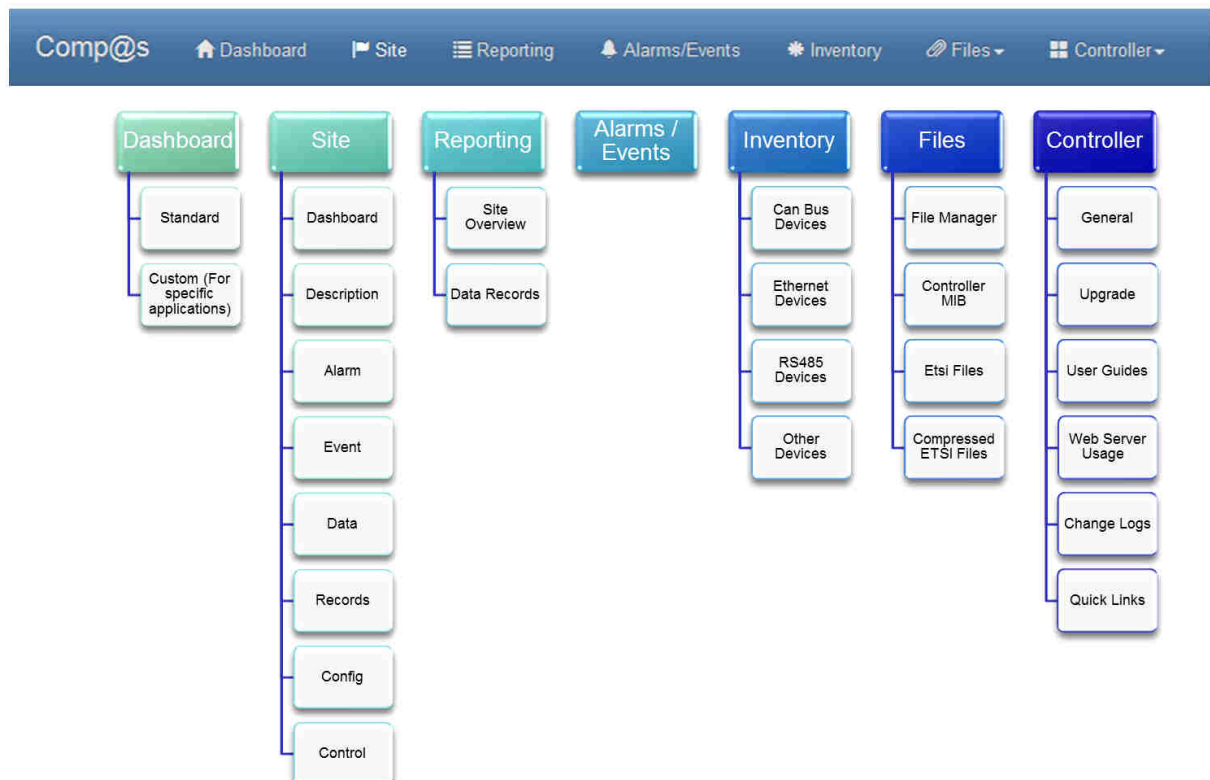
The following figure shows the default initial web page displayed after login (Site):

- 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.). If all these tree nodes are in a blue color, no alarm is active. Otherwise, red = major alarm, orange = minor, yellow = warning.
- 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



The website is structured as shown if the following diagram:

Figure 7 Initial page displayed (Site by default)

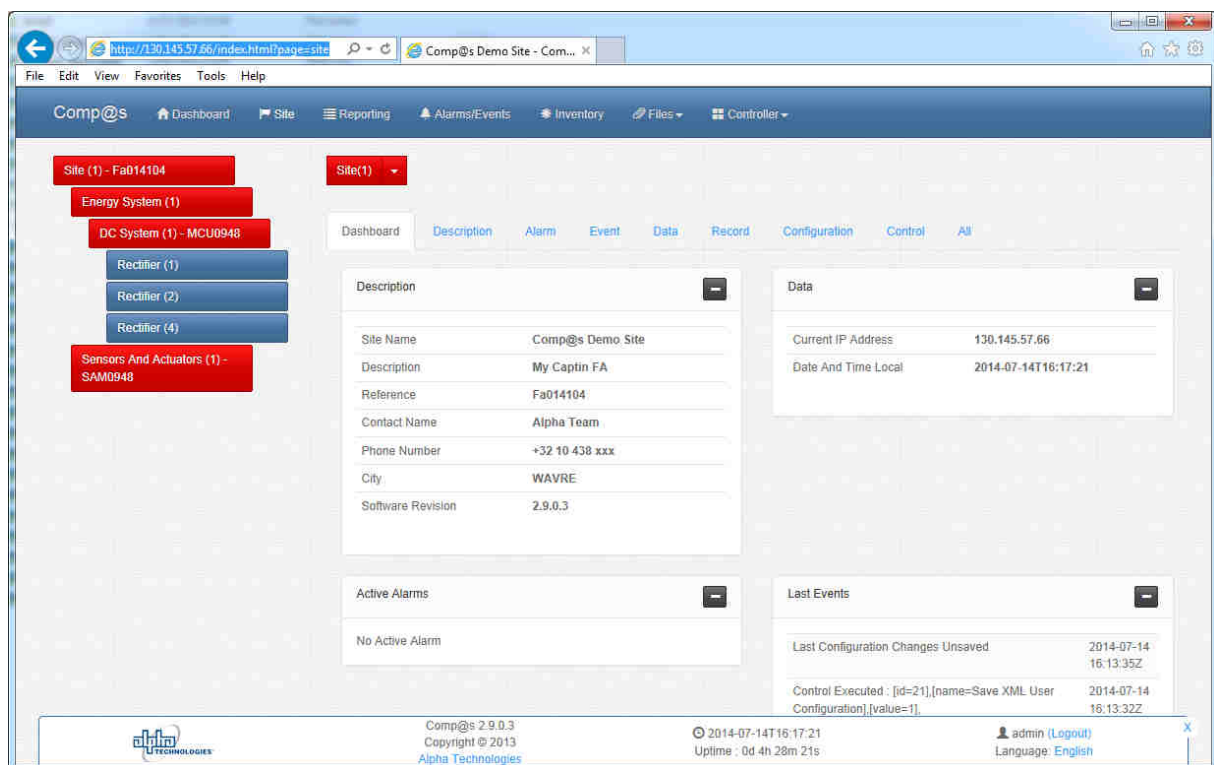


3.3.1 Site

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.). If all these tree nodes are in a blue color, no alarm is active. Otherwise, red = major alarm, orange = minor, yellow = warning.
- 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 8 Initial page displayed



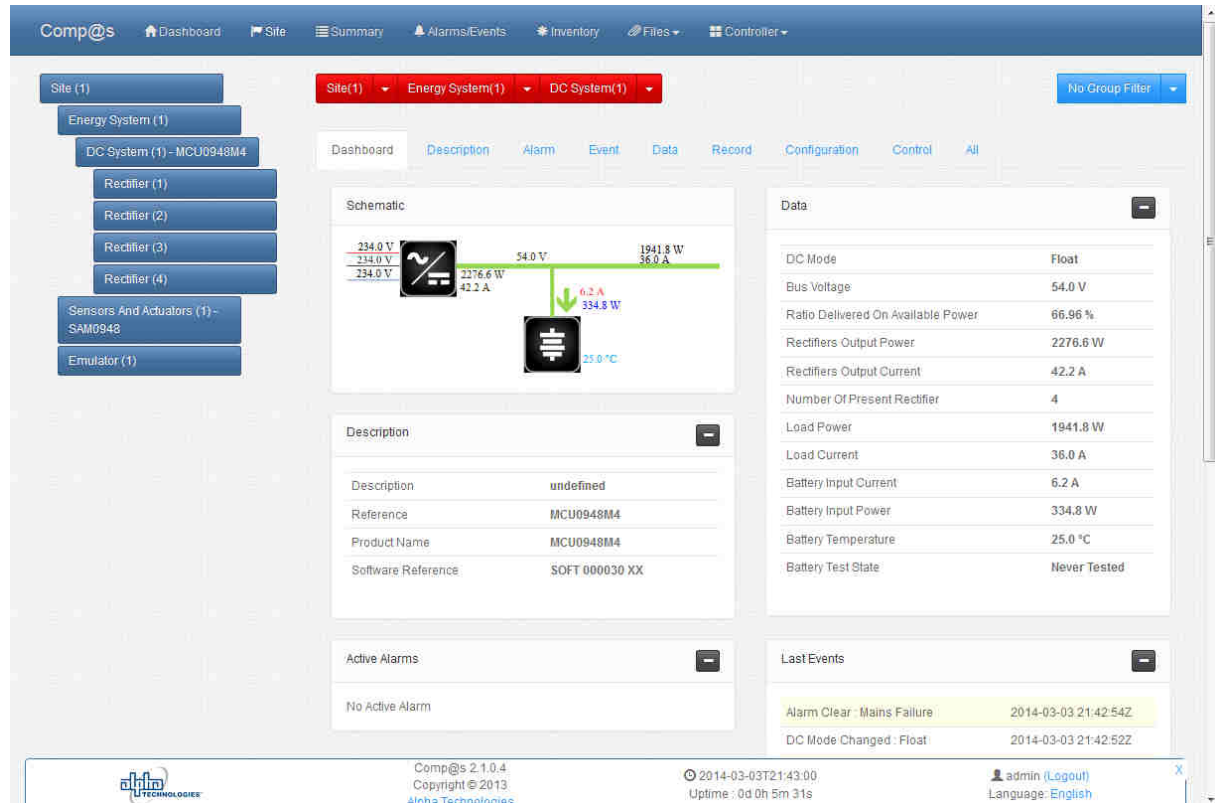
The following tabs are therefore available:

- [Site - Description](#)
- [Site - Alarm](#)
- [Site - Event](#)
- [Site - Data](#)
- [Site - Record](#)

- [Site - Configuration](#)
- [Site - Control](#).

Site - Dashboard

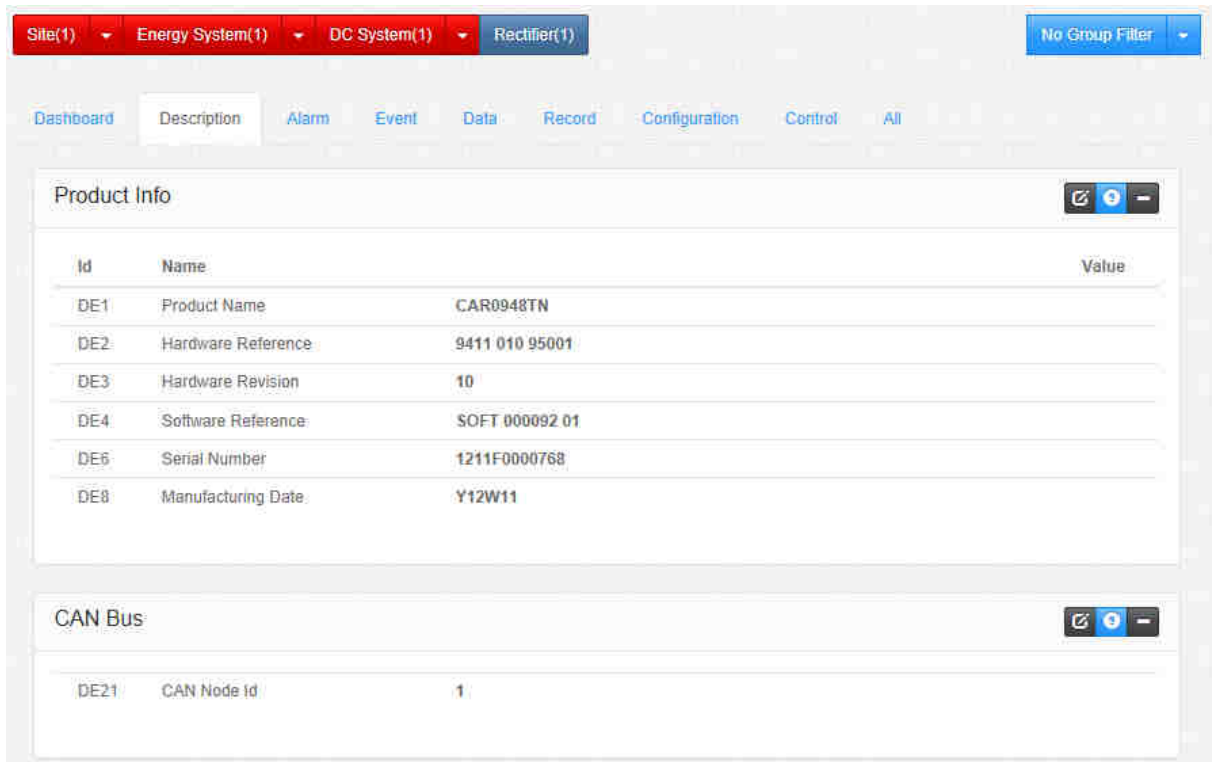
Figure 9 Dc system Dashboard



Site - Description

The following screenshot shows an automatic description of a specific rectifier. Some of our rectifiers embed their hardware/software reference and revision, their serial number, manufacturing id, manufacturing date, etc. This allows a powerful traceability of our products in a network of widely spread cabinet:

Figure 10 Rectifier Tab



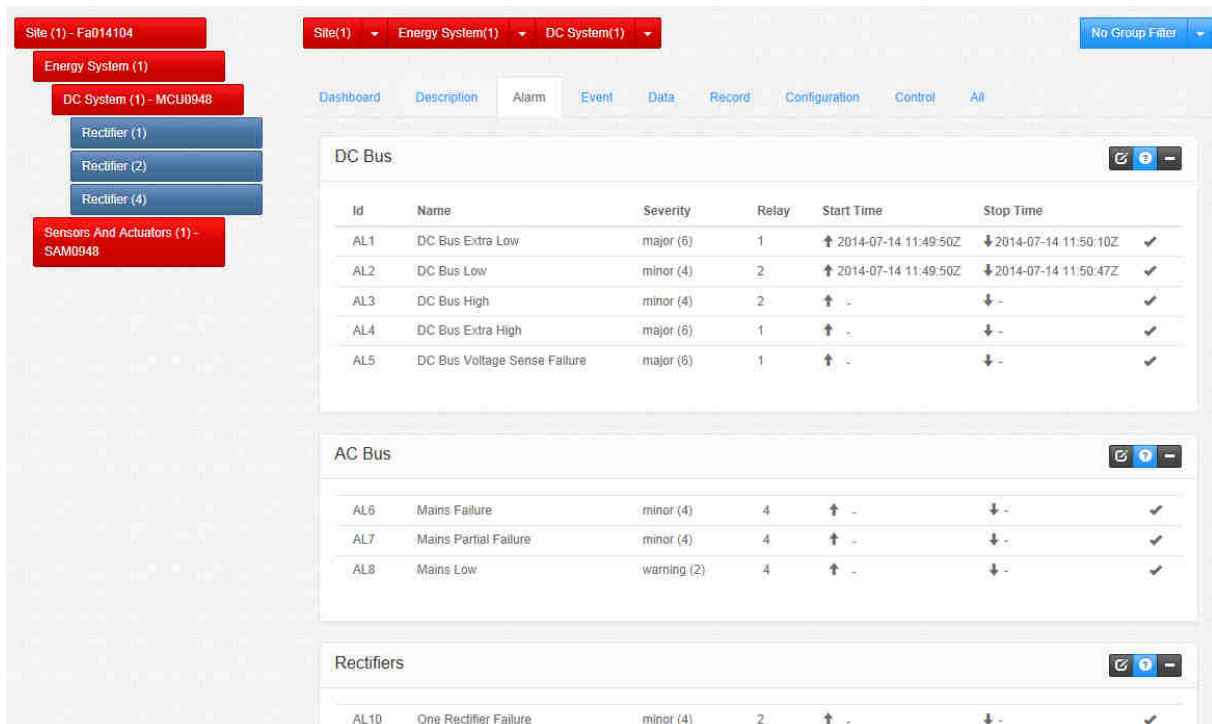
Id	Name	Value
DE1	Product Name	CAR0948TN
DE2	Hardware Reference	9411 010 95001
DE3	Hardware Revision	10
DE4	Software Reference	SOFT 000092 01
DE6	Serial Number	1211F0000768
DE8	Manufacturing Date	Y12W11

Id	Name	Value
DE21	CAN Node Id	1

Site - Alarm

The following figure illustrates how the alarms are displayed. When equipment is in alarm, the left tree menu reflects the situation, allowing to quickly locating a problem:

Figure 11 Alarms at the DC System level



Id	Name	Severity	Relay	Start Time	Stop Time	
AL1	DC Bus Extra Low	major (6)	1	↑ 2014-07-14 11:49:50Z	↓ 2014-07-14 11:50:10Z	✓
AL2	DC Bus Low	minor (4)	2	↑ 2014-07-14 11:49:50Z	↓ 2014-07-14 11:50:47Z	✓
AL3	DC Bus High	minor (4)	2	↑ -	↓ -	✓
AL4	DC Bus Extra High	major (6)	1	↑ -	↓ -	✓
AL5	DC Bus Voltage Sense Failure	major (6)	1	↑ -	↓ -	✓

Id	Name	Severity	Relay	Start Time	Stop Time	
AL6	Mains Failure	minor (4)	4	↑ -	↓ -	✓
AL7	Mains Partial Failure	minor (4)	4	↑ -	↓ -	✓
AL8	Mains Low	warning (2)	4	↑ -	↓ -	✓

Id	Name	Severity	Relay	Start Time	Stop Time	
AL10	One Rectifier Failure	minor (4)	2	↑ -	↓ -	✓

The active alarms are highlighted in a color corresponding to the severity type of the alarm (Red: major, Orange: minor, Yellow: warning). One can see the start time and the stop time of a specific alarm, the associated relay (if dry alarms exist), the severity type and the severity level.

Figure 12 Active alarm at dc system

AL20	Battery Temperature Sensor Fail	minor (3)	0	↑ -	↓ -	✓

LVD							✎ ⓘ -
AL17	Battery LVD Relay Open	major (6)	3	↑ 2014-07-14 11:49:50Z	↓ -	🔔	☐

Sensors							✎ ⓘ -
Temperature							
AL21	Ambient Temperature Too High	minor (0)	0	↑ -	↓ -	✓	
AL22	Ambient Temperature Too Low	minor (0)	0	↑ -	↓ -	✓	
AL23	Ambient Temperature Sensor Fail	minor (0)	0	↑ 2014-07-14 11:49:50Z	↓ -	🔔	☐

Digital Inputs							✎ ⓘ -
AL25	Distribution Breaker Open	major (6)	1	↑ 2014-07-14 11:49:50Z	↓ -	🔔	☐
AL26	Battery Breaker Open	minor (4)	2	↑ 2014-07-14 11:49:50Z	↓ -	🔔	☐
AL27	Digital Input 3	none (0)	0	↑ 2014-07-14 11:49:50Z	↓ -	🔔	☐
AL28	Digital Input 4	none (0)	0	↑ 2014-07-14 11:49:50Z	↓ -	🔔	☐

The following figure illustrates how an alarm can be configured. It is possible to change the severity type, the severity level, the associated dry alarm relay, the set delay and the clear delay:

Figure 13 Alarm configuration

Site(1) ▾
Energy System(1) ▾
DC System(1) ▾

Filter: DC Bus ▾
No SubGroup Filter ▾

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

DC Bus
✖
A
+
-

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 ☒
AL4	DC Bus Extra High	major ▾ ☒	6 ▾ ☒	1 ▾ ☒	5 ☒	2 ☒
AL5	DC Bus Voltage Sense Failure	major ▾ ☒	6 ▾ ☒	1 ▾ ☒	5 ☒	2 ☒

If you need help, you can display it by clicking on the question mark.

Figure 14 Diplaying Help

DC Bus
✖
A
+
-

Id	Name	Severity Type	Severity Level	Relay	Set Delay	Clear Delay
AL1	DC Bus Extra Low	major ▾ ☒	6 ▾ ☒	1 ▾ ☒	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						
AL2	DC Bus Low	minor ▾ ☒	4 ▾ ☒	2 ▾ ☒	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'						
AL3	DC Bus High	minor ▾ ☒	4 ▾ ☒	2 ▾ ☒	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'						
AL4	DC Bus Extra High	major ▾ ☒	6 ▾ ☒	1 ▾ ☒	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'						
AL5	DC Bus Voltage Sense Failure	major ▾ ☒	6 ▾ ☒	1 ▾ ☒	5 ☒	2 ☒
? The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured						

The following figure shows alarms related to some sensors and actuators connected to an extension module: Vandalism alarm (shock detection), Water Detection, Cabinet Temperature Too High, Cabinet Humidity High, Badge Reader Failure, etc.:

Figure 15 Sensors and Actuators alarms

Site(1)

Sensors And Actuators(1)

No Group Filter

Dashboard

Description

Alarm

Event

Data

Record

Configuration

Control

All

	</					

Site - Event

The following figures show a list of events related to a DC System. It is possible to configure the number of events to keep. These events can be sent to multiple servers with SNMP traps or by HTTP post of XML files to a primary and a secondary server:

Figure 16 Events related to DC System

Dashboard	Description	Alarm	Event	Data	Record	Configuration	Control	All
Id Name Severity DateTime Group Subgroup								
Last Day								
EV94	Digital Input 4	none	2014-07-15 09:45:03Z	Digital Inputs				
EV93	Digital Input 3	none	2014-07-15 09:45:03Z	Digital Inputs				
EV92	Battery Breaker Open	minor	2014-07-15 09:45:03Z	Digital Inputs				
EV91	Distribution Breaker Open	major	2014-07-15 09:45:03Z	Digital Inputs				
EV90	Ambient Temperature Sensor Fail	minor	2014-07-15 09:45:03Z	Sensors	Temperature			
EV89	Battery LVD Relay Open	major	2014-07-15 09:45:03Z	LVD				
EV88	DC System Started	major	2014-07-15 09:44:59Z	Controller				
EV87	DC Bus Low	minor	2014-07-14 11:50:47Z	DC Bus				
EV86	DC Bus Extra Low	major	2014-07-14 11:50:10Z	DC Bus				
EV85	Digital Input 4	none	2014-07-14 11:49:50Z	Digital Inputs				
EV84	Digital Input 3	none	2014-07-14 11:49:50Z	Digital Inputs				
EV83	Battery Breaker Open	minor	2014-07-14 11:49:50Z	Digital Inputs				
EV82	Distribution Breaker Open	major	2014-07-14 11:49:50Z	Digital Inputs				
EV81	Ambient Temperature Sensor Fail	minor	2014-07-14 11:49:50Z	Sensors	Temperature			
EV80	Battery LVD Relay Open	major	2014-07-14 11:49:50Z	LVD				
EV79	DC Bus Low	minor	2014-07-14 11:49:50Z	DC Bus				
EV78	DC Bus Extra Low	major	2014-07-14 11:49:50Z	DC Bus				
EV77	DC System Started	major	2014-07-14 11:49:46Z	Controller				
Last 7 Days								
EV76	Ambient Temperature Sensor Fail	minor	2014-07-11 13:40:24Z	Sensors	Temperature			
EV75	Digital Input 4	none	2014-07-11 13:40:21Z	Digital Inputs				
EV74	Digital Input 3	none	2014-07-11 13:40:21Z	Digital Inputs				
EV73	Battery Breaker Open	minor	2014-07-11 13:40:21Z	Digital Inputs				

Site - Data

The following figure shows some data related one DC system: bus voltage, number of present rectifier, load power, rectifier output power, etc.:

Figure 17 Data related to DC System

Site(1) ▾ Energy System(1) ▾ DC System(1) ▾

No Group Filter ▾

DashboardDescriptionAlarmEventDataRecordConfigurationControlAll

System

Id	Name	Value
DA1	DC Mode	Float
DA2	Previous DC Mode	Float
DA12	Ratio Delivered On Available Power	1.08 %

DC Bus

DA11	Bus Voltage	54.4 V

AC Bus

DA13	Minutes Since Last AC Failure Begin	66 m
DA14	Minutes Since Last AC Failure End	66 m
DA41	Mains Phase 1 Voltage	210.1 V
DA42	Mains Phase 2 Voltage	210.5 V
DA43	Mains Phase 3 Voltage	208.5 V

Rectifiers

The following screenshot shows detailed data related to a specific rectifier. It is possible to retrieve for example: the power rating, the fan speed, the temperature, the total converted energy, the service time, the input AC voltage, etc. The screenshot is an example for the CAR0948TN rectifier:

Figure 18 Rectifier Data

Site(1)

Energy System(1)

DC System(1)

Rectifier(1)

No Group Filter

Dashboard

Description

Alarm

Event

Data

Record

Configuration

Control

All

Output

Id	Name	Value
DA1	Output Current	0.1 A
DA2	Output Power	5.4 W
DA3	Output Voltage	54.5 V
DA4	Output Current Max	21.5 A
DA5	Output Power Max	850.0 W

Input

DA11	Input Voltage	207.3 V

General

DA12	Temperature	55.0 °C
DA13	Fan Speed	7620 RPM
DA14	Power Rating	100.0 %
DA15	Service Time	7509845 s
DA16	Thermal Aging Time	55580168 s
DA17	Converted Energy	359.4 kJ

The following screenshot shows data related to some sensors and actuators connected to an extension card. One can see the cabinet temperature, the relative humidity, the tilt of a cabinet, heat exchanger status, RFID badge reader information, door lock state, etc.:

Figure 19 Sensors and Actuators data

Site(1)

Sensors And Actuators(1)

No Group Filter

Dashboard

Description

Alarm

Event

Data

Record

Configuration

Control

All

Sensors

Id	Name	Value
DA1	Cabinet Temperature	-43.3 °C
DA11	Relative Humidity	30.2 %
DA21	Tilt X	-13.2 °
DA22	Tilt Y	-12.0 °
DA31	Vandalism Score	0

Badge Reader

DA41	Last UID Badge Reader	0
DA42	Last Time Badge Reader	0001-01-01T00:00:00

Access Control 1

DA52	Lock 1 Open	True
DA53	Lock 1 Enabled	False

Site - Configuration

The following screenshot illustrates some configuration elements for a dc system. Battery test, boost, partial load disconnection, opening LVD, battery temperature compensation can be configured it these tabs:

Figure 20 DC System Configuration Tab

Site(1)
Energy System(1)
DC System(1)

No Group Filter

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

DC Bus

✎
🔍
-

Id	Name	Value
CF1	DC Bus Float Voltage at 25 degC	54.00 V
Alarm Parameters		
CF2	DC Bus Voltage Extra Low	45.00 V
CF3	DC Bus Voltage Extra Low Hysteresis	1.00 V
CF4	DC Bus Voltage Low	48.00 V
CF5	DC Bus Voltage Low Hysteresis	0.50 V
CF6	DC Bus Voltage High	56.50 V
CF7	DC Bus Voltage High Hysteresis	0.50 V
CF8	DC Bus Voltage Extra High	58.00 V
CF9	DC Bus Voltage Extra High Hysteresis	0.50 V

LVD

✎
🔍
-

CF10	LVD Disconnect Voltage	43.20 V
CF11	LVD Disconnect Delay	1 s
CF85	Battery LVD Node Id	

Battery

✎
🔍
-

The configuration of the site:

Figure 21 Site Configuration

Site(1)
No Group Filter

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

Network
✎ ⓘ -

Id	Name	Value
CF1	DHCP Enabled	False
CF2	IP Address If Static	130.145.57.66
CF3	Subnet Mask If Static	255.255.255.0
CF4	Default Gateway If Static	130.145.56.254
CF5	DNS If Static	130.145.56.1
CF8	Maximum Transmission Unit	auto
CF9	Ethernet Mode	auto

Time
✎ ⓘ -

CF11	SNTP Time Server	130.145.56.1
CF14	Time Zone Name	(GMT+01:00) Brussels, Copenhagen, Madrid, Paris

Web Server
✎ ⓘ -

CF22	Web Server Security Enabled	True
CF23	Web Server Port	80

Figure 22 The configuration of an extension card

Site(1)
Sensors And Actuators(1)
No Group Filter

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

Alarm Parameters

Id	Name	Value
CF1	Cabinet Temperature High	50.00 °C
CF2	Cabinet Temperature Low	-5.00 °C
CF3	Temperature Hysteresis	1.00 °C
CF11	Cabinet Humidity High	80.00 %
CF12	Cabinet Humidity Low	0.00 %
CF13	Humidity Alarm Hysteresis	2.00 %
CF21	Tilt X High	10.00 °
CF22	Tilt Y High	10.00 °
CF23	Tilt Alarm Hysteresis	2.00 °
CF31	Vandalism Detection Threshold	500

Access Control 1

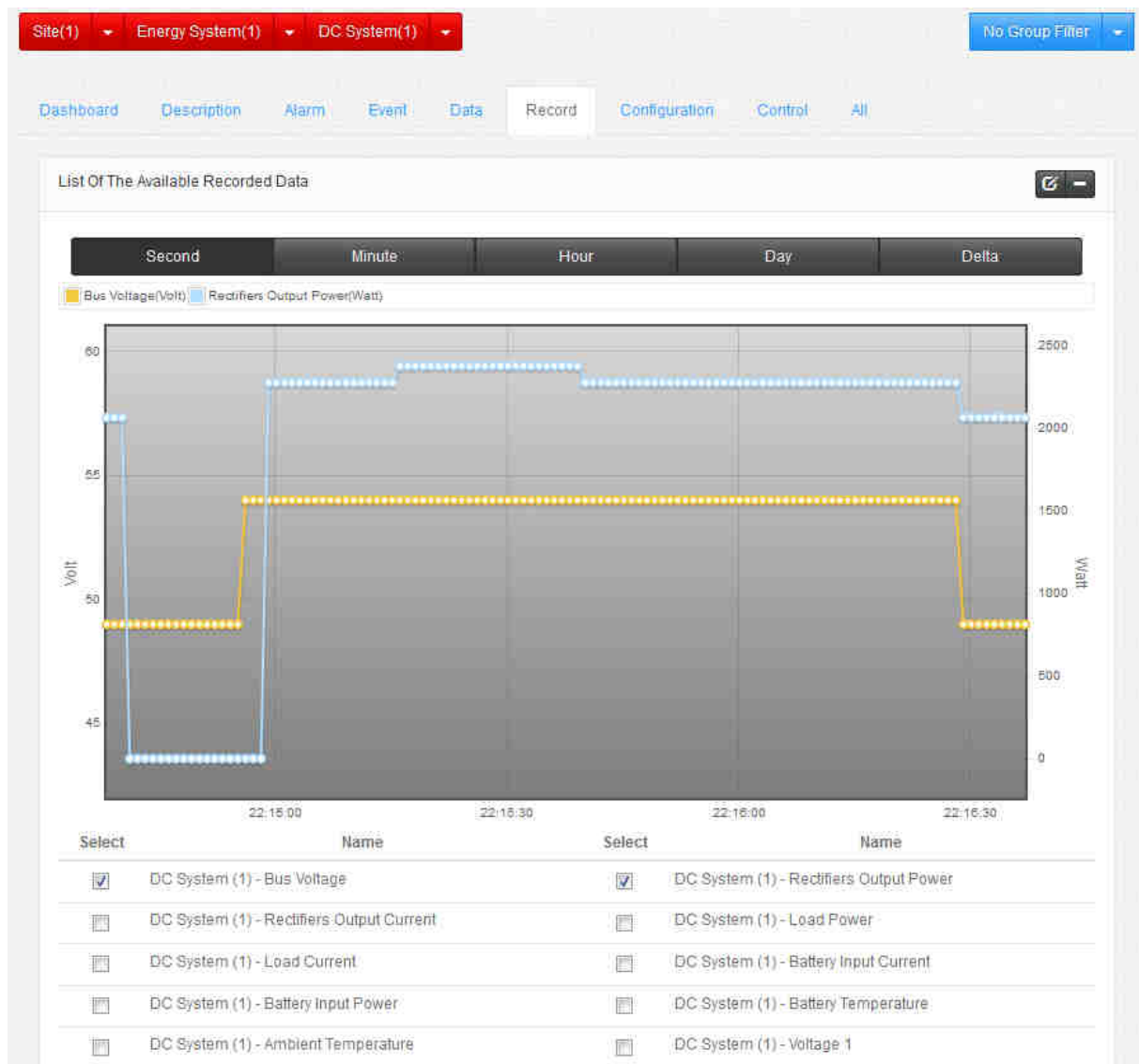
CF41	Access Control 1 Enabled	False
CF42	Access Control 1 Authorized UID	
CF43	Access Control 1 Auto Close Time	30 s
CF44	Access Control 1 Disabled If Badge Reader Failure	True
CF45	Access Control 1 Doors Inputs	7,9,10

Site - Record

The monitoring can keep data records. It can provide the record of the last seconds, last minutes, last hours, last days, and last months. This is a powerful tool to do statistics and optimize many parameters in your systems.

Note that these records are accessible only if the “asset” license package is present.

Figure 23 DC System Record Tab



When only one record is selected, for the Minute, Hour and Day resolution, the min and the max is also displayed.

Figure 24 Bus Voltage record of the last minutes



You can zoom in/out with the wheel mouse and pan with the left click. As the chart is refreshed every 5 second, you can pause this behavior.

Figure 25 Zoom and Pan in the chart



The records can be download in CSV format (Coma Separeted Value). The first line is the data name.

Figure 26 Download 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

In edit mode, any data can be configured with a data record. You can also change the number of record to keep, by data.

