 Comp@s

User's Guide

member_AlphaGrp

Your Power Solutions Partner

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# 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.

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| **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](http://www.alphatechnologies.eu) |

# Overview

* [Comp@s Overview](#scroll-bookmark-3)
* [Block Diagram of Energy Systems managed by Comp@s](#scroll-bookmark-4)
* [DC System Overview](#scroll-bookmark-5).

## Comp@s Overview

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 (**OP**erating **EX**penditures) reduction. It lowers energy costs, reduce field interventions and provide data logging and statistics facilities.

Comp@s has a very flexible hardware and software architecture, as shown on the 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:

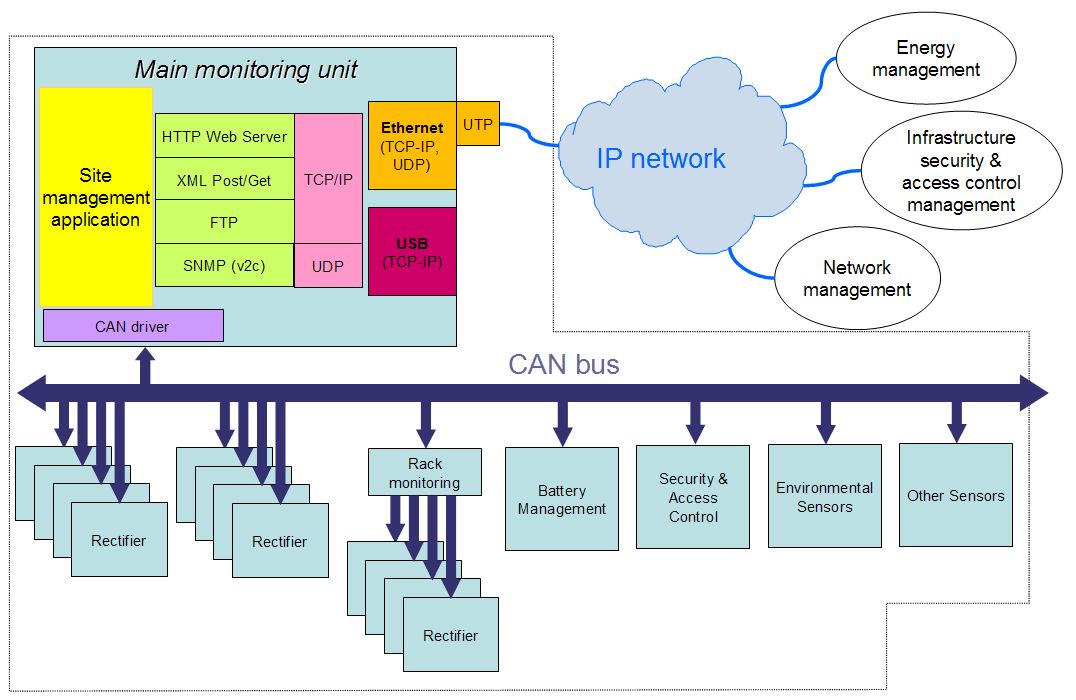


Figure 1 Comp@s Bloc Diagram

## 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:

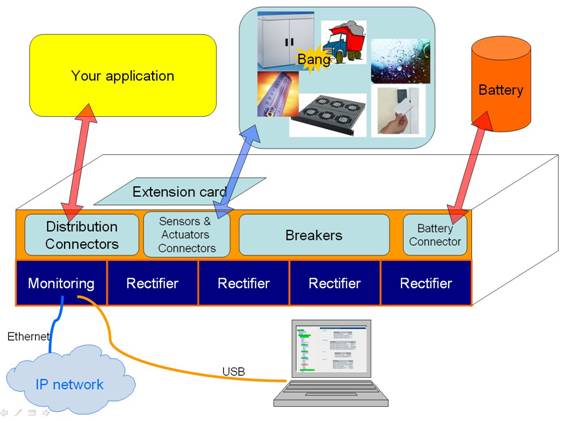


Figure 2 Schematic of the inside of a cabinet

## DC System Overview

* [DC Power System Principles](#scroll-bookmark-6)
* [General Information on MCU](#scroll-bookmark-7)
* [Mode Of Operation](#scroll-bookmark-8)
* [Battery Temperature Compensation](#scroll-bookmark-9)
* [Battery Charge Current Control](#scroll-bookmark-10)
* [Battery Low Voltage Disconnect Operation (LVD)](#scroll-bookmark-11)
* [DC System Alarms Overview](#scroll-bookmark-12)
* [Battery Test](#scroll-bookmark-13)
* [Boost Mode](#scroll-bookmark-14)
* [List Of Possible Events](#scroll-bookmark-15).

### 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:

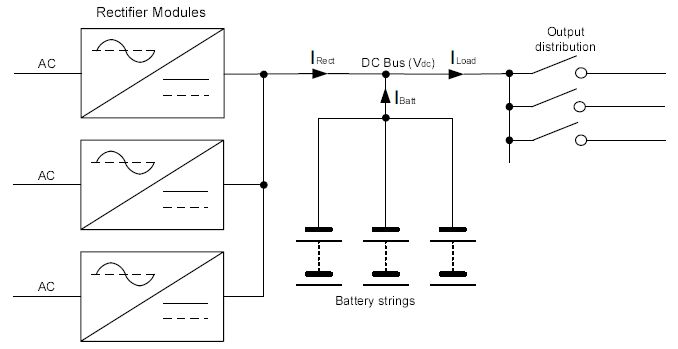


Figure 3 DC System

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.

### 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) :
  + Steady : Monitoring is OK
  + Quick Blinking (200ms): Comp@s is not present (or starting), the MCU is working in standalone (With the configuration saved inside the MCU - This can be copied from Comp@s with "Save In MCU" function)
  + Slow Blinking (1Hz): Battery test is running
  + 800 ms On, 200 ms Off : System is in boost mode
* LVD OK (Green) : 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.

### 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.

### Battery Temperature Compensation

* [BTC: General Overview](#scroll-bookmark-16)
* [BTC: Configuration Parameters](#scroll-bookmark-17)
* [Theory Of Battery Temperature Compensation](#scroll-bookmark-18).

#### 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.

### Battery Charge Current Control

* [BCCC: General Overview](#scroll-bookmark-19)
* [BCCC: Configuration Parameters](#scroll-bookmark-20).

#### 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.

### Battery Low Voltage Disconnect Operation (LVD)

* [LVD: General Overview](#scroll-bookmark-21)
* [LVD: Configuration Parameters](#scroll-bookmark-22).

#### 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.

### DC System Alarms Overview

* [Alarms Related To DC Output Bus Voltage](#scroll-bookmark-23)
* [Alarms Related To Rectifiers](#scroll-bookmark-24)
* [Alarms Related To The Input AC Power Of The Rectifiers](#scroll-bookmark-25)
* [Alarms Related To Battery](#scroll-bookmark-26)
* [Alarms Related To General Input](#scroll-bookmark-27).

#### 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.

### 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](#scroll-bookmark-28)
* [Applied Equations](#scroll-bookmark-29)

#### 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 trough 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: actual current \* (actual current \* rated discharge time / battery capacity) ^ (Peukert - 1).

* If effective current is < 0, battery is discharging.
* If effective currrent is > 0, battery is charging.

Battery remaining capacity equals (in %) to: 100 \* (battery capacity + sum (effective current (minute) ) / 60 ) / battery capacity.

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

### 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).

### 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)](#scroll-bookmark-11)). | **Charge battery, or recover AC input voltage** |
| DC Mode Changed : *<new\_mode>* | Mode of operation has been changed (see: [Mode Of Operation](#scroll-bookmark-8)). 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 |

# Getting Started

* [Connecting the Comp@s Web Server over Ethernet](#scroll-bookmark-31)
* [Connecting the Comp@s Web Server over USB](#scroll-bookmark-32)
* [Using The Web Interface](#scroll-bookmark-33)
* [Using the Comp@s SNMP Agent](#scroll-bookmark-34)

## 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. Than, click the “OK” button.  You can now start your web browser and browse to the URL [http://192.168.45.2](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](http://wavshare:8090/display/Compas/User+Access+Management). | Figure 6 Authentication |

## 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 Ethernet 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.
* The free Microsoft Active Sync application. This application is available on the web:  
  <http://www.microsoft.com/en-us/download/details.aspx?id=15>
* Please note that with Vista, you don’t have to install Active Sync. The “Sync Center” is already installed and is enough. (In this case, you can skip step 2.) With Windows 7, you should download the free Microsoft Mobile Device Center application: <http://www.microsoft.com/download/en/details.aspx?id=14> (32-bit), <http://www.microsoft.com/download/en/details.aspx?id=3182> (64-bit).

**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://wavshare:8090/pages/createpage.action?spaceKey=Compas&title=HKEY_LOCAL_MACHINE%5CSOFTWARE%5CMicrosoft%5CWindows+CE+Services%5CProxyPorts&linkCreation=true&fromPageId=1048589)  "HTTP PORT FORWARDING"=[dword:00000050](http://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](http://127.0.0.1/) or [http://localhost](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.

## Using The Web Interface

* [Web Page Layout Overview](#scroll-bookmark-35)
* [Modifying Comp@s Settings](#scroll-bookmark-36)
* [Modifying Comp@s Settings](#scroll-bookmark-36)[Changing the Network Configuration](#scroll-bookmark-37).

### Web Page Layout Overview

The following figure shows the initial web page displayed after login. The left part displays the last refresh time of the web page and a hierarchy of the component of the system (Site, DC System, Rectifier, etc.). If all these tree nodes are in a grey color, no alarm is active. 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:

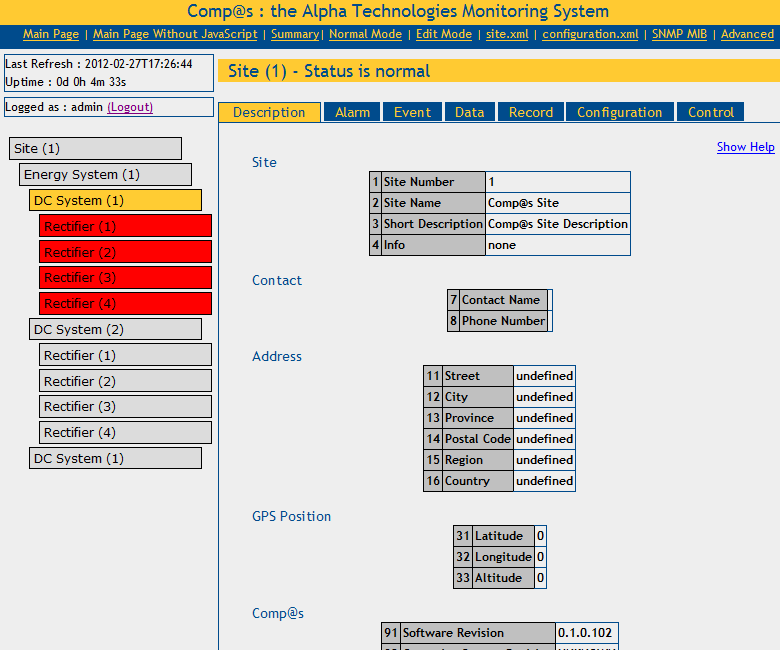


Figure 7 Initial page displayed

The following tabs are therefore available:

* [Description Tabs](#scroll-bookmark-38)
* [Alarm Tabs](#scroll-bookmark-39)
* [Event Tabs](#scroll-bookmark-40)
* [Data Tabs](#scroll-bookmark-41)
* [Record Tabs](#scroll-bookmark-42)
* [Configuration Tabs](#scroll-bookmark-43)
* [Control Tabs](#scroll-bookmark-44).

#### Description Tabs

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:

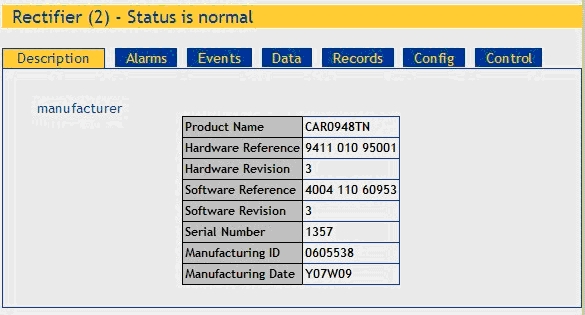


Figure 8 Rectifier Tab

#### Alarm Tabs

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

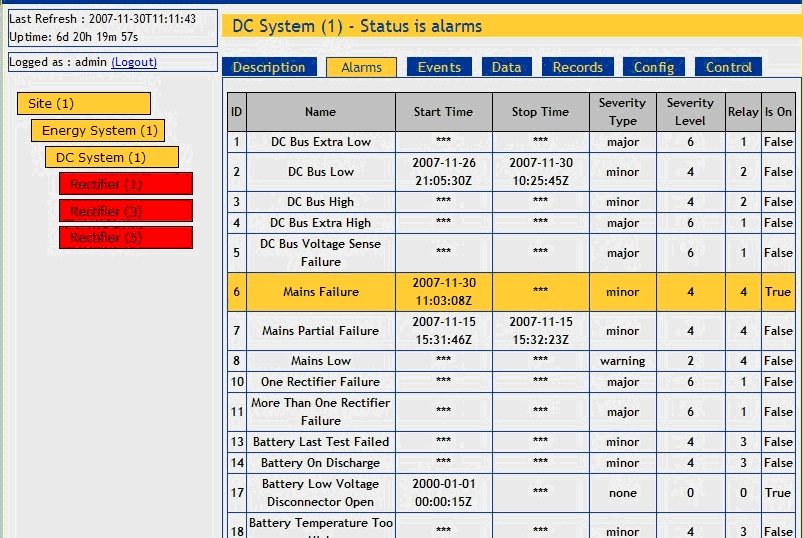


Figure 9 Alarms at the DC System level

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:

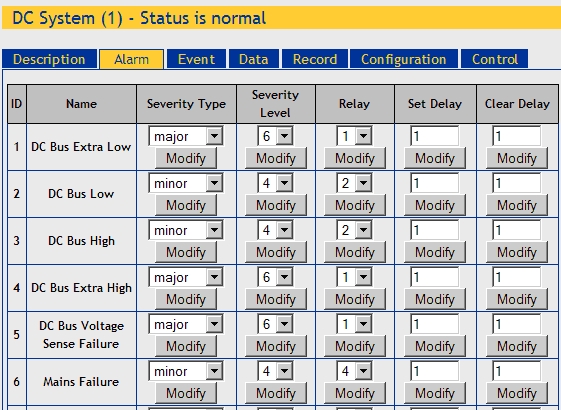


Figure 10 Alarm configuration

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.:

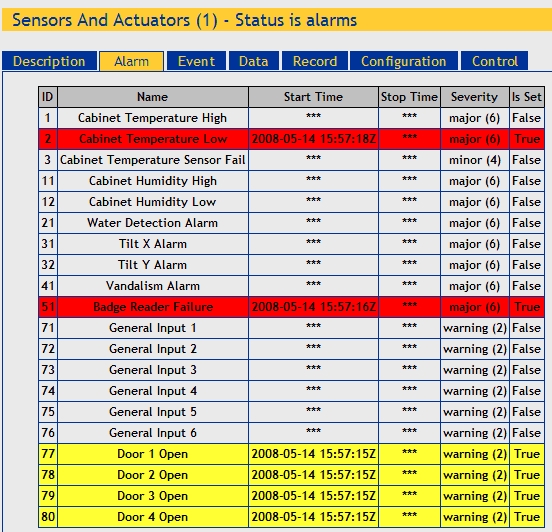


Figure 11 Sensors and Actuators alarms

#### Event Tabs

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:

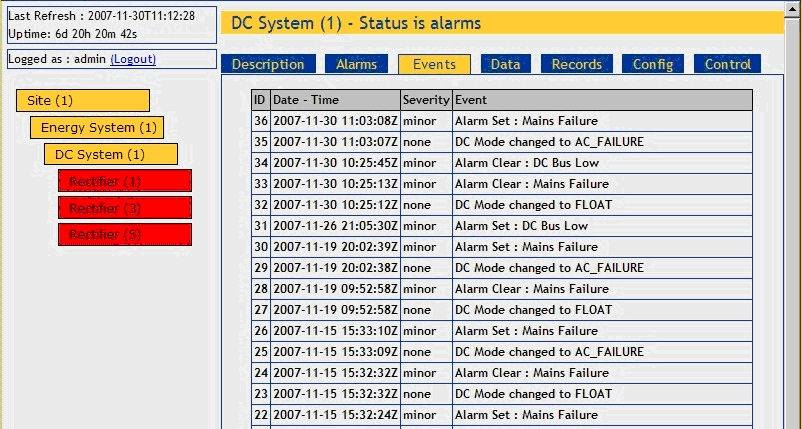


Figure 12 Events related to DC System

#### Data Tabs

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

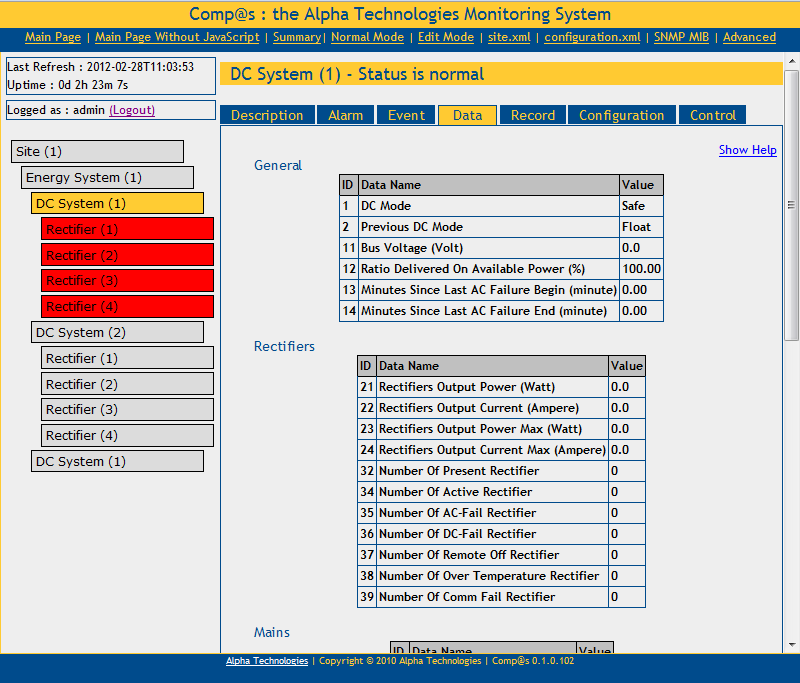


Figure 13 Data related to DC System

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:

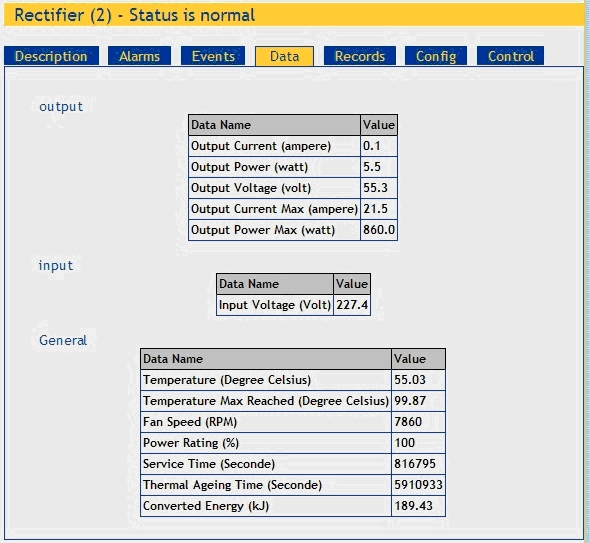


Figure 14 Rectifier Data

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.:

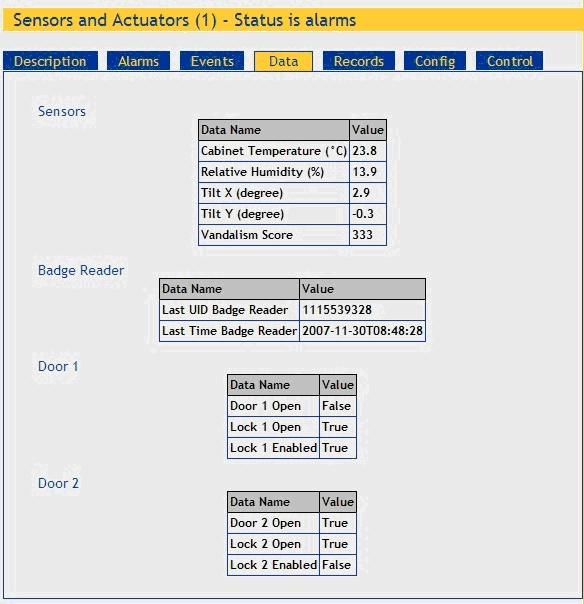


Figure 15 Sensors and Actuators data

#### Configuration Tabs

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:

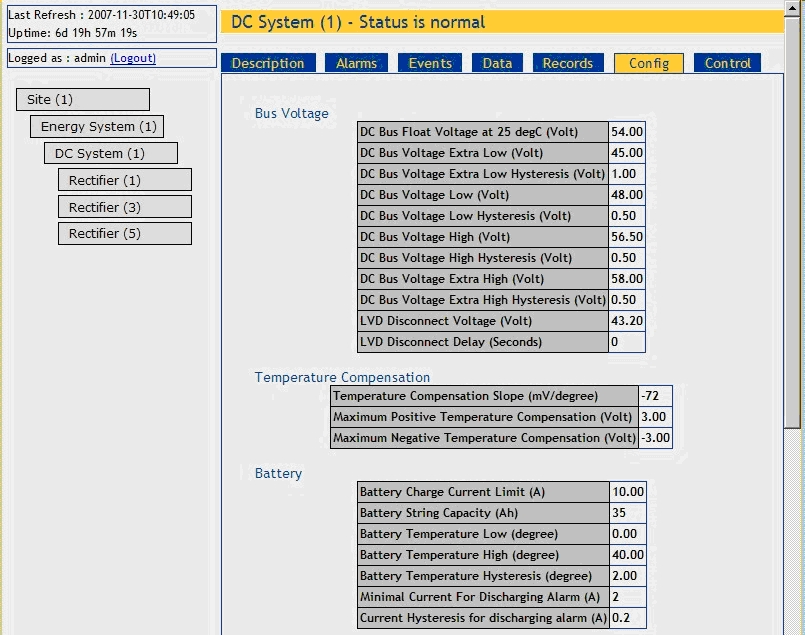


Figure 16 DC System Configuration Tab

The configuration of the site:

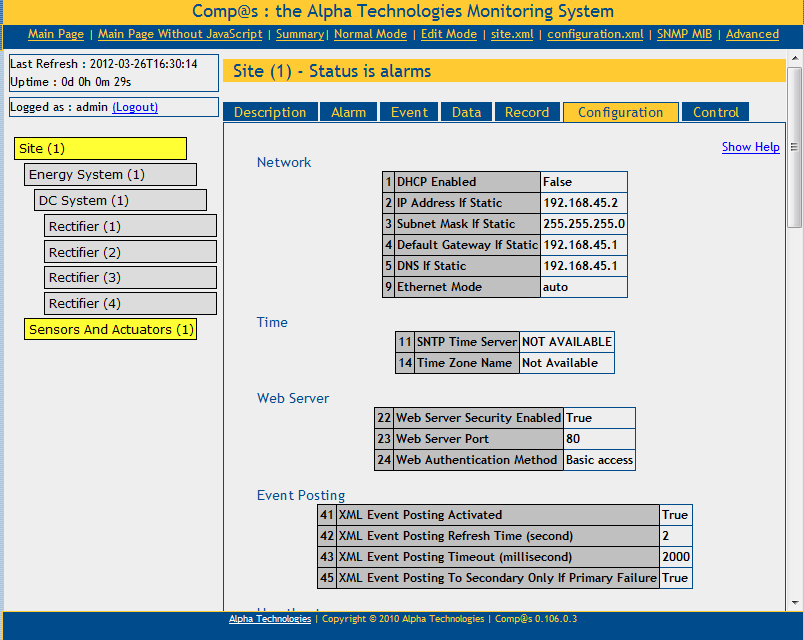


Figure 17 Site Configuration

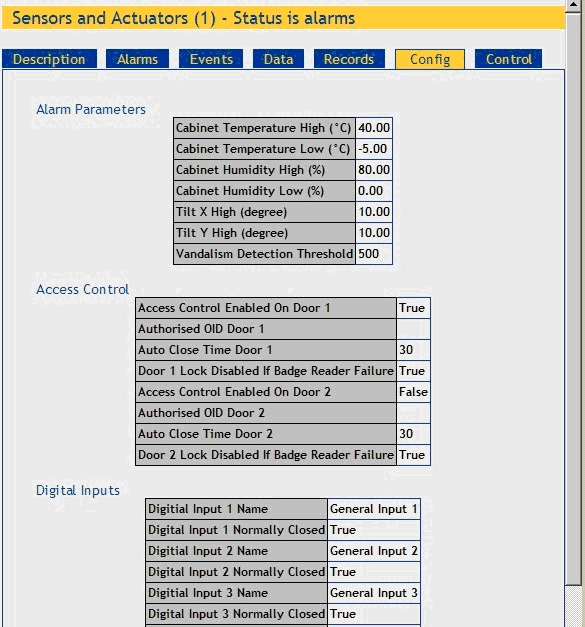


Figure 18 The configuration of an extension card

#### Record Tabs

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 19 DC System Record Tab

The following screenshots show charts with the bus voltage for the last days and minutes and the battery temperature for the last days:

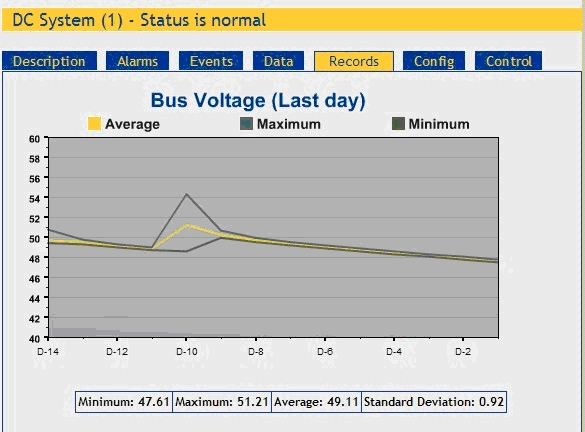


Figure 20 Bus Voltage record of the last days

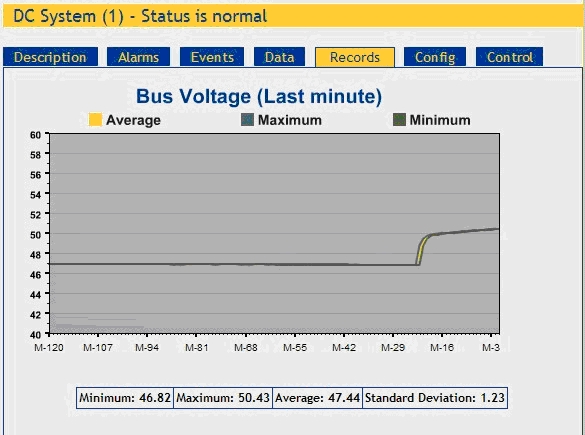


Figure 21 Bus Voltage record of the last minutes

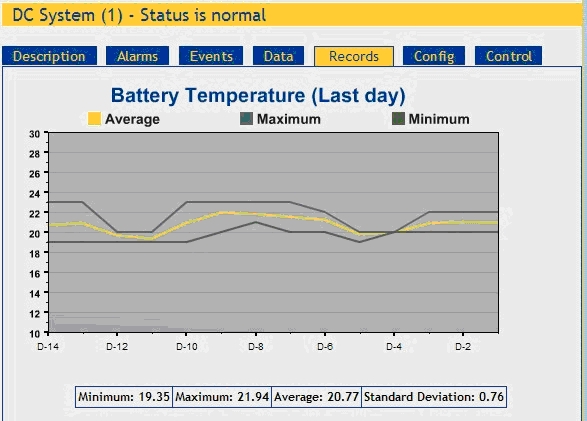


Figure 22 Battery Temperature record for the last days

#### Control Tabs

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:

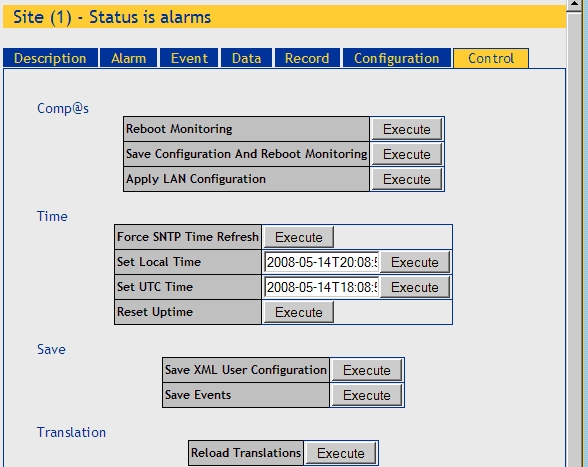


Figure 23 Control Tab at site level

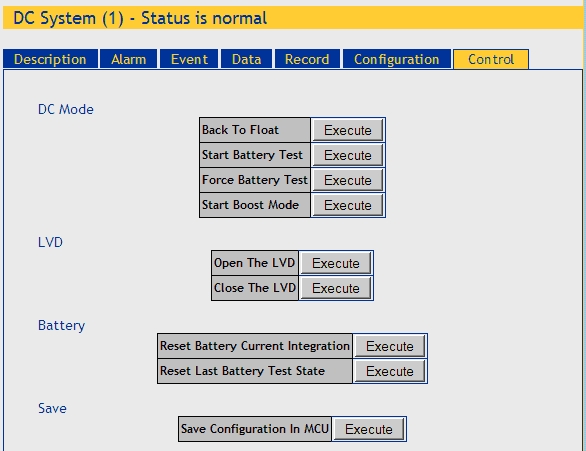


Figure 24 Control Tab at DC System level

### Modifying Comp@s Settings

* [Modifying values](#scroll-bookmark-45)
* [Saving The Changes](#scroll-bookmark-46).

#### Modifying values

The following figures illustrate how to change any configurable value. When you click on "Edit Mode" (“Config Mode” on previous release), all the configurable values become editable. You are now able to change the value:

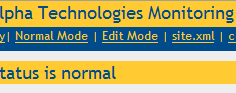


Figure 25 Edit Mode

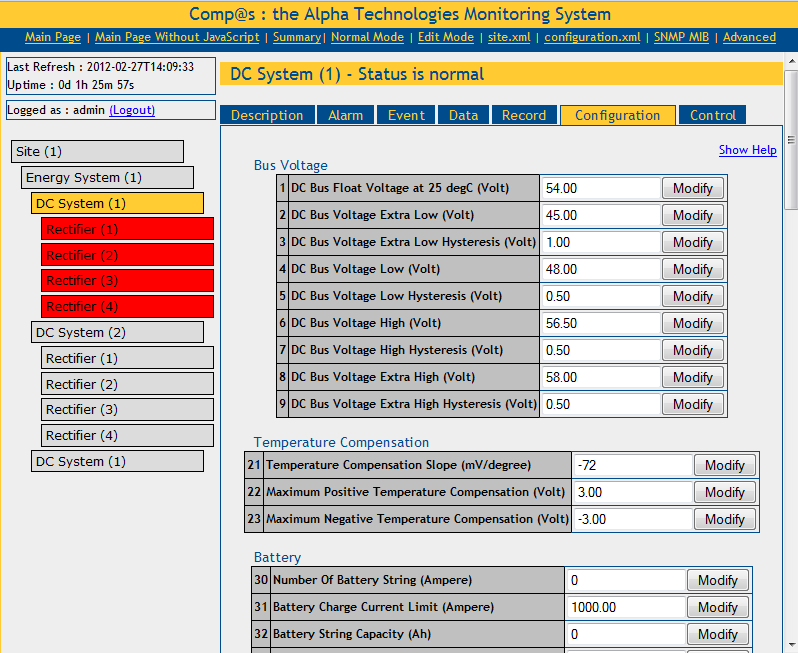


Figure 26 Modifying values

A click on the “Modify” 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](#scroll-bookmark-46).

#### 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.

**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”

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

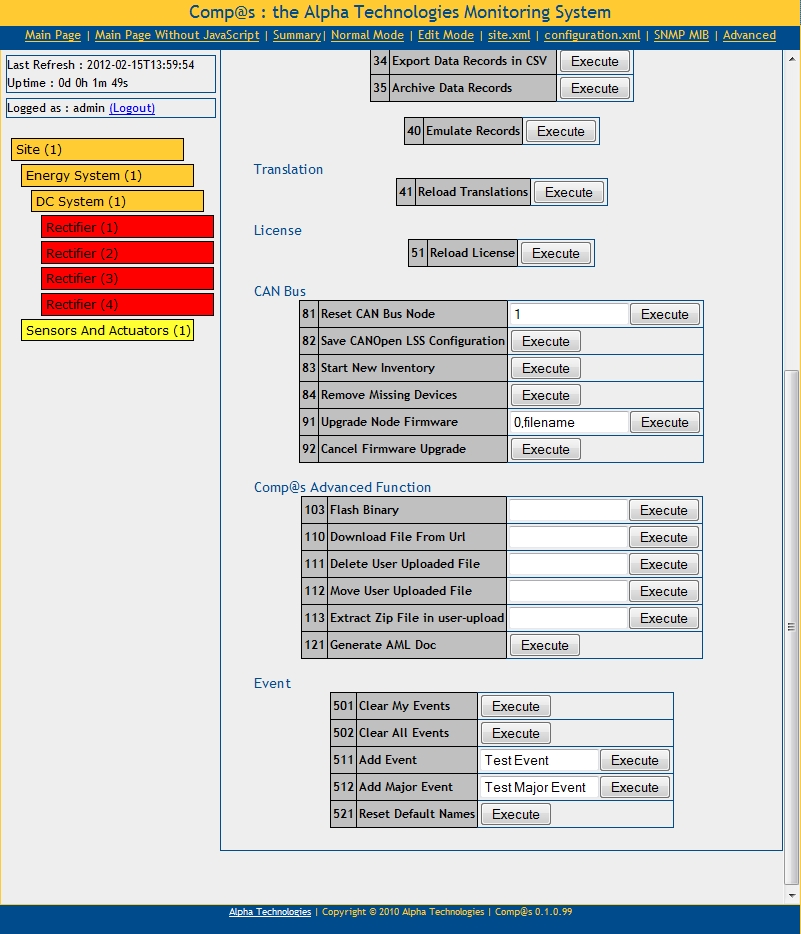


Figure 27 Saving of settings

For more details about configuration savings, refer to [Save / Load configuration](#scroll-bookmark-47).

### Changing the Network Configuration

|  |
| --- |
| **Network configuration steps**  **STEP 1:** Configure the Network Configuration:  The configuration parameters are available in Site -> Configuration, as shown on Figure 28. Information about these parameters is available in the detailed table of chapter 8.1.:  Figure 28 Network configuration  Note that the changes are not applied immediately! You have to apply the changes …  **STEP 2:** To apply the changes, there are two possibilities:  Figure 29 Apply changes  -> “Save Configuration And Reboot Monitoring”  Or  -> “Apply LAN Configuration”: this control will apply the modification without saving them. This has the advantage to be able to test a configuration without rebooting. If the configuration is working, you can simply “Save XML User Configuration”, without rebooting:  Figure 30 Save XML user configuration  Remark: At any time, you can check the actual real configuration in Site -> Data:  Figure 31 Network data |

## Using 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. Please note that SNMP V3 is available only since Comp@s 0.1.0.26.

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

“<http://the_ip/Compas.mib>”

A quick link is available on the top of the website to download this MIB:



Figure 32 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>.