Figure 27 Record Configuration

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

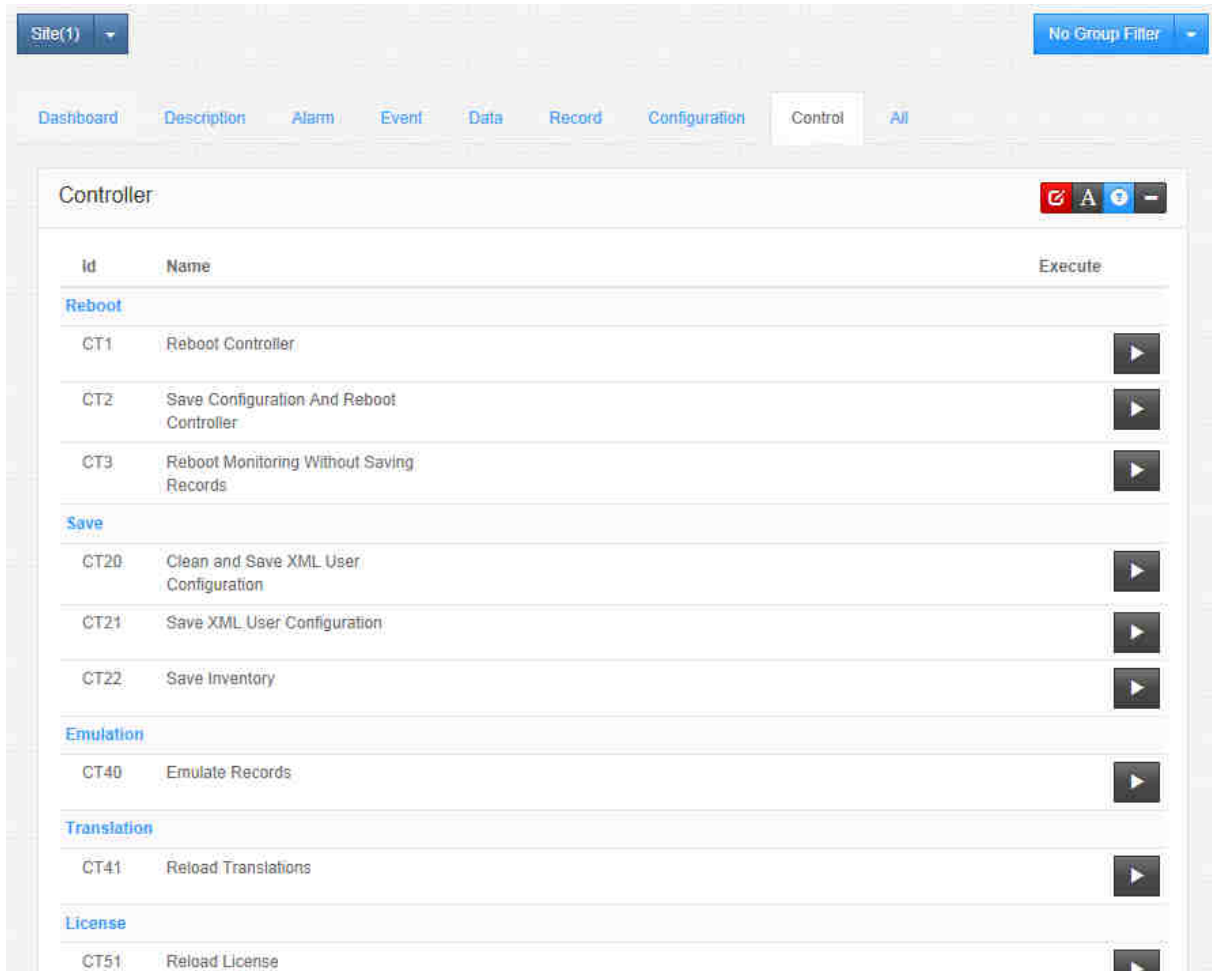
List Of The Available Recorded Data ✖

ID	Group	Data Name	Record Parameters	
1	System	DC Mode		✓
2	System	Previous DC Mode		✓
11	DC Bus	Bus Voltage	s120,m960,h48,d366	✓
12	System	Ratio Delivered On Available Power		✓
13	AC Bus	Minutes Since Last AC Failure Begin		✓
14	AC Bus	Minutes Since Last AC Failure End		✓
21	Rectifiers	Rectifiers Output Power	s120,m120,h48,d366	✓
22	Rectifiers	Rectifiers Output Current	s120,m120,h48,d366	✓
23	Rectifiers	Rectifiers Output Power Max		✓
24	Rectifiers	Rectifiers Output Current Max		✓
31	Rectifiers	Number Of Rectifier Max		✓

Site - Control

A control tab contains elements which can be executed, like starting a battery test, rebooting the monitoring, etc. The control command when the user clicks on the “Execute” button. On some entry, a parameter value is passed when executing the command:

Figure 28 Control Tab at site level



The screenshot displays the 'Control' tab in a web application. At the top, there's a 'Site(1)' dropdown and a 'No Group Filter' button. Below these are navigation tabs: Dashboard, Description, Alarm, Event, Data, Record, Configuration, Control (selected), and All. The main content area is titled 'Controller' and contains a table of control actions. Each action has an 'Id', a 'Name', and an 'Execute' button (a right-pointing arrow). The actions are grouped into categories: Reboot, Save, Emulation, Translation, and License.

Id	Name	Execute
Reboot		
CT1	Reboot Controller	[Execute]
CT2	Save Configuration And Reboot Controller	[Execute]
CT3	Reboot Monitoring Without Saving Records	[Execute]
Save		
CT20	Clean and Save XML User Configuration	[Execute]
CT21	Save XML User Configuration	[Execute]
CT22	Save Inventory	[Execute]
Emulation		
CT40	Emulate Records	[Execute]
Translation		
CT41	Reload Translations	[Execute]
License		
CT51	Reload License	[Execute]

Figure 29 Control Tab at DC System level

Site(1) ▼
Energy System(1) ▼
DC System(1) ▼

No Group Filter ▼

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

System

✖
A
🔍
–

Id	Name	Execute
CT1	Back To Float	▶
CT2	Start Battery Test	▶
CT3	Force Battery Test	▶
CT4	Start Boost Mode	▶

LVD

✖
A
🔍
–

CT11	Open The LVD	▶
CT12	Close The LVD	▶

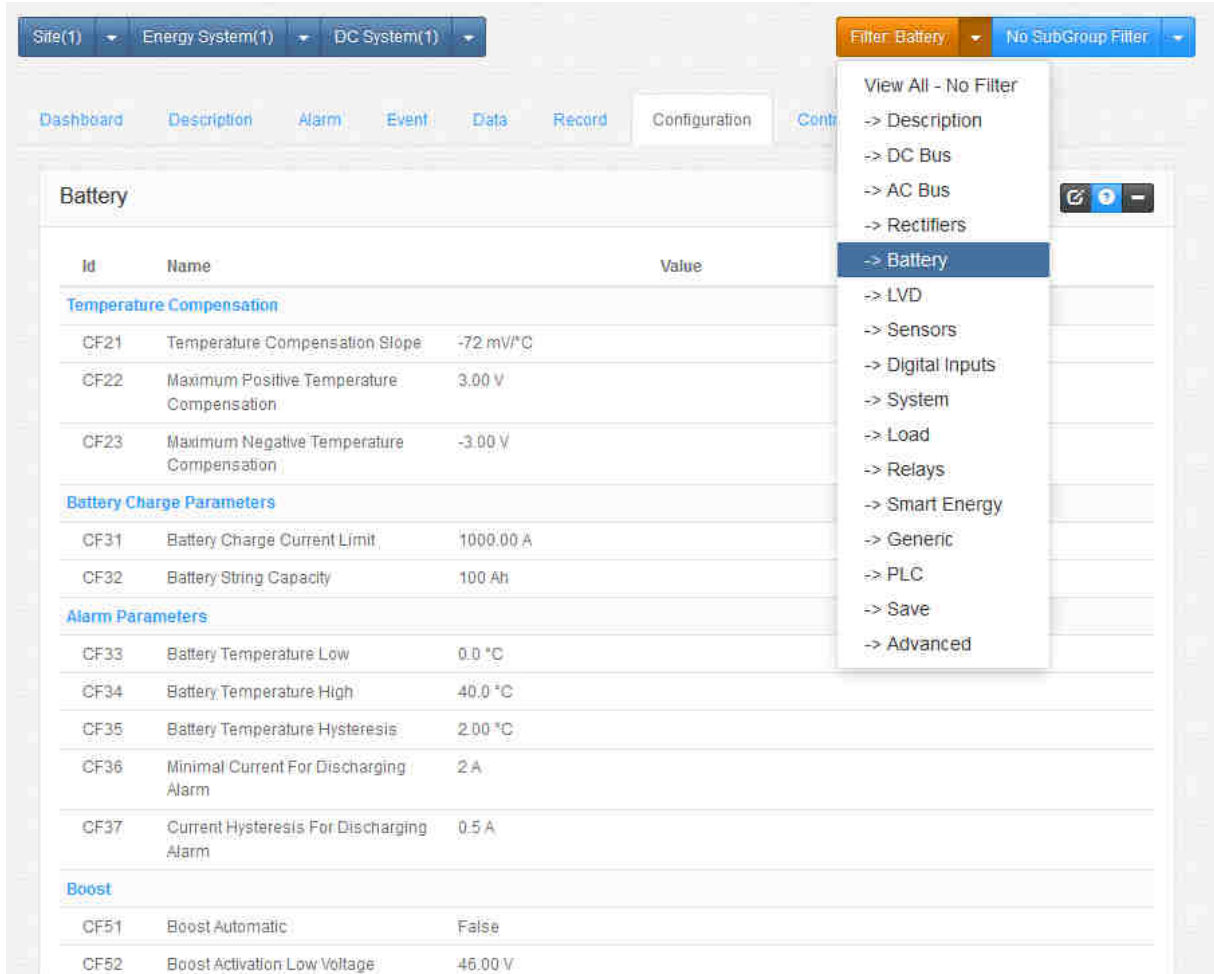
Battery

✖
A
🔍
–

CT21	Correct Battery Current Offset	▶
CT31	Reset Battery Current Integration	▶
CT41	Reset Last Battery Test State	▶

Filter Concept - Group/Subgroup

Figure 30 Dropbox for grouping



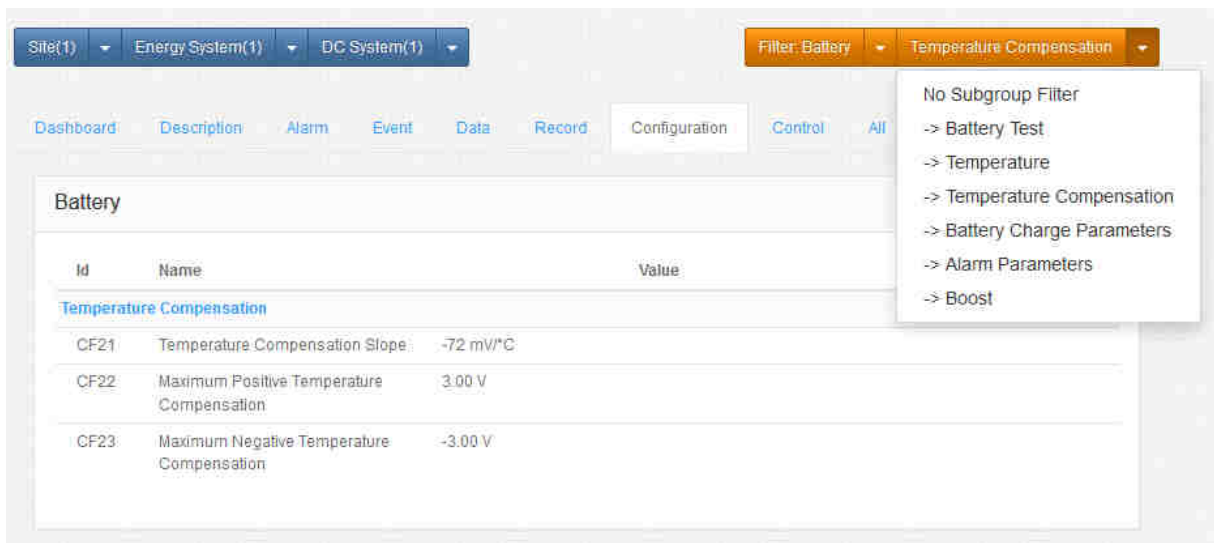
The screenshot shows the 'Battery' configuration page in the Alpha Technologies interface. The page has a navigation bar with tabs: Dashboard, Description, Alarm, Event, Data, Record, Configuration, and Control. The 'Configuration' tab is active. The page displays a table of battery parameters, categorized into Temperature Compensation, Battery Charge Parameters, Alarm Parameters, and Boost. A dropdown menu is open, showing a list of subgroups for filtering. The 'Battery' subgroup is currently selected.

Id	Name	Value
Temperature Compensation		
CF21	Temperature Compensation Slope	-72 mV/°C
CF22	Maximum Positive Temperature Compensation	3.00 V
CF23	Maximum Negative Temperature Compensation	-3.00 V
Battery Charge Parameters		
CF31	Battery Charge Current Limit	1000.00 A
CF32	Battery String Capacity	100 Ah
Alarm Parameters		
CF33	Battery Temperature Low	0.0 °C
CF34	Battery Temperature High	40.0 °C
CF35	Battery Temperature Hysteresis	2.00 °C
CF36	Minimal Current For Discharging Alarm	2 A
CF37	Current Hysteresis For Discharging Alarm	0.5 A
Boost		
CF51	Boost Automatic	False
CF52	Boost Activation Low Voltage	46.00 V

Dropdown Menu Options:

- View All - No Filter
- > Description
- > DC Bus
- > AC Bus
- > Rectifiers
- > **Battery**
- > LVD
- > Sensors
- > Digital Inputs
- > System
- > Load
- > Relays
- > Smart Energy
- > Generic
- > PLC
- > Save
- > Advanced

Figure 31 Dropbox subgroup



The screenshot shows the 'Battery' configuration page in the Alpha Technologies interface. The page has a navigation bar with tabs: Dashboard, Description, Alarm, Event, Data, Record, Configuration, and Control. The 'Configuration' tab is active. The page displays a table of battery parameters, categorized into Temperature Compensation, Battery Charge Parameters, Alarm Parameters, and Boost. A dropdown menu is open, showing a list of subgroups for filtering. The 'Temperature Compensation' subgroup is currently selected.

Id	Name	Value
Temperature Compensation		
CF21	Temperature Compensation Slope	-72 mV/°C
CF22	Maximum Positive Temperature Compensation	3.00 V
CF23	Maximum Negative Temperature Compensation	-3.00 V

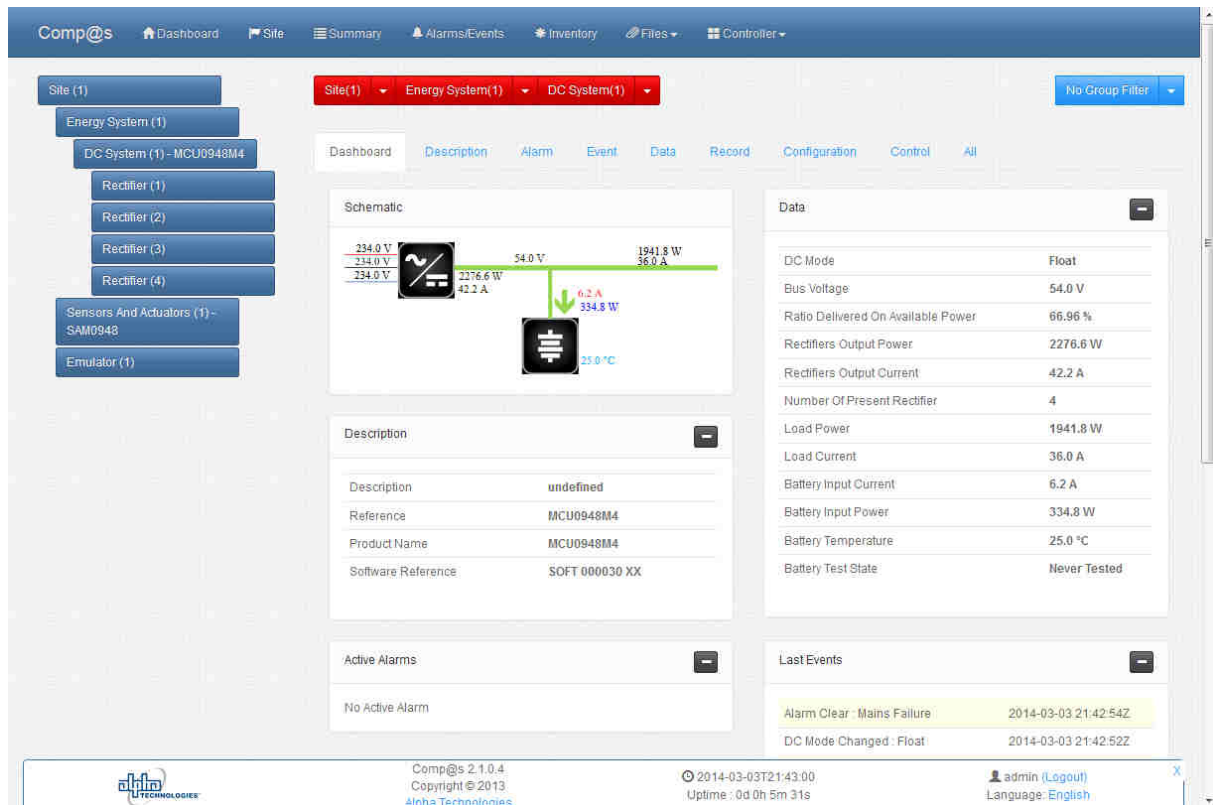
Dropdown Menu Options:

- No Subgroup Filter
- > Battery Test
- > Temperature
- > **Temperature Compensation**
- > Battery Charge Parameters
- > Alarm Parameters
- > Boost

Site - All

3.3.2 Dashboard

Figure 32 Dashboard



3.3.3 Reporting

Figure 33 Site Overview

Comp@s
Dashboard
Site
Summary
Alarms/Events
Inventory
Files
Controller

Site Overview
Data Records

Equipment	Description	Data	Active Alarms																		
Site (1)	<table> <tr><td>Site Name</td><td>Comp@s Site</td></tr> <tr><td>Description</td><td>undefined</td></tr> <tr><td>Reference</td><td>undefined</td></tr> <tr><td>Contact Name</td><td></td></tr> <tr><td>Phone Number</td><td></td></tr> <tr><td>City</td><td>undefined</td></tr> <tr><td>Software Revision</td><td>2.1.0.4</td></tr> </table>	Site Name	Comp@s Site	Description	undefined	Reference	undefined	Contact Name		Phone Number		City	undefined	Software Revision	2.1.0.4	<table> <tr><td>Current IP Address</td><td>0.0.0.0</td></tr> <tr><td>Date And Time Local</td><td>2014-03-03T21:57:10</td></tr> </table>	Current IP Address	0.0.0.0	Date And Time Local	2014-03-03T21:57:10	No Active Alarm
Site Name	Comp@s Site																				
Description	undefined																				
Reference	undefined																				
Contact Name																					
Phone Number																					
City	undefined																				
Software Revision	2.1.0.4																				
Current IP Address	0.0.0.0																				
Date And Time Local	2014-03-03T21:57:10																				
Energy System (1)	<table> <tr><td>Description</td><td>undefined</td></tr> <tr><td>Reference</td><td>undefined</td></tr> </table>	Description	undefined	Reference	undefined	Nothing to display	No Active Alarm														
Description	undefined																				
Reference	undefined																				
DC System (1) - MCU0948M4	<table> <tr><td>Description</td><td>undefined</td></tr> <tr><td>Reference</td><td>MCU0948M4</td></tr> <tr><td>Product Name</td><td>MCU0948M4</td></tr> <tr><td>Software Reference</td><td>SOFT 000030 XX</td></tr> </table>	Description	undefined	Reference	MCU0948M4	Product Name	MCU0948M4	Software Reference	SOFT 000030 XX	<table> <tr><td>DC Mode</td><td>Float</td></tr> <tr><td>Bus Voltage</td><td>54.0 V</td></tr> <tr><td>Ratio Delivered On Available Power</td><td>66.96 %</td></tr> <tr><td>Rectifiers Output</td><td>2276.5 W</td></tr> </table>	DC Mode	Float	Bus Voltage	54.0 V	Ratio Delivered On Available Power	66.96 %	Rectifiers Output	2276.5 W	No Active Alarm		
Description	undefined																				
Reference	MCU0948M4																				
Product Name	MCU0948M4																				
Software Reference	SOFT 000030 XX																				
DC Mode	Float																				
Bus Voltage	54.0 V																				
Ratio Delivered On Available Power	66.96 %																				
Rectifiers Output	2276.5 W																				

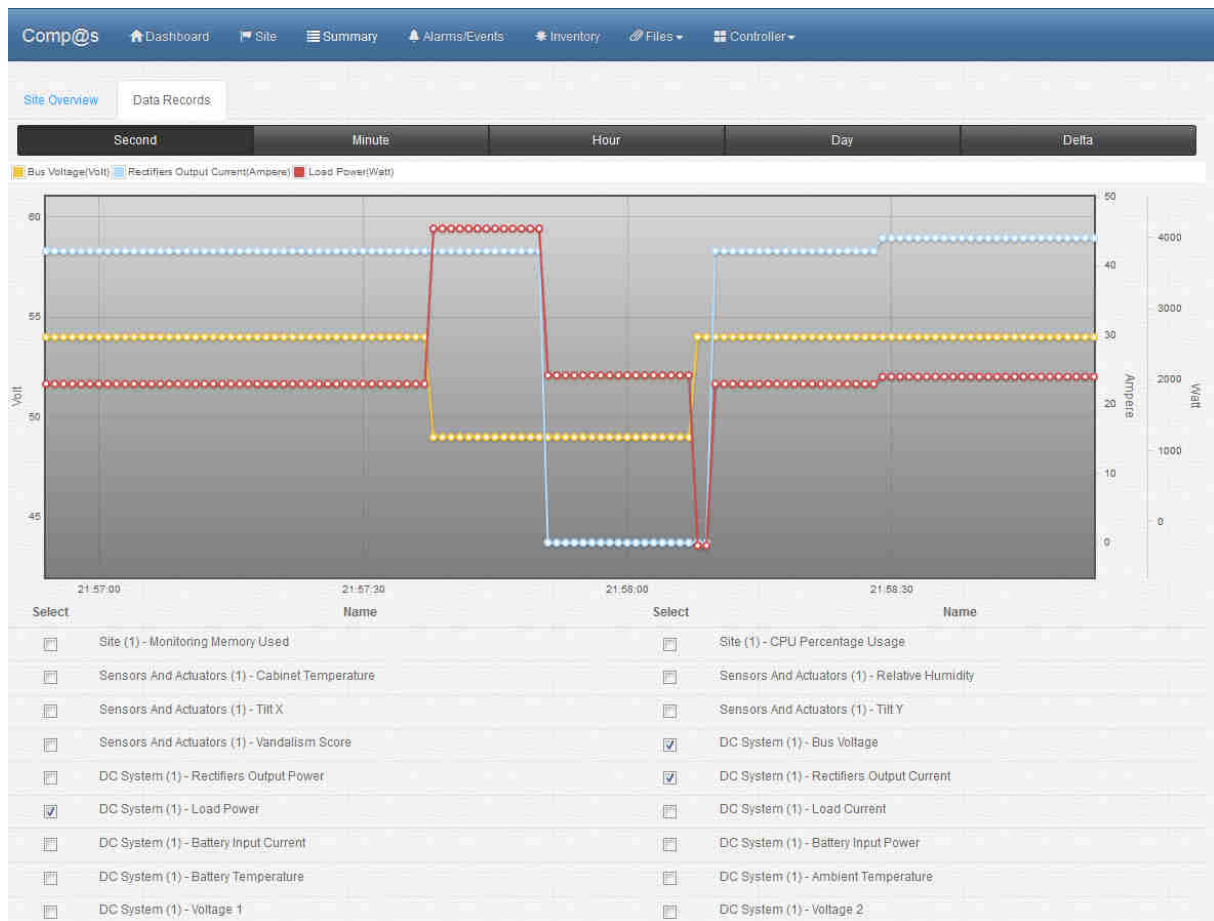


Comp@s 2.1.0.4
Copyright © 2013
Alpha Technologies

2014-03-03T21:57:10
Uptime : 0d 0h 2m 23s

admin (Logout)
Language: English

Figure 34 Data Records



3.3.4 Alarms/Events

Figure 35 Alarms/Events

Comp@s

Dashboard
Site
Summary
Alarms/Events
Inventory
Files
Controller

Equipments With Active Alarms

DC System (1) - MCU0948M4
Rectifier (1)
Rectifier (2)
Rectifier (3)
Rectifier (4)

Active Alarms

From	Name	Start Date-Time
DC System (1) - MCU0948M4	Mains Failure	2014-03-03 22:22:51Z
Rectifier (1)	AC Failure	2014-03-03 22:22:51Z
Rectifier (2)	AC Failure	2014-03-03 22:22:51Z
Rectifier (3)	AC Failure	2014-03-03 22:22:51Z
Rectifier (4)	AC Failure	2014-03-03 22:22:51Z

Last Events Summary

Date-Time	From	Name
2014-03-03 22:22:51Z	DC System (1) - MCU0948M4	Alarm Set : Mains Failure
2014-03-03 22:22:51Z	Rectifier (4)	Alarm Set : AC Failure
2014-03-03 22:22:51Z	Rectifier (2)	Alarm Set : AC Failure
2014-03-03 22:22:51Z	Rectifier (1)	Alarm Set : AC Failure
2014-03-03 22:22:51Z	Rectifier (3)	Alarm Set : AC Failure
2014-03-03 22:22:44Z	Sensors And Actuators (1) - SAM0948	Electronic Lock 1 Enabled
2014-03-03 22:22:44Z	DC System (1) - MCU0948M4	DC Mode Changed : Mains Failure
2014-03-03 22:22:44Z	Sensors And Actuators (1) - SAM0948	Electronic Lock 2 Enabled
2014-03-03 22:22:23Z	Sensors And Actuators (1) - SAM0948	Alarm Clear : Digital Input 1
2014-03-03 22:22:23Z	Sensors And Actuators (1) - SAM0948	Alarm Clear : Digital Input 9

3.3.5 Inventory

The inventory page is about the device list that Comp@s is managing, over CAN, Ethernet and RS485.

Figure 36 Inventory

Comp@s

Dashboard
Site
Reporting
Alarms/Events
Inventory
Files
Controller

Can Bus Devices

Ethernet Devices

RS485 Devices

CANOpen Nodes

Node ID	Node Available	HW Info	SW Info	Product Name
3	true - Heartbeat(998 ms) Last Comm : 910ms ago	9411 011 05001	SOFT 000067 01	CAR1048TN
4	true - Heartbeat(1009 ms) Last Comm : 855ms ago	9411 011 05001	SOFT 000067 01	CAR1048TN
101	true - Heartbeat(2039 ms) Last Comm : 228ms ago	9413 060 950X1	SOFT 000030 11	MCU0948
111	true - Heartbeat(998 ms) Last Comm : 239ms ago	9413 060 95131	SOFT 000003 04	SAM0948

CAN Bus Information

Physical Channel: CAN0

To Send Message Queue Length0

Sent Msg125512 / 125512

Received Msg144174 / 144174

RX1QVR counter0

RXQVR counter2

TXB0 counter0

TXEP counter0

RXEP counter0

TXWAR counter0

RXWAR counter0

EXWAR counter0

Available Upgrades

Physical Channel: CAN0

Node ID	Actual SW Info	Available Upgrade File	Command
Physical Channel: CAN0			
Available Update File			

CAN Bus Information

Bootloader ActifFalse

Node0

Line Sent /Total Line0/0

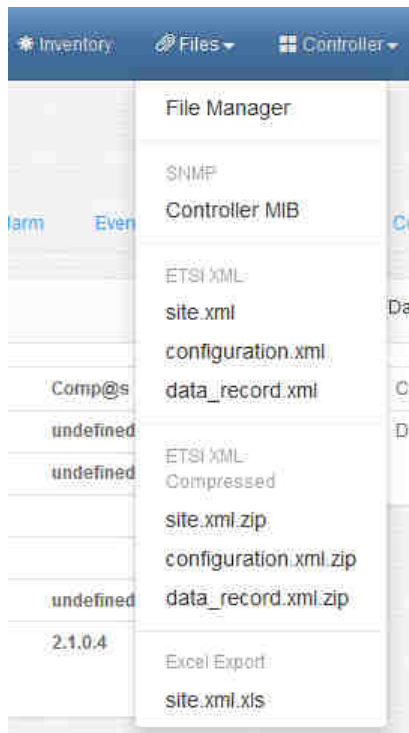
File Name

State0

Bootload task queue0/0

Upload Bootloader File

3.3.6 Files



3.3.7 Controller

Figure 37 General

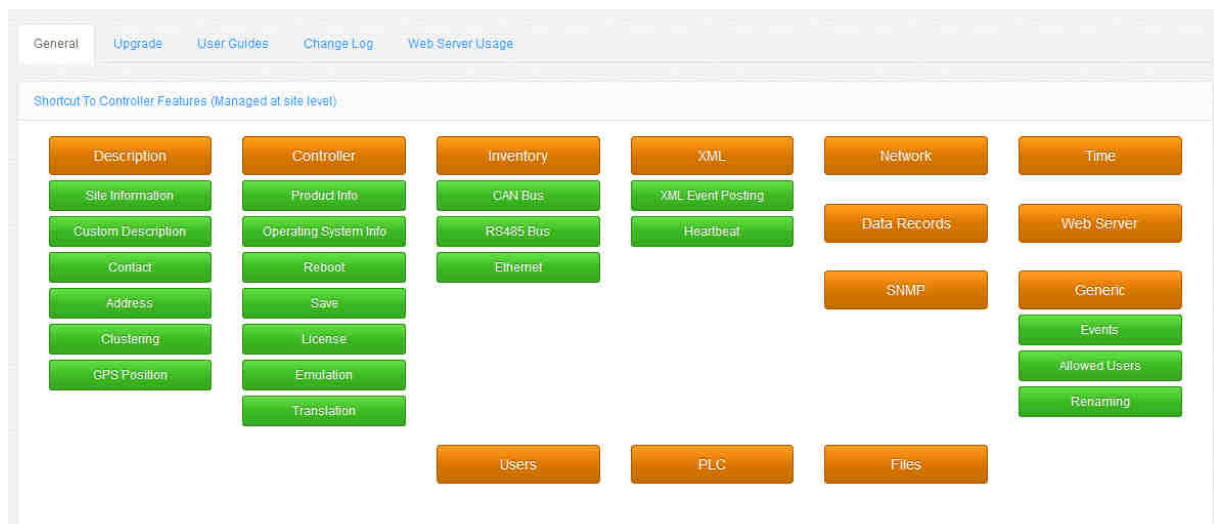


Figure 38 Upgrade

Comp@s
Dashboard
Site
Summary
Alarms/Events
Inventory
Files
Controller

General
Upgrade
User Guides
Change Log
Web Server Usage

Fast Comp@s Upgrade

1'/ The file will be uploaded to the user folder.
2'/ The configuration will be saved.
3'/ The controller will reboot.
4'/ Please refresh after a few minutes.

Please select the new 'compas.exe' file:

Browse...
Compas.exe
Upload, Save Actual Configuration and Reboot

Figure 39 User Guides

General

Upgrade

User Guides

Change Log

Web Server Usage

General for all Comp@s

Name	Short Description	Long Description	Hardware Reference	Etsi Path	Link
COMPAS	Comp@s Platform Card		4004 110 96531	/site/	View Tables

DC Systems : MCU, UCC with ADIO

Name	Short Description	Long Description	Hardware Reference	Etsi Path	Link
ADIO 10 For Cordex Control	Standard I/O module DC systems used as dc system	I/O module with 2 inputs for temperature measurement, 4 voltage measurements, 2 current measurements, 8 digital inputs and 8 relays.	9413 060 05101	/site/energy_system/dc_system	View Tables
MCU0348M4	1U high controller with LCD display	Monitoring and control unit, 1U high with LCD display, USB and Ethernet port - Caplin300 line	9413 060 10131	/site/energy_system/dc_system	View Tables
MCU0548M4	Controller with basic site monitoring functions (4x500W)	Monitoring and control unit with front connector for site monitoring - ACE054 line	9413 060 55101	/site/energy_system/dc_system	View Tables
MCU0948M4	1U high controller with LCD display	Monitoring and control unit, 1U high with LCD display, USB and Ethernet port - Caplin FA, Caplin BW, ACE102FALP and ACE094 lines	9413 060 95051	/site/energy_system/dc_system	View Tables
MCU1848M3	Controller without LCD display	Monitoring and control unit with USB and Ethernet port, no LCD display - ACE153 and ACE156 lines	9413 061 85041	/site/energy_system/dc_system	View Tables
MCU1848M6	Controller without LCD display	Monitoring and control unit with USB and Ethernet port - ACE186 line	9413 061 85001	/site/energy_system/dc_system	View Tables
MCU1X6	Controller without LCD display	Monitoring and control unit with USB and Ethernet port - ACE198 and ACE196 (+24V) lines	9413 060 10121	/site/energy_system/dc_system	View Tables
MCU30110M6	Controller without LCD display (6x3kW - 110V)	Monitoring and control unit with USB and Ethernet port - ACE306 (+110V & +125V) line	9413 063 07011	/site/energy_system/dc_system	View Tables
MCU0948DW	MCU for rack 2x850W -54V		9413 000 XXXXX	/site/energy_system/dc_system	View Tables
MCU1X6M3	MCU for rack 3x1800W		9413 061 85051	/site/energy_system	View

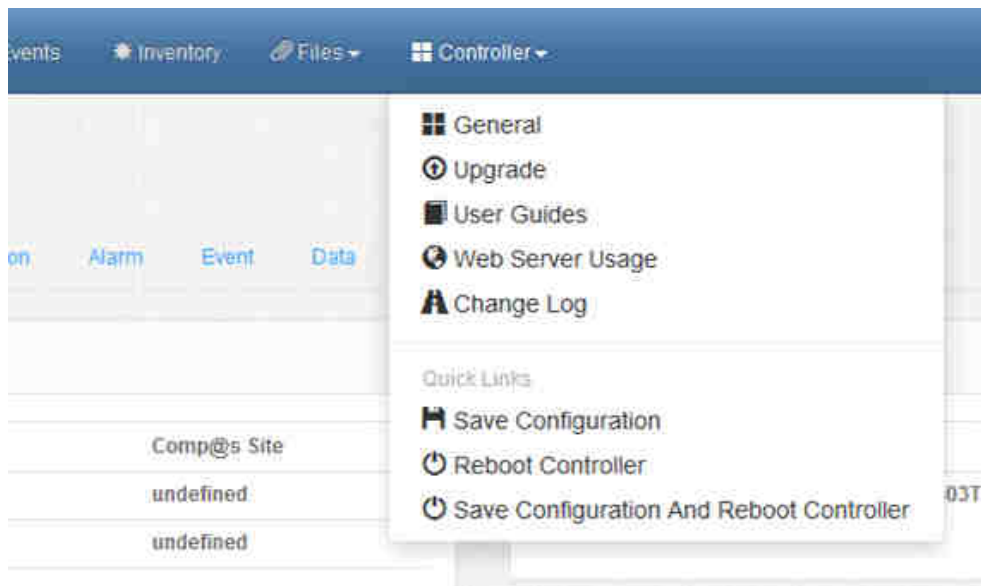
Figure 40 Change Log

General	Upgrade	User Guides	Change Log	Web Server Usage
Revision 2.2.0.3 (28/02/2014)				
- 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 SInt(condition, val if true, val if false) and SCase(condition, val, condition2, val2, ...) functions in PLC equations				
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 Optimisation				
* Group and Subgroup allows filtering				
* Support of SP0155/01 and SP0155/02				
* Many other new features				

Figure 41 Web Server Usage

General	Upgrade	User Guides	Change Log	Web Server Usage
Session Summary				
IP Address	Login	Count	Last Request	Is Browsing
127.0.0.1	admin	267	3/03/2014 22:14:12	True
130.145.56.1		0	3/03/2014 22:13:08	False
130.145.56.1	admin	80	3/03/2014 22:14:08	True
130.145.56.254		0	3/03/2014 22:13:49	False
130.145.56.254	user2	3	3/03/2014 22:14:03	True

Figure 42 Quick Links



3.3.8 Modifying values

The following figures illustrate how to change any configurable value. When you click on the button "Modify", all the configurable values become editable. You are now able to change the value.

Figure 43 Edit Mode

Site(1) ▾
Energy System(1) ▾
DC System(1) ▾

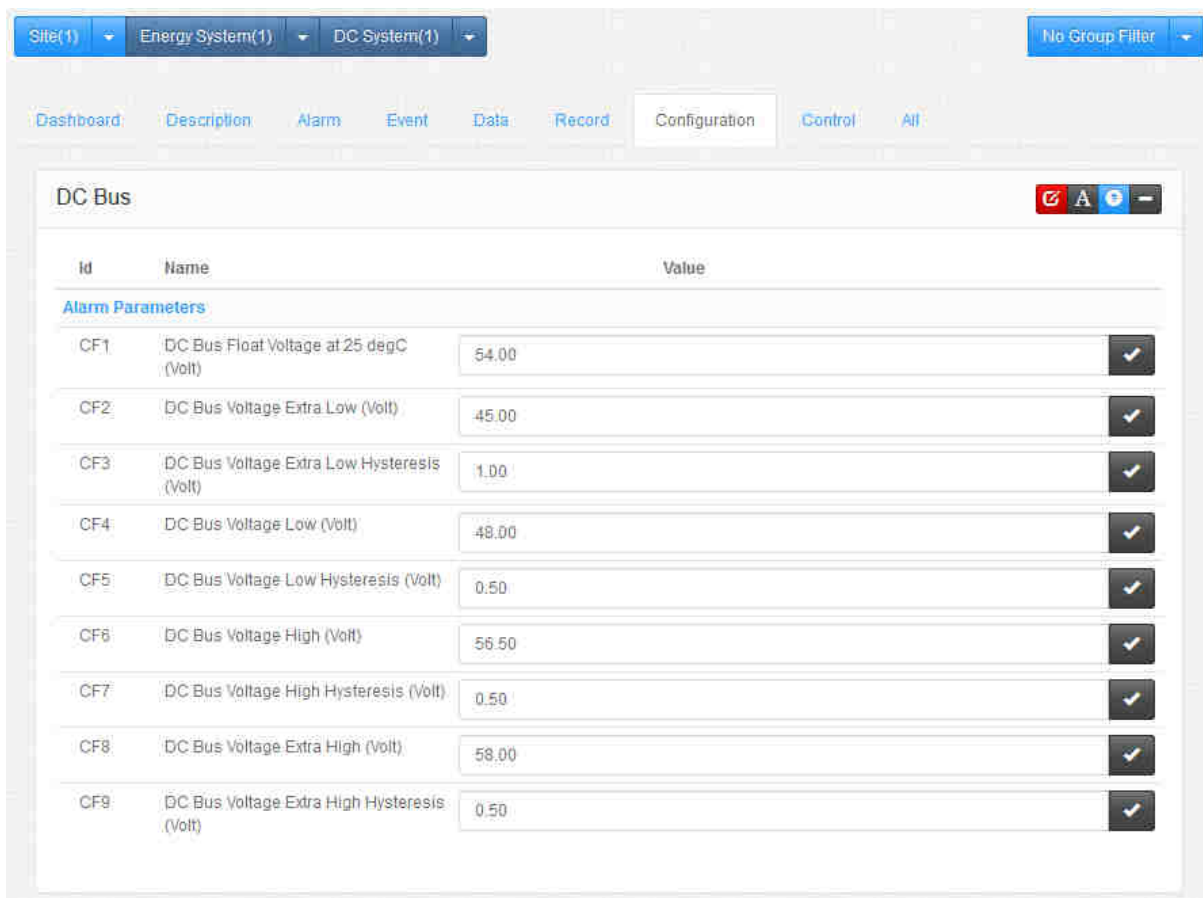
No Group Filter ▾

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

DC Bus
✖
A
🔔
-

Id	Name	Value	
Alarm Parameters			
CF1	DC Bus Float Voltage at 25 degC (Volt)	54.00	✓
CF2	DC Bus Voltage Extra Low (Volt)	45.00	✓
CF3	DC Bus Voltage Extra Low Hysteresis (Volt)	1.00	✓
CF4	DC Bus Voltage Low (Volt)	48.00	✓
CF5	DC Bus Voltage Low Hysteresis (Volt)	0.50	✓
CF6	DC Bus Voltage High (Volt)	56.50	✓
CF7	DC Bus Voltage High Hysteresis (Volt)	0.50	✓
CF8	DC Bus Voltage Extra High (Volt)	58.00	✓
CF9	DC Bus Voltage Extra High Hysteresis (Volt)	0.50	✓

Figure 44 Modifying values



The screenshot shows the 'DC Bus' configuration page. At the top, there are dropdown menus for 'Site(1)', 'Energy System(1)', and 'DC System(1)', along with a 'No Group Filter' button. Below these are tabs for 'Dashboard', 'Description', 'Alarm', 'Event', 'Data', 'Record', 'Configuration' (selected), 'Control', and 'All'. The main content area is titled 'DC Bus' and contains a table of 'Alarm Parameters'.

Id	Name	Value	
CF1	DC Bus Float Voltage at 25 degC (Volt)	54.00	✓
CF2	DC Bus Voltage Extra Low (Volt)	45.00	✓
CF3	DC Bus Voltage Extra Low Hysteresis (Volt)	1.00	✓
CF4	DC Bus Voltage Low (Volt)	48.00	✓
CF5	DC Bus Voltage Low Hysteresis (Volt)	0.50	✓
CF6	DC Bus Voltage High (Volt)	56.50	✓
CF7	DC Bus Voltage High Hysteresis (Volt)	0.50	✓
CF8	DC Bus Voltage Extra High (Volt)	58.00	✓
CF9	DC Bus Voltage Extra High Hysteresis (Volt)	0.50	✓

A click on the “Validate (V)” button sends the change to the monitoring. This method is used to change any parameter of the system. If the parameter is wrong, a message is displayed or the previous parameter is reset.

Note that each modification of setting must be confirmed individually by a “click” on the “Modify” button of the concerned parameter or information.

If you reboot the system after parameters change, modification will be lost. You have to save the system configuration after changes, as explained in [Saving The Changes](#).

3.3.9 Changing the Network Configuration

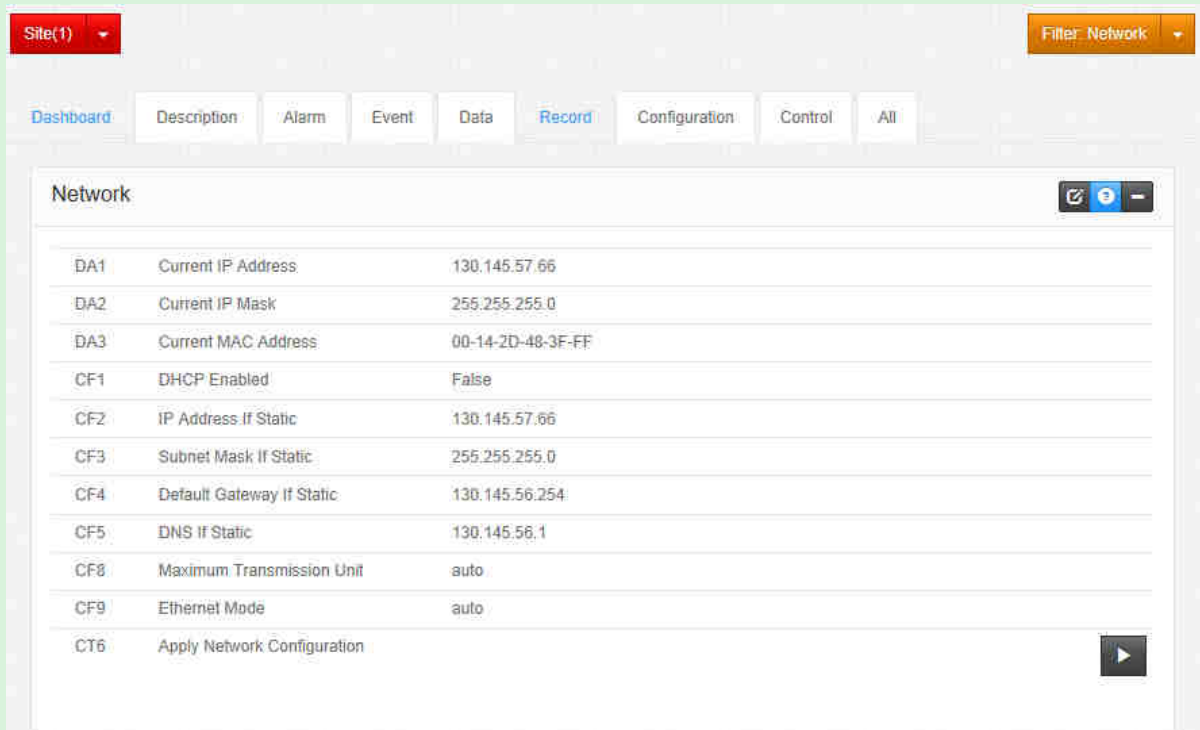
Network configuration steps

STEP 1: Browse to Site --> All, and filter on Network:

The configuration parameters are available in Site -> Configuration. But it is easier to display 'All', filtered with group '**Network**' to see live related data and control at the same time.

Detailed Information about these parameters is available in the detailed table of chapter 8.1.:

Figure 45 Network configuration



Site(1) Filter: Network

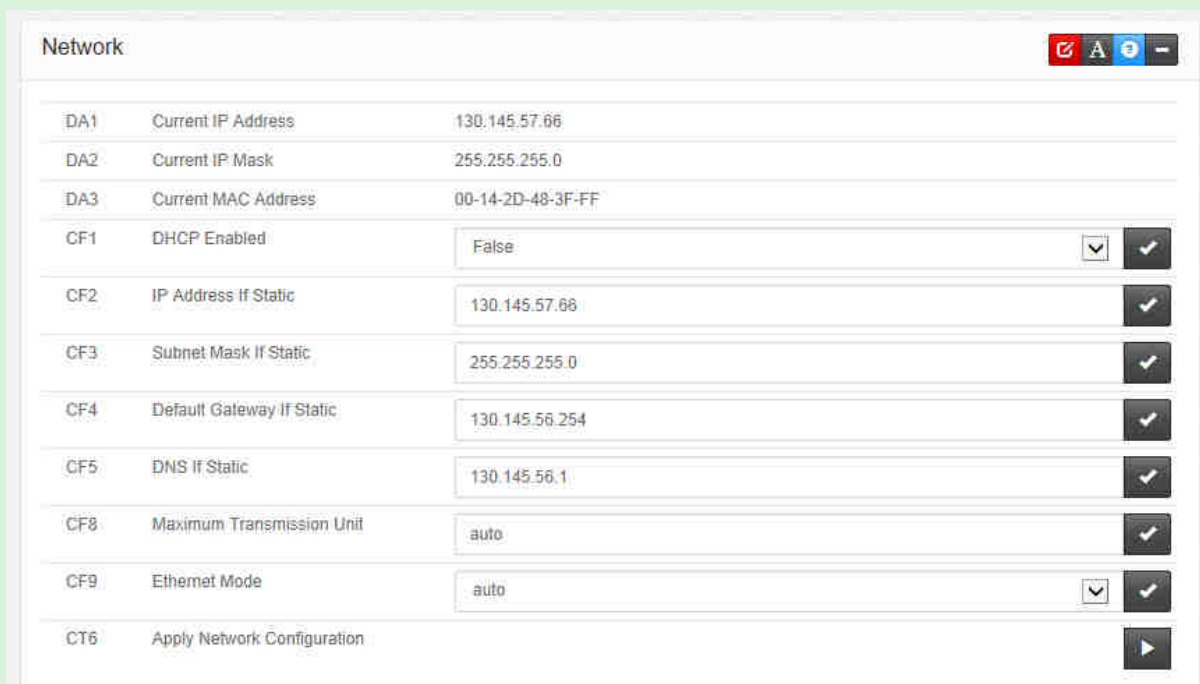
Dashboard Description Alarm Event Data Record Configuration Control All

Network

DA1	Current IP Address	130.145.57.66
DA2	Current IP Mask	255.255.255.0
DA3	Current MAC Address	00-14-2D-48-3F-FF
CF1	DHCP Enabled	False
CF2	IP Address If Static	130.145.57.66
CF3	Subnet Mask If Static	255.255.255.0
CF4	Default Gateway If Static	130.145.56.254
CF5	DNS If Static	130.145.56.1
CF8	Maximum Transmission Unit	auto
CF9	Ethernet Mode	auto
CT6	Apply Network Configuration	

STEP 2: Switch to edit mode and configure. (Help is available by clicking the '?')

Figure 46 Edit Network Configuration



Network

DA1	Current IP Address	130.145.57.66
DA2	Current IP Mask	255.255.255.0
DA3	Current MAC Address	00-14-2D-48-3F-FF
CF1	DHCP Enabled	False
CF2	IP Address If Static	130.145.57.66
CF3	Subnet Mask If Static	255.255.255.0
CF4	Default Gateway If Static	130.145.56.254
CF5	DNS If Static	130.145.56.1
CF8	Maximum Transmission Unit	auto
CF9	Ethernet Mode	auto
CT6	Apply Network Configuration	

Note that the changes are not applied immediately! You have to apply the changes ...

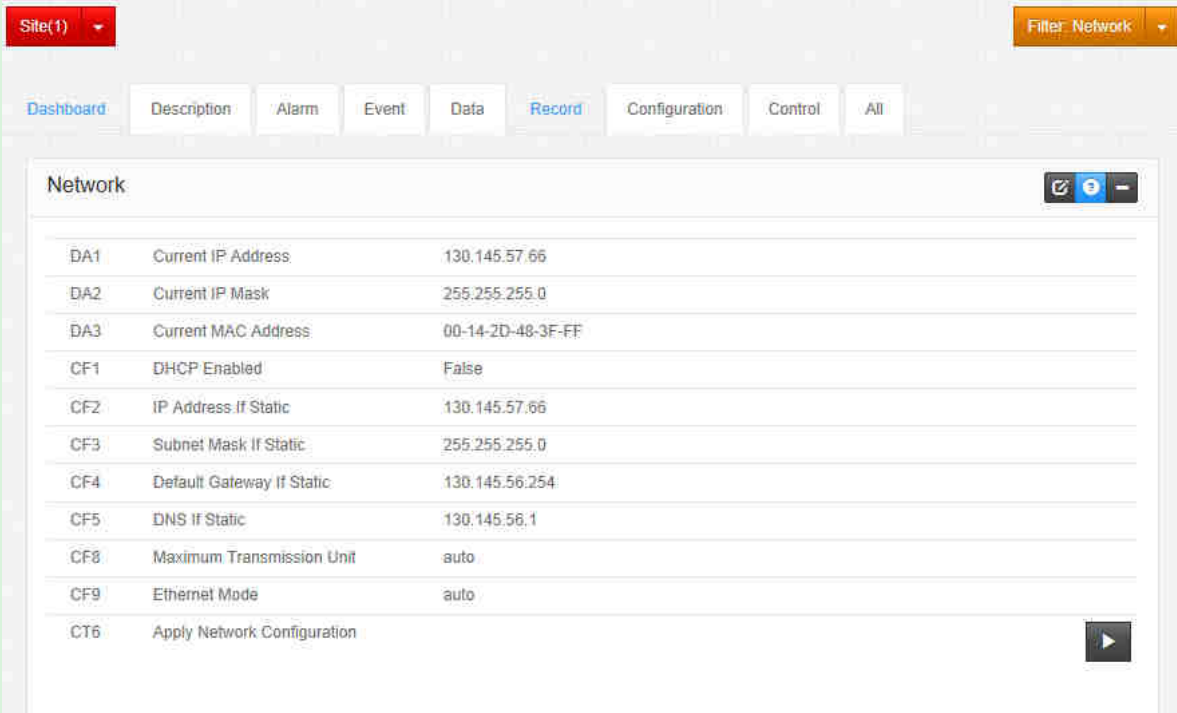
STEP 3: To apply the changes, use the control CT6 : 'Apply Network Configuration'

Network configuration steps

STEP 1: Browse to Site --> All, and filter on Network:

The configuration parameters are available in Site -> Configuration. But it is easier to display 'All', filtered with group '**Network**' to see live related data and control at the same time. Detailed Information about these parameters is available in the detailed table of chapter 8.1.:

Figure 47 Network configuration



The screenshot shows a web interface for network configuration. At the top, there is a 'Site(1)' dropdown and a 'Filter: Network' button. Below these are tabs for 'Dashboard', 'Description', 'Alarm', 'Event', 'Data', 'Record', 'Configuration', 'Control', and 'All'. The 'Configuration' tab is active, displaying a table of network parameters. The table has columns for ID, Name, and Value. The parameters include Current IP Address, Current IP Mask, Current MAC Address, DHCP Enabled, IP Address If Static, Subnet Mask If Static, Default Gateway If Static, DNS If Static, Maximum Transmission Unit, Ethernet Mode, and a control button 'Apply Network Configuration' (CT6).

ID	Name	Value
DA1	Current IP Address	130.145.57.66
DA2	Current IP Mask	255.255.255.0
DA3	Current MAC Address	00-14-2D-48-3F-FF
CF1	DHCP Enabled	False
CF2	IP Address If Static	130.145.57.66
CF3	Subnet Mask If Static	255.255.255.0
CF4	Default Gateway If Static	130.145.56.254
CF5	DNS If Static	130.145.56.1
CF8	Maximum Transmission Unit	auto
CF9	Ethernet Mode	auto
CT6	Apply Network Configuration	

STEP 2: Switch to edit mode and configure. (Help is available by clicking the '?')

Figure 48 Edit Network Configuration

Network

DA1	Current IP Address	130.145.57.66	
DA2	Current IP Mask	255.255.255.0	
DA3	Current MAC Address	00-14-2D-48-3F-FF	
CF1	DHCP Enabled	False	☐
CF2	IP Address If Static	130.145.57.66	
CF3	Subnet Mask If Static	255.255.255.0	
CF4	Default Gateway If Static	130.145.56.254	
CF5	DNS If Static	130.145.56.1	
CF8	Maximum Transmission Unit	auto	
CF9	Ethernet Mode	auto	☐
CT6	Apply Network Configuration		

Note that the changes are not applied immediately! You have to apply the changes ...

STEP 3: To apply the changes, use the control CT6 : 'Apply Network Configuration'

The data DA1 'Current IP Address' should change at that time. If it is empty, it means that there is no network available.

STEP 4: If all is ok, save the configuration to make it permanent. Otherwise, it will be lost after a reboot. (Top Menu: Controller --> Save Configuration).

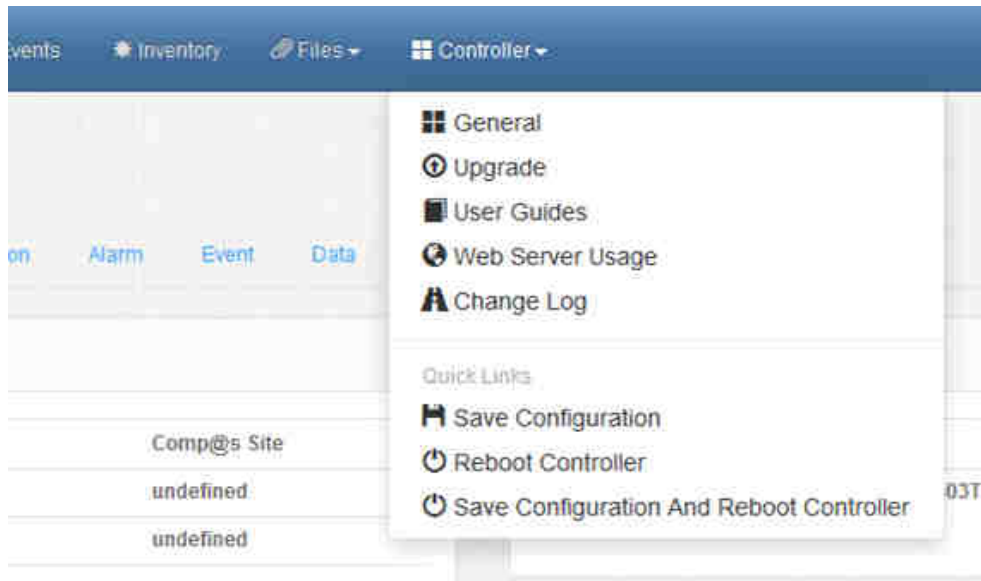
3.3.10 Saving The Changes

Once settings have been modified, they must be saved in the persistent Comp@s memory. If not, these modifications will be lost on the next reboot.

2 possibilities :

- **The fast one:**

In the controller menu, click on 'Save Configuration'.



- **The standard one:**

STEP 1: Click on “Site”

STEP 2: Browse to “Control” (Most right tab)

STEP 3: Click on “Execute” at the entry “Save XML User Configuration” (CT21)

Save		
CT20	Clean and Save XML User Configuration	
CT21	Save XML User Configuration	

CT20 is used if you removed some equipments and you don't want to keep the configuration for this old equipment.

STEP 4: The settings are now stored in the Comp@s Persistent Memory:

Please refer to [Copying configuration from a system to another](#) to load a configuration on a system.

3.3.11 Getting some help about the elements

You can get help at any time by clicking on the '?' button.

Figure 49 Element Help

Site(1) ▾
Energy System(1) ▾
DC System(1) ▾

No Group Filter ▾

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

DC Bus
✎ ⓘ -

Id	Name	Value
Alarm Parameters		
CF1	DC Bus Float Voltage at 25 degC	54.00 V ⓘ The floating dc bus voltage of the system at 25 Celsius degree
CF2	DC Bus Voltage Extra Low	45.00 V ⓘ The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.
CF3	DC Bus Voltage Extra Low Hysteresis	1.00 V ⓘ The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.
CF4	DC Bus Voltage Low	48.00 V ⓘ The bus voltage under which the alarm 'DC Bus Voltage Low' is set.
CF5	DC Bus Voltage Low Hysteresis	0.50 V ⓘ The voltage hysteresis on the alarm 'DC Bus Voltage Low'.
CF6	DC Bus Voltage High	56.50 V ⓘ The bus voltage over which the alarm 'DC Bus Voltage High' is set.
CF7	DC Bus Voltage High Hysteresis	0.50 V ⓘ The voltage hysteresis on the alarm 'DC Bus Voltage High'.
CF8	DC Bus Voltage Extra High	58.00 V ⓘ The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.
CF9	DC Bus Voltage Extra High Hysteresis	0.50 V ⓘ The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'.

The same behavior in edit mode :

Figure 50 Edit Mode with Help

Site(1) ▾
Energy System(1) ▾
DC-System(1) ▾

No Group Filter ▾

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

DC Bus
✖ A ⓘ -

Id	Name	Value	
Alarm Parameters			
CF1	DC Bus Float Voltage at 25 degC (Volt)	54.00	✓
	ⓘ The floating dc bus voltage of the system at 25 Celsius degree		
CF2	DC Bus Voltage Extra Low (Volt)	45.00	✓
	ⓘ The bus voltage under which the alarm 'DC Bus Voltage Extra Low' is set.		
CF3	DC Bus Voltage Extra Low Hysteresis (Volt)	1.00	✓
	ⓘ The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.		
CF4	DC Bus Voltage Low (Volt)	48.00	✓
	ⓘ The bus voltage under which the alarm 'DC Bus Voltage Low' is set.		
CF5	DC Bus Voltage Low Hysteresis (Volt)	0.50	✓
	ⓘ The voltage hysteresis on the alarm 'DC Bus Voltage Low'.		
CF6	DC Bus Voltage High (Volt)	56.50	✓
	ⓘ The bus voltage over which the alarm 'DC Bus Voltage High' is set.		
CF7	DC Bus Voltage High Hysteresis (Volt)	0.50	✓
	ⓘ The voltage hysteresis on the alarm 'DC Bus Voltage High'.		
CF8	DC Bus Voltage Extra High (Volt)	58.00	✓
	ⓘ The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set.		
CF9	DC Bus Voltage Extra High Hysteresis (Volt)	0.50	✓

3.4 The Comp@s SNMP Agent

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.

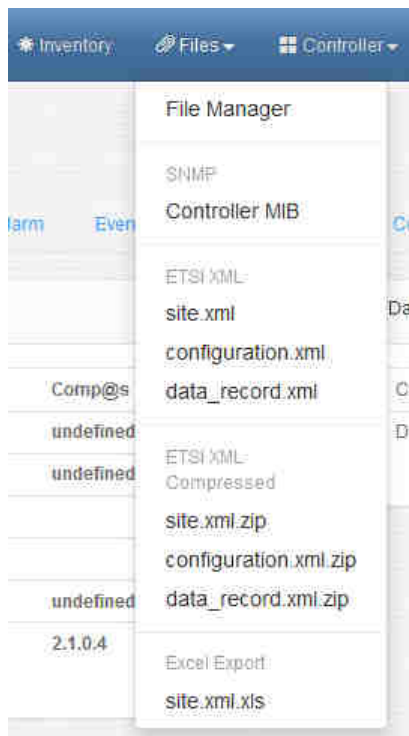
The Comp@s monitoring provides a SNMP v1, v2c and V3 interface.

The Management Information Base (MIB) can be downloaded at the url:

["http:// **the_ip_address** /Compas.mib"](http://**the_ip_address**/Compas.mib)

A quick link is available, in Files, to download this "**Controller MIB**".

Figure 51 Download of the SNMP MIB



This MIB is generated dynamically according to the number and the type of the sub-equipments present at the time of the generation:

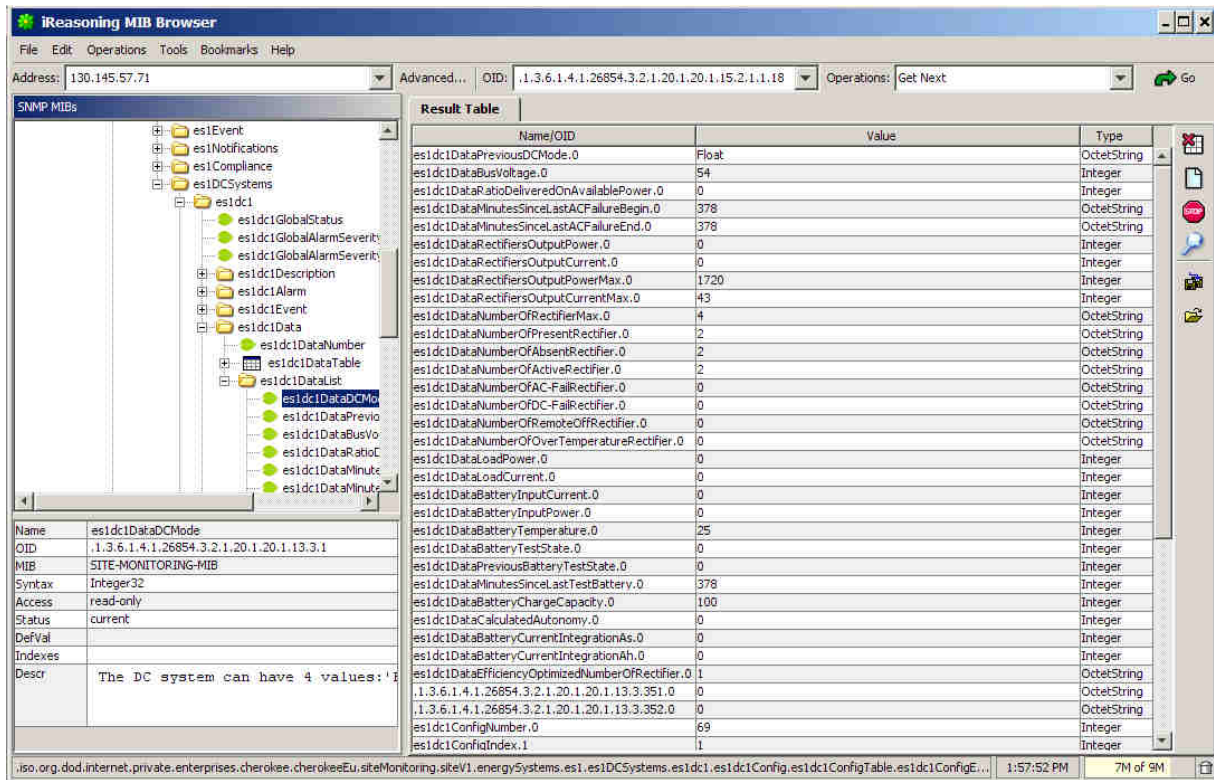
- dc systems
- extension module
- etc.

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 52 Ireasoning MIB Browser



The screenshot shows the iReasoning MIB Browser interface. The left pane displays a tree view of MIBs, with 'es1dc1DataList' selected. The right pane shows a 'Result Table' with columns for Name/OID, Value, and Type. Below the tree view, a detailed view of the selected MIB is shown.

Name/OID	Value	Type
es1dc1DataPreviousDCMode.0	Float	OctetString
es1dc1DataBusVoltage.0	54	Integer
es1dc1DataRatioDeliveredOnAvailablePower.0	0	Integer
es1dc1DataMinutesSinceLastACFailureBegin.0	378	OctetString
es1dc1DataMinutesSinceLastACFailureEnd.0	378	OctetString
es1dc1DataRectifiersOutputPower.0	0	Integer
es1dc1DataRectifiersOutputCurrent.0	0	Integer
es1dc1DataRectifiersOutputPowerMax.0	1720	Integer
es1dc1DataRectifiersOutputCurrentMax.0	43	Integer
es1dc1DataNumberOfRectifierMax.0	4	OctetString
es1dc1DataNumberOfPresentRectifier.0	2	OctetString
es1dc1DataNumberOfAbsentRectifier.0	2	OctetString
es1dc1DataNumberOfActiveRectifier.0	2	OctetString
es1dc1DataNumberOfAC-FailRectifier.0	0	OctetString
es1dc1DataNumberOfDC-FailRectifier.0	0	OctetString
es1dc1DataNumberOfRemoteOffRectifier.0	0	OctetString
es1dc1DataNumberOfOverTemperatureRectifier.0	0	OctetString
es1dc1DataLoadPower.0	0	Integer
es1dc1DataLoadCurrent.0	0	Integer
es1dc1DataBatteryInputCurrent.0	0	Integer
es1dc1DataBatteryInputPower.0	0	Integer
es1dc1DataBatteryTemperature.0	25	Integer
es1dc1DataBatteryTestState.0	0	Integer
es1dc1DataPreviousBatteryTestState.0	0	Integer
es1dc1DataMinutesSinceLastTestBattery.0	378	Integer
es1dc1DataBatteryChargeCapacity.0	100	Integer
es1dc1DataCalculatedAutonomy.0	0	Integer
es1dc1DataBatteryCurrentIntegrationAs.0	0	Integer
es1dc1DataBatteryCurrentIntegrationAh.0	0	Integer
es1dc1DataEfficiencyOptimizedNumberOfRectifier.0	1	OctetString
.1.3.6.1.4.1.26854.3.2.1.20.1.13.3.351.0	0	OctetString
.1.3.6.1.4.1.26854.3.2.1.20.1.13.3.352.0	0	OctetString
es1dc1ConfigNumber.0	69	Integer
es1dc1ConfigIndex.1	1	Integer

Below the tree view, the selected MIB details are shown:

Name	es1dc1DataDCMode
OID	.1.3.6.1.4.1.26854.3.2.1.20.1.20.1.13.3.1
MIB	SITE-MONITORING-MIB
Syntax	Integer32
Access	read-only
Status	current
DefVal	
Indexes	
Descr	The DC system can have 4 values: 1

The SNMP agent supports the SNMP v1, v2c and V3 command:

- GET
- SET
- WALK

The SNMP configuration is available at the site -> configuration level, as shown on the following screenshot:

Figure 53 SNMP Configuration Level

Site(1) ▼
Filter: SNMP ▼

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

SNMP
✖
A
@
-

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	▼	✓

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:

SNMP authentication syntax
 LOGIN:PASSWORD

Default login and password are

SNMP default login and password
 Read Community -> [admin:compas](#)
 Write Community -> [admin:compas](#)

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.

Chapter 4 – Functionalities

- [User Access Management](#)
- [Save / Load configuration](#)
- [Automatic events saving](#)
- [Date and Time Management](#)
- [Software Upgrade Management](#)
- [Reset Factory Settings](#)
- [Copying configuration from a system to another](#)
- [PLC Functionalities](#)
- [Translating The Web Interface](#)
- [Replacing a Rectifier in a DC System](#)
- [Energy Meters \(modbus over RS485\).](#)

4.1 User Access Management

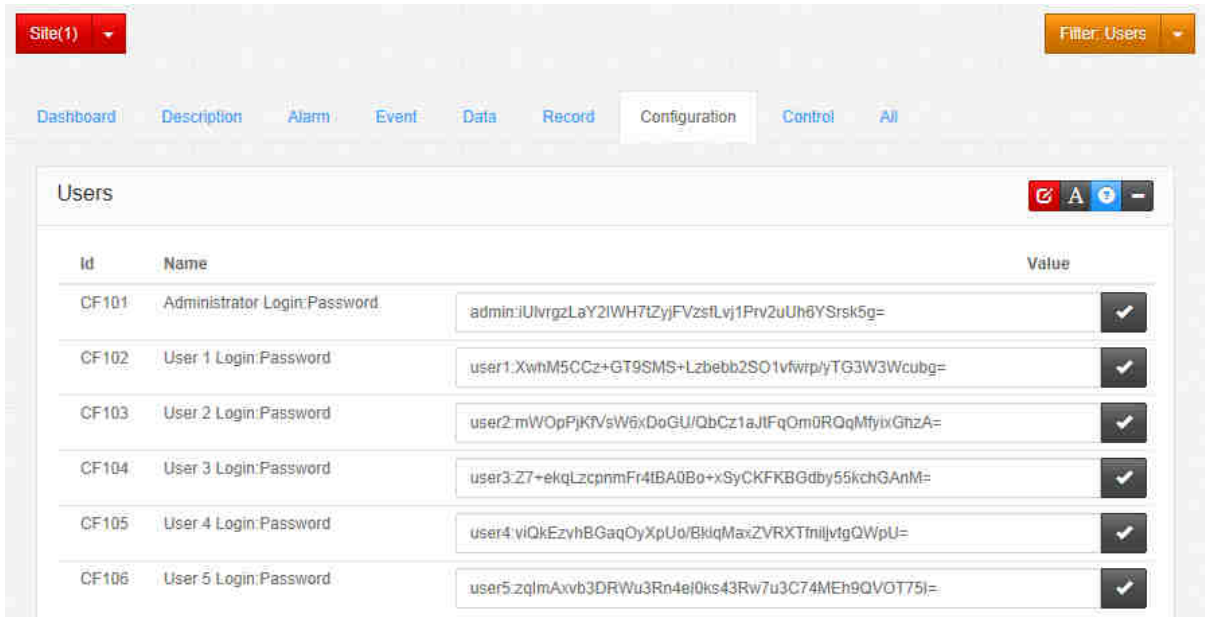
The web server and the SNMP agent are protected by an authentication mechanism based on login/password.