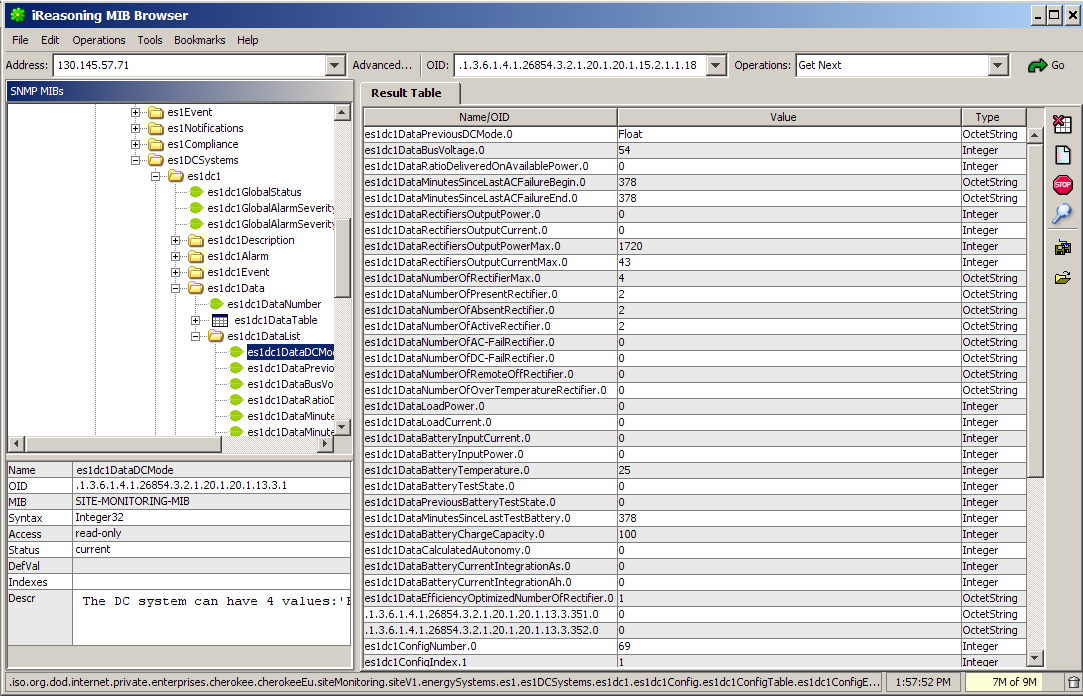


Figure 33 Ireasoning MIB Browser

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:

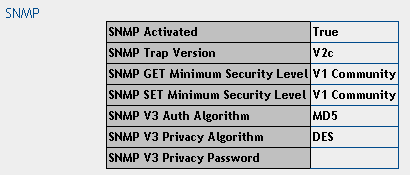


Figure 34 SNMP Configuration Level

**SNMP v2c** uses the mechanism of the SNMP communities (Read and Write). An SNMP community is the group that devices and management stations running SNMP belong to. It helps define where information is sent. The community name is used to identify the group. It will not respond to requests from management stations that do not belong to one of its communities. The login and password are the same as for the web server interface. BUT, as the community is only a string, the syntax is:

|  |
| --- |
| **SNMP authentication syntax**  LOGIN:PASSWORD |

Default login and password are

|  |
| --- |
| **SNMP default login and password**  Read Community -> [admin:compas](http://admincompas)  Write Community -> [admin:compas](http://admincompas) |

**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.

# Functionalities

* [User Access Management](#scroll-bookmark-49)
* [Save / Load configuration](#scroll-bookmark-47)
* [Automatic events saving](#scroll-bookmark-50)
* [Date and Time Management](#scroll-bookmark-51)
* [Software Upgrade Management](#scroll-bookmark-52)
* [Reset Factory Settings](#scroll-bookmark-53)
* [Copying configuration from a system to another](#scroll-bookmark-54)
* [PLC Functionalities](#scroll-bookmark-55)
* [Translating The Web Interface](#scroll-bookmark-56)
* [Replacing a Rectifier in a DC System](#scroll-bookmark-57)
* [Measuring Power and Energy](#scroll-bookmark-58).

## 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:

|  |  |
| --- | --- |
| Login | Password |
| 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 with cryptographic hash function (MD5, 128 bits). These parameters are located in Site -> Configuration, as shown on the following figure:

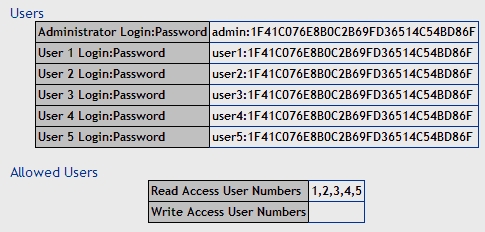


Figure 35 Users login and password configuration

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](http://mikemypassword) |



Figure 36 User login and password change screen

**STEP 4:** Click on “Modify”. The password is immediately hashed and the page is refreshed:



Figure 37 User new login and password change screen

**STEP 5:** Do not forget to save the configuration.

## Save / Load configuration

When a system is correctly configured, you can save the configuration to keep the same configuration in case of reboot of the system. This function is available in Site -> Configuration:

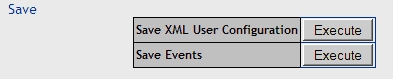


Figure 38 Save / Load configuration

Please refer to [Copying configuration from a system to another](#scroll-bookmark-54) to load a configuration on a system.

## Automatic events saving

The system is configured to keep all the events in case of power failure of the monitoring. Just before dying (battery disconnection), all the events are saved on persistent storage. If you want to stop the system, by pressing 1 second on the front panel button (Bat Test/Save), events will be saved and you can shut down the system.

## Date and Time Management

* [Real Time Clock](#scroll-bookmark-59)
* [Time zone and Daylight Saving Time](#scroll-bookmark-60)
* [(S)NTP Time Protocol](#scroll-bookmark-61).

### Real Time Clock

The monitoring embeds a real time clock in order to manage the event time, periodic actions, etc. This time is set at factory.

You can change the local or the UTC time in Site -> Control, as shown on the following figure:

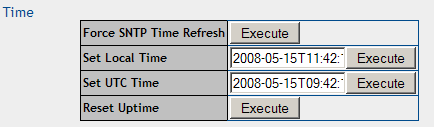


Figure 39 Setting the time

The time configuration at factory is the one from the “Brussels, Copenhagen, Madrid, Paris” time zone.

### Time zone and Daylight Saving Time

You can configure the time zone in Site -> Configuration, as shown on the following figure:



Figure 40 Time Configuration Elements

All the available time zone can be retrieved at URL:

|  |
| --- |
| **Available time zone**  <http://the_ip/timezones.txt> |

Here follows a screenshot of a part of this list:



Figure 41 Partial Time Zone List

You can copy/paste the correct one.

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.

### (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](#scroll-bookmark-60)).

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](#scroll-bookmark-59)).

## Software Upgrade Management

* [Upgrading the Comp@s Software](#scroll-bookmark-62)
* [Upgrading a Firmware with Comp@s](#scroll-bookmark-63).

### Upgrading the Comp@s Software

* [Checking Comp@s revision](#scroll-bookmark-64)
* [Upgrading Locally with USB](#scroll-bookmark-65)
* [Upgrading Remotely with Ethernet](#scroll-bookmark-66)

#### Checking Comp@s revision

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



Figure 42 Software Revision

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



Figure 43 Software Revision at bottom of web pages

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 trough 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):

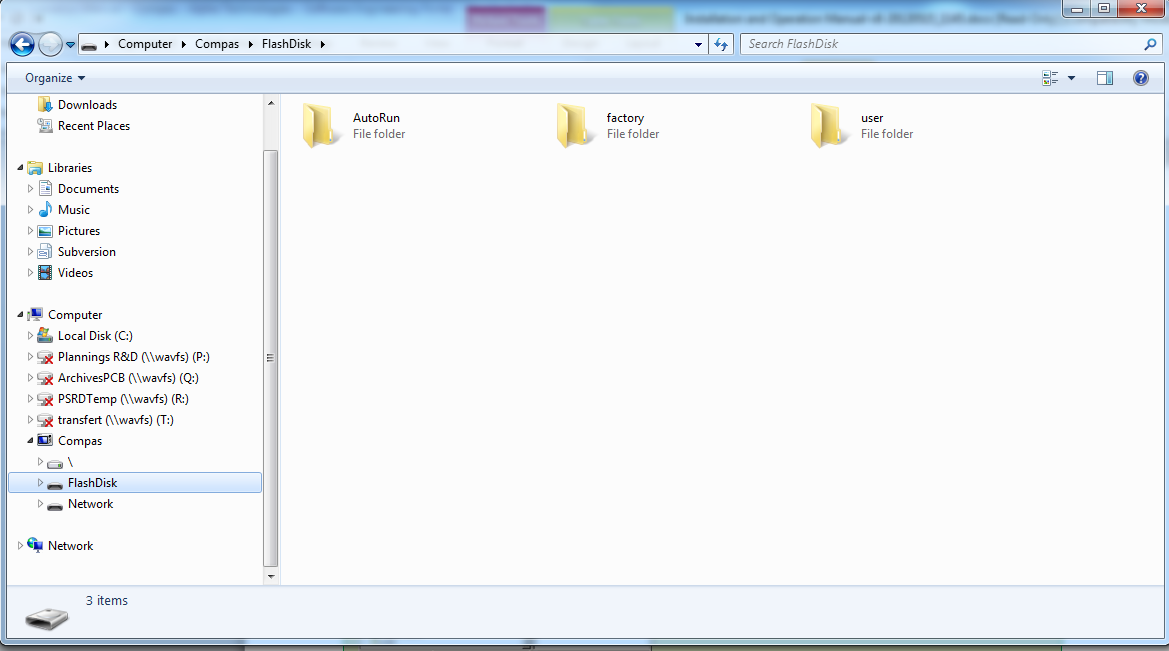


Figure 44 Browse to “\FlashDiskUser”

**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

* [FTP](#scroll-bookmark-67)
* [HTTP POST](#scroll-bookmark-68)

##### FTP

The upgrade is done trough 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 45 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. |

##### HTTP POST

The upgrade is done by following the hyperlink: "Advanced" > "Advanced Functions Links: manage\_files.html" or by going to the address: http://the\_ip/manage\_files.html.

|  |
| --- |
| **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 the file size is geater than 1.5 MB, a zip archive containing the file must be uploaded instead.**  Figure 46 Comp@s Manage Files Page  **STEP** **2:** Press "Send" to upload the file. A message "COMMAND\_EXECUTED" (or "COMMAND ERROR") is displayed. Return to the address: http://the\_ip/manage\_files.html (or press Internet Explorer back, then refresh buttons) to continue.  **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.  **STEP 4:** Press "Replace/Move Compas.exe to user Folder" to move the new compas.exe file to FlashDisk\\user folder.  **STEP 5:** Return to Compas index page. Reboot by following the link: "Site" > "Control" > "Reboot Monitoring". |

### 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. |

**STEP 1:** You must first upload the firmware ‘SOFT\_XXXXX\_XX.txt’ file on 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 with one file, in a Windows Vista environment:

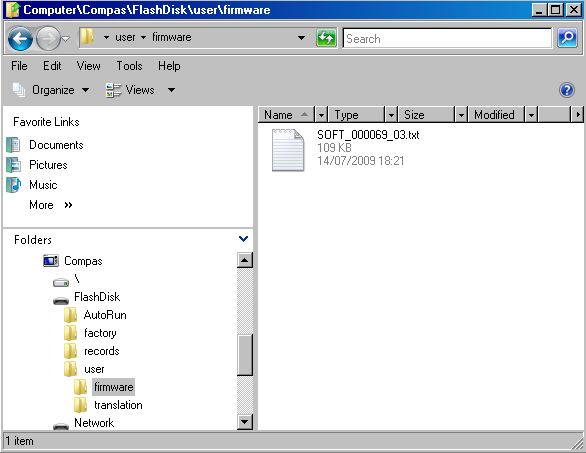


Figure 47 Firmware selection

**STEP 2:** Browse to the comp@s web page and click on the “Advanced” link, at the top right:

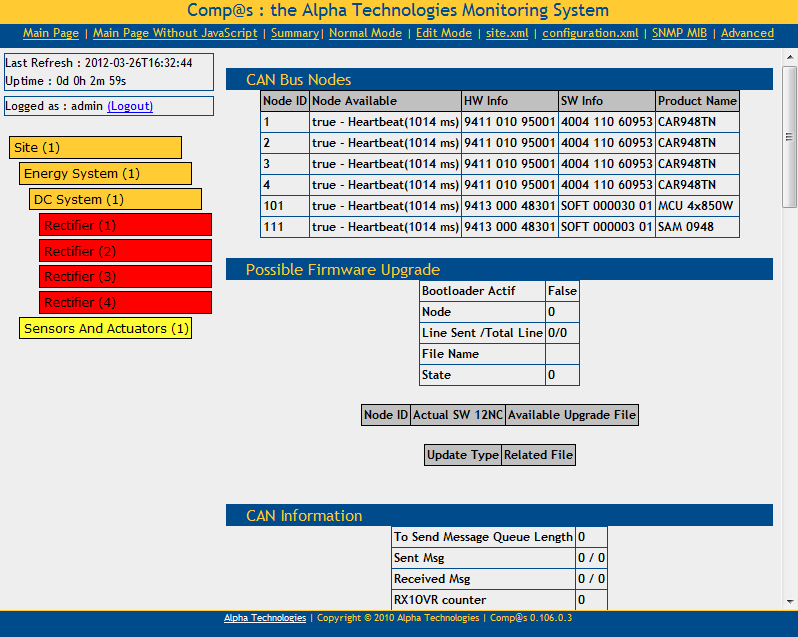


Figure 48 Comp@s web page Advanced link

**STEP 3:** In the “Possible Firmware Upgrade”, you can see buttons “Execute” with the available upgrades. Click the button and wait a feedback from the browser. The Comp@s card is decoding the file during this time (about 10 seconds):

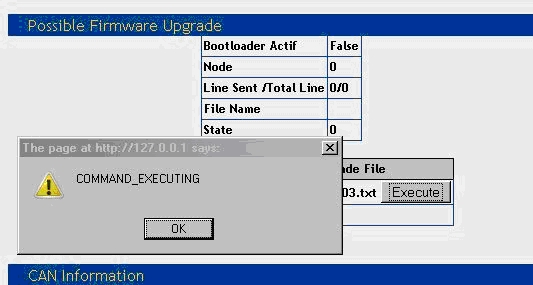


Figure 49 File decoding

**STEP 4:** Once you received the message “COMMAND\_EXECUTING”, click ‘OK’. After, you can click again on the “Advanced” link to see the upgrade progress. 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 left tree during the upgrade:

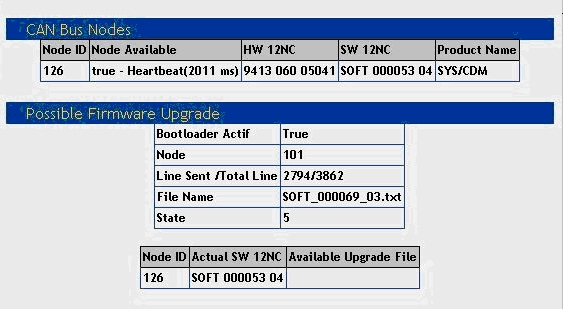


Figure 50 Equipment disappearing during upgrade

**STEP 5:** 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 “Advanced” section (CAN Bus Nodes – SW 12NC).

## 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 is the “\\FlashDisk\User” folder. At next reboot, your monitoring is like the first time you get it.

## 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 51 Workflow of the load configuration function |

## PLC Functionalities

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](#scroll-bookmark-69)
* [Examples of Boolean Conditions](#scroll-bookmark-70)
* [Examples of Mathematical Expressions](#scroll-bookmark-71)
* [PLC License Package](#scroll-bookmark-72).

### Syntax

* [Using Data Entries](#scroll-bookmark-73)
* [Using Alarm Entries](#scroll-bookmark-74)
* [Operators](#scroll-bookmark-75)
* [Time Variables](#scroll-bookmark-76)
* [Other Functions](#scroll-bookmark-77).

#### 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 |

#### 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 |

### Examples of Boolean Conditions

|  |  |
| --- | --- |
| Tested Condition | Configuration Element Value |
| 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 |

### Examples of Mathematical Expressions

|  |  |
| --- | --- |
| Wanted calculation | Configuration Element Value |
| Voltage on bloc 2 of the battery | @(data161)-@(data162) |

### 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:

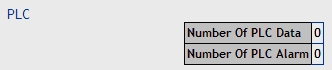


Figure 52 PLC Number

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:

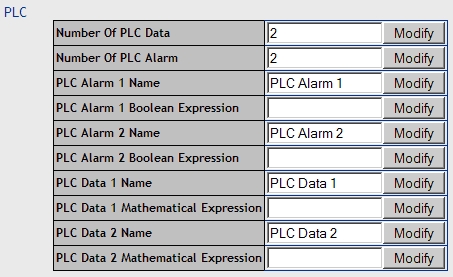


Figure 53 New configuration entries

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, as shown on the following figures:

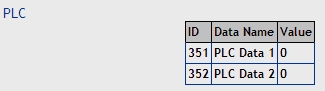


Figure 54 PLC Data

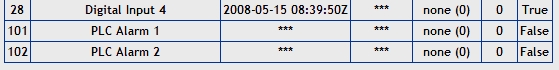


Figure 55 PLC Alarm

## 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 56 Reload Translations

## 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 "Advanced" 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.

## Measuring Power and Energy

By connecting devices like Schneider PM9C ([1]) or IEM3150 ([2]), it is possible to integrate power and energy metering functionalities into Comp@s.

By default, those devices connect to RS-485 Modbus port, that is present on some Alpha Technologies products.

To configure Comp@s, add for instance the following line to parameter 210 (RS485 Extensions configuration) in Site > Configuration (fields seperated by semicolons):

|  |
| --- |
| **RS485 Extensions configuration**  PM9C(1);IEM3150(2) |

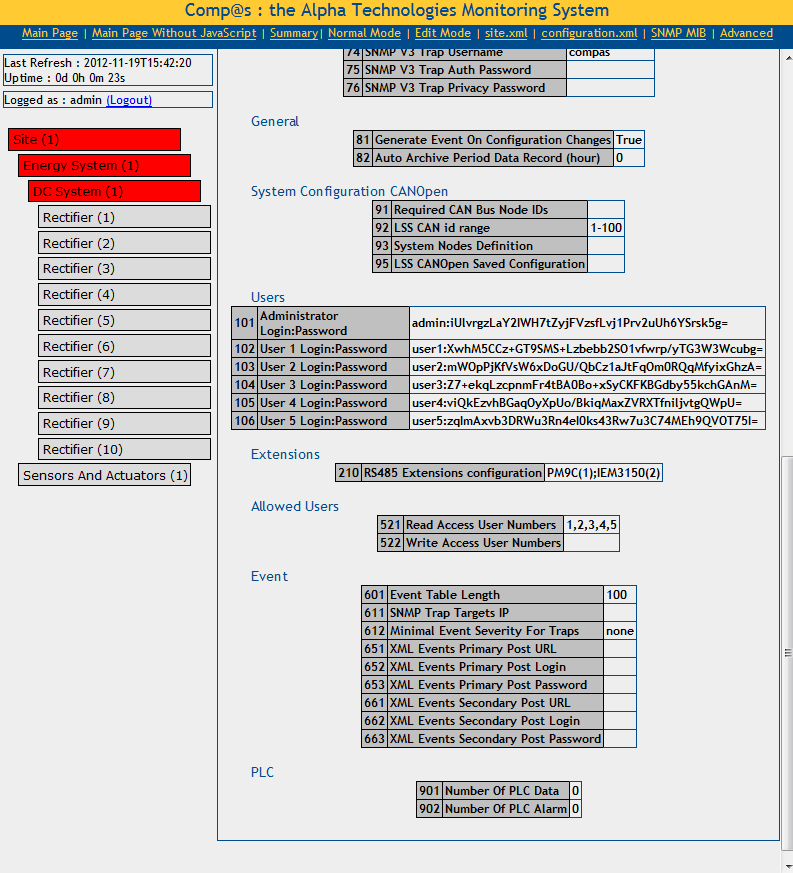


Figure 57 Configure Power and Energy Meter

In example above, PM9C device with address 1 is added. Also is added IEM3150 with adress 2. Only addresses from 1 to 10 are currently authorized. The devices will be displayed in Comp@s in the same order as in configuration parameter (in example above: 1, 2).