There are by default six users defined: one administrator and 5 users:

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

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:

Figure 54 Users login and password configuration



Id	Name	Value
CF101	Administrator Login:Password	admin:UlvrqzLaY2lWH7tZyJFVzstLv1Prv2uUh6YSrsk5g=
CF102	User 1 Login:Password	user1:XwhM5CCz+GT9SMS+Lzbebb2SO1vfwrp/yTG3W3Wcubg=
CF103	User 2 Login:Password	user2:mWOpFjKIVsW6xDoGU/QbCz1aJlFqOm0RQqMfyixGhzA=
CF104	User 3 Login:Password	user3:Z7+ekqLzcpnmFr4tBA0Bo+xxSyCKFKBGdby55kchGAnM=
CF105	User 4 Login:Password	user4:viQkEzyhB.GaqOyXpUo/8klqMaxZVRXTfnilvtgQWpU=
CF106	User 5 Login:Password	user5:zqlmAxvb3DRWu3Rn4ei0ks43Rw7u3C74MEh9QVOT75)=

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 of the site hierarchy, which user has read access and which user has write 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”.

Please remark that the 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.

The procedure to change the login and password of a user is:

STEP 1: Browse to Site ->Configuration

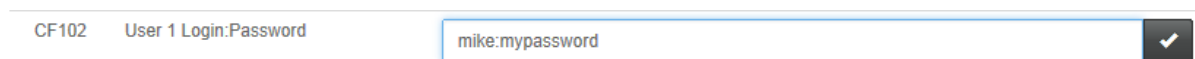
STEP 2: Click on “Edit Mode”

STEP 3: Enter the new login and password in clear for the desired user id. The syntax is:

Login and password

LOGIN:PASSWORD -> [mike:mypassword](#)

Figure 55 User login and password change screen



CF102	User 1 Login:Password	mike:mypassword

STEP 4: Click on “Validate” button. The password is immediately encrypted and the page is refreshed:

Figure 56 User new login and password change screen

CF102	User 1 Login:Password	mike:hJaQRsM22qfzoWSGiUcGfGvi3+f3pi16UQN8GGZs5rc= ☒

STEP 5: Do not forget to save the configuration.

4.2 Save / Load configuration

See [Saving The Changes](#).

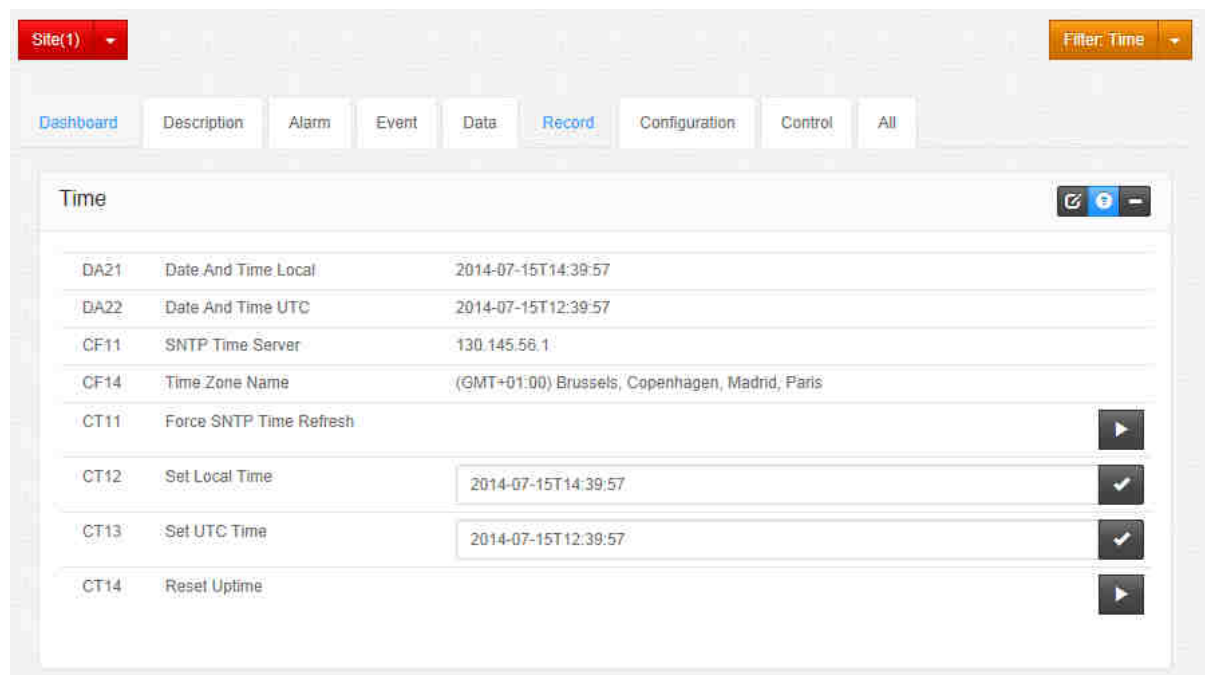
Please refer to [Copying configuration from a system to another](#) to load a configuration on a system.

4.3 Automatic events saving

The system is configured to keep all the events in case of power failure of the monitoring. It is automatically appending the events to a flat file: "events_flat.xml", in the user folder.

4.4 Date and Time Management

Figure 57 Date And Time Configuration



Site(1) Filter: Time

Dashboard Description Alarm Event Data **Record** Configuration Control All

Time

DA21	Date And Time Local	2014-07-15T14:39:57	
DA22	Date And Time UTC	2014-07-15T12:39:57	
CF11	SNTP Time Server	130.145.56.1	
CF14	Time Zone Name	(GMT+01:00) Brussels, Copenhagen, Madrid, Paris	
CT11	Force SNTP Time Refresh		▶
CT12	Set Local Time	2014-07-15T14:39:57	✓
CT13	Set UTC Time	2014-07-15T12:39:57	✓
CT14	Reset Uptime		▶

- [Real Time Clock](#)
- [Time zone and Daylight Saving Time](#)

- [\(S\)NTP Time Protocol](#).

4.4.1 Real Time Clock

The monitoring embeds a real time clock in order to manage the event time, periodic actions, etc.

You can change the local or the UTC time in Site -> Control. (CT12 / CT13)

4.4.2 Time zone and Daylight Saving Time

You can configure the time zone in Site -> Configuration (CF14).

In edit mode, you will see all the available timezone in the drop down list.

Figure 58 List of Available Timezones

DA21	Date And Time Local	2014-08-01T11:42:37
DA22	Date And Time UTC	2014-08-01T09:42:38
CF11	SNTP Time Server	130.145.56.1
CF14	Time Zone Name	(GMT+01:00) Brussels, Copenhagen, Madrid, Paris
CT11	Force SNTP Time Refresh	(GMT-04:00) Santiago (GMT-04:00) Manaus (GMT-04:00) Asuncion
CT12	Set Local Time	(GMT-03:30) Newfoundland (GMT-03:00) Brasilia
CT13	Set UTC Time	(GMT-03:00) Cayenne (GMT-03:00) Greenland (GMT-03:00) Buenos Aires
CT14	Reset Uptime	(GMT-03:00) Montevideo (GMT-02:00) Mid-Atlantic (GMT-01:00) Azores (GMT-01:00) Cape Verde Is. (GMT) Dublin, Edinburgh, Lisbon, London (GMT) Monrovia, Reykjavik (GMT) Casablanca (UTC) Coordinated Universal Time (GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague (GMT+01:00) Sarajevo, Skopje, Warsaw, Zagreb

All the available time zone can aslo be retrieved at URL: (For API usage)

Available time zone

http://the_ip/timezones.txt

Here follows a screenshot of a part of this list:

Figure 59 Partial Time Zone List

```
Available TimeZones:
(GMT) Casablanca, Monrovia
(GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London
(GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
(GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague
(GMT+01:00) Brussels, Copenhagen, Madrid, Paris
(GMT+01:00) Sarajevo, Skopje, Warsaw, Zagreb
(GMT+01:00) West Central Africa
(GMT+02:00) Athens, Istanbul, Minsk
(GMT+02:00) Bucharest
(GMT+02:00) Cairo
(GMT+02:00) Harare, Pretoria
(GMT+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
(GMT+02:00) Jerusalem
(GMT+03:00) Baghdad
(GMT+03:00) Kuwait, Riyadh
(GMT+03:00) Moscow, St. Petersburg, Volgograd
(GMT+03:00) Nairobi
(GMT+03:30) Tehran
```

The daylight saving time is activated on the monitoring, the summer and winter time will be automatically adjusted according to the selected time zone.

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

4.4.3 (S)NTP Time Protocol

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

The configuration parameters are available at Site -> Configuration, as shown above ([Time zone and Daylight Saving Time](#)).

You can configure SNTP Time Server with an IP address or with a domain (if the DNS is set correctly - swisstime.ethz.ch, for example).

The time is retrieved automatically when the system boot and every week. If it fails, it will automatically retry the next day.

You can force an SNTP time refresh in Site -> Control, as shown above ([Real Time Clock](#)).

4.5 Software Upgrade Management

- [Upgrading the Comp@s Software](#)
- [Upgrading a Firmware with Comp@s.](#)

4.5.1 Upgrading the Comp@s Software

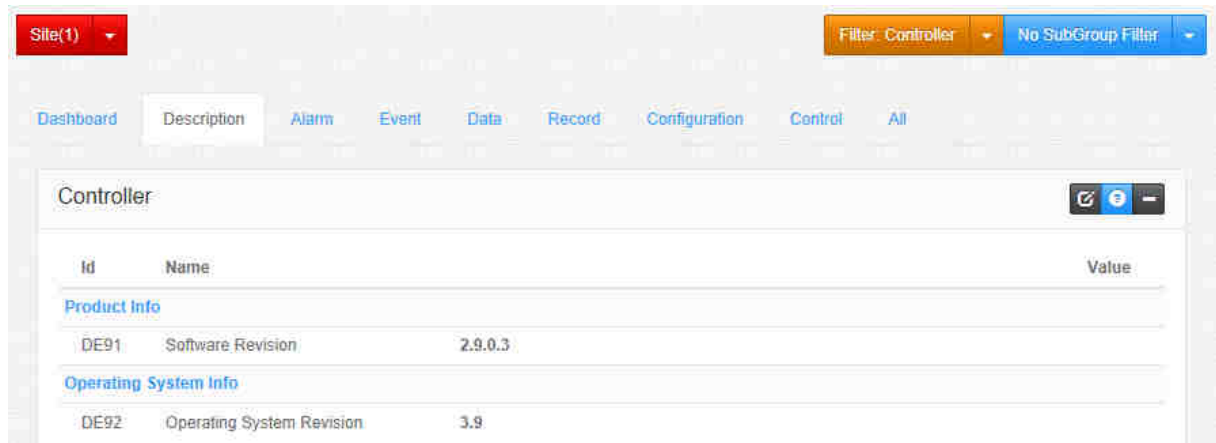
- [Checking Comp@s revision](#)

- [Upgrading Locally with USB](#)
- [Upgrading Remotely with Ethernet](#)

Checking Comp@s revision

You can check the running Comp@s software version in Site -> Data -> Software Revision:

Figure 60 Software Revision



Id	Name	Value
Product Info		
DE91	Software Revision	2.9.0.3
Operating System Info		
DE92	Operating System Revision	3.9

It is also displayed at the bottom of all the web pages:

Figure 61 Software Revision at bottom of web pages



	Comp@s 2.9.0.3 Copyright © 2013 Alpha Technologies	© 2014-07-15T15:20:56 Uptime : 0d 5h 36m 57s	admin (Logout) Language: English

To update the Comp@s software, two possibilities are available:

- Upgrading remotely with Ethernet
- Upgrading locally with USB.

Upgrading Locally with USB

The upgrade is done through the USB Active Sync connection.

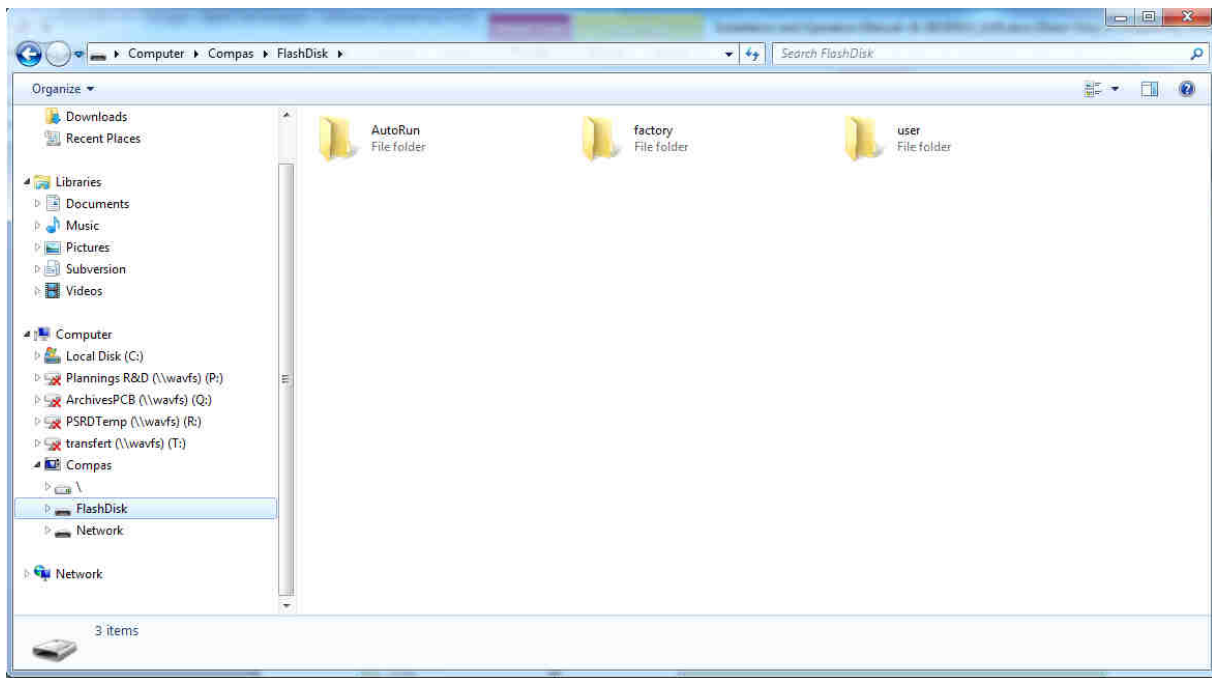
STEP 1: Be sure you have ActiveSync correctly installed as described in (Getting Started – Connecting with USB).

STEP 2: Connect the USB cable between the Comp@s system and your personal computer.

STEP 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.

STEP 4: Browse to “\\FlashDisk\\User” (“\\NOR Flash\\User” on some previous release):

Figure 62 Browse to “\FlashDiskUser”



STEP 5: Copy the new “Compas.exe” release in that folder.

STEP 6: Reboot the monitoring with the Web Interface.

STEP 7: You can check that the running software revision has changed.

Upgrading Remotely with Ethernet

- [Upgrading with FTP](#)
- [Upgrading with Web Interface](#)

Upgrading with FTP

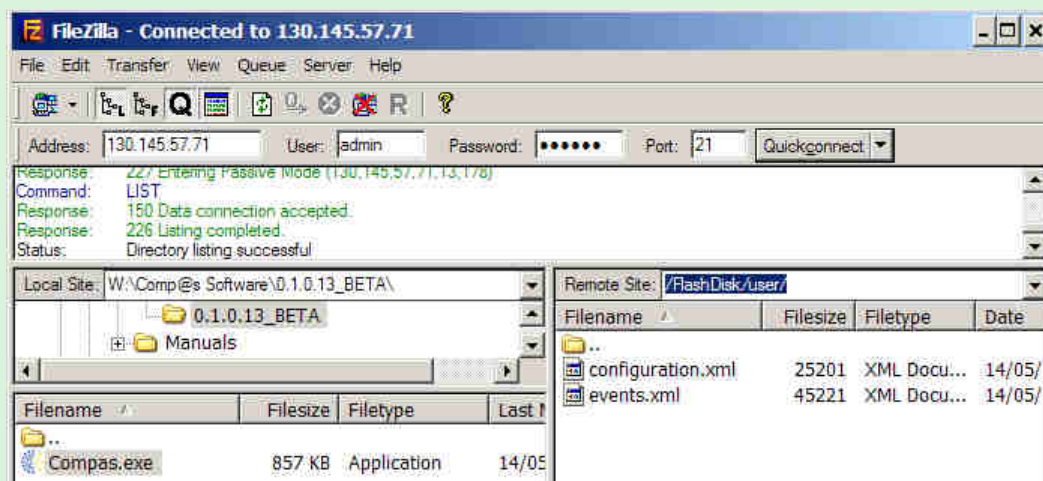
The upgrade is done through FTP connection:

Upgrading Comp@s remotely with FTP

STEP 1: Connect the system with your FTP client (See “Connecting the Comp@s FTP Server”).

STEP 2: Browse to the “user” folder, in the “\FlashDisk” folder (“\NOR Flash” on previous software release):

Figure 63 FTP Connection with Filezilla



STEP 3: Copy the new “Compas.exe” release in that folder.

STEP 4: Reboot the monitoring with the Web Interface (Site -> Control) or with SNMP.

STEP 5: You can check that the running software revision has changed.

Upgrading with Web Interface

There is two possibilities to upgrade with the web interface. A very automated one and a manual.

Fast Comp@s Upgrade (recommended)

Click on Controller --> Upgrade.

Figure 64 Controller-Upgrade



Follow the instruction:

Please select the new 'compas.exe' or compas*.zip file on your computer and click the Button 'Upload, Save Actual Configuration and Reboot'.

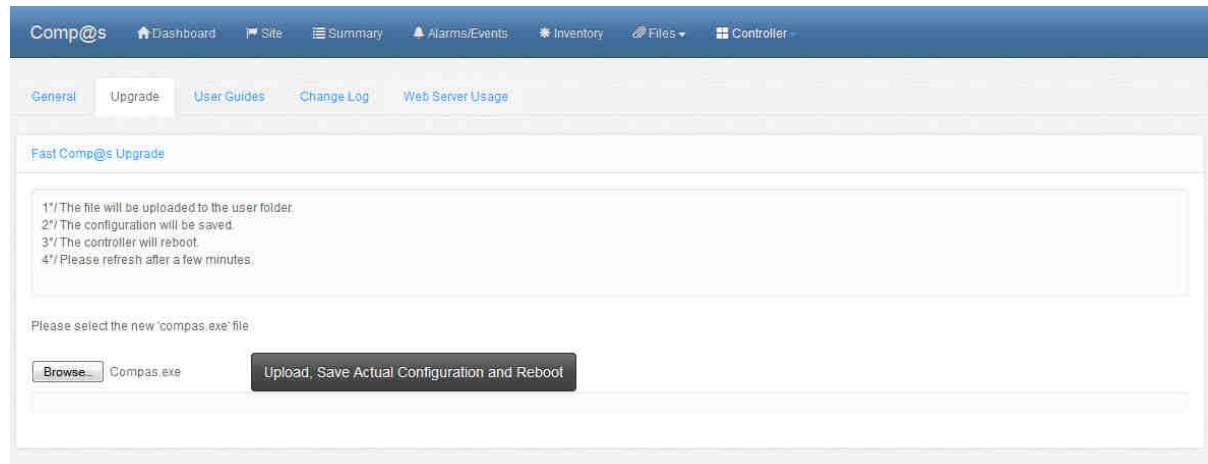
The automated process will:

- 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.

Figure 65 Fast Comp@s Upgrade



The screenshot shows the 'Fast Comp@s Upgrade' page. It includes a navigation bar with 'Comp@s', 'Dashboard', 'Site', 'Summary', 'Alarms/Events', 'Inventory', 'Files', and 'Controller'. Below the navigation bar are tabs for 'General', 'Upgrade', 'User Guides', 'Change Log', and 'Web Server Usage'. The 'Upgrade' tab is selected. The main content area has a heading 'Fast Comp@s Upgrade' and a list of steps: 1/ The file will be uploaded to the user folder, 2/ The configuration will be saved, 3/ The controller will reboot, 4/ Please refresh after a few minutes. Below this, there is a text input field for 'Please select the new 'compas.exe' file:' and a 'Browse...' button. To the right of the input field is a 'Compas.exe' label. At the bottom right, there is a large button labeled 'Upload, Save Actual Configuration and Reboot'.

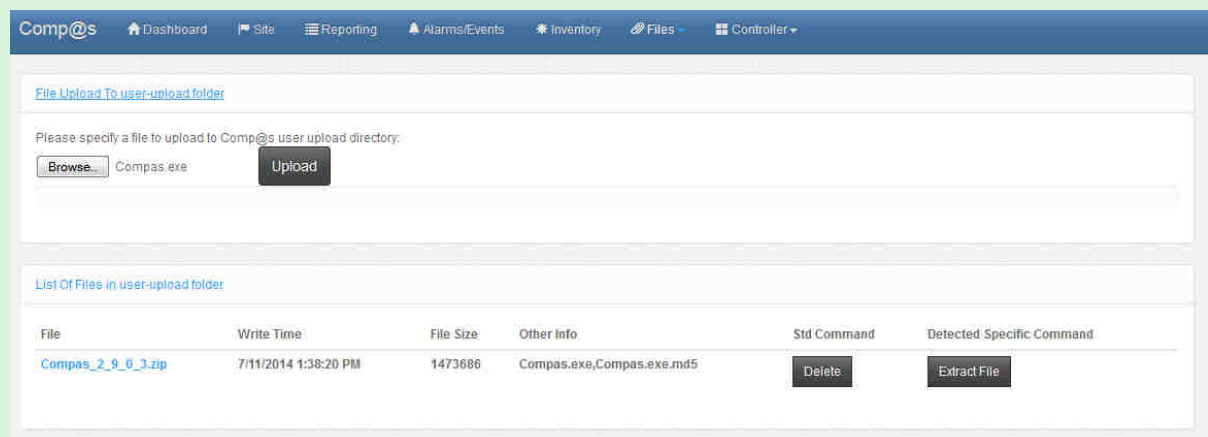
Manual Comp@s Upgrade

The upgrade is done by using the File Manager : "Files" > "File Manager"

Upgrading Comp@s remotely with HTTP POST

STEP 1: Go to "File Upload to user-upload Folder". Click "Browse" and select the file to upload to FlashDisk\\user\\upload folder. (If you have a small bandwidth and the file size is large, it can be smart to zip it first.)

Figure 66 Comp@s Manage Files Page



The screenshot shows the 'Comp@s Manage Files' page. It includes a navigation bar with 'Comp@s', 'Dashboard', 'Site', 'Reporting', 'Alarms/Events', 'Inventory', 'Files', and 'Controller'. Below the navigation bar are tabs for 'File Upload To user-upload folder' and 'List Of Files in user-upload folder'. The 'File Upload To user-upload folder' tab is selected. It contains a text input field for 'Please specify a file to upload to Comp@s user upload directory:' and a 'Browse...' button. To the right of the input field is a 'Compas.exe' label. Below the input field is an 'Upload' button. The 'List Of Files in user-upload folder' tab is also visible, showing a table of files.

File	Write Time	File Size	Other Info	Std Command	Detected Specific Command
Compas_2_9_0_3.zip	7/11/2014 1:38:20 PM	1473686	Compas.exe,Compas.exe.md5	Delete	Extract File

STEP 2: Press "Upload" to upload the file. A message "COMMAND_EXECUTED" (or

"COMMAND ERROR") is displayed. The page is then automatically refresh.

STEP 3: The file appears in "List of Files in user-upload Folder". You can select "Extract File" to uncompress a zip archive, then press "Delete" to erase it from folder. (if Zipped)

STEP 4: Press "Replace/Move Compas.exe to user Folder" to move the new compas.exe file to FlashDisk\\user folder.

STEP 5: Use the top bar to Save Configuration and Reboot : Controller --> 'Save Configuration and Reboot'

4.5.2 Upgrading a Firmware with Comp@s

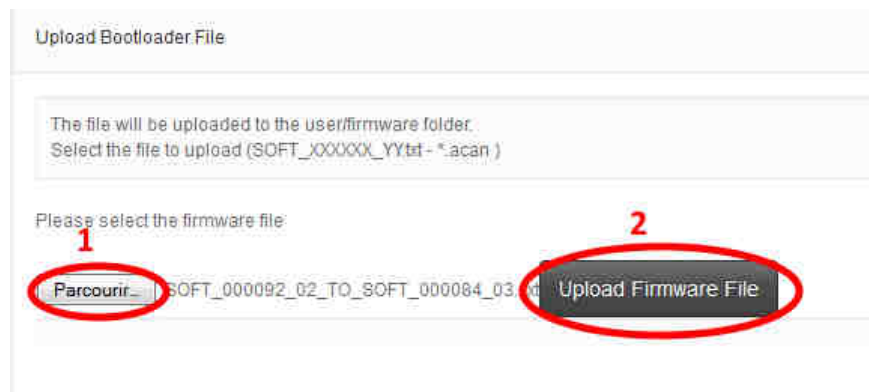
Any software/firmware of any Alpha Technologies equipment connected to the CAN bus can be upgraded remotely thanks to Comp@s.

WARNING: DO NOT POWER OFF THE EQUIPMENT DURING THE PROCEDURE.
Be sure there is at least another rectifier or a battery connected.

STEP 1: Verify that you have at least one other rectifier (or battery) connected to the system. (The rectifier will be down during the upgrade)

STEP 2: In inventory tabs, use the frame "Upload Bootloader File" in order to send the firmware to Comp@s.

A fimware file has usually a name that looks like "SOFT_XXXXX_XX.txt" or *.acan



Upload Bootloader File

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

Please select the firmware file:

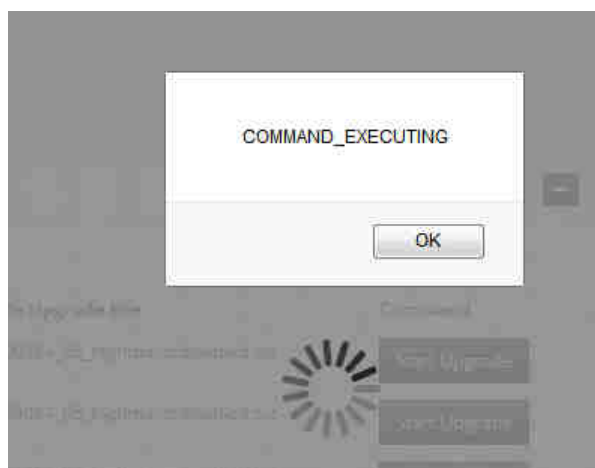
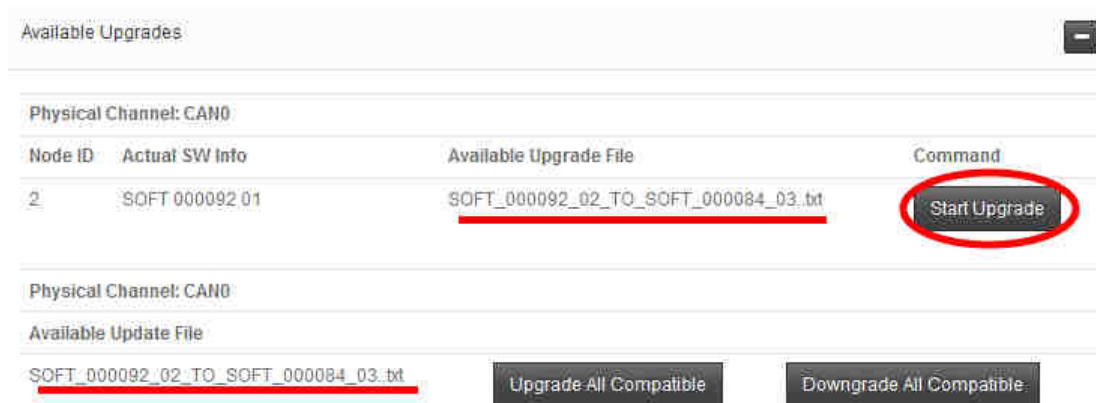
1 SOFT_000092_02_TO_SOFT_000084_03.acan

2

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 direct usb connection.

STEP 3 : 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'.

STEP 4 : The update process

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.

CAN Bus Information	
Bootloader	True
Actif	
Node	2
Line Sent	310/3488
/Total Line	
File Name	SOFT_000092_02_TO_SOFT_000084_03.bt
State	5
Bootload task	1/1
queue	

STEP 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".

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

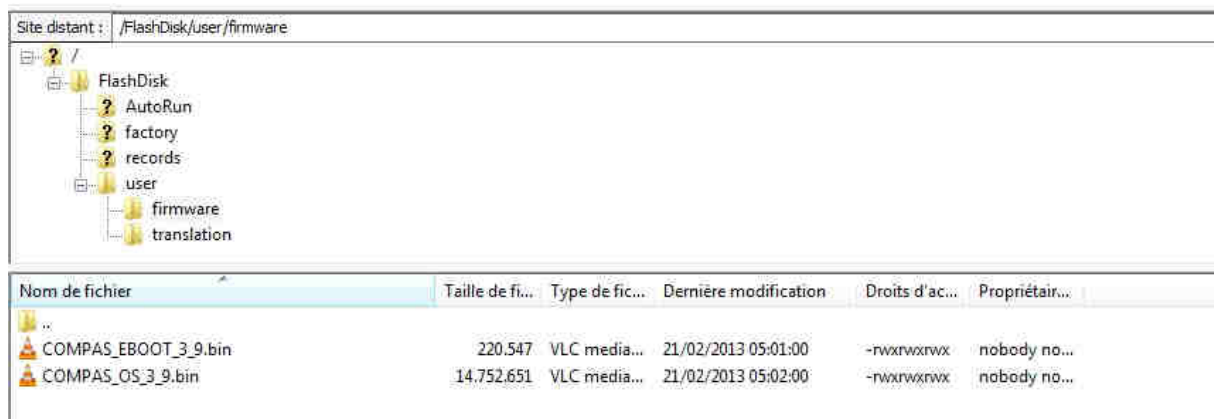
4.5.3 Upgrading The Operating System

The operating system on which Comp@s is running (Windows CE) can be updated. The operating system is not evolving quickly. Last version is 3.9. You can check you version in Site/Description : "Operating System Revision"

WARNING: DO NOT POWER OFF THE EQUIPMENT DURING THE PROCEDURE.

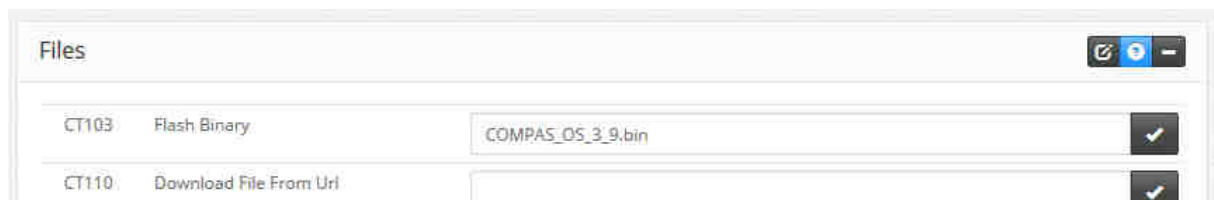
STEP 1: You must first upload the files "COMPAS_EBOOT_xxx.bin" and "COMPAS_OS_xxx.bin" to the the comp@s card. The correct folder is "\\FlashDisk\User\Firmware". This can be done through FTP or USB. The following screenshot shows the folder inf Filezilla, with both files uploaded.

Figure 67 Upload files



STEP 2: Go to site/control (CT103), and type the file name to flash.

Figure 68 Flash Binary



STEP 3: You should start to update the EBOOT file (the bootloader), and than the OS. You can follow the progress with the events.

Figure 69 Check Site events

Site(1) No Group Filter					
Dashboard	Description	Alarm	Event	Data	Record
				Configuration	Control
					All
Id	Name	Severity	DateTime	Group	Subgroup
Last 10 Minutes					
EV195	Binary File Deleted : COMPAS_OS_3_9.bin	none	2014-08-01 13:54:48Z	Controller	
EV194	Binary Flash Success : COMPAS_OS_3_9.bin	none	2014-08-01 13:54:47Z	Controller	
EV193	Binary Flash Started : COMPAS_OS_3_9.bin	none	2014-08-01 13:54:30Z	Controller	
EV192	Control Executed : [id=103], [name=Flash Binary], [value=COMPAS_OS_3_9.bin], [result=OK],[user=admin], [ip=130.145.57.186]	none	2014-08-01 13:54:30Z	Controller	Control Execution
EV191	Alarm Set : Controller Reboot Required	major	2014-08-01 13:54:03Z	Controller	Reboot
EV190	Binary File Deleted : COMPAS_EBOOT_3_9.bin	none	2014-08-01 13:53:58Z	Controller	
EV189	Binary Flash Success : COMPAS_EBOOT_3_9.bin	none	2014-08-01 13:53:58Z	Controller	
EV188	Binary Flash Started : COMPAS_EBOOT_3_9.bin	none	2014-08-01 13:53:57Z	Controller	
EV187	Control Executed : [id=103], [name=Flash Binary], [value=COMPAS_EBOOT_3_9.bin], [result=OK],[user=admin], [ip=130.145.57.186]	none	2014-08-01 13:53:57Z	Controller	Control Execution

STEP 4: Reboot the controller

4.6 Reset Factory Settings

It is possible to easily restore all the settings and software installed in our factory. To do this, delete all the files and folders present in the "\\FlashDisk\User" folder. At next reboot, your monitoring is like the first time you get it.

4.7 Copying configuration from a system to another

STEP 1: Retrieve the configuration of one system. On the web interface, click on “configuration.xml” and save the file as “configuration.xml”.

STEP 2: Copy this file (configuration.xml) on the other system, in the “user” folder, with FTP over Ethernet, or locally with ActiveSync over USB.

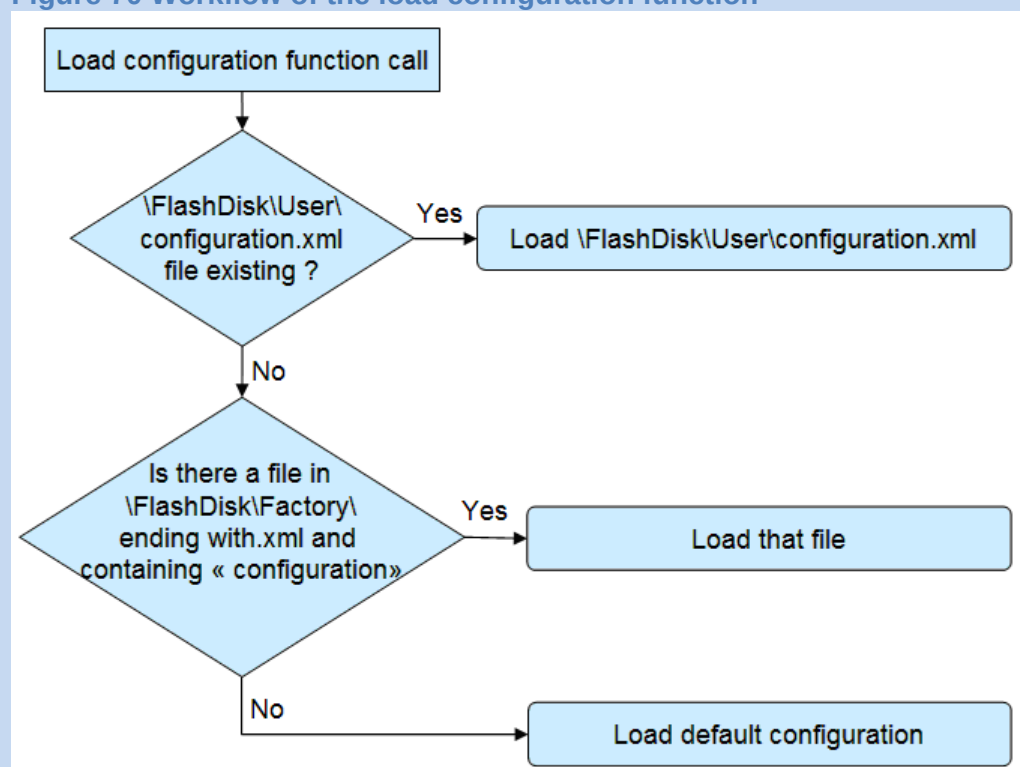
STEP 3: Reboot this other system, the same configuration is applied.