The measurement devices must be configured with following serial communication parameters:

* Baudrade: 9600
* Data bits: 8
* Parity: Odd
* Stop bits: 1.

Once added, following data are available in Energy System > Data:

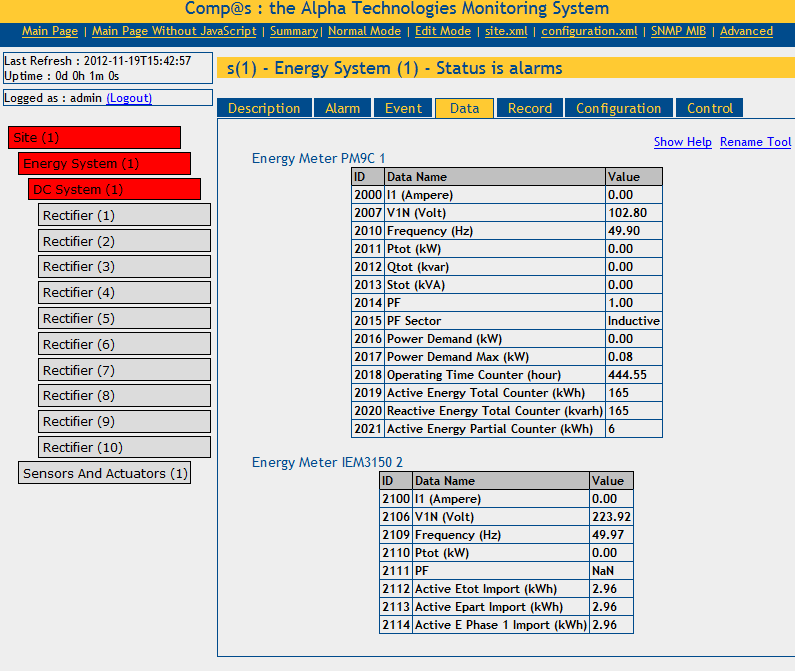


Figure 58 Power and Energy Meter Data

If 3-phase current is used instead of single-phase, supplementary data will be displayed. In case of IEM3150, device configuration (single-phase, 3-phase) is displayed in Energy System > Description. It is also possible to record data by navigating to Energy System > Records.

[1] <http://www.schneider-electric.com/search/ww/en/relevance/10_1/Product%20Information;;68c72df3-e11c-4867-b873-73310c776a59/all?search_text=pm9c&search_type=new&filters=txt_by_category;;CAT_PRD_DATA>

[2] <http://www.downloads.schneider-electric.com/sites/oreo/ww/document-detail.page?p_docId=18054169&p_Conf=i#http://www.downloads.schneider-electric.com>.

# Software Interfaces

* [Web Server](#scroll-bookmark-79)
* [FTP Server](#scroll-bookmark-80)
* [Modbus Slave](#scroll-bookmark-81)
* [SNMP Agent](#scroll-bookmark-82).

## Web Server

* [ETSI Protocol](#scroll-bookmark-83)
* [Retrieving XML files](#scroll-bookmark-84)
* [Retrieving data records in CSV format](#scroll-bookmark-85)
* [HTTP GET of any description, data, configuration, etc.](#scroll-bookmark-86)
* [HTTP POST to configure and control](#scroll-bookmark-87).

### ETSI Protocol

The XML files described in [Retrieving XML files](#scroll-bookmark-84) 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](#scroll-bookmark-88)
* [Common structure of any system/equipment](#scroll-bookmark-89)
* [The <description\_table> element](#scroll-bookmark-90)
* [The <alarm\_table> element](#scroll-bookmark-91)
* [The <event\_table> element](#scroll-bookmark-92)
* [The <data\_table> element](#scroll-bookmark-93)
* [The <config\_table> element](#scroll-bookmark-94)
* [The <control\_table> element](#scroll-bookmark-95).

#### 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](http://xsinteger/) | M |
| status | "normal" or "alarms" or "unknown". | [xs:string](http://xsstring/) | 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](http://xsstring/) | 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](http://xsinteger/) | 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](http://xsdatetime/) | 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](http://xscomplextype/) | O |
| <alarm\_table> | The table of alarms related to the equipment/system | [xs:complexType](http://xscomplextype/) | O |
| <event\_table> | A log of events related to the equipment/system | [xs:complexType](http://xscomplextype/) | O |
| <data\_table> | The table of the data (measurements, states and calculated values) related to the equipment/system | [xs:complexType](http://xscomplextype/) | O |
| <data\_record\_table> | Records of the historic of some data present in the data table | [xs:complexType](http://xscomplextype/) | O |
| <config\_table> | The table of configuration of the equipment | [xs:complexType](http://xscomplextype/) | O |
| <control\_table> | The table of control of the equipment | [xs:complexType](http://xscomplextype/) | 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](http://xsinteger/) | M |
| active | This value is "true" if the alarm is active or "false" if the alarm is not active. | [xs:boolean](http://xsboolean/) | M |
| name | The name of the alarm | [xs:string](http://xsstring/) | M |
| severity\_type | Can be: critical, major, minor, warning or information | [xs:string](http://xsstring/) | M |
| severity\_level | Value from 0 to 9 | [xs:integer](http://xsinteger/) | M |
| start\_time | The date and time at which the alarm has started | [xs:datetime](http://xsdatetime/) | 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](http://xsdatetime/) | 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](http://xsinteger/) | M |
| name | The English name of the configuration parameter | [xs:string](http://xsstring/) | M |
| group | This attribute provide a way to group config element, like for the <data> elements | [xs:string](http://xsstring/) | O |
| subgroup | This attribute allows to group data under the parent group | [xs:string](http://xsstring/) | O |
| unit | The unit of the config parameter | [xs:string](http://xsstring/) | O |
| info | Short additional information on the config parameter | [xs:string](http://xsstring/) | 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](http://xsinteger/) | M |
| name | The English name of control function | [xs:string](http://xsstring/) | M |
| group | This attribute provide a way to group function element, like for the <data> elements | [xs:string](http://xsstring/) | O |
| subgroup | This attribute allows to group data under the parent group | [xs:string](http://xsstring/) | O |
| info | Short information on the control function | [xs:string](http://xsstring/) | 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](http://xsstring)) 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](http://xsstring/) | 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](http://xsstring/) | O |
| subgroup | This attribute allows to group data under the parent group | [xs:string](http://xsstring/) | O |
| type | The type of data, this can be "measurement" or "calculated\_value" | [xs:string](http://xsstring/) | 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](http://xsstring/) | O |
| info | Short additional information on the parameter | [xs:string](http://xsstring/) | 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](http://xsstring/) | 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](http://xsinteger/) |
| name | The name in English of the description element | [xs:string](http://xsstring/) |
| 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](http://xsstring/) |
| subgroup | This attribute allows to group data under the parent group | [xs:string](http://xsstring/) |
| 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](http://xsstring/) |
| info | Short additional information on the parameter | [xs:string](http://xsstring/) |

#### 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](http://xsstring)) describing the event.

The event element has the followings attributes:

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute | Description | Datatype | O/M |
| id | The id of the event | [xs:integer](http://xsinteger/) | M |
| type | The type of event, can be: alarm set, alarm clear or information | [xs:string](http://xsstring/) | M |
| datetime | The date and time at which the event has happened | [xs:datetime](http://xsdatetime/) | 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](http://xsstring/) | 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](http://xsinteger/) | 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](http://xsinteger/) | O/M |
| info | Any additional information | [xs:string](http://xsstring/) | 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.

### 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”](http://the_ip/site.xml%E2%80%9D). The first part of the URI is always the IP address of the site. If hostname are defined, the IP address can be replaced.

A request to such an URI will result in a response message from the server with information about the status of the request and, in applicable cases, the XML document requested.

Parameters can be passed with the URI to retrieve specific parts of the XML file. The following table describes these parameters:

|  |  |  |
| --- | --- | --- |
| Parameter name | Value | Description |
| description (or description\_table) | true/false | Define if the description table must be included in the generated xml document (at each level of hierarchy) |
| alarm (or alarm\_table) | true/false | Define if the alarm be included in the generated xml document (at each level of hierarchy) |
| event (or event\_table) | true/false | Define if the event must be included in the generated xml document (at each level of hierarchy) |
| data (or data\_table) | true/false | Define if the data must be included in the generated xml document (at each level of hierarchy) |
| data\_record (or data\_record\_table) | true/false | Define if the data record must be included in the generated xml document (at each level of hierarchy) |
| 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&](http://the_site_ip/site.xml?description=false&alarm=true&event=false&data=true&data_record=false&config=false&level=3)  [data\_record=false&config=false&level=3](http://the_site_ip/site.xml?description=false&alarm=true&event=false&data=true&data_record=false&config=false&level=3) |

If no option is set, the whole file is sent, except data record table and control table.

Some other files can also be retrieved, with the same available options:

|  |  |
| --- | --- |
| File Name | Description |
| energy\_system.xml | You get only the energy system XML part |
| dc\_system.xml or dc\_system1.xml | You get only the first dc system XML part |
| dc\_system2.xml | You get only the second dc system XML part |
| configuration.xml | You get the actual user configuration file of the system |

These XML files are compliant with the ETSI ES 202 336 standard, a summary of the relevant parts is available in [ETSI Protocol](#scroll-bookmark-83) .

### 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:

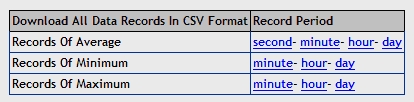


Figure 59 CSV data records

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

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

It is possible to retrieve easily element values trough 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/get.txt?path=/site/data_table/21> |

Get dc system 1 bus voltage:

|  |
| --- |
| **Get dc system 1 bus voltage**  <http://130.145.57.71/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://130.145.57.71/get.txt?path=/site/energy\_system/dc\_system/alarm\_table/1/](http://130.145.57.71/get.txt?path=/site/energy_system/dc_system/alarm_table/1/severity_type)  [severity\_type](http://130.145.57.71/get.txt?path=/site/energy_system/dc_system/alarm_table/1/severity_type) |

### HTTP POST to configure and control

* [Introduction to HTTP POST and implementation](#scroll-bookmark-96)
* [SetValue.cgi](#scroll-bookmark-97)
* [ProcessXML.cgi](#scroll-bookmark-98).

#### 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](http://msdn2.microsoft.com/fr-fr/express/aa975050.aspx).

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.

|  |
| --- |
| **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](http://xxxxxx)")];  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.

## FTP Server

* [Connecting the Comp@s FTP Server](#scroll-bookmark-99)
* [Changing default login and password](#scroll-bookmark-100).

### 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 |

### 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 no 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> |

## 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)](#scroll-bookmark-101)
* [Input Registers (Read Only)](#scroll-bookmark-102)
* [Discrete Coils Table (Command)](#scroll-bookmark-103).

### 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](http://wavshare:8090/pages/createpage.action?spaceKey=Compas&title=Tables+at+the+DC+System+level&linkCreation=true&fromPageId=1049109).

|  |  |  |
| --- | --- | --- |
| 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 Rectifier Failure | More than one rectifier must be replaced |
| 12 | Missing Rectifiers | There is not enough rectifier according to the minimal number of rectifier configuration element |
| 13 | Battery Last Test Failed | The last battery test did not succeed. Maybe the battery should be replaced. |
| 14 | Battery On Discharge | The battery is discharging. This means that the load is too high for the installed rectifiers. This alarm is inactive when the system in AC Failure. |
| 17 | Battery LVD Relay Open | The battery Low Voltage Disconnector 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.

### 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 4 possible states:  FLOAT : 0  BOOST : 1  BATTERY\_TEST : 2  AC\_FAILURE : 3 |
| 2 | Previous DC Mode | General |  | The DC system was previously in one of the 4 possible states:  FLOAT : 0  BOOST : 1  BATTERY\_TEST : 2  AC\_FAILURE : 3 |
| 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 | 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 | Ampere | The sum of the deliverable rectifier current |
| 31 | Number Of Rectifier Max | Rectifiers |  | The maximum possible number of rectifier in this dc system |
| 32 | Number Of Present Rectifier | Rectifiers |  | The actual number of present rectifier in this dc system |
| 33 | Number Of Absent Rectifier | Rectifiers |  | The actual number of absent rectifier in this dc system |
| 34 | Number Of Active Rectifier | Rectifiers |  | The actual number of active rectifier in this dc system. An active rectifier is a rectifier which is present, DC OK, AC OK and not in remote off. |
| 35 | Number Of AC-Fail Rectifier | Rectifiers |  | The actual number or rectifier in AC Failure. |
| 36 | Number Of DC-Fail Rectifier | Rectifiers |  | The actual number or rectifier with DC Failure. |
| 37 | Number Of Remote Off Rectifier | Rectifiers |  | The actual number or rectifier in remote off. |
| 38 | Number Of Over Temperature Rectifier | Rectifiers |  | The actual number or rectifier in OVer Temperature. |
| 41 | AC Phase 1 Voltage | AC | 0.1 Volt | The voltage on AC phase 1 |
| 42 | AC Phase 2 Voltage | AC | 0.1 Volt | The voltage on AC phase 2 |
| 43 | AC Phase 3 Voltage | AC | 0.1 Volt | The voltage on AC phase 3 |
| 51 | Load Power | Load | 100 Watt | Estimation of the load power consumption |
| 52 | Load Current | Load | Ampere | Estimation of the load current consumption |
| 61 | Battery Input Current | Battery | Ampere | Measurement of the battery input current. A negative value means that the battery is discharging |
| 62 | Battery Input Power | Battery | 100 Watt | Measurement of the battery input power. A negative value means that the battery is discharging |
| 71 | Battery Temperature | Battery | 0.1 °C | The battery temperature |
| 72 | Battery Test State | Battery |  | This is about the result of the last battery 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 |
| 73 | Battery Test Discharged Capacity | Battery | 0.01% | This is the battery capacity, in percent, discharged during the last battery test. This value is updated at the end of the battery test. |
| 74 | Battery Test Discharged Capacity Ah | Battery | Ah | This is the battery capacity, in ampere hour, discharged during the last battery test. This value is updated at the end of the battery test. |
| 75 | Battery Test Final Voltage | Battery | 0.1 Volt | This is the bus voltage at the end of the last battery test. This value is updated at the end of the battery test. |

### 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. |

## SNMP Agent

* For SNMP Agent: see [Using the Comp@s SNMP Agent](#scroll-bookmark-34)
* [Using and Configuring SNMP traps](#scroll-bookmark-104).

### Using and Configuring SNMP traps

* [SNMP Comp@s configuration](#scroll-bookmark-105)
* [Sending a testing trap](#scroll-bookmark-106)
* [Receiving traps](#scroll-bookmark-107).

#### 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:

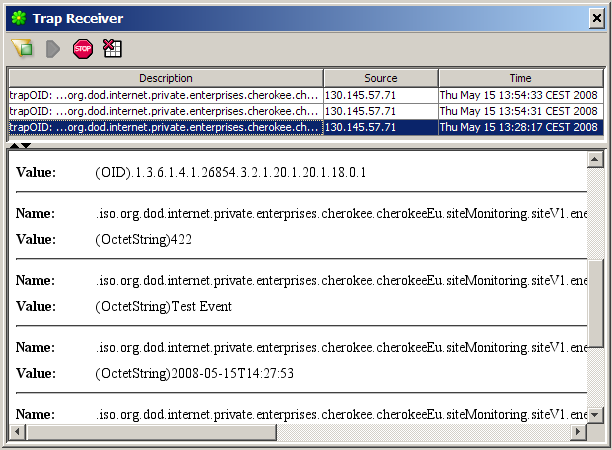


Figure 60 IReasoning trap receiver

# CAN Bus related information

* [CAN Bus - The internal field bus](#scroll-bookmark-109)
* [Connecting multiple rectifier shelves together](#scroll-bookmark-110).

## 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 | [111,120] | 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:

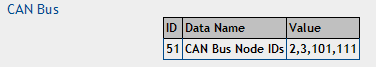


Figure 61 CAN Bus Node IDs

## 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](#scroll-bookmark-111)
* [Multiple Shelves Independent](#scroll-bookmark-112).

### 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:

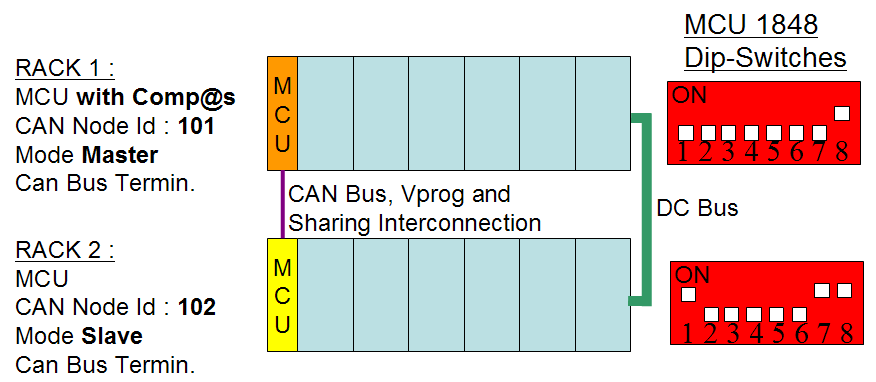


Figure 62 Example with a system with 2 shelves of 6x1800W rectifiers

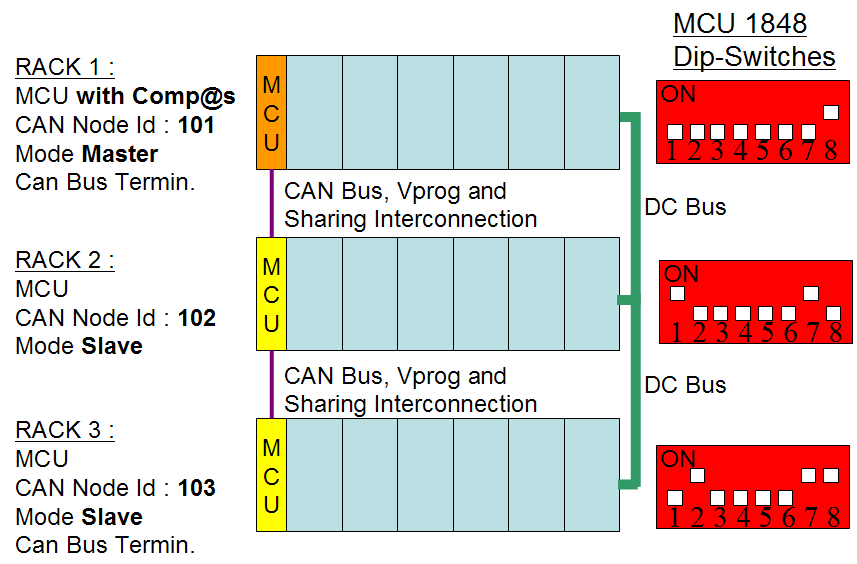


Figure 63 Example with a system of 3 shelves of 6x1800W rectifiers

### Multiple Shelves Independent

An independent shelf will manage the bus voltage, the alarms, the LVD, etc. Multiple DC systems are seen by Comp@s:

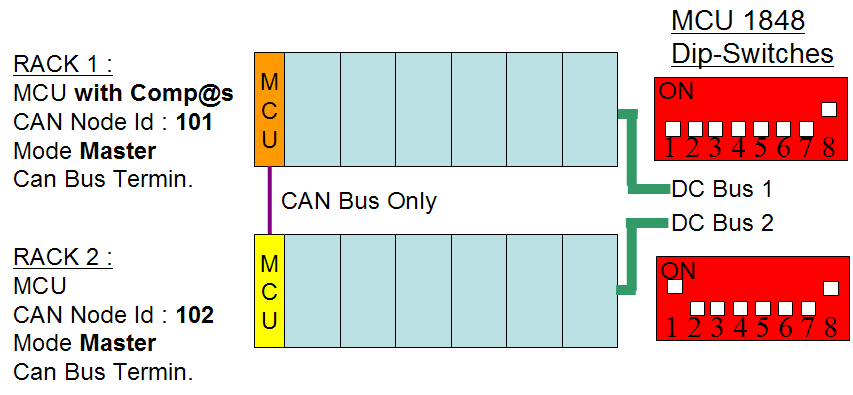


Figure 64 Example with a system with 2 shelves of 6x1800W rectifiers

# 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.)

## Site Tables

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Site Number** | Description | basic |
| The identification number of the site | | |
| **2** | **Site Name** | Description | basic |
| The name of the site | | |
| **3** | **Short Description** | Description | basic |
| A short description of the site | | |
| **4** | **Info** | Description | basic |
| Some more information about the site | | |
| **5** | **Description** | Description | basic |
| A free text zone to write a system description | | |
| **6** | **Reference** | Description | basic |
| A free text zone to write the customer reference of the system | | |
| **7** | **Contact Name** | Contact | basic |
| Contact Name | | |
| **8** | **Phone Number** | Contact | basic |
| Contact Name | | |
| **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 | | |
| **91** | **Software Revision** | Comp@s | basic |
| The software revision of Comp@s (read only) | | |
| **92** | **Operating System Revision** | Comp@s | basic |
| The operating system of Comp@s (read only) | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **CAN Bus Failure** | major (6) | 5 / 2 |
| This alarm is active when there is a problem with the CAN Bus. | | |
| **3** | **Missing CAN Bus Node IDs** | major (6) | 10 / 2 |
| This alarm is active if configured node ids are not detected on the bus | | |
| **4** | **Running CAN LSS Device Detection** | warning (2) | 5 / 2 |
| This alarm is active when new devices are beeing detected. | | |
| **6** | **RS 485 Bus Failure** | major (6) | 5 / 2 |
| This alarm is active when there is a problem with the RS 485 bus | | |
| **11** | **Monitoring Reboot Required** | major (6) | 5 / 2 |
| This alarm is active if the system should be rebooted for some reason | | |
| **15** | **Last Configuration Changes Unsaved** | warning (2) | 1 / 2 |
| This alarm is active if the system should be rebooted for some reason | | |
| **21** | **XML Hearbeat Post Failure** | major (6) | 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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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** | 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** | Operating System Info | Kb | basic |
| This is actual amount of RAM memory used by the application. | | | |
| **32** | **CPU Percentage Usage** | Operating System Info | % | basic |
| This is actual percentage of CPU used | | | |
| **33** | **Free Flash Memory Space** | 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 Info |  | basic |
| No information | | | |
| **42** | **Total Fifo Size Of Minute Records** | Data Records Info |  | basic |
| No information | | | |
| **43** | **Total Fifo Size Of Hour Records** | Data Records Info |  | basic |
| No information | | | |
| **44** | **Total Fifo Size Of Day Records** | Data Records Info |  | basic |
| No information | | | |
| **51** | **CAN Bus Node IDs** | CAN Bus |  | basic |
| The coma separated list of the node ids present on the CAN bus. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *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. | | | | |
| **9** | **Ethernet Mode** | 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. | | | | |
| **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 | | | | |
| **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. | | | | |
| **41** | **XML Event Posting Activated** | 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** | 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** | Event Posting | millisecond | 500/20000 (2000) | 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** | 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 | | | | |
| **51** | **XML Heartbeat Time** | Heartbeat | minute | 0-2880 | basic |
| This is the time between 2 XML Post of heartbeat. If set to 0, no hearbeat. | | | | |
| **61** | **SNMP Activated** | SNMP |  | True/False (True) | basic |
| This is a True/False parameter used to activate or deactivate the SNMP agent. | | | | |
| **63** | **SNMP Trap Version** | SNMP |  |  | basic |
| Traps/Notification can be sent with SNMP V1, V2c or V3 format. | | | | |
| **64** | **SNMP GET Minimum Security Level** | SNMP |  |  | basic |
| 4 choices are available: No Authentication, V1 Community, V2c Community or V3. | | | | |
| **65** | **SNMP SET Minimum Security Level** | SNMP |  |  | basic |
| 4 choices are available: No Authentication, V1 Community, V2c Community or V3. | | | | |
| **66** | **SNMP V3 Auth Algorithm** | SNMP |  |  | basic |
| 3 choices are available: MD5, SHA, Any | | | | |
| **67** | **SNMP V3 Privacy Algorithm** | SNMP |  |  | basic |
| 3 choices are available: DES, AES, 3DES | | | | |
| **68** | **SNMP V3 Privacy Password** | SNMP |  |  | basic |
| The global SNMP V3 Encryption Password. This one is common for all the users to avoid complexity | | | | |
| **69** | **SNMP V3 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 | | | | |
| **81** | **Generate Event On Configuration Changes** | General |  | 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** | General | hour |  | basic |
| Period in hour to auto save records (when detailled and long duration records are needed). 0 means disabled. | | | | |
| **91** | **Required CAN Bus Node IDs** | System Configuration CANOpen |  |  | basic |
| This is a coma separated list with the required CAN bus node ids | | | | |
| **92** | **LSS CAN id range** | System Configuration CANOpen |  |  | 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** | System Configuration CANOpen |  |  | basic |
| dc3(30-100) | | | | |
| **95** | **LSS CANOpen Saved Configuration** | System Configuration CANOpen |  |  | basic |
| No information | | | | |
| **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. | | | | |
| **210** | **RS485 Extensions configuration** | Extensions |  | PM9C(1) | asset |
| The configuration string for RS485 Extensions | | | | |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Reboot Monitoring** | Comp@s | basic |
| Writing a '1' to this control element will reboot the monitoring. Events and Records will be saved. | | |
| **2** | **Save Configuration And Reboot Monitoring** | Comp@s | 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** | Comp@s | basic |
| Writing a '1' to this control element will reboot the monitoring without saving records | | |
| **6** | **Apply LAN Configuration** | Comp@s | 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. | | |
| **21** | **Save XML User Configuration** | Save | basic |
| Writing a '1' to this control element will 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. | | |
| **22** | **Save Inventory** | 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** | Save | 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** | Save | 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** | Save | 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** | Emulation | underdev |
| No information | | |
| **41** | **Reload Translations** | Translation | basic |
| Writing a '1' to this control element will reload all the csv translation files | | |
| **51** | **Reload License** | License | basic |
| Writing a '1' to this control element will reload the license file | | |
| **61** | **Remove Absent Equipments** | Inventory | basic |
| No information | | |
| **81** | **Reset CAN Bus Node** | CAN Bus | basic |
| Writing a valid CAN bus node id to this control element will reset the correspondent device. | | |
| **82** | **Save CANOpen LSS Configuration** | CAN Bus | basic |
| No information | | |
| **83** | **Start New Inventory** | CAN Bus | basic |
| No information | | |
| **91** | **Upgrade Node Firmware** | 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** | CAN Bus | basic |
| This control element is used to cancel the runiing firmware upgrade of a CAN bus Node. | | |
| **103** | **Flash Binary** | Comp@s Advanced Function | 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** | Comp@s Advanced Function | 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** | Comp@s Advanced Function | 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** | Comp@s Advanced Function | 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** | Comp@s Advanced Function | 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. | | |
| **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 | | |

## DC System Tables

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | basic |
| The hysteresis on the 'Battery On Discharge' alarm. | | | | |
| **41** | **Shunt Rating At 60mV** | Battery | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **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 (4) | 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 | 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 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 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU1X6M3

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| --- | --- |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | 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** | 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** | 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** | 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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | 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 (4) | 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 | 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 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 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. | | | | |
| **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. | | | | |
| **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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU0024

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| --- | --- |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |
| **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 | | | |
| **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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **1** | **DC Bus Float Voltage at 25 degC** | Bus Voltage | Volt | 20/30 (27) | basic |
| The floating dc bus voltage of the system at 25 Celsius degree | | | | |
| **2** | **DC Bus Voltage Extra Low** | Bus Voltage | 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** | Bus Voltage | Volt | 0/2 (0) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'. | | | | |
| **4** | **DC Bus Voltage Low** | Bus Voltage | Volt | 20/30 (24) | basic |
| The bus voltage under which the alarm 'DC Bus Voltage Low' is set. | | | | |
| **5** | **DC Bus Voltage Low Hysteresis** | Bus Voltage | Volt | 0/2 (0.25) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Low | | | | |
| **6** | **DC Bus Voltage High** | Bus Voltage | 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** | Bus Voltage | Volt | 0/2 (0.25) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage High | | | | |
| **8** | **DC Bus Voltage Extra High** | Bus Voltage | Volt | 20/30 (29) | basic |
| The bus voltage over which the alarm 'DC Bus Voltage Extra High' is set. | | | | |
| **9** | **DC Bus Voltage Extra High Hysteresis** | Bus Voltage | Volt | 0/2 (0.25) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra High | | | | |
| **10** | **LVD Disconnect Voltage** | Bus Voltage | 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** | Bus Voltage | 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** | 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** | Temperature Compensation | Volt | 0/5 (1) | basic |
| The maximal allowed positive compensation. | | | | |
| **23** | **Maximum Negative Temperature Compensation** | Temperature Compensation | Volt | -5/0 (-1) | 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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | basic |
| The hysteresis on the 'Battery On Discharge' alarm. | | | | |
| **41** | **Shunt Rating At 60mV** | Battery | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **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 | 21/25 (23) | battery |
| The voltage under which the boost mode can be activated. | | | | |
| **53** | **Boost Termination Voltage** | Boost | Volt | 25/29 (28.2) | battery |
| The voltage over which the system must go back to floating mode. | | | | |
| **54** | **Boost Termination Current** | Boost | Ampere | 0/100 (4) | 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 | 15/30 (23) | 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 | 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 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 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU0348LP

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| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

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| Alarm Table | | |
| *Id* | *Name* | *Severity Type (Level)* |
| **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 paramenter 'DC Bus Voltage High'. There is an hysterisis 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 paramenter 'DC Bus Voltage Extra High'. There is an hysterisis 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 Disconnector 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 ambiant 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' | |

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| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 ambiant temperature (second temperature sense) | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

### MCU0348M4

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| **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 |

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| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

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| Alarm Table | | |
| *Id* | *Name* | *Severity Type (Level)* |
| **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 paramenter 'DC Bus Voltage High'. There is an hysterisis 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 paramenter 'DC Bus Voltage Extra High'. There is an hysterisis 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 Disconnector 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 ambiant 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' | |

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| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 ambiant temperature (second temperature sense) | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

### 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 |

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| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **24** | **Humidity Out Of Range** | major (6) | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **152** | **Relative Humidity** | Sensors | % | basic |
| The relative humidity in the cabinet | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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. | | | | |
| **135** | **Cabinet Humidity High** | Alarm Parameters | % | 0/100 (80) | basic |
| The relative humidity over which the cabinet humidity is too high | | | | |
| **136** | **Cabinet Humidity Low** | Alarm Parameters | % | 0/100 (0) | basic |
| The relative humidity over which the cabinet humidity is too low | | | | |
| **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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### 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 000081 XX |
| **Equipment Type** | Monitoring Control Unit |
| **ETSI Level** | /site/energy\_system/dc\_system |

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| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **24** | **Humidity Out Of Range** | major (6) | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **152** | **Relative Humidity** | Sensors | % | basic |
| The relative humidity in the cabinet | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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. | | | | |
| **135** | **Cabinet Humidity High** | Alarm Parameters | % | 0/100 (80) | basic |
| The relative humidity over which the cabinet humidity is too high | | | | |
| **136** | **Cabinet Humidity Low** | Alarm Parameters | % | 0/100 (0) | basic |
| The relative humidity over which the cabinet humidity is too low | | | | |
| **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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU0948DW

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| --- | --- |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |
| **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 | | | |
| **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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 (2) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (0.5) | 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 | 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 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 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU0948M4 / MCU0948M4LP

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| **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 |

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| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |
| **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 | | | |
| **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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 (2) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (0.5) | 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 | 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 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 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. | | | | |
| **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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU1848M3 / MCU1848M3D

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| --- | --- |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | 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 (4) | 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 | 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 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 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. | | | | |
| **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. | | | | |
| **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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU1848M6

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| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | basic |
| The hysteresis on the 'Battery On Discharge' alarm. | | | | |
| **41** | **Shunt Rating At 60mV** | Battery | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **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 (4) | 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 | 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 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 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. | | | | |
| **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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | | |

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| --- | --- | --- | --- |
| Control Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU3048M6

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| --- | --- |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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 substracted to the voltage lower limit. | | |
| **10** | **One Rectifier Failure** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |
| **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 | | | |
| **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 |
| No information | | | |
| **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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 Rectifers** | 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 |
| No information | | | | |
| **29** | **Rectifier Ids Declared** | Rectifiers |  |  | basic |
| No information | | | | |
| **31** | **Battery 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. | | | | |
| **32** | **Battery String Capacity** | Battery | Ah | 3/6500 (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. | | | | |
| **40** | **Number of Battery String** | Battery |  | 1-3 | basic |
| The Number of Battery String in the system | | | | |
| **41** | **Shunt Rating At 60mV** | Battery | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **42** | **Battery 2 Charge Current Limit** | Battery 2 | 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 2 | Ah | 3/6500 (100) | basic |
| The battery capacity in Ah. | | | | |
| **44** | **Shunt Rating At 60mV** | Battery 2 | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **45** | **Battery 3 Charge Current Limit** | Battery 3 | 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 3 | Ah | 3/6500 (100) | basic |
| The battery capacity in Ah. | | | | |
| **47** | **Shunt Rating At 60mV** | Battery 3 | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **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 (4) | 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 | 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 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 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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. | | | | |
| **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. | | | | |
| **144** | **AC Phase 1 PLC** | Mains |  |  | 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** | Mains |  |  | 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** | Mains |  |  | 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. | | | | |
| **151** | **PLD Conditition** | PLD |  |  | basic |
| The PLC conditon to enable the PLD command | | | | |
| **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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU3096M6

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| --- | --- |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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 substracted to the voltage lower limit. | | |
| **10** | **One Rectifier Failure** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |
| **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 | | | |
| **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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **1** | **DC Bus Float Voltage at 25 degC** | Bus Voltage | Volt | 65/105 (94.5) | basic |
| The floating dc bus voltage of the system at 25 Celsius degree | | | | |
| **2** | **DC Bus Voltage Extra Low** | Bus Voltage | 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** | Bus Voltage | Volt | 0.5/10 (2) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'. | | | | |
| **4** | **DC Bus Voltage Low** | Bus Voltage | Volt | 65/105 (84) | basic |
| The bus voltage under which the alarm 'DC Bus Voltage Low' is set. | | | | |
| **5** | **DC Bus Voltage Low Hysteresis** | Bus Voltage | Volt | 0.5/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Low | | | | |
| **6** | **DC Bus Voltage High** | Bus Voltage | 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** | Bus Voltage | Volt | 0.5/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage High | | | | |
| **8** | **DC Bus Voltage Extra High** | Bus Voltage | 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** | Bus Voltage | Volt | 0.5/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra High | | | | |
| **10** | **LVD Disconnect Voltage** | Bus Voltage | 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** | Bus Voltage | 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** | 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** | Temperature Compensation | Volt | 0/20 (6) | basic |
| The maximal allowed positive compensation. | | | | |
| **23** | **Maximum Negative Temperature Compensation** | Temperature Compensation | Volt | -20/0 (-6) | 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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | basic |
| The hysteresis on the 'Battery On Discharge' alarm. | | | | |
| **41** | **Shunt Rating At 60mV** | Battery | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **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 | 75.25/87.5 (80.5) | battery |
| The voltage under which the boost mode can be activated. | | | | |
| **53** | **Boost Termination Voltage** | 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** | Boost | Ampere | 0/100 (4) | 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 | 52.5/105 (80.5) | 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 | 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 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 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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. | | | | |
| **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. | | | | |
| **144** | **AC Phase 1 PLC** | Mains |  |  | 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** | Mains |  |  | 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** | Mains |  |  | basic |
| This is the mathematical expression of the calculation of AC phase 3. If empty, the rectifiers are used. The syntax for writting mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation. | | | | |
| **521** | **Read Access User Numbers** | 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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### 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 |