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.

Note

If you want to deploy a configuration as the default configuration for your network, you can put the file in the folder “factory”. This file can be renamed like XXX_configuration.xml where XXX is free and of any length. This way you can indicate in the file the type of configuration. Make sure to delete the “configuration.xml” in the “user” folder as this last has the priority. Here follows a diagram for better understanding:

Figure 70 Workflow of the load configuration function



4.8 PLC Functionalities

PLC stands for Programmable Logic Controller. It allows to add custom features by using some logical expression. It is very cost effective for regulation where the main loop is not smaller 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:

- [Syntax](#)
- [Examples of Boolean Conditions](#)
- [Examples of Mathematical Expressions](#)
- [PLC License Package](#).

You will find a practical example on [the energy meter page](#).

4.8.1 Syntax

- [Using Data Entries](#)
- [Using Alarm Entries](#)
- [Operators](#)
- [Time Variables](#)
- [Other Functions](#).

Using Data Entries

Syntax	Signification
@(dataXXX)	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.

Using Alarm Entries

Syntax	Signification
@(alarmXXX)	The data 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.
@(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

Syntax	Signification
(...)	Parentheses
&&	Logical AND
	Logical OR
==	Equal
!=	Not Equal
+	Addition
-	Subtraction
*	Multiplication
/	Division
%	Modulo
>	Superior
>=	Superior or Equal
<	Inferior
<=	Inferior or equal

Time Variables

Syntax	Signification
\$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.

Other Functions

Syntax	Signification
\$abs(XXX)	The absolute value of XXX
\$sqrt(XXX)	The square root value of XXX
\$ceil(XXX)	The ceil value of XXX

\$floor(XXX)	The floor value of XXX
\$max(X1, X2, X3, ...)	The maximum value between X1,X2,X3, etc.
\$min(X1, X2, X3, ...)	The minimum value between X1,X2,X3, etc.
\$canid(XXX)	Can Id XXX is present
\$iif(condition, val if true, val if false)	Equivalent to "If then else"
\$case(condition, val, condition2, val2, ...)	Equivalent to "switch"

4.8.2 Examples of Boolean Conditions

<u>Tested Condition</u>	<u>Configuration Element Value</u>
The bus voltage is under 47V	@(data11)<47
The rectifier output power is over 2500W	@(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

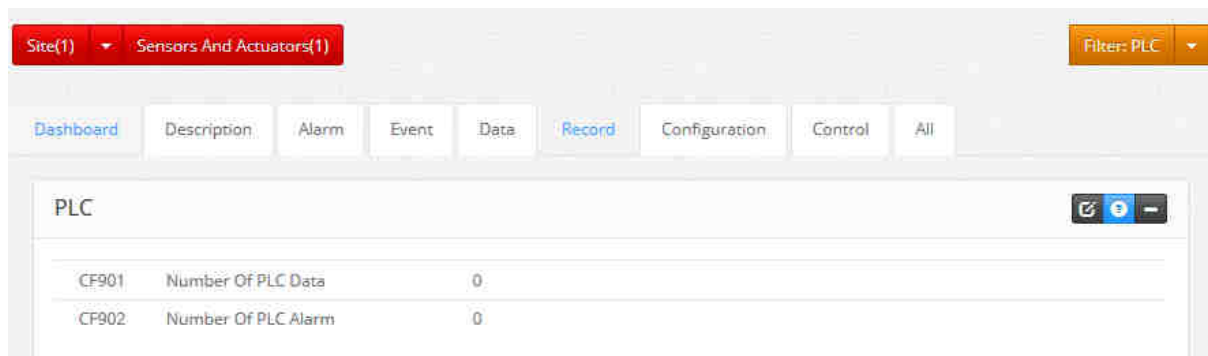
4.8.3 Examples of Mathematical Expressions

<u>Wanted calculation</u>	<u>Configuration Element Value</u>
Voltage on bloc 2 of the battery	@(data161)-@(data162)

4.8.4 PLC License Package

With the PLC License activated, you are able to add custom data and custom alarms. In Site, DC System and "Sensors and Actuators", in the configuration tab, the following parameters are available:

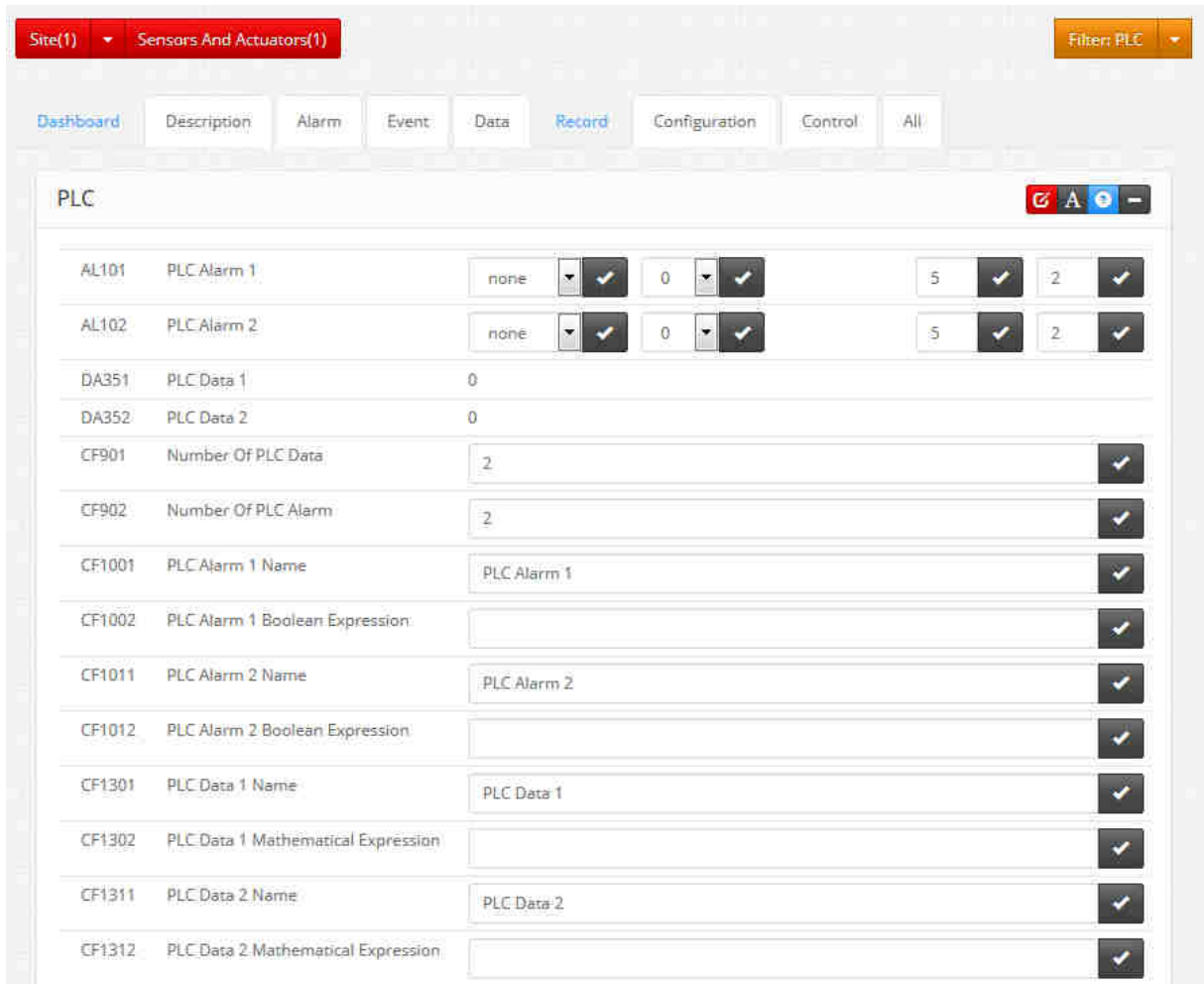
Figure 71 PLC Number



Site(1)	Sensors And Actuators(1)	Filter: PLC
Dashboard	Description	Alarm
Event	Data	Record
Configuration	Control	All
PLC		
CF901	Number Of PLC Data	0
CF902	Number Of PLC Alarm	0

By default, “Number of PLC Data” and “Number of PLC Alarm” is set to 0. If you increase these numbers, you can access new configuration entries in the same tab:

Figure 72 New configuration entries



The screenshot shows the 'PLC' configuration tab in a software interface. At the top, there are tabs for 'Dashboard', 'Description', 'Alarm', 'Event', 'Data', 'Record', 'Configuration', 'Control', and 'All'. The 'Configuration' tab is active. Below the tabs, there is a 'PLC' section with a 'Filter: PLC' button. The configuration is organized into a table with columns for ID, Name, and various settings. The settings include 'none' (with a dropdown), '0' (with a dropdown), '5' (with a dropdown), and '2' (with a dropdown). The table lists the following entries:

ID	Name	Setting 1	Setting 2	Setting 3	Setting 4
AL101	PLC Alarm 1	none	0	5	2
AL102	PLC Alarm 2	none	0	5	2
DA351	PLC Data 1	0			
DA352	PLC Data 2	0			
CF901	Number Of PLC Data	2			
CF902	Number Of PLC Alarm	2			
CF1001	PLC Alarm 1 Name	PLC Alarm 1			
CF1002	PLC Alarm 1 Boolean Expression				
CF1011	PLC Alarm 2 Name	PLC Alarm 2			
CF1012	PLC Alarm 2 Boolean Expression				
CF1301	PLC Data 1 Name	PLC Data 1			
CF1302	PLC Data 1 Mathematical Expression				
CF1311	PLC Data 2 Name	PLC Data 2			
CF1312	PLC Data 2 Mathematical Expression				

You are now able to enter new Boolean expression for the alarms and new Mathematical expression for the data.

These changes are reflected in the data tab and in the alarm tab.

4.9 Translating The Web Interface

It is possible to translate the Comp@s Web Interface to satisfy your needs. Here follows the steps:

STEP 1: An empty 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

STEP 2: This file is encoded in UTF8. After the coma of each line, you can put the wanted translation.

STEP 3: The first two lines are:

CSV file:
#LANGUAGE;MYLANGUAGE
#LANG;MYLANG

STEP 4: Replace "MYLANGUAGE" by the equivalent of "ENGLISH".

STEP 5: Replace "MYLANG" by the equivalent of "EN".

STEP 6: Then, save the file (in UTF8!)? You can choose the name you want, but the extension must be "csv".

STEP 7: Copy it to the monitoring with an FTP client to the folder: "/FlashDisk/user/translation/"

Remark

Excel 2003 is not able to save in CSV UTF8. You can use the free "OpenOffice Calc" to do it. Alternatively, you can use any UTF8-capable text editor like SciTE, Notepad2 or Notepad++.

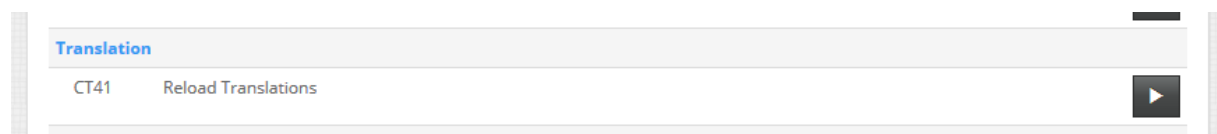
Remark

The coma separator is ";" and there is no text delimiter

STEP 8: Browsing to Site -> Control.

STEP 9: Reload the Translations as shown on the following figure:

Figure 73 Reload Translations



4.10 Replacing a Rectifier in a DC System

When pulling out one of the rectifiers from a DC System shelf, it is **mandatory to wait a minimum time delay** in order that Comp@s detect the removal the CAN Open node. You can check that it was removed in the "Inventory" menu.

The delay is usually **around 15-20 seconds**.

After CAN Open node was removed from the "Advanced" menu, it is possible to insert another rectifier into the DC System shelf. This one will be automatically detected.

4.11 Mobile Compliant

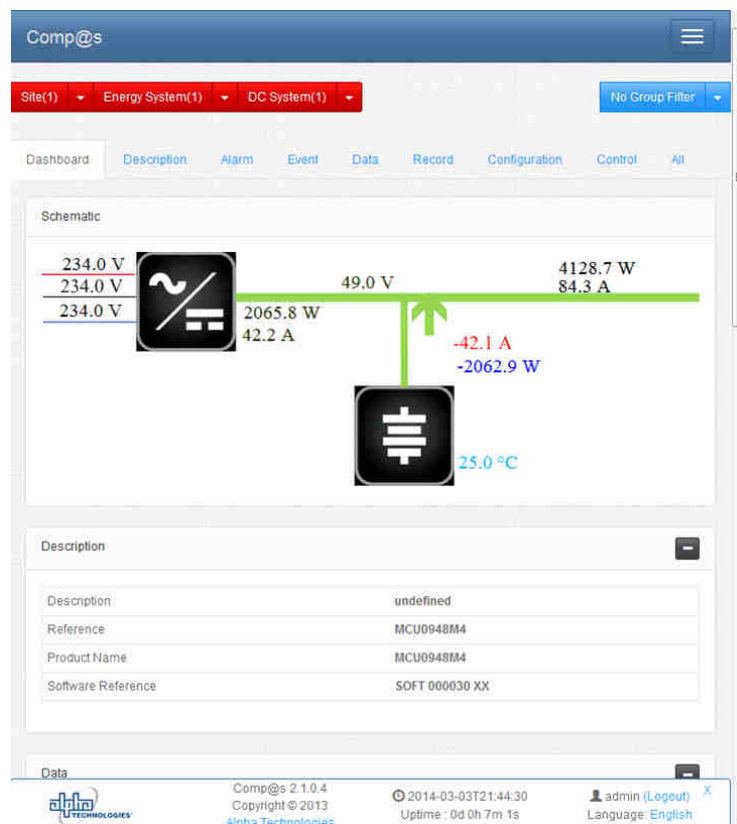
The new Comp@s 2.0. web interface has been designed to support mobile devices like smartphone and tablets.

Table 1 Mobile Compliant




- 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 74 Dashboard Mobile

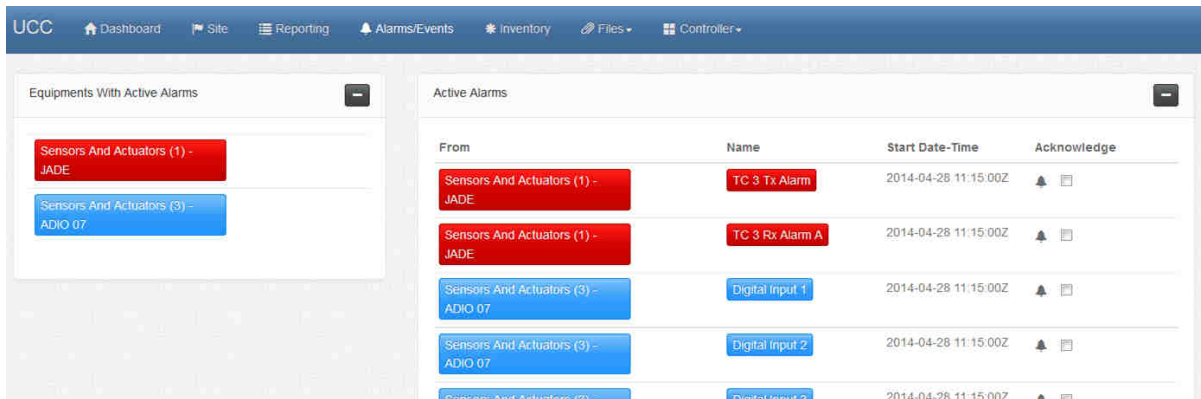


4.12 Alarm Acknowledgement

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.

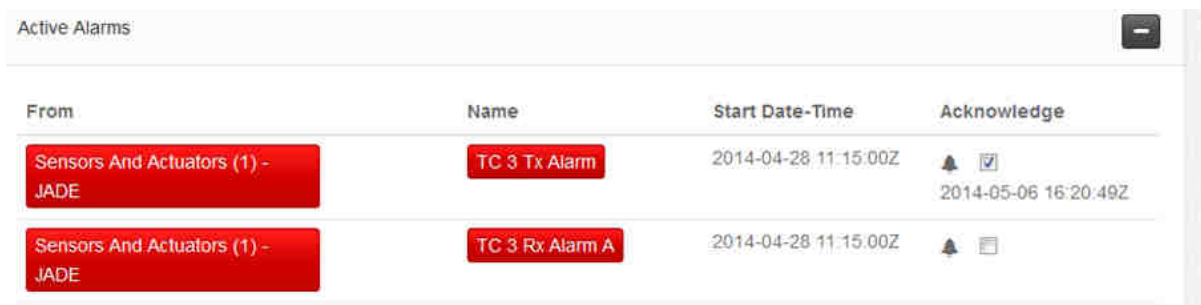
When someone acknowledges, an event is generated, with the information about the user and the ip address from which it was done.



The screenshot shows the UCC interface with a navigation bar at the top containing links for Dashboard, Site, Reporting, Alarms/Events, Inventory, Files, and Controller. Below the navigation bar, there are two main panels. The left panel, titled 'Equipments With Active Alarms', lists two equipment items: 'Sensors And Actuators (1) - JADE' and 'Sensors And Actuators (3) - ADIO 07'. The right panel, titled 'Active Alarms', displays a table of active alarms.

From	Name	Start Date-Time	Acknowledge
Sensors And Actuators (1) - JADE	TC 3 Tx Alarm	2014-04-28 11:15:00Z	 
Sensors And Actuators (1) - JADE	TC 3 Rx Alarm A	2014-04-28 11:15:00Z	 
Sensors And Actuators (3) - ADIO 07	Digital Input 1	2014-04-28 11:15:00Z	 
Sensors And Actuators (3) - ADIO 07	Digital Input 2	2014-04-28 11:15:00Z	 
Sensors And Actuators (3) - ADIO 07	Digital Input 3	2014-04-28 11:15:00Z	 

Figure 75 Acknowledgement in Alarms/Events



This screenshot shows the 'Active Alarms' table after one alarm has been acknowledged. The table structure is the same as in the previous screenshot, but the 'Acknowledge' column for the 'TC 3 Tx Alarm' now shows a checked checkbox and a timestamp.

From	Name	Start Date-Time	Acknowledge
Sensors And Actuators (1) - JADE	TC 3 Tx Alarm	2014-04-28 11:15:00Z	 ☒ 2014-05-06 16:20:49Z
Sensors And Actuators (1) - JADE	TC 3 Rx Alarm A	2014-04-28 11:15:00Z	 

4.13 Email

Comp@s can be configured to send email to one or multiple addresses when a event with a minimal severity happens. A correctly configured SMTP server is required.

Figure 76 Email Configuration

Site(1) ▼
Filter: Email ▼

Dashboard
Description
Alarm
Event
Data
Record
Configuration
Control
All

Email
✖
A
🔍
—

CF120	Smtip Server	130.145.57.254	✓
CF121	Smtip Login	alphatechnologies.be	✓
CF122	Smtip Login	compas	✓
CF123	Smtip Password	compas2014	✓
CF130	Mail Sender	SOME_EMAIL@alphatechnologies.be	✓
CF131	Mail Recipients	SOME_EMAIL@alphatechnologies.be	✓
CT120	Send Summary Email		▶

Here follows an example of mail :

Figure 77 Email Sample

Subject: Comp@s - Summary

Site Information

Site Name	Comp@s Siteg
Description	undefined
Reference	undefined
Contact Name	
Phone Number	
City	undefined
Software Revision	2.7.0.1
Current IP Address	0.0.0.0
Date And Time Local	2014-05-06T15:57:36

Equipments In Alarm

Sensors And Actuators (1) - SAM0948	major

Active Alarms

From	Name	Start Date-Time	Ack	Severity
Sensors And Actuators (1) - SAM0948	Digital Input 1	2014-05-06 15:57:33Z	No Ack	major

Last Events

From	Name	Date-Time	Severity
Sensors And Actuators (1) - SAM0948	Alarm Set : Digital Input 1	2014-05-06 15:57:33Z	major
Sensors And Actuators (1) - SAM0948	Alarm Clear : Digital Input 1	2014-05-06 15:57:25Z	major
Sensors And Actuators (1) - SAM0948	Electronic Lock 1 Disabled	2014-05-06 15:57:23Z	none
Sensors And Actuators (1) - SAM0948	Access Request Badge Reader 1 : 2800828648	2014-05-06 15:57:23Z	major
Sensors And Actuators (1) - SAM0948	Electronic Lock 2 Disabled	2014-05-06 15:57:23Z	none
Sensors And Actuators (1) - SAM0948	Alarm Set : Digital Input 1	2014-05-06 15:57:22Z	major
DC System (1) - MCU0948M4	DC System Started	2014-05-06 15:57:17Z	major
Site (1)	CAN Bus Node Detected : 2	2014-05-06 15:57:14Z	none
Site (1)	CAN Bus Node Detected : 101	2014-05-06 15:57:14Z	none

Chapter 5 – Software Interfaces

- [Web Server](#)
- [FTP Server](#)
- [Modbus Slave](#)
- [SNMP Agent.](#)

5.1 Web Server

- [ETSI Protocol](#)
- [Retrieving XML files](#)
- [Retrieving data records in CSV format](#)
- [HTTP GET of any description, data, configuration, etc.](#)
- [HTTP POST to configure and control.](#)

5.1.1 ETSI Protocol

The XML files described in [Retrieving 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:

- [The Hierarchy of the devices/equipments](#)
- [Common structure of any system/equipment](#)
- [The <description table> element](#)
- [The <alarm_table> element](#)
- [The <event table> element](#)
- [The <data table> element](#)
- [The <config table> element](#)
- [The <control table> element.](#)

Common structure of any system/equipment

Any equipment XML node can have the following attributes:

Attribute	Description	Datatype	O/M
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

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

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
unit	The unit of the config parameter	xs:string	O
info	Short additional information on the config parameter	xs:string	O

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

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

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

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

The Hierarchy of the devices/equipments

Equipments 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.

5.1.2 Retrieving XML files

Each Comp@s 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:

<u>Parameter name</u>	<u>Value</u>	<u>Description</u>
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)
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:

URI example

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:

<u>File Name</u>	<u>Description</u>
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](#) .

5.1.3 Retrieving data records in CSV format

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.

These files can be downloaded through the web interface, in the “records” tab of any element. It is possible to download the records of average, minimum and maximum values of data element. The period of time can be a second, a minute, an hour or a day:

Figure 78 CSV data records



Records Of	Record Period
Records Of Average	second- minute- hour- day
Records Of Minimum	minute- hour- day
Records Of Maximum	minute- hour- day

Please note that this function requires the “asset” license.

5.1.4 HTTP GET of any description, data, configuration, etc.

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. The following examples illustrate some requests:

Get local time:

Get local time

http://<the ip address>/get.txt?path=/site/data_table/21

Get dc system 1 bus voltage:

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:

Get severity type

http://<the ip address>/get.txt?path=/site/energy_system/dc_system/alarm_table/1/severity_type

5.1.5 HTTP POST to configure and control

- [Introduction to HTTP POST and implementation](#)
- [SetValue.cgi](#)
- [ProcessXML.cgi](#).

Introduction to HTTP POST and implementation

The Comp@s web server supports some HTTP POST command.

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.

Table 2 C# code

```
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 StreamReader(webResponse.GetResponseStream());
        return sr.ReadToEnd().Trim();
    }
}
catch { return "error"; }
return "error";
}

```

C#

```

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 StreamReader(webResponse.GetResponseStream());  
    return sr.ReadToEnd().Trim();  
}  
}  
catch { return "error"; }  
return "error";  
}
```

SetValue.cgi

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

Here is an example of code to manually set the local time:

```
C#  
string path = "/site/1/control_table/control/12";  
string value = System.DateTime.Now.ToString("s");  
string postdata = "path=" + path + "&value=" + value;  
PostMsg("http://192.168.45.2/SetValue.cgi", postdata, "admin", "compas");
```

ProcessXML.cgi

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.

This allows to remotely changing multiple config parameters by posting on each IP where a Comp@s monitoring is running.

5.2 FTP Server

- [Connecting the Comp@s FTP Server](#)
- [Changing default login and password.](#)

5.2.1 Connecting the Comp@s FTP Server

In order to use the FTP functionalities of Comp@s, you need a FTP client installed. We recommend the use of “Filezilla”, a free FTP solution available at <http://filezilla-project.org/>.

The connection parameters are:

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

5.2.2 Changing default login and password

The passwords are independent from the main Comp@s application. There 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:

STEP 1: Start a text editor like Notepad

STEP 2: Copy –Paste the following content:

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

STEP 3: Modify the login and password

STEP 4: Save the file as “Compas_FTPServer.xml”

STEP 5: Copy that file in the “\\FlashDisk\\user” (“\\Nor Flash\\user” on previous release).

STEP 6: You have to use the new login and password at the next FTP connection.

Remark 1

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

Remark 2

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

XML

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

5.3 Modbus Slave

With the Modbus license, a DC system can be monitored with the Modbus over TCP/IP protocol. Here follows the exchange table 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.

5.3.1 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 Tables at the DC System level.

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
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	More than one rectifier must be replaced

	Rectifier Failure	
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 Discharge On	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.

5.3.2 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 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 Ampere	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 Ampere	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 Ampere	The sum of the delivered dc-powered rectifier current
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 Ampere	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	Rectifiers		The actual number or rectifier in AC Failure.

	Rectifier			
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 Ampere	Estimation of the load current consumption
61	Battery Current Input	Battery	0.1 Ampere	Measurement of the battery input current. A negative value means that the battery is discharging
62	Battery Power Input	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 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 Discharged Capacity Test	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 Discharged Capacity Ah Test	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

5.3.3 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.

5.4 SNMP Agent

- For SNMP Agent: see [The Comp@s SNMP Agent](#)
- [Using and Configuring SNMP traps.](#)

5.4.1 Using and Configuring SNMP traps

- [SNMP Comp@s configuration](#)

- [Sending a testing trap](#)
- [Receiving traps.](#)

SNMP Comp@s configuration

STEP 1: Connect the Comp@s web server

STEP 2: Browse to Site -> Configuration

STEP 3: Check that SNMP Activated is “True”.

STEP 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”.

STEP 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”.

STEP 6: Repeat STEP 4 and STEP 5 at the DC System level and on the Sensors and Actuators if you have. This allows sending traps to different servers in function of the concerned equipment.

Your system is now configured; each event will be sent by trap.

Sending a testing trap

STEP 1: Connect the Comp@s web server

STEP 2: Browse to Site -> Control or to DC System -> Control

STEP 3: At the bottom of the page, you can enter a text in the field called “Add Event”.

STEP 4: Click on the corresponding “Execute” button.

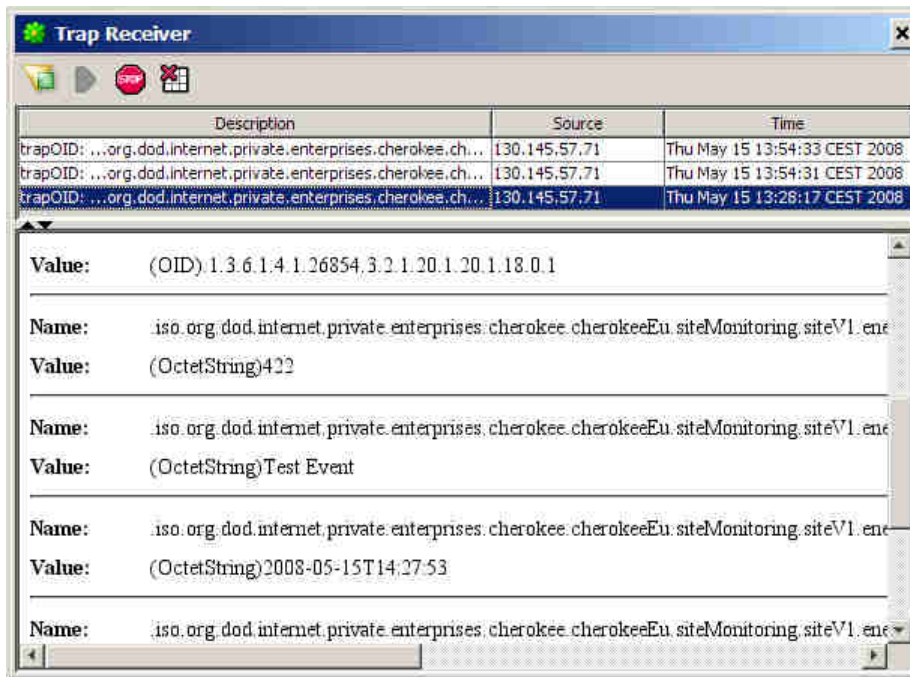
STEP 5: An event has been added and was sent trough traps.

Receiving traps

In order to receive traps, you need SNMP software able to receive traps. 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” located in tools:

Figure 79 IReasoning trap receiver



5.5 XML Event Posting (ETSI)

The controller can send XML events, in compliance with ETSI standard ES-202-336, part 1. The relevant chapter is 9.4.2 (Alarm and Event Message). 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.

XML

XML Event Posting

CF41	XML Event Posting Activated	True	☐
CF42	XML Event Posting Refresh Time (second)	0	☒
CF43	XML Event Posting Timeout (millisecond)	100000	☒
CF45	XML Event Posting To Secondary Only If Primary Failure	True	☐
CF46	XML Tables To Post On XML Event	description,alarm,data,config	☒
CF651	XML Events Primary Post URL	http://Myserver/Post	☒
CF652	XML Events Primary Post Login	admin	☒
CF653	XML Events Primary Post Password	password	☒
CF661	XML Events Secondary Post URL		☒

Some configuration elements about the XML Event Posting (See site tables for more information.)