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| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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 substracted to the voltage lower limit. | | |
| **10** | **One Rectifier Failure** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |
| **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 | | | |
| **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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **1** | **DC Bus Float Voltage at 25 degC** | Bus Voltage | Volt | 60/120 (108) | basic |
| The floating dc bus voltage of the system at 25 Celsius degree | | | | |
| **2** | **DC Bus Voltage Extra Low** | Bus Voltage | 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** | Bus Voltage | Volt | 0/10 (2) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'. | | | | |
| **4** | **DC Bus Voltage Low** | Bus Voltage | Volt | 60/120 (96) | basic |
| The bus voltage under which the alarm 'DC Bus Voltage Low' is set. | | | | |
| **5** | **DC Bus Voltage Low Hysteresis** | Bus Voltage | Volt | 0/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Low | | | | |
| **6** | **DC Bus Voltage High** | Bus Voltage | Volt | 60/120 (113) | basic |
| The bus voltage over which the alarm 'DC Bus Voltage High' is set. | | | | |
| **7** | **DC Bus Voltage High Hysteresis** | Bus Voltage | Volt | 0/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage High | | | | |
| **8** | **DC Bus Voltage Extra High** | Bus Voltage | 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** | Bus Voltage | Volt | 0/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra High | | | | |
| **10** | **LVD Disconnect Voltage** | Bus Voltage | 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** | Bus Voltage | 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** | 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** | Temperature Compensation | Volt | 0/20 (6) | basic |
| The maximal allowed positive compensation. | | | | |
| **23** | **Maximum Negative Temperature Compensation** | Temperature Compensation | Volt | -20/0 (-6) | 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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | basic |
| The hysteresis on the 'Battery On Discharge' alarm. | | | | |
| **41** | **Shunt Rating At 60mV** | Battery | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **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 | 86/100 (92) | battery |
| The voltage under which the boost mode can be activated. | | | | |
| **53** | **Boost Termination Voltage** | Boost | Volt | 100/116 (112.8) | battery |
| The voltage over which the system must go back to floating mode. | | | | |
| **54** | **Boost Termination Current** | Boost | Ampere | 0/100 (4) | 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 | 60/120 (92) | 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 | 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 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 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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. | | | | |
| **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. | | | | |
| **144** | **AC Phase 1 PLC** | Mains |  |  | 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** | Mains |  |  | 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** | Mains |  |  | basic |
| This is the mathematical expression of the calculation of AC phase 3. If empty, the rectifiers are used. The syntax for writting mathematical expression is described in the PLC chapter. The PLC data element is the result of the calculation. | | | | |
| **521** | **Read Access User Numbers** | 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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### MCU30125M6

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| --- | --- |
| **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 |

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| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| **18** | **Manufacturing Date** | Monitoring | asset |
| The production date of the DC system monitoring | | |

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| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **1** | **DC Bus Extra Low** | 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** | 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** | minor (4) | 5 / 2 |
| The bus voltage is high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage High'. There is an hysterisis on the alarm : 'DC Bus Voltage High Hysteresis' | | |
| **4** | **DC Bus Extra High** | major (6) | 5 / 2 |
| The bus voltage is extra high. The alarm is set when the bus voltage is higher than the configuration paramenter 'DC Bus Voltage Extra High'. There is an hysterisis on the alarm : 'DC Bus Voltage Extra High Hysteresis' | | |
| **5** | **DC Bus Voltage Sense Failure** | major (6) | 5 / 2 |
| The DC bus voltage sense is defective. The DC bus voltage is unconnected or unconfigured. | | |
| **6** | **Mains Failure** | 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** | 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** | 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** | 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** | major (6) | 10 / 2 |
| There is no mains failure and number of rectifier failures is greater than 1. | | |
| **12** | **Missing Rectifiers** | major (6) | 5 / 2 |
| There is not enough rectifier according to the configuration parameter : 'Minimal Number Of Rectifier' | | |
| **13** | **Battery Last Test Failed** | minor (4) | 5 / 2 |
| The last battery test did not succeed and was not cancelled. Maybe the battery should be replaced. | | |
| **14** | **Battery On Discharge** | 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** | major (6) | 5 / 2 |
| The battery Low Voltage Disconnector 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) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 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** | minor (4) | 5 / 2 |
| The ambiant temperature sensor (NTC) value is inferior to -500 units meaning that it is not connected or defective. | | |
| **25** | **Distribution Breaker Open** | 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** | 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** | 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** | 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** | 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** | 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** | 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** | 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' | | |

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| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |
| **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 | | | |
| **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 | % | 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** | Battery | As | basic |
| Actual value of the integration of the current, in Ampere \* second | | | |
| **94** | **Battery Current Integration** | 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** | 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 | degree C | basic |
| The ambiant temperature (second temperature sense) | | | |
| **161** | **Voltage Sense 1** | Sensors | 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 Sense 2** | Sensors | 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 Sense 3** | Sensors | Volt | basic |
| The voltage measured by the sense 3. Can be used for battery symmetry measurement. Calculation can be done with the PLC | | | |
| **204** | **Digital Input 4 Counter** | Sensors |  | basic |
| The counter value of the digital input 4. | | | |

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| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **1** | **DC Bus Float Voltage at 25 degC** | Bus Voltage | Volt | 92/138 (125) | basic |
| The floating dc bus voltage of the system at 25 Celsius degree | | | | |
| **2** | **DC Bus Voltage Extra Low** | Bus Voltage | 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 Hysteresis** | Bus Voltage | Volt | 0/10 (2) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra Low'. | | | | |
| **4** | **DC Bus Voltage Low** | Bus Voltage | 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** | Bus Voltage | Volt | 0/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Low | | | | |
| **6** | **DC Bus Voltage High** | Bus Voltage | 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** | Bus Voltage | Volt | 0/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage High | | | | |
| **8** | **DC Bus Voltage Extra High** | Bus Voltage | 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** | Bus Voltage | Volt | 0/10 (1) | basic |
| The voltage hysteresis on the alarm 'DC Bus Voltage Extra High | | | | |
| **10** | **LVD Disconnect Voltage** | Bus Voltage | 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** | Bus Voltage | 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** | 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** | Temperature Compensation | Volt | 0/20 (6) | basic |
| The maximal allowed positive compensation. | | | | |
| **23** | **Maximum Negative Temperature Compensation** | Temperature Compensation | Volt | -20/0 (-6) | 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 Rectifers** | 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 (3) | basic |
| The minimal discharging current to set the 'Battery On Discharge' alarm. | | | | |
| **37** | **Current Hysteresis For Discharging Alarm** | Battery | Ampere | 0/50 (1) | basic |
| The hysteresis on the 'Battery On Discharge' alarm. | | | | |
| **41** | **Shunt Rating At 60mV** | Battery | Ampere | 25/5000 (250) | basic |
| The rating of the battery shunt at 60mV. | | | | |
| **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 | 86/100 (92) | battery |
| The voltage under which the boost mode can be activated. | | | | |
| **53** | **Boost Termination Voltage** | Boost | Volt | 115/133.4 (129.72) | battery |
| The voltage over which the system must go back to floating mode. | | | | |
| **54** | **Boost Termination Current** | Boost | Ampere | 0/100 (4) | 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 | 69/138 (105.8) | 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 | 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 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 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. | | | | |
| **103** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 | basic |
| The name of the digital input 7 | | | | |
| **104** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 | basic |
| The name of the digital input 8 | | | | |
| **106** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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 | | | | |
| **602** | **Event Table Length By Rectifier** | Event |  | 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

## Rectifier Tables

### 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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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) | | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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) | | | |

### 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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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) | | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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) | | | |

### 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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |

### 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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |

### 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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |

### 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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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) | | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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) | | | |

### 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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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. | | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |
| *Id* | *Name* | *Severity Type (Level)* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Locate Rectifier** | Locate | basic |
| No information | | |
| **5** | **Change Phase Number** | Phase | basic |
| No information | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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) | | | |

### ECOR0348

|  |  |
| --- | --- |
| **Device Information** | |
| **Name** | ECOR0348 |
| **Short Description** | Rectifer 300W -54V |
| **Long Description** | Replaced by CXRF 48-300W |
| **Hardware Reference** | 9411 010 35001 |
| **Software Reference** | SOFT 000097 XX |
| **Equipment Type** | Rectifier |
| **ETSI Level** | /site/energy\_system/dc\_system/rectifier |

|  |  |  |  |
| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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

### ADIO 7

|  |  |
| --- | --- |
| **Device Information** | |
| **Name** | ADIO 7 |
| **Short Description** | Standard I/O module D24 T7 |
| **Long Description** | I/O module with 24 digital inputs and 7 inputs for temperature measurement |
| **Hardware Reference** | 9413 060 05071 |
| **Software Reference** | SOFT 000095 XX |
| **Equipment Type** | System Extension |
| **ETSI Level** | /site/sensors\_and\_actuators |

|  |  |  |  |
| --- | --- | --- | --- |
| Description Table | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Product Name** | Product Info | basic |
| The commercial name of the extension card. | | |
| **2** | **Hardware Reference** | Product Info | basic |
| The hardware refence | | |
| **3** | **Hardware Revision** | Product Info | basic |
| The hardware revision | | |
| **4** | **Software Reference** | Product Info | basic |
| The software reference | | |
| **6** | **Serial Number** | Product Info | basic |
| The serial number. | | |
| **7** | **Manufacturing ID** | Product Info | basic |
| The production batch id. | | |
| **8** | **Manufacturing Date** | Product Info | basic |
| The production date. | | |
| **11** | **Description** | Description | basic |
| A free text zone to write a system description | | |
| **12** | **Reference** | Description | basic |
| A free text zone to write the customer reference of the system | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **71** | **General Input 1** | warning (2) | 5 / 2 |
| Alarm related to digital input 1 | | |
| **72** | **General Input 2** | warning (2) | 5 / 2 |
| Alarm related to digital input 2 | | |
| **73** | **General Input 3** | warning (2) | 5 / 2 |
| Alarm related to digital input 3 | | |
| **74** | **General Input 4** | warning (2) | 5 / 2 |
| Alarm related to digital input 4 | | |
| **75** | **General Input 5** | warning (2) | 5 / 2 |
| Alarm related to digital input 5 | | |
| **76** | **General Input 6** | warning (2) | 5 / 2 |
| Alarm related to digital input 6 | | |
| **77** | **General Input 7** | warning (2) | 5 / 2 |
| Alarm related to digital input 7 | | |
| **78** | **General Input 8** | warning (2) | 5 / 2 |
| Alarm related to digital input 8 | | |
| **79** | **General Input 9** | warning (2) | 5 / 2 |
| Alarm related to digital input 9 | | |
| **80** | **General Input 10** | warning (2) | 5 / 2 |
| Alarm related to digital input 10 | | |
| **81** | **General Input 11** | warning (2) | 5 / 2 |
| Alarm related to digital input 11 | | |
| **82** | **General Input 12** | warning (2) | 5 / 2 |
| Alarm related to digital input 12 | | |
| **83** | **General Input 13** | warning (2) | 5 / 2 |
| Alarm related to digital input 13 | | |
| **84** | **General Input 14** | warning (2) | 5 / 2 |
| Alarm related to digital input 14 | | |
| **85** | **General Input 15** | warning (2) | 5 / 2 |
| Alarm related to digital input 15 | | |
| **86** | **General Input 16** | warning (2) | 5 / 2 |
| Alarm related to digital input 16 | | |
| **87** | **General Input 17** | warning (2) | 5 / 2 |
| Alarm related to digital input 17 | | |
| **88** | **General Input 18** | warning (2) | 5 / 2 |
| Alarm related to digital input 18 | | |
| **89** | **General Input 19** | warning (2) | 5 / 2 |
| Alarm related to digital input 19 | | |
| **90** | **General Input 20** | warning (2) | 5 / 2 |
| Alarm related to digital input 20 | | |
| **91** | **General Input 21** | warning (2) | 5 / 2 |
| Alarm related to digital input 21 | | |
| **92** | **General Input 22** | warning (2) | 5 / 2 |
| Alarm related to digital input 22 | | |
| **93** | **General Input 23** | warning (2) | 5 / 2 |
| Alarm related to digital input 23 | | |
| **94** | **General Input 24** | warning (2) | 5 / 2 |
| Alarm related to digital input 24 | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **1** | **Temperature 1** | Temperature Sensor | degree C | basic |
| Temperature Measurement 1 | | | |
| **2** | **Temperature 2** | Temperature Sensor | degree C | basic |
| Temperature Measurement 2 | | | |
| **3** | **Temperature 3** | Temperature Sensor | degree C | basic |
| Temperature Measurement 3 | | | |
| **4** | **Temperature 4** | Temperature Sensor | degree C | basic |
| Temperature Measurement 4 | | | |
| **5** | **Temperature 5** | Temperature Sensor | degree C | basic |
| Temperature Measurement 5 | | | |
| **6** | **Temperature 6** | Temperature Sensor | degree C | basic |
| Temperature Measurement 6 | | | |
| **7** | **Temperature 7** | Temperature Sensor | degree C | basic |
| Temperature Measurement 7 | | | |
| **8** | **Temperature 8** | Temperature Sensor | degree C | basic |
| Temperature Measurement 8 | | | |
| **131** | **Pulse Counter 1** | Pulse Counter |  | basic |
| Energy Consumption Counter 1 | | | |
| **132** | **Pulse Counter 2** | Pulse Counter |  | basic |
| Energy Consumption Counter 2 | | | |
| **133** | **Pulse Counter 3** | Pulse Counter |  | basic |
| Energy Consumption Counter 3 | | | |
| **134** | **Pulse Counter 4** | Pulse Counter |  | basic |
| Energy Consumption Counter 4 | | | |
| **135** | **Pulse Counter 5** | Pulse Counter |  | basic |
| Energy Consumption Counter 5 | | | |
| **136** | **Pulse Counter 6** | Pulse Counter |  | basic |
| Energy Consumption Counter 6 | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **71** | **Digital Input 1 Name** | Digital Inputs |  | General Input 1 | basic |
| The name of the digital input 1 | | | | |
| **72** | **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. | | | | |
| **73** | **Digital Input 2 Name** | Digital Inputs |  | General Input 2 | basic |
| The name of the digital input 2 | | | | |
| **74** | **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. | | | | |
| **75** | **Digital Input 3 Name** | Digital Inputs |  | General Input 3 | basic |
| The name of the digital input 3 | | | | |
| **76** | **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. | | | | |
| **77** | **Digital Input 4 Name** | Digital Inputs |  | General Input 4 | basic |
| The name of the digital input 4 | | | | |
| **78** | **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. | | | | |
| **79** | **Digital Input 5 Name** | Digital Inputs |  | General Input 5 | basic |
| The name of the digital input 5 | | | | |
| **80** | **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. | | | | |
| **81** | **Digital Input 6 Name** | Digital Inputs |  | General Input 6 | basic |
| The name of the digital input 6 | | | | |
| **82** | **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. | | | | |
| **83** | **Digital Input 7 Name** | Digital Inputs |  | General Input 7 | basic |
| The name of the digital input 7 | | | | |
| **84** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 |  | General Input 8 | basic |
| The name of the digital input 8 | | | | |
| **86** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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 |  | General Input 9 | basic |
| The name of the digital input 9 | | | | |
| **88** | **Digital Input 9 Normally Closed** | Digital Inputs |  | 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 |  | General Input 10 | basic |
| The name of the digital input 10 | | | | |
| **90** | **Digital Input 10 Normally Closed** | Digital Inputs |  | 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 |  | General Input 11 | basic |
| The name of the digital input 11 | | | | |
| **92** | **Digital Input 11 Normally Closed** | Digital Inputs |  | 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 |  | General Input 12 | basic |
| The name of the digital input 12 | | | | |
| **94** | **Digital Input 12 Normally Closed** | Digital Inputs |  | 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 |  | General Input 13 | basic |
| The name of the digital input 13 | | | | |
| **96** | **Digital Input 13 Normally Closed** | Digital Inputs |  | 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 |  | General Input 14 | basic |
| The name of the digital input 14 | | | | |
| **98** | **Digital Input 14 Normally Closed** | Digital Inputs |  | 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 |  | General Input 15 | basic |
| The name of the digital input 15 | | | | |
| **100** | **Digital Input 15 Normally Closed** | Digital Inputs |  | 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 |  | General Input 16 | basic |
| The name of the digital input 16 | | | | |
| **102** | **Digital Input 16 Normally Closed** | Digital Inputs |  | 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 |  | General Input 17 | basic |
| The name of the digital input 17 | | | | |
| **104** | **Digital Input 17 Normally Closed** | Digital Inputs |  | 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 |  | General Input 18 | basic |
| The name of the digital input 18 | | | | |
| **106** | **Digital Input 18 Normally Closed** | Digital Inputs |  | 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 |  | General Input 19 | basic |
| The name of the digital input 19 | | | | |
| **108** | **Digital Input 19 Normally Closed** | Digital Inputs |  | 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 |  | General Input 20 | basic |
| The name of the digital input 20 | | | | |
| **110** | **Digital Input 20 Normally Closed** | Digital Inputs |  | 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 |  | General Input 21 | basic |
| The name of the digital input 21 | | | | |
| **112** | **Digital Input 21 Normally Closed** | Digital Inputs |  | 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 |  | General Input 22 | basic |
| The name of the digital input 22 | | | | |
| **114** | **Digital Input 22 Normally Closed** | Digital Inputs |  | 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 |  | General Input 23 | basic |
| The name of the digital input 23 | | | | |
| **116** | **Digital Input 23 Normally Closed** | Digital Inputs |  | 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 |  | General Input 24 | basic |
| The name of the digital input 24 | | | | |
| **118** | **Digital Input 24 Normally Closed** | Digital Inputs |  | 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** | 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 | | | | |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **101** | **Set Pulse Counter 1** | Pulse Counters | basic |
| Set Counter 1 Value | | |
| **102** | **Set Pulse Counter 2** | Pulse Counters | basic |
| Set Counter 2 Value | | |
| **103** | **Set Pulse Counter 3** | Pulse Counters | basic |
| Set Counter 3 Value | | |
| **104** | **Set Pulse Counter 4** | Pulse Counters | basic |
| Set Counter 4 Value | | |
| **105** | **Set Pulse Counter 5** | Pulse Counters | basic |
| Set Counter 5 Value | | |
| **106** | **Set Pulse Counter 6** | Pulse Counters | basic |
| Set Counter 6 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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Product Name** | Product Info | basic |
| The commercial name of the extension card. | | |
| **2** | **Hardware Reference** | Product Info | basic |
| The hardware refence | | |
| **3** | **Hardware Revision** | Product Info | basic |
| The hardware revision | | |
| **4** | **Software Reference** | Product Info | basic |
| The software reference | | |
| **6** | **Serial Number** | Product Info | basic |
| The serial number. | | |
| **7** | **Manufacturing ID** | Product Info | basic |
| The production batch id. | | |
| **8** | **Manufacturing Date** | Product Info | basic |
| The production date. | | |
| **11** | **Description** | Description | basic |
| A free text zone to write a system description | | |
| **12** | **Reference** | Description | basic |
| A free text zone to write the customer reference of the system | | |

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| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **71** | **General Input 1** | warning (2) | 5 / 2 |
| Alarm related to digital input 1 | | |
| **72** | **General Input 2** | warning (2) | 5 / 2 |
| Alarm related to digital input 2 | | |
| **73** | **General Input 3** | warning (2) | 5 / 2 |
| Alarm related to digital input 3 | | |
| **74** | **General Input 4** | warning (2) | 5 / 2 |
| Alarm related to digital input 4 | | |
| **75** | **General Input 5** | warning (2) | 5 / 2 |
| Alarm related to digital input 5 | | |
| **76** | **General Input 6** | warning (2) | 5 / 2 |
| Alarm related to digital input 6 | | |
| **77** | **General Input 7** | warning (2) | 5 / 2 |
| Alarm related to digital input 7 | | |
| **78** | **General Input 8** | warning (2) | 5 / 2 |
| Alarm related to digital input 8 | | |
| **79** | **General Input 9** | warning (2) | 5 / 2 |
| Alarm related to digital input 9 | | |
| **80** | **General Input 10** | warning (2) | 5 / 2 |
| Alarm related to digital input 10 | | |
| **81** | **General Input 11** | warning (2) | 5 / 2 |
| Alarm related to digital input 11 | | |
| **82** | **General Input 12** | warning (2) | 5 / 2 |
| Alarm related to digital input 12 | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **1** | **Temperature 1** | Temperature Sensor | degree C | basic |
| Temperature Measurement 1 | | | |
| **101** | **Voltage 5V 1** | Voltage Sensor | mVolt | basic |
| Voltage Measurement 5V 1 | | | |
| **102** | **Voltage 5V 2** | Voltage Sensor | mVolt | basic |
| Voltage Measurement 5V 2 | | | |
| **111** | **Current 4-20mA 1** | Current 4-20mA Sensor | mAmpere | basic |
| Current 4-20mA Sensor 1 | | | |
| **112** | **Current 4-20mA 2** | Current 4-20mA Sensor | mAmpere | basic |
| Current 4-20mA Sensor 2 | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **71** | **Digital Input 1 Name** | Digital Inputs |  | General Input 1 | basic |
| The name of the digital input 1 | | | | |
| **72** | **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. | | | | |
| **73** | **Digital Input 2 Name** | Digital Inputs |  | General Input 2 | basic |
| The name of the digital input 2 | | | | |
| **74** | **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. | | | | |
| **75** | **Digital Input 3 Name** | Digital Inputs |  | General Input 3 | basic |
| The name of the digital input 3 | | | | |
| **76** | **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. | | | | |
| **77** | **Digital Input 4 Name** | Digital Inputs |  | General Input 4 | basic |
| The name of the digital input 4 | | | | |
| **78** | **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. | | | | |
| **79** | **Digital Input 5 Name** | Digital Inputs |  | General Input 5 | basic |
| The name of the digital input 5 | | | | |
| **80** | **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. | | | | |
| **81** | **Digital Input 6 Name** | Digital Inputs |  | General Input 6 | basic |
| The name of the digital input 6 | | | | |
| **82** | **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. | | | | |
| **83** | **Digital Input 7 Name** | Digital Inputs |  | General Input 7 | basic |
| The name of the digital input 7 | | | | |
| **84** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 |  | General Input 8 | basic |
| The name of the digital input 8 | | | | |
| **86** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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 |  | General Input 9 | basic |
| The name of the digital input 9 | | | | |
| **88** | **Digital Input 9 Normally Closed** | Digital Inputs |  | 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 |  | General Input 10 | basic |
| The name of the digital input 10 | | | | |
| **90** | **Digital Input 10 Normally Closed** | Digital Inputs |  | 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 |  | General Input 11 | basic |
| The name of the digital input 11 | | | | |
| **92** | **Digital Input 11 Normally Closed** | Digital Inputs |  | 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 |  | General Input 12 | basic |
| The name of the digital input 12 | | | | |
| **94** | **Digital Input 12 Normally Closed** | Digital Inputs |  | 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. | | | | |
| **121** | **Output Relay 1 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 1 Boolean Condition | | | | |
| **122** | **Output Relay 1 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 1 Normal State | | | | |
| **123** | **Output Relay 2 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 2 Boolean Condition | | | | |
| **124** | **Output Relay 2 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 2 Normal State | | | | |
| **125** | **Output Relay 3 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 3 Boolean Condition | | | | |
| **126** | **Output Relay 3 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 3 Normal State | | | | |
| **127** | **Output Relay 4 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 4 Boolean Condition | | | | |
| **128** | **Output Relay 4 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 4 Normal State | | | | |
| **129** | **Output Relay 5 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 5 Boolean Condition | | | | |
| **130** | **Output Relay 5 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 5 Normal State | | | | |
| **131** | **Output Relay 6 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 6 Boolean Condition | | | | |
| **132** | **Output Relay 6 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 6 Normal State | | | | |
| **133** | **Output Relay 7 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 7 Boolean Condition | | | | |
| **134** | **Output Relay 7 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 7 Normal State | | | | |
| **135** | **Output Relay 8 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 8 Boolean Condition | | | | |
| **136** | **Output Relay 8 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 8 Normal State | | | | |
| **137** | **Output Relay 9 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 9 Boolean Condition | | | | |
| **138** | **Output Relay 9 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 9 Normal State | | | | |
| **139** | **Output Relay 10 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 10 Boolean Condition | | | | |
| **140** | **Output Relay 10 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 10 Normal State | | | | |
| **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 | | | | |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

### ADIO 9

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| --- | --- |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Product Name** | Product Info | basic |
| The commercial name of the extension card. | | |
| **2** | **Hardware Reference** | Product Info | basic |
| The hardware refence | | |
| **3** | **Hardware Revision** | Product Info | basic |
| The hardware revision | | |
| **4** | **Software Reference** | Product Info | basic |
| The software reference | | |
| **6** | **Serial Number** | Product Info | basic |
| The serial number. | | |
| **7** | **Manufacturing ID** | Product Info | basic |
| The production batch id. | | |
| **8** | **Manufacturing Date** | Product Info | basic |
| The production date. | | |
| **11** | **Description** | Description | basic |
| A free text zone to write a system description | | |
| **12** | **Reference** | Description | basic |
| A free text zone to write the customer reference of the system | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **71** | **General Input 1** | warning (2) | 5 / 2 |
| Alarm related to digital input 1 | | |
| **72** | **General Input 2** | warning (2) | 5 / 2 |
| Alarm related to digital input 2 | | |
| **73** | **General Input 3** | warning (2) | 5 / 2 |
| Alarm related to digital input 3 | | |
| **74** | **General Input 4** | warning (2) | 5 / 2 |
| Alarm related to digital input 4 | | |
| **75** | **General Input 5** | warning (2) | 5 / 2 |
| Alarm related to digital input 5 | | |
| **76** | **General Input 6** | warning (2) | 5 / 2 |
| Alarm related to digital input 6 | | |
| **77** | **General Input 7** | warning (2) | 5 / 2 |
| Alarm related to digital input 7 | | |
| **78** | **General Input 8** | warning (2) | 5 / 2 |
| Alarm related to digital input 8 | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **1** | **Temperature 1** | Temperature Sensor | degree C | basic |
| Temperature Measurement 1 | | | |
| **2** | **Temperature 2** | Temperature Sensor | degree C | basic |
| Temperature Measurement 2 | | | |
| **3** | **Temperature 3** | Temperature Sensor | degree C | basic |
| Temperature Measurement 3 | | | |
| **4** | **Temperature 4** | Temperature Sensor | degree C | basic |
| Temperature Measurement 4 | | | |
| **71** | **Shunt 1** | Current Sensor | Ampere | basic |
| Shunt Measurement 1 | | | |
| **72** | **Shunt 2** | Current Sensor | Ampere | basic |
| Shunt Measurement 2 | | | |
| **73** | **Shunt 3** | Current Sensor | Ampere | basic |
| Shunt Measurement 3 | | | |
| **74** | **Shunt 4** | Current Sensor | Ampere | basic |
| Shunt Measurement 4 | | | |
| **75** | **Shunt 5** | Current Sensor | Ampere | basic |
| Shunt Measurement 5 | | | |
| **76** | **Shunt 6** | Current Sensor | Ampere | basic |
| Shunt Measurement 6 | | | |
| **77** | **Shunt 7** | Current Sensor | Ampere | basic |
| Shunt Measurement 7 | | | |
| **78** | **Shunt 8** | Current Sensor | Ampere | basic |
| Shunt Measurement 8 | | | |
| **91** | **Voltage 1** | Voltage Sensor | Volt | basic |
| Voltage Measurement 1 | | | |
| **131** | **Pulse Counter 1** | Pulse Counter |  | basic |
| Energy Consumption Counter 1 | | | |
| **132** | **Pulse Counter 2** | Pulse Counter |  | basic |
| Energy Consumption Counter 2 | | | |
| **133** | **Pulse Counter 3** | Pulse Counter |  | basic |
| Energy Consumption Counter 3 | | | |
| **134** | **Pulse Counter 4** | Pulse Counter |  | basic |
| Energy Consumption Counter 4 | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **71** | **Digital Input 1 Name** | Digital Inputs |  | General Input 1 | basic |
| The name of the digital input 1 | | | | |
| **72** | **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. | | | | |
| **73** | **Digital Input 2 Name** | Digital Inputs |  | General Input 2 | basic |
| The name of the digital input 2 | | | | |
| **74** | **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. | | | | |
| **75** | **Digital Input 3 Name** | Digital Inputs |  | General Input 3 | basic |
| The name of the digital input 3 | | | | |
| **76** | **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. | | | | |
| **77** | **Digital Input 4 Name** | Digital Inputs |  | General Input 4 | basic |
| The name of the digital input 4 | | | | |
| **78** | **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. | | | | |
| **79** | **Digital Input 5 Name** | Digital Inputs |  | General Input 5 | basic |
| The name of the digital input 5 | | | | |
| **80** | **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. | | | | |
| **81** | **Digital Input 6 Name** | Digital Inputs |  | General Input 6 | basic |
| The name of the digital input 6 | | | | |
| **82** | **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. | | | | |
| **83** | **Digital Input 7 Name** | Digital Inputs |  | General Input 7 | basic |
| The name of the digital input 7 | | | | |
| **84** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 |  | General Input 8 | basic |
| The name of the digital input 8 | | | | |
| **86** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | 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 | | | | |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **101** | **Set Pulse Counter 1** | Pulse Counters | basic |
| Set Counter 1 Value | | |
| **102** | **Set Pulse Counter 2** | Pulse Counters | basic |
| Set Counter 2 Value | | |
| **103** | **Set Pulse Counter 3** | Pulse Counters | basic |
| Set Counter 3 Value | | |
| **104** | **Set Pulse Counter 4** | Pulse Counters | basic |
| Set Counter 4 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 And Groups** | Advanced | basic |
| This control element resets all the element Names, Groups and Subgroups to default values | | |