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;
using 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 AsyncCallback(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 = "";
    HttpRequest request = null;
    HttpResponse 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();

    }
}
}

```

Here is an example of event received, when the data and alarms are requested on event :

```

<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<site id="1" status="alarm" severity_type="major" severity_level="4" datetime="2014-02-10T15:59:48">
  <energy_system id="1" status="alarm" severity_type="major" severity_level="4">
    <dc_system id="1" status="alarm" severity_type="major" severity_level="4">
      <description_table>
        <description id="1" name="Description" group="Description">undefined</description>
        <description id="2" name="Reference" group="Description">undefined</description>
        <description id="11" name="Product Name" group="Monitoring">MCU0948M4</description>
        <description id="12" name="Hardware Reference" group="Monitoring">9413 060 95051</description>
        <description id="14" name="Software Reference" group="Monitoring">SOFT 000030 XX</description>
        <description id="16" name="Serial Number" group="Monitoring" />
        <description id="18" name="Manufacturing Date" group="Monitoring">y12w34</description>
      </description_table>
      <alarm_table>
        <alarm id="1" active="false" name="DC Bus Extra Low" group="Voltage" severity_type="major" severity_level="6" set_delay="5" clear_delay="2" relay_number="0" />
        <alarm id="2" active="false" name="DC Bus Low" group="Voltage" severity_type="major" severity_level="4" set_delay="5" clear_delay="2" relay_number="0" />
        <alarm id="3" active="false" name="DC Bus High" group="Voltage" severity_type="minor" severity_level="4" set_delay="5" clear_delay="2" relay_number="0" />
        <alarm id="4" active="false" name="DC Bus Extra High" group="Voltage" severity_type="major" severity_level="6" set_delay="5" clear_delay="2" relay_number="0" />
        ...
        <alarm id="27" active="false" name="Digital Input 3" group="Digital" severity_type="none" severity_level="0" set_delay="5" clear_delay="2" relay_number="0" />
        <alarm id="28" active="false" name="Digital Input 4" group="Digital" severity_type="none" severity_level="0" set_delay="5" clear_delay="2" relay_number="0" />
      </alarm_table>
      <event_table>
        <event id="15424" datetime="2014-02-10T15:59:47" severity_type="none" severity_level="0" type="information">DC Mode Changed : Float</event>
      </event_table>
      <data_table>
        <data id="1" name="DC Mode" group="General">Float</data>
        <data id="2" name="Previous DC Mode" group="General">Mains Failure</data>
        <data id="11" name="Bus Voltage" group="General" unit="Volt" record_conf="s120,m480,h48,d366">49.0</data>
        <data id="12" name="Ratio Delivered On Available Power" group="General" unit="%">0.00</data>
        <data id="13" name="Minutes Since Last AC Failure Begin" group="General" unit="minute">10</data>
        <data id="14" name="Minutes Since Last AC Failure End" group="General" unit="minute">10</data>
        <data id="21" name="Rectifiers Output Power" group="Rectifiers" unit="Watt" record_conf="s120,m120,h48,d366">0.0</data>
        <data id="22" name="Rectifiers Output Current" group="Rectifiers" unit="Ampere" record_conf="s120,m120,h48,d366">0.0</data>
        <data id="23" name="Rectifiers Output Power Max" group="Rectifiers" unit="Watt">3400.0</data>
        <data id="24" name="Rectifiers Output Current Max" group="Rectifiers" unit="Ampere">69.4</data>
        <data id="31" name="Number Of Rectifier Max" group="Rectifiers">4</data>
        <data id="32" name="Number Of Present Rectifier" group="Rectifiers">4</data>
        <data id="33" name="Number Of Absent Rectifier" group="Rectifiers">0</data>
        <data id="34" name="Number Of Active Rectifier" group="Rectifiers">0</data>
        <data id="35" name="Number Of AC-Fail Rectifier" group="Rectifiers">4</data>
        <data id="36" name="Number Of DC-Fail Rectifier" group="Rectifiers">0</data>
        <data id="37" name="Number Of Remote Off Rectifier" group="Rectifiers">0</data>
        <data id="38" name="Number Of Over Temperature Rectifier" group="Rectifiers">0</data>
        <data id="41" name="Mains Phase 1 Voltage" group="Mains" unit="Volt">-1.0</data>
        <data id="42" name="Mains Phase 2 Voltage" group="Mains" unit="Volt">-1.0</data>
        <data id="43" name="Mains Phase 3 Voltage" group="Mains" unit="Volt">-1.0</data>
        <data id="51" name="Load Power" group="Load" unit="Watt" record_conf="s120,m120,h48,d366">1695.4</data>
        <data id="52" name="Load Current" group="Load" unit="Ampere" record_conf="s120,m120,h48,d366">34.6</data>
        <data id="61" name="Battery Input Current" group="Battery" unit="Ampere" record_conf="s120,m480,h48,d366">-34.6</data>
        <data id="62" name="Battery Input Power" group="Battery" unit="Watt" record_conf="s120,m120,h48,d366">-1695.4</data>
      </data_table>
    </dc_system>
  </energy_system>
</site>

```

Arm@da, our server application, is managing all these events, by filling in a mysql database. Please contact your reseller for more information.

Chapter 6 – Third-Party Interfaces

Equipment

6.1 Energy Meters (modbus over RS485)

With comp@s, you can connect and monitor several energy meter using modbus RTU. By doing that, you'll save your energy, time and money.

6.1.1 Requirements :

- Hardware requirement
 - o 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
 - o minimum Comp@as version : **2.16.0.3**
 - o minimum SAM0348 firmware : **SOFT 000136 05** (Only needed if you use the the RS485 over SAM0348)
 - o minimum SAM0948 firmware : **SOFT 000003 05** (Only needed if you use the the RS485 over SAM0948)
- Compatible energy meter
 - o ABB B21
 - o Schneider Electrics PM9C
 - o Schneider Electrics IEM3150
 - o (...)
 - o If you need another RS485 modbus energy meter, contact us
- The licence Metering available on our licences shop

6.1.2 Configure the energy meter

Configure the your energy meter communication (refer to the manufacturer manual) according to theses parameters:

Baud rate	9600
Data bits	8
Parity	None
Protocol	Modbus

6.1.3 Connecting the energy meter to Comp@s

According to your device's user manual, connect your energy meter to the Comp@as RS485 bus line.

On sensors and actuators module, the RS485 bus is on the reader connector that use these pin layout:

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

6.1.4 Configuring comp@s

First, Add the "metering" license.

Then, you have to find the RS485 configuration field :

- with **UCC Core Module** (or another Comp@s control device with *embedded direct RS485 bus*)
 - o Site
 - Configuration tab > Inventory> RS485 Bus
 - Parameter CF210
- with **Sensors and actuators** module (SAM0348 or SAM0948) and comp@s
 - o Site > Sensors And Actuators

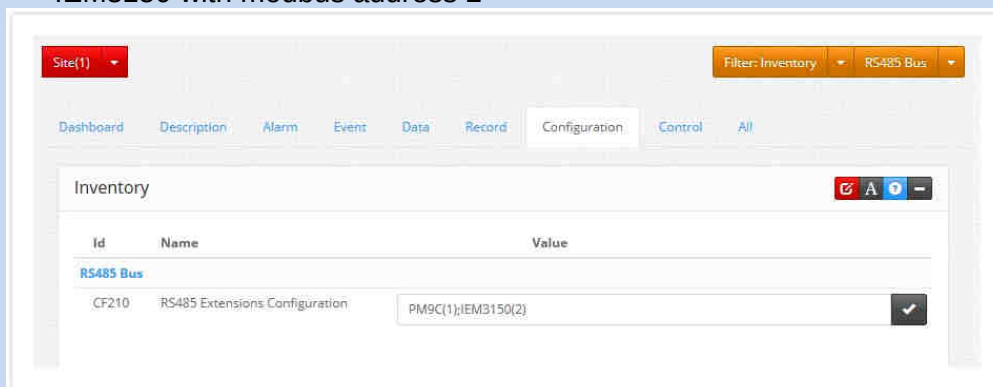
- Configuration tab > RS485 BUS
- Parameter CF150

Then you have to specify the device name that you want to use with the address in brackets and save the configuration (e.g. : *B21(1)* for energy meter B21 on modbus address 1). You can specify multiples devices using semicolons (example below).

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



Id	Name	Value
CF210	RS485 Extensions Configuration	PM9C(1);IEM3150(2)

6.1.5 Discover your new device

Once your device is added in configuration, new equipments 'Energy Meter' are created in the site structure:



```

graph TD
    Site1[Site (1)] --> ES1[Energy System (1)]
    ES1 --> EM1[Energy Meter (1)]
    ES1 --> EM2[Energy Meter (2)]
  
```

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



Id	Name	Value
DE1	Product Name	IEM3150
DE4	Software Version	1.0.300
DE9	Manufacturer	Schneider Electric

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

(...) you will find all control to reset the partial energy counter or configuration of the refresh time of the device in all others tabs.

6.1.6 Case studies : adding an overload current alarm via PLC system

First, change the parameter CF902 (Number Of PLC Alarm) of the energy meter to 1. You will see two new parameters (CF1001, CF1002)

Then, configure the alarm name and triggering condition

- CF1001 : Alarm name
 - o Change the name (e.g. "Overload current on line 1 (current > 1A)")
- CF1002 : Alarm 1 Boolean Expression
 - o change the expression to : "@(data10) >= 1"
 - **@(data10)** represent the data with id 10 of this device (here, i1)
 - **>=** is the operator
 - **1** is the value to compare the data
- we can read these parameters as :
 - o 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.

Finally, 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.

6.2 CE+T Inverters (CANOpen)

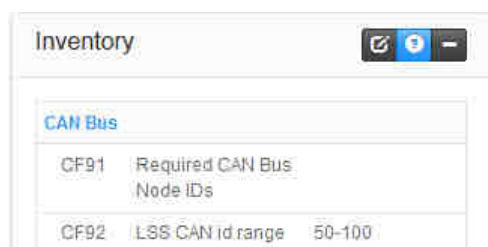
Comp@s can easily monitor a lot of device through CANOpen. The CE+T inverter is one of them

In order to monitor the CE+T inverter, you need to :

- have CE+T inverter in CANOpen mode ([See Appendix - Convert a CE+T to CANOpen](#) to make the conversion)
- change a parameter of configuration
- connect the CE+T inverter to the Comp@s CANOpen
- save & Reboot Comp@as

Change the addressing parameter in comp@s

- In **Site > Configuration > Inventory**

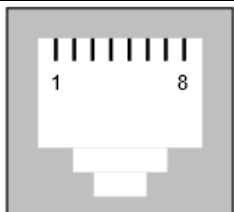


- If you already have a dc-system connected, with CAR rectifier using node id from 1 to x : change the **CF92** parameter to something like **50-100** to assign a compatible address to the T2S. So the CE+T will be addressed in the 50-100 node id range

Connect the CE+T CanOpen to the Comp@s CANOpen connector

You need to know where is the CANOpen connector on your Rack. Refer to your rack's specification manual. See Below for some examples.

Only CAN_H, CAN_L, and CAN_GND must be interconnected.

Rack UCC and CE+T CANOpen Converter			
	Pin #	Name	Description
	1	CAN_H	CAN bus High
	2	CAN_L	CAN bus Low
	3	CAN_GND	CAN bus Ground

Rack SP35



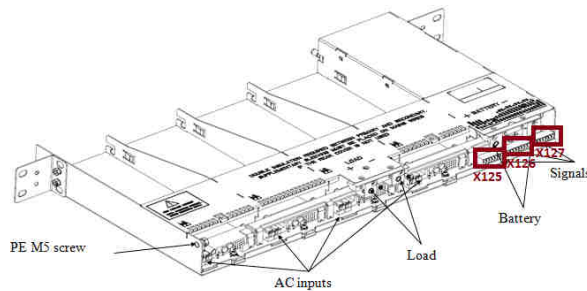
Pin #	Name	Description
X9-6	CAN_H	CAN bus High
X9-9	CAN_L	CAN bus Low
X9-10	CAN_GND	CAN bus Ground

CAPTIN 850



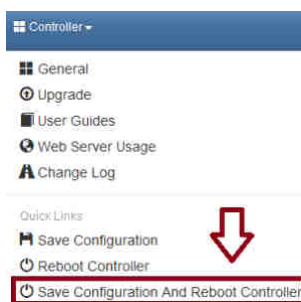
Pin #	Name	Description
1,8,9	NC	No usage
2	CAN_L	CAN bus Low
3	CAN_GND	CAN bus Ground
4	-48V	-48V power
5	0V	0V power
6	CAN_GND	CAN bus Ground
7	CAN_H	CAN bus High

ACE094



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

Save and Reboot Comp@s



After a few seconds, Comp@s reboot, the inverter node is detected and you can configure the monitoring directly in the device.

Chapter 7 – CAN Bus related information

- [CAN Bus - The internal field bus](#)
- [Connecting multiple rectifier shelves together.](#)

7.1 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, 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, as shown on the following figure:

Figure 80 CAN Bus Node IDs

CAN Bus		
ID	Data Name	Value
51	CAN Bus Node IDs	2,3,101,111

7.2 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.](#)

7.2.1 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 81 Example with a system with 2 shelves of 6x1800W rectifiers

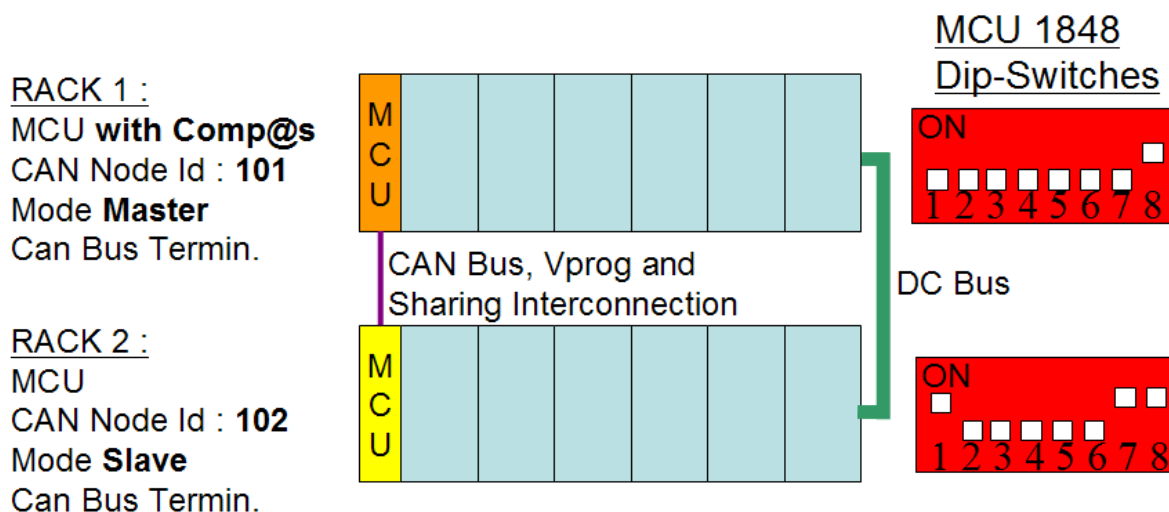
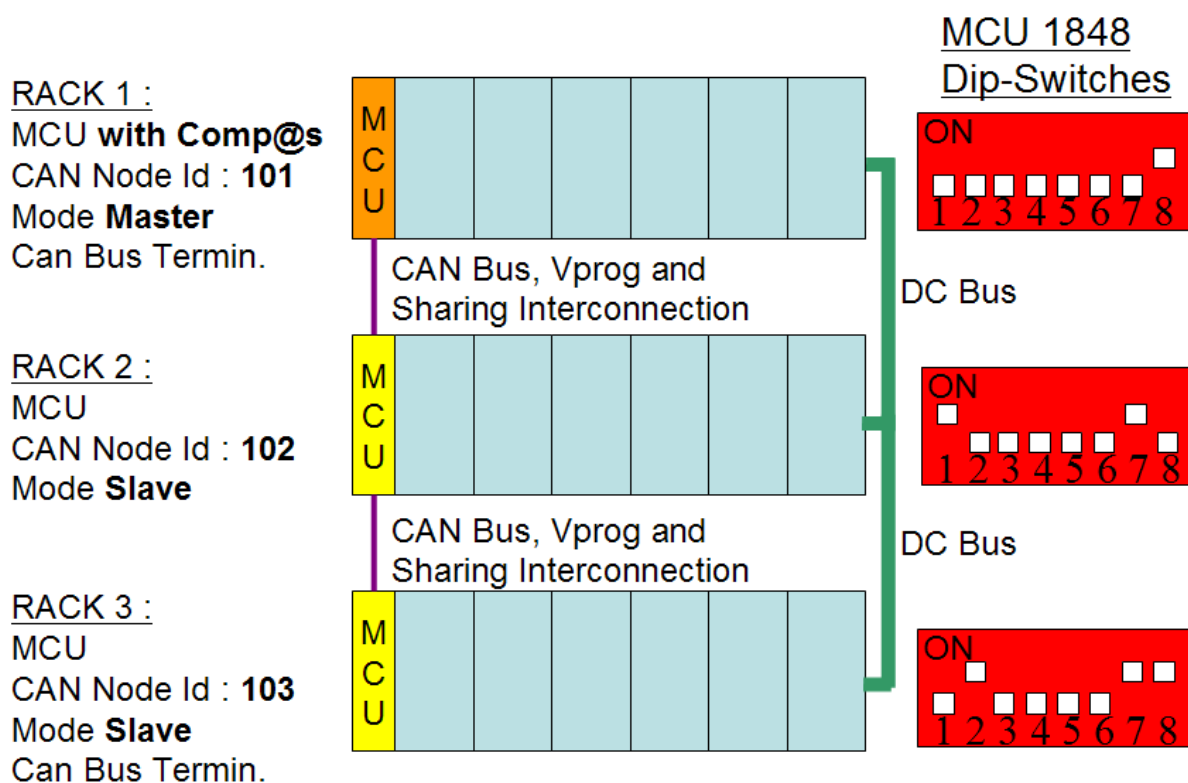


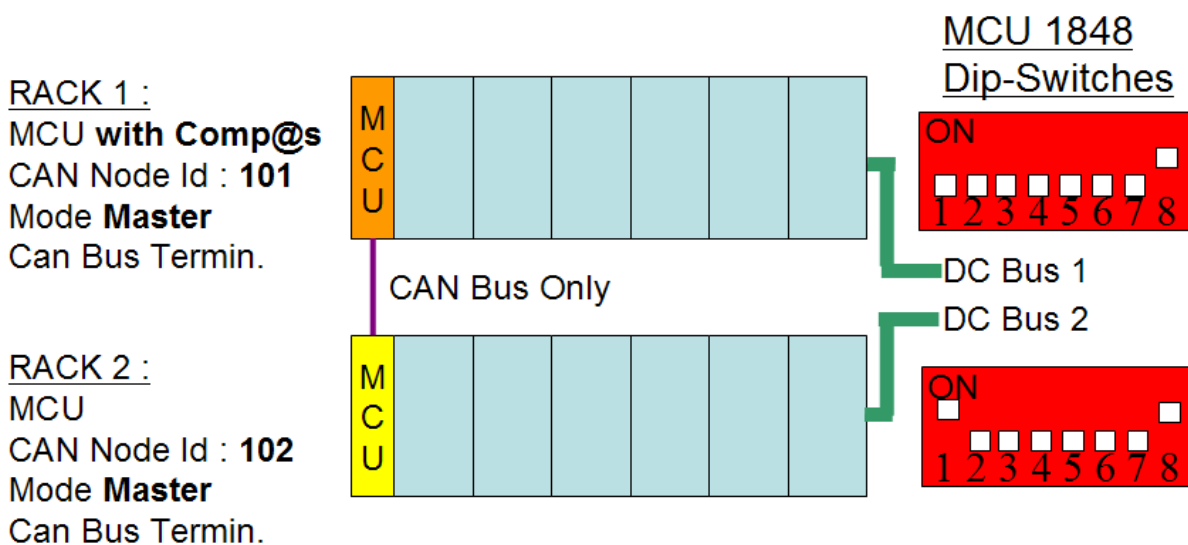
Figure 82 Example with a system of 3 shelves of 6x1800W rectifiers



7.2.2 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 83 Example with a system with 2 shelves of 6x1800W rectifiers



Chapter 8 – 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.)

8.1 Site Tables

8.1.1 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
	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			

Alarm Table						
<i>Id</i>	<i>Name</i>	<i>Group</i>	<i>SubGroup</i>	<i>Severity (Level)</i>	<i>Type</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 et reboot the compas to avoid a possible strange behavior.					
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	Inventory	CAN Bus	warning (0)		5 / 2

	Upgrade				
	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 some reason				
15	Last Configuration Changes Unsaved	Controller	Save	warning (2)	1 / 2
	This alarm is active if the system should be rebooted for some reason				
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				
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
	The coma separated list of the node ids present on the CAN bus.				
161	Cloud Link State	Cloud Link			basic
	Cloud Link State				

Config Table						
Id	Name	Group	SubGroup	Unit	Range: Min/Max (default)	License
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 Gateway 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 gateway, 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. The default SNTP Time server is 192.168.45.1.					
14	Time Zone Name	Time			((GMT+01:00) Brussels, Copenhagen, Madrid, Paris)	basic
	The Time Zone of the site					
15	SNTP Time Refresh	Time		hour	178	basic
	Set the time between synchronisation with the SNTP server					

16	SNTP Time Recovery Refresh	Time		hour	24	basic
	Set the time to wait before retry if a synchronisation fail					
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 2 authentication methods: Basic Access or Digest Access. It is recommended to use the secured Digest access if security is an issue for you.					
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.					
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	Heartbeat	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	SNMP				basic

	Minimum Security Level					
	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 Engine ID	SNMP				basic
	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 seperated 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	Generic	Events		True/False (True)	basic

	Control Execution					
	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
	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 Login: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 Login:Password	Users			(user1:compas)	basic
	This is the login and the password of the user number 1.					
103	User 2 Login:Password	Users			(user2:compas)	basic
	This is the login and the password of the user number 2.					
104	User 3 Login:Password	Users			(user3:compas)	basic
	This is the login and the password of the user number 3.					
105	User 4 Login:Password	Users			(user4:compas)	basic
	This is the login and the password of the user number 4.					
106	User 5 Login:Password	Users			(user5:compas)	basic
	This is the login and the password of the user number 5.					
120	Enable Email Feature	Email			True/False (False)	asset
	Enable/Disable the email feature					
121	Smtip Server	Email				basic
	Smtip Server. If you are using a domain name, make sure you configured the network Dns (CF5)					
122	Smtip Domain	Email				basic

	Smtplib Domain. (Required by some servers.)					
123	Smtplib User Login:Password	Email				basic
	Smtplib Login and Password. The password is encrypted. To enter a new login and password, enter login:password and validate, the password will be encrypted.					
130	Mail Sender	Email				basic
	Mail Sender (The 'From' of the emails you will receive)					
131	Mail Recipients	Email				basic
	Mail Recipients, separated with semicolon ';'.					
135	Minimal Severity Type To Send Mail	Email			(minor)	basic
	This is the minimal severity of the event to send a Summary Mail					
161	Cloud Enabled	Cloud Link				underdev
	Enable Cloud Connection					
162	Cloud Server	Cloud Link				underdev
	Cloud Server					
163	Cloud Login	Cloud Link				underdev
	Cloud Login					
164	Cloud Password	Cloud Link				underdev
	Cloud Password					
165	Cloud Cluster	Cloud Link				underdev
	Cloud Cluster					
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					
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 posted. The XML ETSI standard is used in the posted data content.					
652	XML Events Primary Post Login	XML	XML Event Posting			basic
	The login which must be used when posting events to the primary server					
653	XML Events Primary Post Password	XML	XML Event Posting			basic
	The password which must be used when posting events to the primary server					
661	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.					
662	XML Events Secondary Post Login	XML	XML Event Posting			basic
	The login which must be used when posting events to the secondary server					
663	XML Events Secondary Post Password	XML	XML Event Posting			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				
<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 Records will be saved.			
2	Save Configuration And Reboot 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 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
	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			
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 runiing 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 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 riskless 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 riskless 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			
150	Restart Background Script	Scripting		underdev
	This control element is used to start a script			
151	Enable script	Scripting		underdev
	This control element is used to enable a lua script. Put the file name of the script that you want to activate (ex: example.lua).			
152	Disable script	Scripting		underdev
	This control element is used to disable a lua script. Put the file name of the script that			

	you want to disable (ex: example.lua).		
153	Add script	Scripting	underdev
	You can add a new lua script. The name has to be different of all .		
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		

8.2 DC System Tables

8.2.1 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						
Id	Name	Group	SubGroup	Severity (Level)	Type	Set/Clear Delay
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
	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 2	warning (0)	5 / 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				
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 temeperature derating, that value will be lower that 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 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.				
39	Number Of Comm Fail Rectifier	Rectifiers			basic
	The actual number of rectifier with communication failure.				
41	Mains Phase 1 Voltage	Mains		Volt	basic
	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.				
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				
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 (default)</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 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	Bus Voltage	Alarm Parameters	Volt	0/5 (1)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'.					
4	DC Bus Voltage Low	Bus Voltage	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	Bus Voltage	Alarm Parameters	Volt	0/5 (0.5)	basic
	The voltage hysteresis on the alarm 'DC Bus Voltage Low'					
6	DC Bus Voltage High	Bus Voltage	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	Bus Voltage	Alarm Parameters	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 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	Bus Voltage	Alarm Parameters	Volt	0/5 (0.5)	basic
	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.					
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	Equalize			False/False (False)	battery
	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	Equalize		Volt	43/50 (46)	battery

	Threshold					
	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 Current	Battery	Battery Test	Ampere	0/6000 (0)	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. If the parameter is set to 0, no regulation will be done					
74	Battery Test Minimal Discharge 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
	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.					
204	Digital Input 1 Name	Adio 1	Digital Input 1		Adio 1	basic
	The name of the digital input 1.					
205	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.					
206	Digital Input 2 Name	Adio 1	Digital Input 2		Adio 1	basic
	The name of the digital input 2.					
207	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.					
208	Digital Input 3 Name	Adio 1	Digital Input 3		Adio 1	basic
	The name of the digital input 3.					
209	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.					
210	Digital Input 4 Name	Adio 1	Digital Input 4		Adio 1	basic
	The name of the digital input 4.					
211	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.					
212	Digital Input 5 Name	Adio 1	Digital Input 5		Adio 1	basic
	The name of the digital input 5.					
213	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.					
214	Digital Input 6 Name	Adio 1	Digital Input 6		Adio 1	basic
	The name of the digital input 6.					

215	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.					
216	Digital Input 7 Name	Adio 1	Digital Input 7		Adio 1	basic
	The name of the digital input 7.					
217	Digital Input 7 Normally Closed	Adio 1	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.					
218	Digital Input 8 Name	Adio 1	Digital Input 8		Adio 1	basic
	The name of the digital input 8.					
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 Condition	Adio 1	Relay 5		(False)	basic
	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 Relay Output 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					
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 Rectifier By	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.			
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
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments			

8.2.2 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 (Level)</i>	<i>Type 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 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.				
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 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

	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				
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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	Battery Test Discharged	Battery	Battery Test	Ah	basic

	Capacity				
	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	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.				
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 without 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				
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				
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

	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.					
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 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.					
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: $(\log(t_2)-\log(t_1))/(\log(i_1)-\log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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	Battery			1-3 or 0-2	basic

	String					
	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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 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					
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
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
	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			

8.2.3 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				
<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 (Level)</i>	<i>Type 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 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.				
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 is 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 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		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 Inputs		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 Inputs		disabled (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		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				
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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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 Test	minute	basic

	Battery				
	The number of minute without 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				
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. 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.					
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	Battery	Temperature	Volt	0/10 (3)	basic

	Temperature Compensation		Compensation			
	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 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 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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 Duration Test	Battery	Battery Test	minute	1/5000 (10)	battery
	The timeout in minute after which the battery test must be stopped.					
76	Battery Requested Minutes Without Failure Test	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 Scheduler Cron Rule Test	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

	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
	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	Sensors	Temperature	degree C		basic

	Temperature High					
	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>
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
	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			

8.2.4 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 (Level)</i>	<i>Type 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 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.				
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 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)				
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 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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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 without 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				
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				

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.					
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
	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: $(\log(t_2)-\log(t_1))/(\log(i_1)-\log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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 (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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 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.					
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					
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			
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			

8.2.5 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 (Level)</i>	<i>Type 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 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.				
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 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
	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				
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 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)				

73	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	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	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.				
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 without 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				
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. 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	DC Bus	Alarm	Volt	0/2 (0.25)	basic

	Extra High Hysteresis		Parameters			
	The voltage hysteresis on the alarm 'DC Bus Voltage Extra High'					
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.					
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.					
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	Battery	Alarm	degree C	5/100 (40)	basic

	High		Parameters			
	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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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	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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	15/30 (23)	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 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 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					
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 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 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
	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			

8.2.6 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><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></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
	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 unconfigured.	
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 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>Id</u>	<u>Name</u>	<u>Group</u>	<u>Unit</u>	<u>License</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			
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. 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
	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 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
	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 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
	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				
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 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
	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		

8.2.7 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 Ethernet port - Captin300 line
Hardware 12NC	9413 060 10131
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
	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>Id</u>	<u>Name</u>	<u>Severity Type (Level)</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 unconfigured.	
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 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
	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
	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			
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
	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 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
	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 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	basic

				Open	
	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 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				
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 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
	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

8.2.8 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 (Level)</i>	<i>Type</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 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.				
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 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
	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
	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				
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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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 without 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				
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)				
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 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.					
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

	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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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.					
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
	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.					
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
	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			

8.2.9 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 (Level)</i>	<i>Type</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'					

	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.				
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 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 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					
Id	Name	Group	SubGroup	Unit	License
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 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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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 without 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				
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)				
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	DC Bus	Alarm	Volt	0/5 (0.5)	basic

	Hysteresis		Parameters			
	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 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.					
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	Battery		Ah	3/1000 (100)	basic

	Capacity					
	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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 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.					
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	Sensors	Temperature	degree C		basic

	Temperature Low					
	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.					
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
	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

8.2.10 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			
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 (Level)</i>	<i>Type 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 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.				
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 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
	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				
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 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)				
73	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	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	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.				
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 without 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				
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. 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.					
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 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 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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 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

	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
	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
	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			

8.2.11 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 (Level)</i>	<i>Type 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 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.				
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 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'				

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 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 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)				
73	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	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	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.				
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 without 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				
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. 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.					
11	LVD Disconnect	LVD		second	1/2000 (1)	basic

	Delay					
	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
	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: $(\log(t_2)-\log(t_1))/(\log(i_1)-\log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 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.					
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 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
	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			

8.2.12 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 (Level)</i>	<i>Type 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 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	Rectifiers		major (6)	10 / 2

	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.				
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 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)				
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 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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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 without 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				
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				

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.					
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 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	Battery	Alarm	degree C	0/10 (2)	basic

	Hysteresis		Parameters			
	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: $(\log(t_2)-\log(t_1))/(\log(i_1)-\log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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 (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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 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	Digital Input 4		Digital Input 4	basic

		Inputs				
	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					
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			
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			

8.2.13 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 (Level)</i>	<i>Type</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 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.				
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 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'				

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 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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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 without 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				
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	Smart Energy			asset

	Number Of Rectifier				
	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 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.					
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
	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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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	Battery	Boost	Ampere	0/100 (4)	battery

	Current					
	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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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 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.					
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	Sensors	Temperature	degree C		basic

	Temperature Hysteresis					
	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>
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
	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			

8.2.14 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 (Level)</i>	<i>Type 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 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				
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.				
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 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
	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				
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				
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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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 without 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				
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. 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.					
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 automony 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 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	3/6500 (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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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.					
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	Battery	Boost	Volt	50/58 (56.4)	battery

	Voltage					
	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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	30/60 (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 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
	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
	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.					
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 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 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
	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			

8.2.15 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 (Level)</i>	<i>Type 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 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				
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.				
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 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
	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				
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 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)				
73	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	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	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.				
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 without 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				
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. 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					
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.					
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.					
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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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	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.					
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.					
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 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					
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

	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.					
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.					
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
	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			

8.2.16 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 07011
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 (Level)</i>	<i>Type</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 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				
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.				
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 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
	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				
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 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)				
73	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	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	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.				
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 without 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				

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. 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.					
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.					
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.					
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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	60/120 (92)	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 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	Battery	Battery Test			basic

	Scheduler Cron Rule					
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
	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
	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 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 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
	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

8.2.17 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 (Level)</i>	<i>Type</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 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.				
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 is 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 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
	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				
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 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)				
73	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	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	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.				
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 without 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				
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. 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 Extra Low	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	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.					
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
	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 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 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: $(\log(t_2)-\log(t_1))/(\log(i_1)-\log(i_2))$ 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 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	battery

					(False)	
	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.					
70	Battery Test End Voltage	Battery	Battery Test	Volt	69/138 (105.8)	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 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 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 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 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
	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			

8.2.18 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'				
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.				
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 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	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 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'				
41	Battery 1 Disconnected	Battery		none (0)	5 / 2
42	Battery 2 Disconnected	Battery		none (0)	5 / 2
55	Rescue Branch Failure	Rescue Branch Rectifiers		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 Rectifiers		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 Rectifiers		minor (4)	5 / 2
	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				
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	DC Rectifiers Output Power Max	Rescue Branch Rectifiers		Watt	basic
	The sum of the deliverable rectifier power				
29	DC 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.				
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', 'Failed: Lvd Opened'(8), 'Failed: No Battery'(9)				
73	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	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	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.				
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	basic
	The number of minute without 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
	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				
87	Previous Battery String 2 Test State	Battery	Battery Test		basic
	The result of the previous battery test				
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				
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				
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 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	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	DC Bus	Alarm Parameters	Volt	0/10 (1)	basic

	Hysteresis					
	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.					
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
	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 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	Battery		Ah	3/1000 (100)	basic

	Capacity					
	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: $(\log(t_2) - \log(t_1)) / (\log(i_1) - \log(i_2))$ where t_x is the autonomy in hours at a constant discharge current of i_x Amps. Often, we use $t_1 = 1h$ and $t_2 = 10h$					
39	Max Depth Of Discharge 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					
61	Rescue Branch Rectifier Declared	Rescue Branch Rectifiers				basic
70	Battery Test End Voltage	Battery	Battery Test	Volt	165/330 (253)	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	Battery	Battery Test	Ampere	0.5/100	battery

	Discharge Current				(1000)	
	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					
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 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	Sensors	Temperature	degree C		basic

	Temperature High					
	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.					
201	Application Timeout	Specific	Application State	second		basic
	If Set to 0, disabled the application timeout, otherwise, ater 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 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.			
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
	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 Disconnection	basic
	Used to allow Rescue Branch Disconnection			
204	Rescue Branch Disconnection Not Allowed	Specific	Rescue Branch Disconnection	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			

8.3 Rectifier Tables

8.3.1 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.				

8.3.2 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 Mitra 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 Mitra 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>
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)				

8.3.3 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 Mitra 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 Mitra 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>
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)				

8.3.4 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				
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.				

8.3.5 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 Mitra 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 Mitra 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>
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)				

8.3.6 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 Mitra 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 Mitra 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>
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)				

8.3.7 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
	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.				

8.3.8 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.				
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.				

8.3.9 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.				
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.				

8.3.10 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.				
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.				

8.3.11 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 Mitra 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 Mitra 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>
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)				

8.3.12 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				
<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 Mitra 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 Mitra 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>
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)				

8.3.13 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 Mitra 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 Mitra 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>
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)				

8.3.14 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.				

8.3.15 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				
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

8.3.16 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

8.3.17 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><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></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><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Severity Type (Level)</i></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><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	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	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			
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
1	Locate Rectifier	Locate	basic
	No information		
5	Change Phase Number	Phase	basic
	No information		

8.3.18 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 Mitra 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 Mitra 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>
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)				

8.3.19 ECOR0348

Device Information	
Name	ECOR0348
Short Description	Rectifier 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 Mitra 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 Mitra 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>
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)				

8.3.20 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 Mitra 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 Mitra 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>
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)				

Sensors And Actuators Tables

8.4.1 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	9413 060 05071

Reference	
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			
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

	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 23	Digital Inputs	Digital Input 23	warning (0)	5 / 2
	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				
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				
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 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.					
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 Name	Digital Inputs	Digital Input 18		Digital Inputs	basic

	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
	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			
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			

8.4.2 ADIO 8

Device Information	
Name	ADIO 8
Short Description	Standard I/O module D9 ACR5 LVD PLD DCR2
Long Description	I/O module with 9 digital inputs, 5 relays for AC, Low Voltage Disconnection, Partial Load Disconnection and 2 relays for outputs
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</i> <i>(Level)</i>	<i>Set/Clear</i> <i>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.				
150	Teleruptor 1 status mismatch desired status	Teleruptors	Teleruptor 1	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor or when it is not well connected. The status is not corresponding to the desired status.				
155	Teleruptor 2 status mismatch desired status	Teleruptors	Teleruptor 2	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor or when it is not well connected. The status is not corresponding to the desired status.				
160	Teleruptor 3 status mismatch desired status	Teleruptors	Teleruptor 3	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor or when it is not well connected. The status is not corresponding to the desired status.				
165	Teleruptor 4 status mismatch desired status	Teleruptors	Teleruptor 4	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor or when it is not well connected. The status is not corresponding to the desired status.				
170	Teleruptor 5 status mismatch desired status	Teleruptors	Teleruptor 5	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor or when it is not well connected. The status is not corresponding to the desired status.				
175	Teleruptor 6 status mismatch desired status	Teleruptors	Teleruptor 6	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor or when it is not well connected. The status is not corresponding to the desired status.				
180	Teleruptor 7 status mismatch desired status	Teleruptors	Teleruptor 7	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor or when it is not well connected. The status is not corresponding to the desired status.				
185	Teleruptor 8 status mismatch desired status	Teleruptors	Teleruptor 8	warning (0)	5 / 2
	This alarm happens when there is a defect in teleruptor 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 Sensor	Current 4-20mA 1	mAmpere	basic
	Current 4-20mA Sensor 1				
112	Current 4-20mA 2	Current 4-20mA Sensor	Current 4-20mA 2	mAmpere	basic
	Current 4-20mA Sensor 2				
150	Teleruptor 1 Status	Teleruptors	Teleruptor 1		basic
	Status of the Teleruptor				
155	Teleruptor 2 Status	Teleruptors	Teleruptor 2		basic
	Status of the Teleruptor				
160	Teleruptor 3 Status	Teleruptors	Teleruptor 3		basic
	Status of the Teleruptor				
165	Teleruptor 4 Status	Teleruptors	Teleruptor 4		basic
	Status of the Teleruptor				
170	Teleruptor 5 Status	Teleruptors	Teleruptor 5		basic
	Status of the Teleruptor				
175	Teleruptor 6 Status	Teleruptors	Teleruptor 6		basic
	Status of the Teleruptor				
180	Teleruptor 7 Status	Teleruptors	Teleruptor 7		basic
	Status of the Teleruptor				
185	Teleruptor 8 Status	Teleruptors	Teleruptor 8		basic
	Status of the Teleruptor				

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.					
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	Teleruptor 1 enabled	Teleruptors	Teleruptor 1		True/False (False)	basic
	If the teleruptor is disable, the teleruptor can't change his state.					
151	Teleruptor 1 desired Status	Teleruptors	Teleruptor 1		True/False (False)	basic
	The desired state of the teleruptor					
152	Teleruptor 1 default desired Status	Teleruptors	Teleruptor 1		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					
153	Teleruptor 1 input reversed	Teleruptors	Teleruptor 1		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
155	Teleruptor 2 enabled	Teleruptors	Teleruptor 2		True/False (False)	basic
	If the teleruptor is disable, the teleruptor can't change his state.					
156	Teleruptor 2 desired Status	Teleruptors	Teleruptor 2		True/False (False)	basic
	The desired state of the teleruptor					
157	Teleruptor 2 default desired Status	Teleruptors	Teleruptor 2		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					

158	Teleruptor 2 input reversed	Teleruptors	Teleruptor 2		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
160	Teleruptor 3 enabled	Teleruptors	Teleruptor 3		True/False (False)	basic
	If the teleruptor is disable, the teleruptor can't change his state.					
161	Teleruptor 3 desired Status	Teleruptors	Teleruptor 3		True/False (False)	basic
	The desired state of the teleruptor					
162	Teleruptor 3 default desired Status	Teleruptors	Teleruptor 3		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					
163	Teleruptor 3 input reversed	Teleruptors	Teleruptor 3		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
165	Teleruptor 4 enabled	Teleruptors	Teleruptor 4		True/False (False)	basic
	If the teleruptor is disable, the teleruptor can't change his state.					
166	Teleruptor 4 desired Status	Teleruptors	Teleruptor 4		True/False (False)	basic
	The desired state of the teleruptor					
167	Teleruptor 4 default desired Status	Teleruptors	Teleruptor 4		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					
168	Teleruptor 4 input reversed	Teleruptors	Teleruptor 4		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
170	Teleruptor 5 enabled	Teleruptors	Teleruptor 5		True/False (False)	basic
	If the teleruptor is disable, the teleruptor can't change his state.					
171	Teleruptor 5 desired Status	Teleruptors	Teleruptor 5		True/False (False)	basic
	The desired state of the teleruptor					
172	Teleruptor 5 default desired Status	Teleruptors	Teleruptor 5		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					
173	Teleruptor 5 input reversed	Teleruptors	Teleruptor 5		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
175	Teleruptor 6 enabled	Teleruptors	Teleruptor 6		True/False (False)	basic
	If the teleruptor is disable, the teleruptor can't change his state.					
176	Teleruptor 6 desired Status	Teleruptors	Teleruptor 6		True/False (False)	basic
	The desired state of the teleruptor					
177	Teleruptor 6 default desired Status	Teleruptors	Teleruptor 6		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					
178	Teleruptor 6 input reversed	Teleruptors	Teleruptor 6		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
180	Teleruptor 7 enabled	Teleruptors	Teleruptor 7		True/False (False)	basic

	If the teleruptor is disable, the teleruptor can't change his state.					
181	Teleruptor 7 desired Status	Teleruptors	Teleruptor 7		True/False (False)	basic
	The desired state of the teleruptor					
182	Teleruptor 7 default desired Status	Teleruptors	Teleruptor 7		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					
183	Teleruptor 7 input reversed	Teleruptors	Teleruptor 7		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
185	Teleruptor 8 enabled	Teleruptors	Teleruptor 8		True/False (False)	basic
	If the teleruptor is disable, the teleruptor can't change his state.					
186	Teleruptor 8 desired Status	Teleruptors	Teleruptor 8		True/False (False)	basic
	The desired state of the teleruptor					
187	Teleruptor 8 default desired Status	Teleruptors	Teleruptor 8		True/False (False)	basic
	The desired state of the teleruptor when communication is lost (10 min).					
188	Teleruptor 8 input reversed	Teleruptors	Teleruptor 8		True/False (False)	basic
	Reflect the connexion of the system : contact inversed or not					
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>
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	Teleruptor 1 reverse status	Teleruptors	Teleruptor 1	basic
	Reverse the teleruptor status			
155	Teleruptor 2 reverse status	Teleruptors	Teleruptor 2	basic
	Reverse the teleruptor status			
160	Teleruptor 3 reverse status	Teleruptors	Teleruptor 3	basic
	Reverse the teleruptor status			
165	Teleruptor 4 reverse status	Teleruptors	Teleruptor 4	basic
	Reverse the teleruptor status			
170	Teleruptor 5 reverse status	Teleruptors	Teleruptor 5	basic
	Reverse the teleruptor status			
175	Teleruptor 6 reverse status	Teleruptors	Teleruptor 6	basic
	Reverse the teleruptor status			
180	Teleruptor 7 reverse status	Teleruptors	Teleruptor 7	basic
	Reverse the teleruptor status			
185	Teleruptor 8 reverse status	Teleruptors	Teleruptor 8	basic
	Reverse the teleruptor status			
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			

8.4.3 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 reference			
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 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				
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 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

	Normally Closed	Inputs				
	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.					
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			
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			

8.4.4 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 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
	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
	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.					
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	Digital Input		Digital Inputs	basic

		Inputs	3			
	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
	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

	State Boolean Condition					
	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 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	Relays			(0b00000000)	basic

	Output Vector	Binary					
	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 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 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			

8.4.5 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.			
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

	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.					
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 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 Output Vector	Digital Binary	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 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			
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
	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			

8.4.6 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.			
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
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	Generic	Allowed		(1,2,3,4,5)	basic

	User Numbers		Users			
	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			

8.4.7 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. TCx 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
	The name of the track circuit. TCx 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. TCx 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. TCx 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. TCx 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. TCx 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 (0)	5 / 2
	The Tx alarm				
21	TC 1 Rx Alarm A	Track Circuits	Track Circuit 1	major (0)	5 / 2
	Level A Rx Alarm				
22	TC 1 Rx Alarm B	Track Circuits	Track Circuit 1	minor (0)	5 / 2
	Level B Rx Alarm				
23	TC 1 Rx Alarm C	Track Circuits	Track Circuit 1	major (0)	5 / 2
	Level C Rx Alarm				
24	TC 1 Rx Alarm D	Track Circuits	Track Circuit 1	warning (0)	5 / 2

	Level D Rx Alarm				
40	TC 2 Tx Alarm	Track Circuits	Track Circuit 2	major (0)	5 / 2
	The Tx alarm				
41	TC 2 Rx Alarm A	Track Circuits	Track Circuit 2	major (0)	5 / 2
	Level A Rx Alarm				
42	TC 2 Rx Alarm B	Track Circuits	Track Circuit 2	minor (0)	5 / 2
	Level B Rx Alarm				
43	TC 2 Rx Alarm C	Track Circuits	Track Circuit 2	major (0)	5 / 2
	Level C Rx Alarm				
44	TC 2 Rx Alarm D	Track Circuits	Track Circuit 2	warning (0)	5 / 2
	Level D Rx Alarm				
60	TC 3 Tx Alarm	Track Circuits	Track Circuit 3	major (0)	5 / 2
	The Tx alarm				
61	TC 3 Rx Alarm A	Track Circuits	Track Circuit 3	major (0)	5 / 2
	Level A Rx Alarm				
62	TC 3 Rx Alarm B	Track Circuits	Track Circuit 3	minor (0)	5 / 2
	Level B Rx Alarm				
63	TC 3 Rx Alarm C	Track Circuits	Track Circuit 3	major (0)	5 / 2
	Level C Rx Alarm				
64	TC 3 Rx Alarm D	Track Circuits	Track Circuit 3	warning (0)	5 / 2
	Level D Rx Alarm				
80	TC 4 Tx Alarm	Track Circuits	Track Circuit 4	major (0)	5 / 2
	The Tx alarm				
81	TC 4 Rx Alarm A	Track Circuits	Track Circuit 4	major (0)	5 / 2
	Level A Rx Alarm				
82	TC 4 Rx Alarm B	Track Circuits	Track Circuit 4	minor (0)	5 / 2
	Level B Rx Alarm				
83	TC 4 Rx Alarm C	Track Circuits	Track Circuit 4	major (0)	5 / 2
	Level C Rx Alarm				
84	TC 4 Rx Alarm D	Track Circuits	Track Circuit 4	warning (0)	5 / 2
	Level D Rx Alarm				
100	TC 5 Tx Alarm	Track Circuits	Track Circuit 5	major (0)	5 / 2
	The Tx alarm				
101	TC 5 Rx Alarm A	Track Circuits	Track Circuit 5	major (0)	5 / 2
	Level A Rx Alarm				
102	TC 5 Rx Alarm B	Track Circuits	Track Circuit 5	minor (0)	5 / 2
	Level B Rx Alarm				
103	TC 5 Rx Alarm C	Track Circuits	Track Circuit 5	major (0)	5 / 2
	Level C Rx Alarm				
104	TC 5 Rx Alarm D	Track Circuits	Track Circuit 5	warning (0)	5 / 2
	Level D Rx Alarm				
120	TC 6 Tx Alarm	Track Circuits	Track Circuit 6	major (0)	5 / 2
	The Tx alarm				
121	TC 6 Rx Alarm A	Track Circuits	Track Circuit 6	major (0)	5 / 2
	Level A Rx Alarm				

122	TC 6 Rx Alarm B	Track Circuits	Track Circuit 6	minor (0)	5 / 2
	Level B Rx Alarm				
123	TC 6 Rx Alarm C	Track Circuits	Track Circuit 6	major (0)	5 / 2
	Level C Rx Alarm				
124	TC 6 Rx Alarm D	Track Circuits	Track Circuit 6	warning (0)	5 / 2
	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	Status	Track Circuits	Track Circuit 1		basic
	--, Free or Occupied				
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	Status	Track Circuits	Track Circuit 2		basic
	--, Free or Occupied				
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	Status	Track Circuits	Track Circuit 3		basic
	--, Free or Occupied				
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	Status	Track Circuits	Track Circuit 4		basic
	--, Free or Occupied				
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	Status	Track Circuits	Track Circuit 5		basic
	--, Free or Occupied				
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	Status	Track Circuits	Track Circuit 6		basic
	--, Free or Occupied				

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 Overvoltage (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 D 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 Integration Time	Track Circuits	Track Circuit 2	second		basic
	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	Track	Track		True/False (True)	basic

	Status Enabled	Circuits	Circuit 2			
	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	mVlt		basic
	Control Level Value					
62	Track Circuit 3 Integration Time	Track Circuits	Track Circuit 3	second		basic
	Integration Time					
63	Track Circuit 3 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	mVlt		basic
	Control Level Value					
82	Track Circuit 4 Integration Time	Track Circuits	Track Circuit 4	second		basic
	Integration Time					
83	Track Circuit 4 Delay	Track Circuits	Track Circuit 4	minute		basic
	TC Delay Time for TC Occupied Alarm (D)					
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	mVlt		basic
	Control Level Value					
102	Track Circuit 5 Integration Time	Track Circuits	Track Circuit 5	second		basic

	Integration Time					
103	Track Circuit 5 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 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
	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 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	PLC			(0)	plc

Alarm					
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			
999	Test Emulate Changes	Test		basic
	Control used in development phase to test scenario			

8.4.8 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 reference			
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
	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
	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				
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				
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>
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 Name	Digital Inputs	Digital Input 7		Digital Inputs	basic
	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
	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.					
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 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.					
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
	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
	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 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>
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 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			

8.4.9 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 reference			
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
	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
	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.				
133	Digital Input 33	Digital Inputs	Digital Input 33	warning (0)	5 / 2
	The name of the digital input 33 alarm.				
134	Digital Input 34	Digital Inputs	Digital Input 34	warning (0)	5 / 2
	The name of the digital input 34 alarm.				
135	Digital Input 35	Digital Inputs	Digital Input 35	warning (0)	5 / 2
	The name of the digital input 35 alarm.				
136	Digital Input 36	Digital Inputs	Digital Input 36	warning (0)	5 / 2
	The name of the digital input 36 alarm.				
137	Digital Input 37	Digital Inputs	Digital Input 37	warning (0)	5 / 2
	The name of the digital input 37 alarm.				

138	Digital Input 38	Digital Inputs	Digital Input 38	warning (0)	5 / 2
	The name of the digital input 38 alarm.				
139	Digital Input 39	Digital Inputs	Digital Input 39	warning (0)	5 / 2
	The name of the digital input 39 alarm.				
140	Digital Input 40	Digital Inputs	Digital Input 40	warning (0)	5 / 2
	The name of the digital input 40 alarm.				
141	Digital Input 41	Digital Inputs	Digital Input 41	warning (0)	5 / 2
	The name of the digital input 41 alarm.				
142	Digital Input 42	Digital Inputs	Digital Input 42	warning (0)	5 / 2
	The name of the digital input 42 alarm.				
143	Digital Input 43	Digital Inputs	Digital Input 43	warning (0)	5 / 2
	The name of the digital input 43 alarm.				
144	Digital Input 44	Digital Inputs	Digital Input 44	warning (0)	5 / 2
	The name of the digital input 44 alarm.				
145	Digital Input 45	Digital Inputs	Digital Input 45	warning (0)	5 / 2
	The name of the digital input 45 alarm.				
146	Digital Input 46	Digital Inputs	Digital Input 46	warning (0)	5 / 2
	The name of the digital input 46 alarm.				
147	Digital Input 47	Digital Inputs	Digital Input 47	warning (0)	5 / 2
	The name of the digital input 47 alarm.				
148	Digital Input 48	Digital Inputs	Digital Input 48	warning (0)	5 / 2
	The name of the digital input 48 alarm.				
149	Digital Input 49	Digital Inputs	Digital Input 49	warning (0)	5 / 2
	The name of the digital input 49 alarm.				
150	Digital Input 50	Digital Inputs	Digital Input 50	warning (0)	5 / 2
	The name of the digital input 50 alarm.				
151	Digital Input 51	Digital Inputs	Digital Input 51	warning (0)	5 / 2
	The name of the digital input 51 alarm.				
152	Digital Input 52	Digital Inputs	Digital Input 52	warning (0)	5 / 2
	The name of the digital input 52 alarm.				
153	Digital Input 53	Digital Inputs	Digital Input 53	warning (0)	5 / 2
	The name of the digital input 53 alarm.				
154	Digital Input 54	Digital Inputs	Digital Input 54	warning (0)	5 / 2
	The name of the digital input 54 alarm.				
155	Digital Input 55	Digital Inputs	Digital Input 55	warning (0)	5 / 2
	The name of the digital input 55 alarm.				
156	Digital Input 56	Digital Inputs	Digital Input 56	warning (0)	5 / 2
	The name of the digital input 56 alarm.				
157	Digital Input 57	Digital Inputs	Digital Input 57	warning (0)	5 / 2
	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
	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
	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
	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.					
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

	Normally Closed	Inputs				
	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 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.					
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	Digital	Digital Input 13		True/False (True)	basic

	Normally Closed	Inputs				
	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 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	Digital	Digital Input 20		True/False (True)	basic

	Normally Closed	Inputs				
	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.					
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	Digital	Digital Input 27		True/False (True)	basic

	Normally Closed	Inputs				
	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 Name	Digital Inputs	Digital Input 32		Digital Inputs	basic
	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	Digital	Digital Input 34		True/False (True)	basic

	Normally Closed	Inputs				
	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
	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	Digital	Digital Input 41		True/False (True)	basic

	Normally Closed	Inputs				
	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.					
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	Digital	Digital Input 48		True/False (True)	basic

	Normally Closed	Inputs				
	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 Normally Closed	Digital Inputs	Digital Input 50		True/False (True)	basic
	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	Digital	Digital Input 55		True/False (True)	basic

	Normally Closed	Inputs				
	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
	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	Digital	Digital Input 62		True/False (True)	basic

	Normally Closed	Inputs				
	True/False value defining if the digital input 62 is normally closed. If this digital 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			

8.4.10 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 reference			
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
	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.				

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

	Normally Closed	Inputs				
	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.					
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	Digital	Digital Input		True/False (True)	basic

	Normally Closed	Inputs	12			
	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.					
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 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			

8.4.11 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.			
2	Hardware Reference	Description	Product Info	basic
	The hardware reference			
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 (Level)</i>	<i>Type</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
	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
	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 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
	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 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.					
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			

8.4.12 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 (Level)</i>	<i>Type 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
	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
	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 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
	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 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.				
89	Digital Input 10 Name	Digital Inputs	Digital Input 10		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			

8.5 Remote Power Feeding System Tables

8.5.1 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

Description Table			
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
1	Description	Description	basic

	A free text zone to write a system description		
2	Reference	Description	basic
	A free text zone to write the customer reference of the system		

Config Table					
<u>Id</u>	<u>Name</u>	<u>Group</u>	<u>Unit</u>	<u>Range: Min/Max (default)</u>	<u>License</u>
1	Number of CEM03 By Shelf	Up Converters			basic
	Maximum number of CEM03 cards that are authorized by shelf. This parameter value must be comprised between 1 and 4.				

8.5.2 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

8.6 Up Converter System Tables

8.6.1 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			
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
1	Description	Description	basic
	A free text zone to write a system description		
2	Reference	Description	basic
	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		
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>	<u><i>Set/Clear Delay</i></u>
1	One Up Converter Failure	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	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	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	minor (4)	5 / 2
	One FAN has a problem		
12	More Than One FAN Failure	major (6)	5 / 2
	More Than One FAN has a problem		
14	Configuration Problem	minor (4)	5 / 2
	There is a configuration problem. A card is configuted but not available		
20	Slot 0 Alarm	minor (4)	15 / 15
	Slot 0 is in alarm		
21	Slot 1 Alarm	minor (4)	15 / 15
	Slot 1 is in alarm		

22	Slot 2 Alarm	minor (4)	15 / 15
	Slot 2 is in alarm		
23	Slot 3 Alarm	minor (4)	15 / 15
	Slot 3 is in alarm		
24	Slot 4 Alarm	minor (4)	15 / 15
	Slot 4 is in alarm		
25	Slot 5 Alarm	minor (4)	15 / 15
	Slot 5 is in alarm		
26	Slot 6 Alarm	minor (4)	15 / 15
	Slot 6 is in alarm		
27	Slot 7 Alarm	minor (4)	15 / 15
	Slot 7 is in alarm		
28	Slot 8 Alarm	minor (4)	15 / 15
	Slot 8 is in alarm		
29	Slot 9 Alarm	minor (4)	15 / 15
	Slot 9 is in alarm		
30	Slot 10 Alarm	minor (4)	15 / 15
	Slot 10 is in alarm		
31	Slot 11 Alarm	minor (4)	15 / 15
	Slot 11 is in alarm		
32	Slot 12 Alarm	minor (4)	15 / 15
	Slot 12 is in alarm		
33	Slot 13 Alarm	minor (4)	15 / 15
	Slot 13 is in alarm		
34	Slot 14 Alarm	minor (4)	15 / 15
	Slot 14 is in alarm		
35	Slot 15 Alarm	minor (4)	15 / 15
	Slot 15 is in alarm		
36	Slot 16 Alarm	minor (4)	15 / 15
	Slot 16 is in alarm		

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	Input Voltage	Rack	Volt	basic
	No information			
2	Temperature	Rack	degree C	basic
	No information			
12	Number Of Up Converter NOK	Up Converters		basic
	No information			
13	Number Of Up Converter Card NOK	Up Converters		basic
	No information			
20	Status Slot 0	Slots Status		basic
	No information			
21	Status Slot 1	Slots Status		basic
	No information			

22	Status Slot 2	Slots Status		basic
	No information			
23	Status Slot 3	Slots Status		basic
	No information			
24	Status Slot 4	Slots Status		basic
	No information			
25	Status Slot 5	Slots Status		basic
	No information			
26	Status Slot 6	Slots Status		basic
	No information			
27	Status Slot 7	Slots Status		basic
	No information			
28	Status Slot 8	Slots Status		basic
	No information			
29	Status Slot 9	Slots Status		basic
	No information			
30	Status Slot 10	Slots Status		basic
	No information			
31	Status Slot 11	Slots Status		basic
	No information			
32	Status Slot 12	Slots Status		basic
	No information			
33	Status Slot 13	Slots Status		basic
	No information			
34	Status Slot 14	Slots Status		basic
	No information			
35	Status Slot 15	Slots Status		basic
	No information			
36	Status Slot 16	Slots Status		basic
	No information			
51	Powered Site Ids	Monitoring		basic
	No information			
52	Monitored Site Ids	Monitoring		basic
	No information			
53	Powered Site Ids with Possible Line Feed Problem	Monitoring		basic
	No information			

Config Table					
<u>Id</u>	<u>Name</u>	<u>Group</u>	<u>Unit</u>	<u>Range: Min/Max</u> <u>(default)</u>	<u>License</u>
20	Slot 0	Config Site			basic
	No information				
21	Slot 1	Config Site			basic

	No information			
22	Slot 2	Config Site		basic
	No information			
23	Slot 3	Config Site		basic
	No information			
24	Slot 4	Config Site		basic
	No information			
25	Slot 5	Config Site		basic
	No information			
26	Slot 6	Config Site		basic
	No information			
27	Slot 7	Config Site		basic
	No information			
28	Slot 8	Config Site		basic
	No information			
29	Slot 9	Config Site		basic
	No information			
30	Slot 10	Config Site		basic
	No information			
31	Slot 11	Config Site		basic
	No information			
32	Slot 12	Config Site		basic
	No information			
33	Slot 13	Config Site		basic
	No information			
34	Slot 14	Config Site		basic
	No information			
35	Slot 15	Config Site		basic
	No information			
36	Slot 16	Config Site		basic
	No information			
51	Urgent Relay Energized Boolean Condition	Relays		basic

	No information				
52	Non Urgent Relay Energized Boolean Condition	Relays			basic
	No information				

Control Table			
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
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 And Groups	Advanced	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	Advanced	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments		

8.6.2 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				
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>SubGroup</i></u>	<u><i>License</i></u>
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	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 (Level)</i>	<i>Type</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 configuted 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
	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
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 Feed Problem	Monitoring			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>
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
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			

8.7 Remote Site Tables

8.7.1 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			
<u>Id</u>	<u>Name</u>	<u>Group</u>	<u>License</u>
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			
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Severity Type (Level)</i></u>	<u><i>Set/Clear Delay</i></u>
1	One Down Converter Failure	minor (4)	10 / 2
2	More Than One Down Converter Failure	major (6)	10 / 2
3	One Fan Failure	minor (4)	30 / 2
4	More Than One FAN Failure	major (6)	30 / 2
5	Possible Power Feed Reduced	warning (2)	5 / 2
8	One Down Converter Over Temperature	minor (4)	10 / 2
9	Output 1 Off	major (6)	5 / 2
10	Output 2 Off	major (6)	5 / 2
15	Communication Failure	major (6)	5 / 2
25	Digital Input 1	major (6)	5 / 2
	This alarm is related to digital input 1		
26	Digital Input 2	major (6)	5 / 2
	This alarm is related to digital input 2		
27	Digital Input 3	major (6)	5 / 2
	This alarm is related to digital input 3		
28	Digital Input 4	minor (4)	5 / 2
	This alarm is related to digital input 4		
29	Digital Input 5	minor (4)	5 / 2
	This alarm is related to digital input 5		
30	Digital Input 6	minor (4)	5 / 2
	This alarm is related to digital input 6		

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	Number of Configured Power Lines	Lines		basic
	No information			
2	Line Configured for Monitoring	Lines		basic
	No information			
11	Remote Type	Remote DC System		basic
	No information			
12	Input Voltage	Remote DC System	Volt	basic
	No information			
13	Input Common Mode Voltage	Remote DC System	Volt	basic
	Input Common Mode Voltage with respect to ground			
14	Output Voltage	Remote DC System	Volt	basic
	No information			
15	Temperature	Remote DC System	degree C	basic
	No information			
21	Number Of Declared Down Converters	Remote DC System		basic
	No information			

Config Table					
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>Unit</i></u>	<u><i>Range: Min/Max (default)</i></u>	<u><i>License</i></u>
91	Digital Input 1 Name	Digital Inputs		Digital Input 1	basic
	The name of the digital input 1				
93	Digital Input 2 Name	Digital Inputs		Digital Input 2	basic
	The name of the digital input 2				
95	Digital Input 3 Name	Digital Inputs		Digital Input 3	basic
	The name of the digital input 3				
97	Digital Input 4 Name	Digital Inputs		Digital Input 4	basic
	The name of the digital input 4				
99	Digital Input 5 Name	Digital Inputs		Digital Input 5	basic
	The name of the digital input 5				
101	Digital Input 6 Name	Digital Inputs		Digital Input 6	basic
	The name of the digital input 6				

Control Table			
<u><i>Id</i></u>	<u><i>Name</i></u>	<u><i>Group</i></u>	<u><i>License</i></u>
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	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 And Groups	Advanced	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	Advanced	basic
	This control element resets all the element Names, Groups and Subgroups to default values for this equipment and all sub equipments		

8.7.2 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
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					
Id	Name	Group	SubGroup	Unit	License
1	Number of Configured Power Lines	Lines			basic
2	Line Configured for Monitoring	Lines			basic
11	Remote Type	Remote System	DC		basic
12	Input Voltage	Remote System	DC	Volt	basic
13	Input Common Mode Voltage	Remote System	DC	Volt	basic
	Input Common Mode Voltage with respect to ground				
14	Output Voltage	Remote System	DC	Volt	basic
15	Temperature	Remote System	DC	degree C	basic
16	Output Power	Remote System	DC	Watt	basic
21	Number Of Declared Down Converters	Remote System	DC		basic

Config Table						
Id	Name	Group	SubGroup	Unit	Range: (default) Min/Max	License
91	Digital Input 1 Name	Digital Inputs	Digital Input 1		Digital Input 1	basic
	The name of the digital input 1					
93	Digital Input 2 Name	Digital Inputs	Digital Input 2		Digital Input 2	basic
	The name of the digital input 2					
95	Digital Input 3 Name	Digital Inputs	Digital Input 3		Digital Input 3	basic

	The name of the digital input 3					
97	Digital Input Name	4	Digital Inputs	Digital Input 4		basic
	The name of the digital input 4					
99	Digital Input Name	5	Digital Inputs	Digital Input 5		basic
	The name of the digital input 5					
101	Digital Input Name	6	Digital Inputs	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			

8.8 Inverter Tables

8.8.1 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 Status			basic
	Module Status				
2	AC Output Status	Inverter			basic

		Status			
	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
	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 ...			

8.9 Inverter System Tables

8.9.1 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 (Level)</i>	<i>Type</i>	<i>Set/Clear Delay</i>
1	One Inverter in Alarm	Inverter System		minor (4)		5 / 2
	One Inverter is in alarm. Check specific Inverter Alarm table.					
2	More Than One Inverter in Alarm	Inverter System		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 Inputs		major (6)		5 / 2
	Give alarm with code 227 and appropriate text when digital input 1 change is state					
228	Digital Input 2 Failure	Digital Inputs		major (6)		5 / 2
	Give alarm with code 228 and appropriate text when digital input 2 change is state					
229	Redundancy Lost	Inverter System		minor (4)		5 / 2
	Give alarm with code 229 and text 'Redudancy Lost' when the condition is true					
230	Redundancy Plus 1 Lost	Inverter System		major (6)		5 / 2
	Give alarm with code 230 and text 'Redudancy + 1 Lost' when the condition is 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 Outputs	AC Output 1		basic
	Number of modules configured for the phase 1				
11	Amount of redundancy configured	AC Outputs	AC Output 1		basic
	Amount of redundancy configured in the phase 1				
12	DC Input Power	AC Outputs	AC Output 1	Watt	basic
	DC input power for group 1				
13	AC Input Power in W	AC Outputs	AC Output 1	Watt	basic
	AC input power (W) for group 1				
14	AC Input Power in VA	AC Outputs	AC Output 1	VA	basic
	AC input power (VA) for group 1				
15	Installed Power in W	AC Outputs	AC Output 1	Watt	basic
	Installed power value in watts for group 1				
16	Installed Power in VA	AC Outputs	AC Output 1	VA	basic
	Installed power value in VA for group 1				
17	Available Power in W	AC Outputs	AC Output 1	Watt	basic
	Available power value in watts for group 1				
18	Available Power in VA	AC Outputs	AC Output 1	VA	basic
	Available power value in VA for group 1				
19	Number Of Module seen by T2S	AC Outputs	AC Output 1		basic
	Number of modules seen by T2S for group 1				
20	Number Of Modules delivering output	AC Outputs	AC Output 1		basic
	Number of modules delivering output for group 1				
21	Number Of Modules manually off	AC Outputs	AC Output 1		basic
	Number of modules manually off for group 1				
22	Number Of Module In Failure	AC Outputs	AC Output 1		basic
	Number of modules in failure for group 1				
23	Number Of Module not seen by T2S	AC Outputs	AC Output 1		basic
	Number of modules not seen by T2S for group 1				
51	Output Voltage	AC Outputs	AC Output 2	Volt	basic
	Output Voltage in volts group 2				
52	Output Power	AC Outputs	AC Output 2	Ampere	basic

	Output Current in amperes group 2				
53	Output Power	AC Outputs	AC Output 2	Watt	basic
	Output power in watts group 2				
54	Output Apparent Power	AC Outputs	AC Output 2	VA	basic
	Output apparent power in VA group 2				
55	Output Frequency	AC Outputs	AC Output 2	Hz	basic
	Output Frequency in hertz group 2				
56	Loading Ratio	AC Outputs	AC Output 2	%	basic
	Ratio between output load and available power expressed in watts group 2				
57	Loading Ratio - Available Power in VA	AC Outputs	AC Output 2	%	basic
	Ratio between output load and available power expressed in VA group 2				
58	Loading Ratio - Installed Power in W	AC Outputs	AC Output 2	%	basic
	Ratio between output load and installed power expressed in watts group 2				
59	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 2	%	basic
	Ratio between output load and installed power expressed in VA group 2				
60	Number Of Modules Configured	AC Outputs	AC Output 2		basic
	Number of modules configured for the phase 2				
61	Amount of redundancy configured	AC Outputs	AC Output 2		basic
	Amount of redundancy configured in the phase 2				
62	DC Input Power	AC Outputs	AC Output 2	Watt	basic
	DC input power for group 2				
63	AC Input Power in W	AC Outputs	AC Output 2	Watt	basic
	AC input power (W) for group 2				
64	AC Input Power in VA	AC Outputs	AC Output 2	VA	basic
	AC input power (VA) for group 2				
65	Installed Power in W	AC Outputs	AC Output 2	Watt	basic
	Installed power value in watts for group 2				
66	Installed Power in VA	AC Outputs	AC Output 2	VA	basic
	Installed power value in VA for group 2				
67	Available Power in W	AC Outputs	AC Output 2	Watt	basic
	Available power value in watts for group 2				
68	Available Power in VA	AC Outputs	AC Output 2	VA	basic
	Available power value in VA for group 2				
69	Number Of Module seen by T2S	AC Outputs	AC Output 2		basic
	Number of modules seen by T2S for group 2				
70	Number Of Modules delivering output	AC Outputs	AC Output 2		basic
	Number of modules delivering output for group 2				
71	Number Of Modules manually off	AC Outputs	AC Output 2		basic
	Number of modules manually off for group 2				
72	Number Of Module In Failure	AC Outputs	AC Output 2		basic
	Number of modules in failure for group 2				
73	Number Of Module not seen by T2S	AC Outputs	AC Output 2		basic
	Number of modules not seen by T2S for group 2				
101	Output Voltage	AC Outputs	AC Output 3	Volt	basic
	Output Voltage in volts group 3				

102	Output Power	AC Outputs	AC Output 3	Ampere	basic
	Output Current in amperes group 3				
103	Output Power	AC Outputs	AC Output 3	Watt	basic
	Output power in watts group 3				
104	Output Apparent Power	AC Outputs	AC Output 3	VA	basic
	Output apparent power in VA group 3				
105	Output Frequency	AC Outputs	AC Output 3	Hz	basic
	Output Frequency in hertz group 3				
106	Loading Ratio	AC Outputs	AC Output 3	%	basic
	Ratio between output load and available power expressed in watts group 3				
107	Loading Ratio - Available Power in VA	AC Outputs	AC Output 3	%	basic
	Ratio between output load and available power expressed in VA group 3				
108	Loading Ratio - Installed Power in W	AC Outputs	AC Output 3	%	basic
	Ratio between output load and installed power expressed in watts group 3				
109	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 3	%	basic
	Ratio between output load and installed power expressed in VA group 3				
110	Number Of Modules Configured	AC Outputs	AC Output 3		basic
	Number of modules configured for the phase 3				
111	Amount of redundancy configured	AC Outputs	AC Output 3		basic
	Amount of redundancy configured in the phase 3				
112	DC Input Power	AC Outputs	AC Output 3	Watt	basic
	DC input power for group 3				
113	AC Input Power in W	AC Outputs	AC Output 3	Watt	basic
	AC input power (W) for group 3				
114	AC Input Power in VA	AC Outputs	AC Output 3	VA	basic
	AC input power (VA) for group 3				
115	Installed Power in W	AC Outputs	AC Output 3	Watt	basic
	Installed power value in watts for group 3				
116	Installed Power in VA	AC Outputs	AC Output 3	VA	basic
	Installed power value in VA for group 3				
117	Available Power in W	AC Outputs	AC Output 3	Watt	basic
	Available power value in watts for group 3				
118	Available Power in VA	AC Outputs	AC Output 3	VA	basic
	Available power value in VA for group 3				
119	Number Of Module seen by T2S	AC Outputs	AC Output 3		basic
	Number of modules seen by T2S for group 3				
120	Number Of Modules delivering output	AC Outputs	AC Output 3		basic
	Number of modules delivering output for group 3				
121	Number Of Modules manually off	AC Outputs	AC Output 3		basic
	Number of modules manually off for group 3				
122	Number Of Module In Failure	AC Outputs	AC Output 3		basic
	Number of modules in failure for group 3				
123	Number Of Module not seen by T2S	AC Outputs	AC Output 3		basic
	Number of modules not seen by T2S for group 3				
151	Output Voltage	AC Outputs	AC Output 4	Volt	basic

	Output Voltage in volts group 4				
152	Output Power	AC Outputs	AC Output 4	Ampere	basic
	Output Current in amperes group 4				
153	Output Power	AC Outputs	AC Output 4	Watt	basic
	Output power in watts group 4				
154	Output Apparent Power	AC Outputs	AC Output 4	VA	basic
	Output apparent power in VA group 4				
155	Output Frequency	AC Outputs	AC Output 4	Hz	basic
	Output Frequency in hertz group 4				
156	Loading Ratio	AC Outputs	AC Output 4	%	basic
	Ratio between output load and available power expressed in watts group 4				
157	Loading Ratio - Available Power in VA	AC Outputs	AC Output 4	%	basic
	Ratio between output load and available power expressed in VA group 4				
158	Loading Ratio - Installed Power in W	AC Outputs	AC Output 4	%	basic
	Ratio between output load and installed power expressed in watts group 4				
159	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 4	%	basic
	Ratio between output load and installed power expressed in VA group 4				
160	Number Of Modules Configured	AC Outputs	AC Output 4		basic
	Number of modules configured for the phase 4				
161	Amount of redundancy configured	AC Outputs	AC Output 4		basic
	Amount of redundancy configured in the phase 4				
162	DC Input Power	AC Outputs	AC Output 4	Watt	basic
	DC input power for group 4				
163	AC Input Power in W	AC Outputs	AC Output 4	Watt	basic
	AC input power (W) for group 4				
164	AC Input Power in VA	AC Outputs	AC Output 4	VA	basic
	AC input power (VA) for group 4				
165	Installed Power in W	AC Outputs	AC Output 4	Watt	basic
	Installed power value in watts for group 4				
166	Installed Power in VA	AC Outputs	AC Output 4	VA	basic
	Installed power value in VA for group 4				
167	Available Power in W	AC Outputs	AC Output 4	Watt	basic
	Available power value in watts for group 4				
168	Available Power in VA	AC Outputs	AC Output 4	VA	basic
	Available power value in VA for group 4				
169	Number Of Module seen by T2S	AC Outputs	AC Output 4		basic
	Number of modules seen by T2S for group 4				
170	Number Of Modules delivering output	AC Outputs	AC Output 4		basic
	Number of modules delivering output for group 4				
171	Number Of Modules manually off	AC Outputs	AC Output 4		basic
	Number of modules manually off for group 4				
172	Number Of Module In Failure	AC Outputs	AC Output 4		basic
	Number of modules in failure for group 4				
173	Number Of Module not seen by T2S	AC Outputs	AC Output 4		basic
	Number of modules not seen by T2S for group 4				

201	Output Voltage	AC Outputs	AC Output 5	Volt	basic
	Output Voltage in volts group 5				
202	Output Power	AC Outputs	AC Output 5	Ampere	basic
	Output Current in amperes group 5				
203	Output Power	AC Outputs	AC Output 5	Watt	basic
	Output power in watts group 5				
204	Output Apparent Power	AC Outputs	AC Output 5	VA	basic
	Output apparent power in VA group 5				
205	Output Frequency	AC Outputs	AC Output 5	Hz	basic
	Output Frequency in hertz group 5				
206	Loading Ratio	AC Outputs	AC Output 5	%	basic
	Ratio between output load and available power expressed in watts group 5				
207	Loading Ratio - Available Power in VA	AC Outputs	AC Output 5	%	basic
	Ratio between output load and available power expressed in VA group 5				
208	Loading Ratio - Installed Power in W	AC Outputs	AC Output 5	%	basic
	Ratio between output load and installed power expressed in watts group 5				
209	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 5	%	basic
	Ratio between output load and installed power expressed in VA group 5				
210	Number Of Modules Configured	AC Outputs	AC Output 5		basic
	Number of modules configured for the phase 5				
211	Amount of redundancy configured	AC Outputs	AC Output 5		basic
	Amount of redundancy configured in the phase 5				
212	DC Input Power	AC Outputs	AC Output 5	Watt	basic
	DC input power for group 5				
213	AC Input Power in W	AC Outputs	AC Output 5	Watt	basic
	AC input power (W) for group 5				
214	AC Input Power in VA	AC Outputs	AC Output 5	VA	basic
	AC input power (VA) for group 5				
215	Installed Power in W	AC Outputs	AC Output 5	Watt	basic
	Installed power value in watts for group 5				
216	Installed Power in VA	AC Outputs	AC Output 5	VA	basic
	Installed power value in VA for group 5				
217	Available Power in W	AC Outputs	AC Output 5	Watt	basic
	Available power value in watts for group 5				
218	Available Power in VA	AC Outputs	AC Output 5	VA	basic
	Available power value in VA for group 5				
219	Number Of Module seen by T2S	AC Outputs	AC Output 5		basic
	Number of modules seen by T2S for group 5				
220	Number Of Modules delivering output	AC Outputs	AC Output 5		basic
	Number of modules delivering output for group 5				
221	Number Of Modules manually off	AC Outputs	AC Output 5		basic
	Number of modules manually off for group 5				
222	Number Of Module In Failure	AC Outputs	AC Output 5		basic
	Number of modules in failure for group 5				
223	Number Of Module not seen by T2S	AC Outputs	AC Output 5		basic

	Number of modules not seen by T2S for group 5				
251	Output Voltage	AC Outputs	AC Output 6	Volt	basic
	Output Voltage in volts group 6				
252	Output Power	AC Outputs	AC Output 6	Ampere	basic
	Output Current in amperes group 6				
253	Output Power	AC Outputs	AC Output 6	Watt	basic
	Output power in watts group 6				
254	Output Apparent Power	AC Outputs	AC Output 6	VA	basic
	Output apparent power in VA group 6				
255	Output Frequency	AC Outputs	AC Output 6	Hz	basic
	Output Frequency in hertz group 6				
256	Loading Ratio	AC Outputs	AC Output 6	%	basic
	Ratio between output load and available power expressed in watts group 6				
257	Loading Ratio - Available Power in VA	AC Outputs	AC Output 6	%	basic
	Ratio between output load and available power expressed in VA group 6				
258	Loading Ratio - Installed Power in W	AC Outputs	AC Output 6	%	basic
	Ratio between output load and installed power expressed in watts group 6				
259	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 6	%	basic
	Ratio between output load and installed power expressed in VA group 6				
260	Number Of Modules Configured	AC Outputs	AC Output 6		basic
	Number of modules configured for the phase 6				
261	Amount of redundancy configured	AC Outputs	AC Output 6		basic
	Amount of redundancy configured in the phase 6				
262	DC Input Power	AC Outputs	AC Output 6	Watt	basic
	DC input power for group 6				
263	AC Input Power in W	AC Outputs	AC Output 6	Watt	basic
	AC input power (W) for group 6				
264	AC Input Power in VA	AC Outputs	AC Output 6	VA	basic
	AC input power (VA) for group 6				
265	Installed Power in W	AC Outputs	AC Output 6	Watt	basic
	Installed power value in watts for group 6				
266	Installed Power in VA	AC Outputs	AC Output 6	VA	basic
	Installed power value in VA for group 6				
267	Available Power in W	AC Outputs	AC Output 6	Watt	basic
	Available power value in watts for group 6				
268	Available Power in VA	AC Outputs	AC Output 6	VA	basic
	Available power value in VA for group 6				
269	Number Of Module seen by T2S	AC Outputs	AC Output 6		basic
	Number of modules seen by T2S for group 6				
270	Number Of Modules delivering output	AC Outputs	AC Output 6		basic
	Number of modules delivering output for group 6				
271	Number Of Modules manually off	AC Outputs	AC Output 6		basic
	Number of modules manually off for group 6				
272	Number Of Module In Failure	AC Outputs	AC Output 6		basic
	Number of modules in failure for group 6				

273	Number Of Module not seen by T2S	AC Outputs	AC Output 6		basic
	Number of modules not seen by T2S for group 6				
301	Output Voltage	AC Outputs	AC Output 7	Volt	basic
	Output Voltage in volts group 7				
302	Output Power	AC Outputs	AC Output 7	Ampere	basic
	Output Current in amperes group 7				
303	Output Power	AC Outputs	AC Output 7	Watt	basic
	Output power in watts group 7				
304	Output Apparent Power	AC Outputs	AC Output 7	VA	basic
	Output apparent power in VA group 7				
305	Output Frequency	AC Outputs	AC Output 7	Hz	basic
	Output Frequency in hertz group 7				
306	Loading Ratio	AC Outputs	AC Output 7	%	basic
	Ratio between output load and available power expressed in watts group 7				
307	Loading Ratio - Available Power in VA	AC Outputs	AC Output 7	%	basic
	Ratio between output load and available power expressed in VA group 7				
308	Loading Ratio - Installed Power in W	AC Outputs	AC Output 7	%	basic
	Ratio between output load and installed power expressed in watts group 7				
309	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 7	%	basic
	Ratio between output load and installed power expressed in VA group 7				
310	Number Of Modules Configured	AC Outputs	AC Output 7		basic
	Number of modules configured for the phase 7				
311	Amount of redundancy configured	AC Outputs	AC Output 7		basic
	Amount of redundancy configured in the phase 7				
312	DC Input Power	AC Outputs	AC Output 7	Watt	basic
	DC input power for group 7				
313	AC Input Power in W	AC Outputs	AC Output 7	Watt	basic
	AC input power (W) for group 7				
314	AC Input Power in VA	AC Outputs	AC Output 7	VA	basic
	AC input power (VA) for group 7				
315	Installed Power in W	AC Outputs	AC Output 7	Watt	basic
	Installed power value in watts for group 7				
316	Installed Power in VA	AC Outputs	AC Output 7	VA	basic
	Installed power value in VA for group 7				
317	Available Power in W	AC Outputs	AC Output 7	Watt	basic
	Available power value in watts for group 7				
318	Available Power in VA	AC Outputs	AC Output 7	VA	basic
	Available power value in VA for group 7				
319	Number Of Module seen by T2S	AC Outputs	AC Output 7		basic
	Number of modules seen by T2S for group 7				
320	Number Of Modules delivering output	AC Outputs	AC Output 7		basic
	Number of modules delivering output for group 7				
321	Number Of Modules manually off	AC Outputs	AC Output 7		basic
	Number of modules manually off for group 7				
322	Number Of Module In Failure	AC Outputs	AC Output 7		basic

	Number of modules in failure for group 7				
323	Number Of Module not seen by T2S	AC Outputs	AC Output 7		basic
	Number of modules not seen by T2S for group 7				
351	Output Voltage	AC Outputs	AC Output 8	Volt	basic
	Output Voltage in volts group 8				
352	Output Power	AC Outputs	AC Output 8	Ampere	basic
	Output Current in amperes group 8				
353	Output Power	AC Outputs	AC Output 8	Watt	basic
	Output power in watts group 8				
354	Output Apparent Power	AC Outputs	AC Output 8	VA	basic
	Output apparent power in VA group 8				
355	Output Frequency	AC Outputs	AC Output 8	Hz	basic
	Output Frequency in hertz group 8				
356	Loading Ratio	AC Outputs	AC Output 8	%	basic
	Ratio between output load and available power expressed in watts group 8				
357	Loading Ratio - Available Power in VA	AC Outputs	AC Output 8	%	basic
	Ratio between output load and available power expressed in VA group 8				
358	Loading Ratio - Installed Power in W	AC Outputs	AC Output 8	%	basic
	Ratio between output load and installed power expressed in watts group 8				
359	Loading Ratio - Installed Power in VA	AC Outputs	AC Output 8	%	basic
	Ratio between output load and installed power expressed in VA group 8				
360	Number Of Modules Configured	AC Outputs	AC Output 8		basic
	Number of modules configured for the phase 8				
361	Amount of redundancy configured	AC Outputs	AC Output 8		basic
	Amount of redundancy configured in the phase 8				
362	DC Input Power	AC Outputs	AC Output 8	Watt	basic
	DC input power for group 8				
363	AC Input Power in W	AC Outputs	AC Output 8	Watt	basic
	AC input power (W) for group 8				
364	AC Input Power in VA	AC Outputs	AC Output 8	VA	basic
	AC input power (VA) for group 8				
365	Installed Power in W	AC Outputs	AC Output 8	Watt	basic
	Installed power value in watts for group 8				
366	Installed Power in VA	AC Outputs	AC Output 8	VA	basic
	Installed power value in VA for group 8				
367	Available Power in W	AC Outputs	AC Output 8	Watt	basic
	Available power value in watts for group 8				
368	Available Power in VA	AC Outputs	AC Output 8	VA	basic
	Available power value in VA for group 8				
369	Number Of Module seen by T2S	AC Outputs	AC Output 8		basic
	Number of modules seen by T2S for group 8				
370	Number Of Modules delivering output	AC Outputs	AC Output 8		basic
	Number of modules delivering output for group 8				
371	Number Of Modules manually off	AC Outputs	AC Output 8		basic
	Number of modules manually off for group 8				

372	Number Of Module In Failure	AC Outputs	AC Output 8		basic
	Number of modules in failure for group 8				
373	Number Of Module not seen by T2S	AC Outputs	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
	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 output	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 output	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
	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
	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 AC					
21	AC Input Frequency Low Start	AC Inputs	Input Frequency	Hz	0/1000 (0)	basic
	The AC frequency low start in hertz.					
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					
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					
162	Amount of Redundancy	AC Outputs	AC Output 7			basic
	The amount of redundancy in phase 7					
163	Phase Shift	AC Outputs	AC Output 7	degree		basic
	The phase shift in degrees in phase 7					
164	Nominal Output Voltage	AC Outputs	AC Output 7	Volt	0/250 (120)	basic

	The output voltage 1 in volts phase 7					
171	Number of Modules	AC Outputs	AC Output 8			basic
	The number of modules in phase 8					
172	Amount of Redundancy	AC Outputs	AC Output 8			basic
	The amount of redundancy in phase 8					
173	Phase Shift	AC Outputs	AC Output 8	degree		basic
	The phase shift in degrees in phase 8					
174	Nominal Output Voltage	AC Outputs	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					
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					
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					
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					
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			

Chapter 9 – Licenses

- [The Comp@s license packages](#)
- [How can I upgrade my license?](#)
- [How is the license stored?](#)

9.1 The Comp@s license packages

The Comp@s software has functionalities which are accessible depending of the licensed options. For the time being, 4 license packages are available: battery, asset, plc and modbus.

- [The Battery Package](#)
- [The Asset Package](#)
- [The PLC Package](#)
- [The Modbus Package](#)
- [License currently in use.](#)

9.1.1 The Battery Package

This package allows using advanced functionalities related to the battery management. It allows configuring and starting battery test, it allows to retrieve test battery records, etc. The detailed table, in chapter 8, details the table entries only available with the battery package.

9.1.2 The Asset Package

This package allows:

- To retrieve any available data record, with a resolution of second, minute, hour or day. This includes also some statistics about the data. The records can be viewed with a web browser with Flash installed. The records can also be downloaded in CSV;
- To retrieve any information about the components of a system, like serial numbers, batch ids, production dates, software information, etc;
- To retrieve detailed information about smart rectifiers;
- To use strategy to optimize the global efficiency.

Note: The PLC package is also included in the Asset Package.

9.1.3 The PLC Package

This PLC package allows:

- The creation of customer defined data, like in a Programmable Logic Controller: a PCL Data is defined by any mathematical operation over any data;
- The creation of customer defined alarms, like in a Programmable Logic Controller: a PLC Alarm is defined by any combination of any data and any alarm.

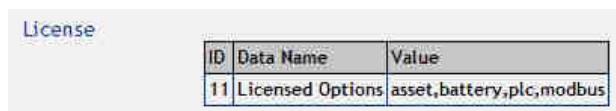
9.1.4 The Modbus Package

This Modbus package allows retrieving the data and the alarms related to one dc system with the Modbus RTU over TCP protocol. This protocol is used in some industrial environment.

9.1.5 License currently in use

In order to check which license is currently used by Comp@s, browse to SiteàData. The entry “Licensed Options” provides the information, as shown on the following figure:

Figure 84 Installed License



ID	Data Name	Value
11	Licensed Options	asset,battery,plc,modbus

9.2 How can I upgrade my license?

If you want to unlock functionalities thanks to a new license:

STEP 1: Please contact your vendor.

STEP 2: He will ask you to send you actual license file.

STEP 3: A new license file will be returned.

STEP 4: Copy it to \\FlashDisk\\User

STEP 5: After a reboot, your system is using the new license.

9.3 How is the license stored?

The Comp@s license is a XML 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) When the file is installed at factory, it is located in “\\FlashDisk\\Factory”.

The content of this XML file looks like:

XML licence file content:

```
<licenseKey version="1.0">
<product version="0.1.X.X">Alpha Technologies Comp@s</product>
<macAddress>00-14-2D-20-0B-20</macAddress>
<options>asset,battery</options>
<key>vddR+a7oQcx4Qrmt24padm3hSd1DJtbC3LEsKtzxdSJ5mCloN9uZMg
NnvemA13CWE5pOZxZBJY/uTsuCPHEwAQ==</key>
</licenseKey>
```

The interesting part is “<options>asset,battery</options>” which corresponds to the licensed option you bought.

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

Chapter 10 – Software Components

Release

A comp@s release is composed of different components.

Comp@s is evolving every day to satisfy new customer and new products needs. It supports more and more devices.

When required, we release a production release. This release is composed of the following components :

- [System bootloader](#)
- [The Operating System](#)
- [Comp@s Starter Executable](#)
- [Comp@s Executable](#)
- [Comp@s FTP Server Executable.](#)

10.1 System bootloader

The Bootloader is the first piece of code being executed at start-up. Its main purpose is to load and start the OS (WinCE). The Boot loader is also the place where various settings can be changed.

10.2 The Operating System

Comp@s is running on Windows CE 5.0 operating system, featuring nice features like:

- Real Time
- A reliable TCP/IP stack
- USB driver for local connection
- Fast development capabilities.

The system image is build with the Microsoft Platform Builder. It uses the Toradex BSP (Board Support Package).

An external watchdog system is present to automatically restart the monitoring application if loss of activity is detected.

Microsoft® Windows® CE 5.0 is an open, scalable, 32-bit operating system (OS) that integrates reliable, real time capabilities with advanced Windows technologies. Windows CE

allows you to build a wide range of innovative, small footprint devices. A typical Windows CE-based device is designed for a specific use, often runs disconnected from other computers, and requires a small OS that has a deterministic response to interrupts. Examples include enterprise tools, such as industrial controllers, communications hubs, and point-of-sale terminals, and consumer products, such as cameras, Internet appliances, and interactive televisions.

See MSDN Win CE 5.0 for more information: <http://msdn.microsoft.com/en-us/library/ms905511.aspx>.

10.3 Comp@s Starter Executable

That application is stored on the Flash, in the AutoRun folder. The exact file name is : "Compas_Starter.exe".

The application is written in c# and run over the .NET CF 2.0.

10.4 Comp@s Executable

The application is written in c# and run over the .NET CF 2.0.

When Compas is executed, the followings tasks are run:

1. Extract and load of [C Drivers](#)
2. Retrieve [Environment Configuration](#)
3. Load [License](#)
4. Load [Translation Dictionary](#)
5. Create a [Site Object](#)
6. Create Thread "[Decode CAN Msg](#)" >
7. Create Thread "[Web Server](#)"
8. Create Thread [SNMP](#)
9. Create Thread "Modbus Slave"
10. Create Thread "Modbus Master"
11. Create Thread "[ProcessScheduledTasks](#)".

10.4.1 C Drivers

In order to guarantee fast and reliable CAN communication, the can drivers is build in a C DLL (Dynamic Link Library).

The driver is not build in the operating system to allow easy upgrade and avoid compatibility issues.

The hardware CAN controller model is Microchip MCP 2515. It provides a SPI interface used to communicate with the Compas electronic board.

[Microchip MCP 2515 details.](#)

CAN Message Receiving

Each time a message is received, the MCP 2515 use hardware interrupt to request the driver to read the new message.

The CAN messages are stored in a large circular buffer queue. These messages can be read without real time issues.

CAN Message Sending

Message can be sent via 3 different output buffers:

- High Priority Buffer
- Normal Priority Buffer
- Low Priority Buffer

They can be sent one by one or in block of maximum 10 messages. (Block sending is required by the CANOpen LSS algorithm to guarantee the message order)

Other Driver Functions

The C driver is also used to control led, and to reset the hardware watchdog, depending of the hardware configuration.

10.4.2 Environment Configuration

Global variables are configured depending of the environment:

- [BSP Version](#)
- [Flash path](#)
- [Ethernet Device.](#)

BSP Version

The Board Support Package is related to the operating system version.

Flash path

Default path to access the flash memory is \\FlashDisk

But, on previous versions of Compas, \\NOR Flash was used.

Ethernet Device

Depending of the comp@s hardware revision, different chipset are used for Ethernet:

- DM90001
- AX887961

10.4.3 License

The license is validated and loaded if trusted.

10.4.4 Translation Dictionary

On start-up, the list of all the used strings is generated dynamically.

Then, the associated translations are loaded in memory from csv files stored in the user dedicated Flash.

The Namespace in charge of the translations is Compas.Strings.

10.4.5 Site Object

The site object is the root node of the equipments controlled and monitored by Compas.

Any detected equipment/device will be a child of this object.

After the object creation, the associated site configuration is loaded.

10.4.6 Decode CAN Msg

See `MonitoringThreadDecodeCANMsg()`

10.4.7 Web Server Interface

The internal Web server of the application is launched at startup in a separate thread. It is constituted of an request extractor that listens to the HTTP messages, and calls back a method to process them.

Default listening port number is 80.

10.4.8 SNMP Management

A new SNMP agent is instantiated at application startup. This agent is called in order to send an event trap each time a new event is added by an equipment.

10.4.9 Process Scheduled Tasks

This thread is looping on the function “ProcessTasks”, and sleep 20 milliseconds after each execution. It executes the following tasks:

- Execute the “RefreshSlow” of all the equipments. It recalculate the internal variables, the PLC data, manage the regulation, etc. (Every 1000ms)
- Execute the “UpdateAlarmTableAndStatus” of all the equipments. It recalculate each alarm, and update the global status of the equipment. (Every 1000ms)
- Update Led status, for led controlled directly by Comp@s. (every 100ms)
- Ask necessary CANOpen variables refresh (every 100ms)
- Manage CANOpen Nodes, detect nodes to remove (Every 1500ms)
- Check if new CANOpen LSS node has been detected (Every 2000ms)
- Refresh the equipment structure if needed (Every 2000ms)
- Send SNMP trap if Authentication Failure (Every 2000ms)
- Process Data Records elements with second resolution (Every 1 sec)
- Process Data Records elements with minute resolution (Every time the system ime as changed of minute)
- Process Data Records elements with hour resolution (Every time the system time as changed of hour)
- Archive Data records (Every x hours if x is configured and different of 0)
- Process Data Records elements with day resolution, and save all records in flash (Every time the system time as changed of day)
- Post XML events if any and if configured, for all equipments (Every 2 seconds)

10.4.10 **Inventory Management and Equipment Mounting**

The device inventory is initialized and loaded at startup. First application is searching for the file `devices.xml` in `\\User\\` directory of the flash memory path. If this file doesn't exist, a default initialization procedure is started.

Procedure is the following:

- If a site doesn't exist, application is creating or getting one. Getting one means that application is searching for an equipment with the same name or ID. Otherwise, a new site is created.
- If an energy system doesn't exist, application is creating or getting one.
- After CAN bus initialization, LSS (Layer Setting Services) messages are processed. Each time a new CANOpen node is found, corresponding device is added to the device dictionary.

10.4.11 **Alarm Set-up and Clearance**

Each time a new alarm is created, two "Set" and "Clear" delay parameters are associated to it. By default they are equal to 0 and 2 seconds respectively:

- Alarm is set if its severity type is different to "Disabled" AND if its alarm condition is true since a time in seconds superior to the set delay parameter.
- Alarm is cleared if its alarm condition is NOT true since a time in seconds superior to the clear delay parameter.

10.4.12 **System and Application Configuration**

Each equipment of the application possess its own configuration elements. They appear in the Web page Config tab related to the equipment in order to be editable by application user.

10.4.13 **Data Record Management**

In addition to instantaneous Data objects, the application manages Data Records objects that accumulate information from Data objects. Real-time statistics like average, max. and

min. values are computed. The Comp@s Web server uses an integrated javascript applet in order to generate a dynamical display of the data record information.

10.4.14 **Equipment Emulation**

If equipment emulation is used, CANDriver is emulating a set of equipments by sending corresponding CAN messages.

10.5 **Comp@s FTP Server Executable**

The application is written in c# and run over the .NET CF 2.0.

This program implements a FTP server. The program is separated from Comp@s to allow software upgrade also when Compas.exe is not running. The security management is separated from the Comp@s one.

File Transfer Protocol (FTP) is a standard network protocol used to transfer files from one host to another host over a TCP-based network, such as the Internet. FTP is built on a client-server architecture and uses separate control and data connections between the client and server.

[Wikipedia - FTP](#)

Chapter 11 – Software Changelog

- [.NET Executable Versioning](#)
- [Comp@s Changelog](#).

11.1 .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 showned 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:
 - o <revision> - 0 : for alpha (non-stable)
 - o <revision> - 1: for beta (internal)
 - o <revision> - 2 : for release candidate (QA-passed, final tests)
 - o <revision> - 3 : for public (release)
 - o <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:
 - o odd for beta version
 - o even for stable version
- Y is the major revision number.

11.2 Comp@s Changelog

Note: Only revisions with a SOFT 000031 XX code 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 2.17.0.3 (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 it 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

- * 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 optimisation, 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 to detect possible memory leaks at runtime.

- Memory - Fixed memory leak when equipments 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, severirty_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 with 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 circonstance, corrupted value could be read - timing issue solved.
* Data Record - Delta record is now immediatly available after configuration change. Previously, a least one append to file was required
+ PLC - support of equations with strings. Example to link dc system realys 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 adresssing)
* 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 - Developpers have the possibility to link data to alarms, to send them with the trap.
+ SNMP - Some data Mlb 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
* 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 Optimisation
* 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 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 - Optimisation 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 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.
* Optimised 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 download 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)
* Optimisation 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() where 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 customisation 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)
* 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 equipments
+ 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 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)

+ 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 analysed to retrieve the software revision
- + The zip files are analysed 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
- 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
* 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)
* 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

Chapter 12 – Emulation Capabilities

On demand, we can provide an emulation program of the real monitoring application. This emulation program can run on any personal computer running Windows. Thanks to this last, you can develop and test the integration of our monitoring platform inside your network management application.

- [What is the Comp@s emulator?](#)
- [What are the requirements?](#)
- [How to run the emulator?](#)
- [How to use the emulator?](#)
- [Simulating a network of Comp@s system](#)
- [Where can I get the emulator?](#)
- [Remarks.](#)

12.1 What is the Comp@s emulator?

This is 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 2 sub-shelves 4x850W, with some rectifiers. Also an AC failure alarm appears and disappears, generating events and modifications of element status. An extension card with some sensors and access control is also simulated.

With the emulator, you can develop and test the integration of our monitoring platform inside your network management application.

12.2 What are the requirements?

- Any personal computer running Windows 2000, XP or later.
- You need the Microsoft .NET Framework 2.0 installed on your computer. This is freely available through Microsoft website or Windows Update.

12.3 How to run the emulator?

- When you execute the provided “Compas_Emulator.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.
- To stop the emulator, you just have to close the opened shell window.

12.4 How to use the emulator?

- Start the Compas_Emulator.exe application
- Testing the Web Server :
 - a. Start you favorite web browser (Firefox 2.x or Internet Explorer 7.x)
 - 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 5.3. to use the Web Interface
- Testing SNMP :
 - a. You need a SNMP MIB browser (see [The Comp@s SNMP Agent](#))
 - 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.

12.5 Simulating a network of Comp@s system

If you want to simulate multiple sites, you can start the emulator on different port. For example, to execute an instance on port 85, execute “Compas_Emulator 85”.

12.6 Where can I get the emulator?

Please contact your vendor.

12.7 Remarks

- This emulator is just an introduction to the different interfaces
- It is not possible to have a real overview of all the Comp@s 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 emulated.

Chapter 13 – Frequently Asked Questions

- [USB Connection Troubles](#)

13.1 USB Connection Troubles

Q : I can browse Comp@s flash disk but I cannot open the Comp@s webpage in my web browser.

A: 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:

- Open cmd prompt and type the following command:

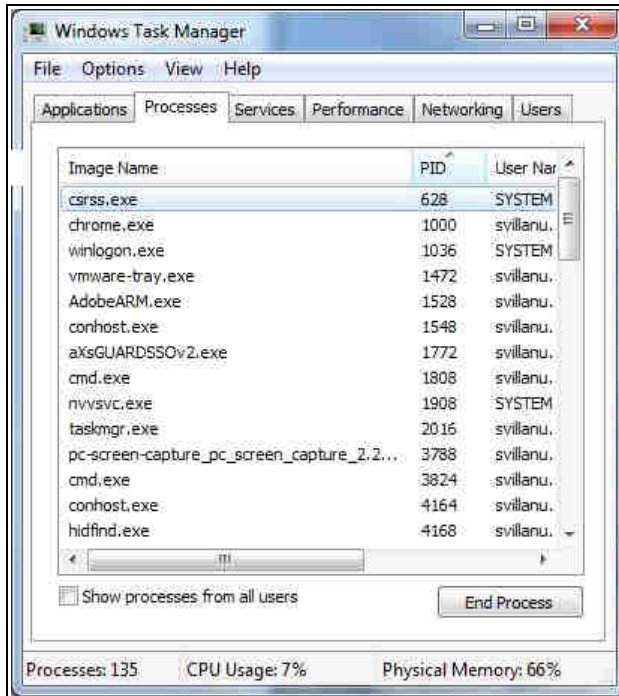


```

Administrator: Command Prompt
U:\>netstat -ano | findstr 0.0.0.0:80
TCP    0.0.0.0:8009    0.0.0.0:0      LISTENING    3200
TCP    0.0.0.0:8080    0.0.0.0:0      LISTENING    3200
U:\>
  
```

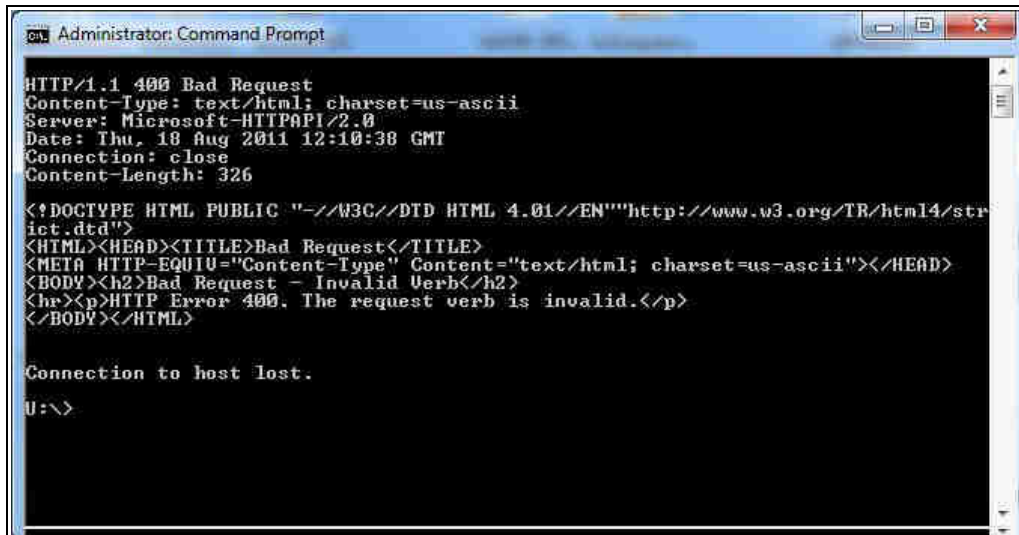
Administrator Command Prompt

- 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.
- 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:



Windows Task Manager

- 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.
- 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:



IIS Shutdown

- 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.

Q : After plug in, the usb cable in my computer, i see the device is not recognized and the driver could not successfully installed.

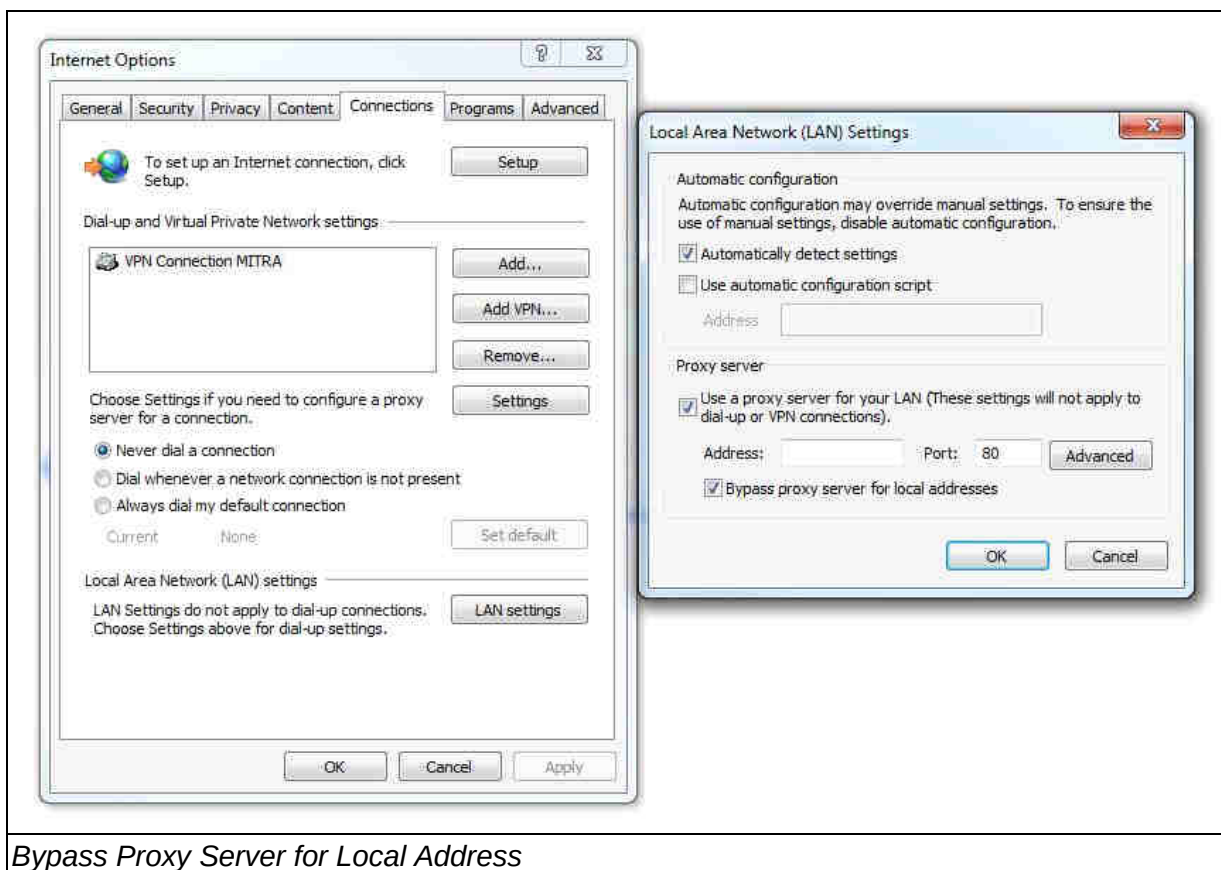
A: You have to take care of using multiple mobile devices at the same time. For exemple, it's not possible to connect to compas if you have connected your mobile phone to the computer using bluetooth and so on.

Q: On my web brower, I see access denied to 127.0.0.1 .

A: 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":



Bypass Proxy Server for Local Address

Chapter 14 – Support

Do not hesitate to contact us in case of questions, problems, suggestions, etc. We want to be your partner in a successful network management.

Chapter 15 – Appendix

15.1 Convert a CE+T to CANOpen

In this guide you will upgrade the CE+T 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**
 - o 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")
 - o Select "Update driver" -> "Browse my computer for driver software" -> "Let me pick from a list"
 - o "Ports (COM and LPT)"
 - o Select the "ST Microelectronics > STMicroelectronics Virtual COM Port" driver
 - o Dismiss the warnings by accepting the driver
3. **Update of CE+T Inverter to CANOpen Mode**
 - o Go to the *FirmwareUpdater* folder

- o Unplug the CE+T controller from the rack
- o Plug the USB cable between your computer and the CE+T controller
- o Plug the rack with at least one inverter
- o Now, this is the tricky part :
 - You have to plug-in the controller **and** launch immediately the file dwnld_T2S.bat. (Within 10 seconds after connecting the controler)
- o 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.)
- o The program need to show "**Download was successful**"
- o Unplug the usb cable from the controller
- o Unplug and Replug the CE+T controller