### ADIO 10

|  |  |
| --- | --- |
| **Device Information** | |
| **Name** | ADIO 10 |
| **Short Description** | Standard I/O module DC systems |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Product Name** | Product Info | basic |
| The commercial name of the extension card. | | |
| **2** | **Hardware Reference** | Product Info | basic |
| The hardware refence | | |
| **3** | **Hardware Revision** | Product Info | basic |
| The hardware revision | | |
| **4** | **Software Reference** | Product Info | basic |
| The software reference | | |
| **6** | **Serial Number** | Product Info | basic |
| The serial number. | | |
| **7** | **Manufacturing ID** | Product Info | basic |
| The production batch id. | | |
| **8** | **Manufacturing Date** | Product Info | basic |
| The production date. | | |
| **11** | **Description** | Description | basic |
| A free text zone to write a system description | | |
| **12** | **Reference** | Description | basic |
| A free text zone to write the customer reference of the system | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **71** | **General Input 1** | warning (2) | 5 / 2 |
| Alarm related to digital input 1 | | |
| **72** | **General Input 2** | warning (2) | 5 / 2 |
| Alarm related to digital input 2 | | |
| **73** | **General Input 3** | warning (2) | 5 / 2 |
| Alarm related to digital input 3 | | |
| **74** | **General Input 4** | warning (2) | 5 / 2 |
| Alarm related to digital input 4 | | |
| **75** | **General Input 5** | warning (2) | 5 / 2 |
| Alarm related to digital input 5 | | |
| **76** | **General Input 6** | warning (2) | 5 / 2 |
| Alarm related to digital input 6 | | |
| **77** | **General Input 7** | warning (2) | 5 / 2 |
| Alarm related to digital input 7 | | |
| **78** | **General Input 8** | warning (2) | 5 / 2 |
| Alarm related to digital input 8 | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **1** | **Temperature 1** | Temperature Sensor | degree C | basic |
| Temperature Measurement 1 | | | |
| **2** | **Temperature 2** | Temperature Sensor | degree C | basic |
| Temperature Measurement 2 | | | |
| **71** | **Shunt 1** | Current Sensor | Ampere | basic |
| Shunt Measurement 1 | | | |
| **72** | **Shunt 2** | Current Sensor | Ampere | basic |
| Shunt Measurement 2 | | | |
| **91** | **Voltage 1** | Voltage Sensor | Volt | basic |
| Voltage Measurement 1 | | | |
| **92** | **Voltage 2** | Voltage Sensor | Volt | basic |
| Voltage Measurement 2 | | | |
| **93** | **Voltage 3** | Voltage Sensor | Volt | basic |
| Voltage Measurement 3 | | | |
| **94** | **Voltage 4** | Voltage Sensor | Volt | basic |
| Voltage Measurement 4 | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 |  | General Input 1 | basic |
| The name of the digital input 1 | | | | |
| **72** | **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. | | | | |
| **73** | **Digital Input 2 Name** | Digital Inputs |  | General Input 2 | basic |
| The name of the digital input 2 | | | | |
| **74** | **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. | | | | |
| **75** | **Digital Input 3 Name** | Digital Inputs |  | General Input 3 | basic |
| The name of the digital input 3 | | | | |
| **76** | **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. | | | | |
| **77** | **Digital Input 4 Name** | Digital Inputs |  | General Input 4 | basic |
| The name of the digital input 4 | | | | |
| **78** | **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. | | | | |
| **79** | **Digital Input 5 Name** | Digital Inputs |  | General Input 5 | basic |
| The name of the digital input 5 | | | | |
| **80** | **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. | | | | |
| **81** | **Digital Input 6 Name** | Digital Inputs |  | General Input 6 | basic |
| The name of the digital input 6 | | | | |
| **82** | **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. | | | | |
| **83** | **Digital Input 7 Name** | Digital Inputs |  | General Input 7 | basic |
| The name of the digital input 7 | | | | |
| **84** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 |  | General Input 8 | basic |
| The name of the digital input 8 | | | | |
| **86** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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** | **Output Relay 1 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 1 Boolean Condition | | | | |
| **122** | **Output Relay 1 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 1 Normal State | | | | |
| **123** | **Output Relay 2 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 2 Boolean Condition | | | | |
| **124** | **Output Relay 2 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 2 Normal State | | | | |
| **125** | **Output Relay 3 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 3 Boolean Condition | | | | |
| **126** | **Output Relay 3 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 3 Normal State | | | | |
| **127** | **Output Relay 4 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 4 Boolean Condition | | | | |
| **128** | **Output Relay 4 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 4 Normal State | | | | |
| **129** | **Output Relay 5 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 5 Boolean Condition | | | | |
| **130** | **Output Relay 5 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 5 Normal State | | | | |
| **131** | **Output Relay 6 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 6 Boolean Condition | | | | |
| **132** | **Output Relay 6 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 6 Normal State | | | | |
| **133** | **Output Relay 7 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 7 Boolean Condition | | | | |
| **134** | **Output Relay 7 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 7 Normal State | | | | |
| **135** | **Output Relay 8 Boolan Condition** | Digital Outputs |  | (False) | basic |
| Relay 8 Boolean Condition | | | | |
| **136** | **Output Relay 8 Normal State** | Digital Outputs |  | (Energized / De-energized) | basic |
| Relay 8 Normal State | | | | |
| **137** | **Default Digital Output Binary Vector** | Digital Outputs |  | (0b00000000) | basic |
| This configuration is stored inside the module in case of configuration failure | | | | |
| **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 | | | | |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **11** | **Calibrate V1** | Calibration | basic |
| No information | | |
| **12** | **Calibrate V2** | Calibration | basic |
| No information | | |
| **13** | **Calibrate V3** | Calibration | basic |
| No information | | |
| **14** | **Calibrate V4** | Calibration | basic |
| No information | | |
| **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 | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Product Name** | Product Info | basic |
| The commercial name of the extension card. | | |
| **2** | **Hardware Reference** | Product Info | basic |
| The hardware refence | | |
| **3** | **Hardware Revision** | Product Info | basic |
| The hardware revision | | |
| **4** | **Software Reference** | Product Info | basic |
| The software reference | | |
| **6** | **Serial Number** | Product Info | basic |
| The serial number. | | |
| **7** | **Manufacturing ID** | Product Info | basic |
| The production batch id. | | |
| **8** | **Manufacturing Date** | Product Info | basic |
| The production date. | | |
| **11** | **Description** | Description | basic |
| A free text zone to write a system description | | |
| **12** | **Reference** | Description | basic |
| A free text zone to write the customer reference of the system | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **71** | **General Input 1** | warning (2) | 5 / 2 |
| Alarm related to digital input 1 | | |
| **72** | **General Input 2** | warning (2) | 5 / 2 |
| Alarm related to digital input 2 | | |
| **73** | **General Input 3** | warning (2) | 5 / 2 |
| Alarm related to digital input 3 | | |
| **74** | **General Input 4** | warning (2) | 5 / 2 |
| Alarm related to digital input 4 | | |
| **75** | **General Input 5** | warning (2) | 5 / 2 |
| Alarm related to digital input 5 | | |
| **76** | **General Input 6** | warning (2) | 5 / 2 |
| Alarm related to digital input 6 | | |
| **77** | **General Input 7** | warning (2) | 5 / 2 |
| Alarm related to digital input 7 | | |
| **78** | **General Input 8** | warning (2) | 5 / 2 |
| Alarm related to digital input 8 | | |
| **79** | **General Input 9** | warning (2) | 5 / 2 |
| Alarm related to digital input 9 | | |
| **80** | **General Input 10** | warning (2) | 5 / 2 |
| Alarm related to digital input 10 | | |
| **81** | **General Input 11** | warning (2) | 5 / 2 |
| Alarm related to digital input 11 | | |
| **82** | **General Input 12** | warning (2) | 5 / 2 |
| Alarm related to digital input 12 | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **1** | **Temperature 1** | Sensors | degree C | basic |
| The temperature 1 | | | |
| **2** | **Temperature 2** | Sensors | degree C | basic |
| The temperature 2 | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **71** | **Digital Input 1 Name** | Digital Inputs |  | General Input 1 | basic |
| The name of the digital input 1 | | | | |
| **72** | **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. | | | | |
| **73** | **Digital Input 2 Name** | Digital Inputs |  | General Input 2 | basic |
| The name of the digital input 2 | | | | |
| **74** | **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. | | | | |
| **75** | **Digital Input 3 Name** | Digital Inputs |  | General Input 3 | basic |
| The name of the digital input 3 | | | | |
| **76** | **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. | | | | |
| **77** | **Digital Input 4 Name** | Digital Inputs |  | General Input 4 | basic |
| The name of the digital input 4 | | | | |
| **78** | **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. | | | | |
| **79** | **Digital Input 5 Name** | Digital Inputs |  | General Input 5 | basic |
| The name of the digital input 5 | | | | |
| **80** | **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. | | | | |
| **81** | **Digital Input 6 Name** | Digital Inputs |  | General Input 6 | basic |
| The name of the digital input 6 | | | | |
| **82** | **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. | | | | |
| **83** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 Name | basic |
| The name of the digital input 7 | | | | |
| **84** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 |  | General Input 8 | basic |
| The name of the digital input 8 | | | | |
| **86** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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 |  | General Input 9 | basic |
| The name of the digital input 9 | | | | |
| **88** | **Digital Input 9 Normally Closed** | Digital Inputs |  | 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 |  | General Input 10 | basic |
| The name of the digital input 10 | | | | |
| **90** | **Digital Input 10 Normally Closed** | Digital Inputs |  | 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 |  | General Input 11 | basic |
| The name of the digital input 11 | | | | |
| **92** | **Digital Input 11 Normally Closed** | Digital Inputs |  | 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 |  | General Input 12 | basic |
| The name of the digital input 12 | | | | |
| **94** | **Digital Input 12 Normally Closed** | Digital Inputs |  | 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. | | | | |
| **121** | **Digital Output Relay 1 Energized Boolan Condition** | Digital Outputs |  | (False) | basic |
| PLC Boolean condition to energize the relay 1 | | | | |
| **122** | **Digital Output Relay 2 Energized Boolan Condition** | Digital Outputs |  | (False) | basic |
| PLC Boolean condition to energize the relay 2 | | | | |
| **123** | **Digital Output Relay 3 Energized Boolan Condition** | Digital Outputs |  | (False) | basic |
| PLC Boolean condition to energize the relay 3 | | | | |
| **124** | **Digital Output Relay 4 Energized Boolan Condition** | Digital Outputs |  | (False) | basic |
| PLC Boolean condition to energize the relay 4 | | | | |
| **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 | | | | |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **1** | **Product Name** | Product Info | basic |
| The commercial name of the extension card. | | |
| **2** | **Hardware Reference** | Product Info | basic |
| The hardware refence | | |
| **3** | **Hardware Revision** | Product Info | basic |
| The hardware revision | | |
| **4** | **Software Reference** | Product Info | basic |
| The software reference | | |
| **6** | **Serial Number** | Product Info | basic |
| The serial number. | | |
| **7** | **Manufacturing ID** | Product Info | basic |
| The production batch id. | | |
| **8** | **Manufacturing Date** | Product Info | basic |
| The production date. | | |
| **11** | **Description** | Description | basic |
| A free text zone to write a system description | | |
| **12** | **Reference** | Description | basic |
| A free text zone to write the customer reference of the system | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Alarm Table | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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** | **General Input 1** | warning (2) | 5 / 2 |
| Alarm related to digital input 1 | | |
| **72** | **General Input 2** | warning (2) | 5 / 2 |
| Alarm related to digital input 2 | | |
| **73** | **General Input 3** | warning (2) | 5 / 2 |
| Alarm related to digital input 3 | | |
| **74** | **General Input 4** | warning (2) | 5 / 2 |
| Alarm related to digital input 4 | | |
| **75** | **General Input 5** | warning (2) | 5 / 2 |
| Alarm related to digital input 5 | | |
| **76** | **General Input 6** | warning (2) | 5 / 2 |
| Alarm related to digital input 6 | | |
| **77** | **Door 1 Open** | warning (2) | 5 / 2 |
| Alarm related to digital input 7, used for access control by default | | |
| **78** | **Door 2 Open** | warning (2) | 5 / 2 |
| Alarm related to digital input 8, used for access control by default | | |
| **79** | **Door 3 Open** | warning (2) | 5 / 2 |
| Alarm related to digital input 9, used for access control by default | | |
| **80** | **Door 4 Open** | warning (2) | 5 / 2 |
| Alarm related to digital input 10, used for access control by default | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Config Table | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 | | | | |
| **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 | | | | |
| **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 | | | | |
| **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 |  | General Input 1 | basic |
| The name of the digital input 1 | | | | |
| **72** | **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. | | | | |
| **73** | **Digital Input 2 Name** | Digital Inputs |  | General Input 2 | basic |
| The name of the digital input 2 | | | | |
| **74** | **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. | | | | |
| **75** | **Digital Input 3 Name** | Digital Inputs |  | General Input 3 | basic |
| The name of the digital input 3 | | | | |
| **76** | **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. | | | | |
| **77** | **Digital Input 4 Name** | Digital Inputs |  | General Input 4 | basic |
| The name of the digital input 4 | | | | |
| **78** | **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. | | | | |
| **79** | **Digital Input 5 Name** | Digital Inputs |  | General Input 5 | basic |
| The name of the digital input 5 | | | | |
| **80** | **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. | | | | |
| **81** | **Digital Input 6 Name** | Digital Inputs |  | General Input 6 | basic |
| The name of the digital input 6 | | | | |
| **82** | **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. | | | | |
| **83** | **Digital Input 7 Name** | Digital Inputs |  | Digital Input 7 Name | basic |
| The name of the digital input 7 | | | | |
| **84** | **Digital Input 7 Normally Closed** | Digital Inputs |  | 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 |  | Door 2 Open | basic |
| The name of the digital input 8 | | | | |
| **86** | **Digital Input 8 Normally Closed** | Digital Inputs |  | 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 |  | Door 3 Open | basic |
| The name of the digital input 9 | | | | |
| **88** | **Digital Input 9 Normally Closed** | Digital Inputs |  | 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 |  | Door 4 Open | basic |
| The name of the digital input 10 | | | | |
| **90** | **Digital Input 10 Normally Closed** | Digital Inputs |  | 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 Boolan Condition** | Digital Outputs |  | (False) | basic |
| PLC Boolean condition to energize the relay 1 | | | | |
| **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 | | | | |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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** | 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 | | |

## Remote Power Feeding System Tables

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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. | | | | |

## Up Converter System Tables

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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) | 5 / 2 |
| Slot 0 is in alarm | | |
| **21** | **Slot 1 Alarm** | minor (4) | 5 / 2 |
| Slot 1 is in alarm | | |
| **22** | **Slot 2 Alarm** | minor (4) | 5 / 2 |
| Slot 2 is in alarm | | |
| **23** | **Slot 3 Alarm** | minor (4) | 5 / 2 |
| Slot 3 is in alarm | | |
| **24** | **Slot 4 Alarm** | minor (4) | 5 / 2 |
| Slot 4 is in alarm | | |
| **25** | **Slot 5 Alarm** | minor (4) | 5 / 2 |
| Slot 5 is in alarm | | |
| **26** | **Slot 6 Alarm** | minor (4) | 5 / 2 |
| Slot 6 is in alarm | | |
| **27** | **Slot 7 Alarm** | minor (4) | 5 / 2 |
| Slot 7 is in alarm | | |
| **28** | **Slot 8 Alarm** | minor (4) | 5 / 2 |
| Slot 8 is in alarm | | |
| **29** | **Slot 9 Alarm** | minor (4) | 5 / 2 |
| Slot 9 is in alarm | | |
| **30** | **Slot 10 Alarm** | minor (4) | 5 / 2 |
| Slot 10 is in alarm | | |
| **31** | **Slot 11 Alarm** | minor (4) | 5 / 2 |
| Slot 11 is in alarm | | |
| **32** | **Slot 12 Alarm** | minor (4) | 5 / 2 |
| Slot 12 is in alarm | | |
| **33** | **Slot 13 Alarm** | minor (4) | 5 / 2 |
| Slot 13 is in alarm | | |
| **34** | **Slot 14 Alarm** | minor (4) | 5 / 2 |
| Slot 14 is in alarm | | |
| **35** | **Slot 15 Alarm** | minor (4) | 5 / 2 |
| Slot 15 is in alarm | | |
| **36** | **Slot 16 Alarm** | minor (4) | 5 / 2 |
| Slot 16 is in alarm | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Table | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

## Remote Site Tables

### 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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | | |
| *Id* | *Name* | *Severity Type (Level)* | *Set/Clear Delay* |
| **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 |
|  | | |
| **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 | | | | |
| *Id* | *Name* | *Group* | *Unit* | *License* |
| **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 | | | | | |
| *Id* | *Name* | *Group* | *Unit* | *Range: Min/Max (default)* | *License* |
| **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 | | | |
| *Id* | *Name* | *Group* | *License* |
| **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 | | |

# Licenses

* [The Comp@s license packages](#scroll-bookmark-163)
* [How can I upgrade my license?](#scroll-bookmark-164)
* [How is the license stored?](#scroll-bookmark-165)

## 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](#scroll-bookmark-166)
* [The Asset Package](#scroll-bookmark-167)
* [The PLC Package](#scroll-bookmark-168)
* [The Modbus Package](#scroll-bookmark-169)
* [License currently in use](#scroll-bookmark-170).

### 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.

### 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.

### 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.

### The Modbus Package

This Mobdus 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.

### 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:

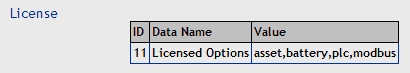


Figure 65 Installed License

## 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.

## 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">Cherokee 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! |

# Software Release Components

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](#scroll-bookmark-172)
* [The Operating System](#scroll-bookmark-173)
* [Comp@s Starter Executable](#scroll-bookmark-174)
* [Comp@s Executable](#scroll-bookmark-175)
* [Comp@s FTP Server Executable](#scroll-bookmark-176).

## 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.

## 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>.

## 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.

## 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](#scroll-bookmark-177)
2. Retrieve [Environment Configuration](#scroll-bookmark-178)
3. Load [License](#scroll-bookmark-179)
4. Load [Translation Dictionary](#scroll-bookmark-180)
5. Create a [Site Object](#scroll-bookmark-181)
6. Create Thread “[Decode CAN Msg](#scroll-bookmark-182) ” >
7. Create Thread “[Web Server](#scroll-bookmark-183)”
8. Create Thread [SNMP](#scroll-bookmark-184)
9. Create Thread “Modbus Slave”
10. Create Thread “Modbus Master”
11. Create Thread “[ProcessScheduledTasks](#scroll-bookmark-185)".

### 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](http://www.microchip.com/wwwproducts/Devices.aspx?dDocName=en010406).

#### 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.

### Environment Configuration

Global variables are configured depending of the environment:

* [BSP Version](#scroll-bookmark-189)
* [Flash path](#scroll-bookmark-190)
* [Ethernet Device](#scroll-bookmark-191).

#### 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

### License

The license is validated and loaded if trusted.

### 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.

### 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.

### Decode CAN Msg

See MonitoringThreadDecodeCANMsg()()()()

### 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.

### 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.

### 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)

### 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.

### 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.

### 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.

### 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 dyncamical display of the data record information.

### Equipment Emulation

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

## 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](http://en.wikipedia.org/wiki/File_Transfer_Protocol)

# Software Changelog

* [.NET Executable Versioning](#scroll-bookmark-199)
* [Comp@s Changelog](#scroll-bookmark-200).

## .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:
  + <revision> - 0 : for alpha (non-stable)
  + <revision> - 1: for beta (internal)
  + <revision> - 2 : for release candidate (QA-passed, final tests)
  + <revision> - 3 : for public (release)
  + <revision> - 4 and following : for releasing specific modifications on a released version (for specific customers - should be avoided as much as possible)

Before that version, the used format was:

0.Y.0.X where:

* X is the minor revision number and is:
  + odd for beta version
  + even for stable version
* Y is the major revision number.

## 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 0.116.0.3 (16/01/2013) - SOFT 000031 27 |
| + Implementation of the periodic automatic battery test |
| \* Finalization of the equalize feature for Cordex dc systems |
| \* New parameters for site.xml, allowing to download only some resolutions of the records (day, hour, minute, second). By default, it retrieves only dayly and hourly data records/ |
| + Inverter system with T2S - New control element to Turn On/Off all modules |
| - Inverter system with T2S - Save to T2s is now more reliable |
| + 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) |
| \* New control elements to calibrate voltage and currents on ADIO10 |
| - Fix for relay control problem on ADIO10 (introduced in 0.115.0.3 changes) |

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| --- |
| Revision 0.115.0.3 (20/12/2012) - SOFT 000031 26 |
| \* Relay of Alarm 'Missing Rectifiers' can now be saved in MCU |
| \* Support of the T2S with Media Inverters |
| \* Better support of T2S alarms |
| - Some Alarm Set delay were not reloaded correctly after reboot, lile the bus voltage sense failure |
| - Reworked relay boolean condition on ADIOs. Possibility to configure normal condition as 'Energized' or 'De-Energized'. |

|  |
| --- |
| Revision 0.114.0.7 (17/12/2012) - SOFT 000031 25 |
| - PLC functions without arguments like $second() where broken unless used as $second(0) |
| \* Better support of zip files generation (site.xml.zip). The files are now fully compliant (before, it was a compressed stream) |
| \* Optimisation of the Web Server - Faster and uses less memory when files are posted |
| - 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) |
| \* Reboot improved to reply to request, delayed by 10 seconds to allow events to be sent to Arm@da |
| \* More robust and faster startup |
| - Digital Input alarm logic was inverted on ADIO 7-8-9-10. If you are using it, care required when upgrading. |
| \* Improvement of the DC bus voltage sense failure detection on Cordex |
| \* Better implementation of the data\_record management. Thread safe and faster. |
| - If events.xml was corrupted, the system could never start without deleting the file |
| - Randomly, system could reboot at midnight during data records saving |

|  |
| --- |
| Revision 0.113.0.3 (15/11/2012) - SOFT 000031 24 |
| + Cordex - Initial support of firmware upgrade |
| - SNMP - Traps content oids where shifted of 1 |
| \* SNMP - Improved MIB compliance - Some oid related name were too long |
| \* Better implementation of the battery test for Cordex DC Systems |
| \* CEM03 - Remote Site can now have an id > 100 (up to 1000) |
| \* Improved RS485 modbus driver allowing different types of device on the same bus |
| + Support of energy meter IEM3150 on RS485 bus |
| + Initial limited support of Cordex Converters |
| + Possibility to rename Name and Group of any element from the web interface |
| + Group is now loaded from configuration.xml for any element, allowing total customisation of name/group of elements |
| + Events are now automatically saved in a flat file : events\_flat.xml. events.xml is converted on first boot. |
| + Introduced group possibilities for the alarm table |
| - SNMP walk was not working from top snmp node |

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| 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 |
| + Initial support of Alpha CXC over SNMP |
| \* Allow to limit the request of one CAN message at the time (for T2S) |
| + Support of multiple Inverter System (T2S) |

|  |
| --- |
| Revision 0.110.0.3 (11/07/2012) - SOFT 000031 22 |
| - Changed unit of Rectifier Cordex 'Service Time'(s->m) and 'Converted Energy'(KJ->kwh) |
| - It was no possible to reset to empty the list of required node on the can bus (config Required CAN Bus Node IDs) |
| - CAN Driver - The can driver was crashing when there was only one node on the bus and it was removed |
| - CAN Driver - Randomly, a can message was corrupted because of an OS interrupt during SPI communication |
| \* 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 |
| \* Better support of T2S inverter monitoring |
| \* Remote Power Feeding - Possiblitly to define the number of CEM03 by rack, in master/slave configuration --> up to 64 racks |
| \* Remote Power Feeding - Added customer description element at the Remote Power Feeding System level |
| + New alarm at the site level to notify that the last configuration changes are not saved |
| + New site control to remove absent equipments |
| + Introduction of 'Absent' status for Cordex Rectifiers |
| + Auto detection of the rectifier model for smart energy |
| + Support of 850W/1000W systems with embedded distribution. |
| + Added possibilites to store a fix information about alarms |
| + SNMP - Initial Support of monitoring of SNMP device like the Cordex CXC |

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| 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 |

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| Revision 0.1.0.104 (15/03/2012) |
| \* Remote Power Feeding system - New alarm is generated 'Configuration problem' when the slot is empty but there is a configuration |
| - Remote Powering System was not detected anymore correctly - broken with 1.0.96 |
| - CET Inverter were not detected anymore correctly -broken with 1.0.96 |

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| 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 transiant 'fake' data |

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| Revision 0.1.0.100 (15/02/2012) |
| - In remote Site in relation of a remote power feeding system, the latitude position parameter was not set correctly. (And changed the longitude). |
| - Modbus Slave – Socket was closed if the device id did not exist. Comp@s will now send a Modbus exception according to the standard. |

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| 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. |

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| Revision 0.1.0.96 (21/11/2011) |
| + Web interface allows minimizing parts of the tables, by group. |
| + 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. |
| + Complete support of LSS devices (Dynamic CanOpen node addressing for Cordex rectifiers) |
| + CanOpen Node definition is now managed to avoid any interference between new development and old qualified developments. (Thanks to better use of the polymorphism) |
| + First official release supporting cordex 4kw rectifier, with new UCC |

|  |
| --- |
| Revision 0.1.0.88 (11/09/2011) - SOFT 000031 20 |
| \* Support of rack 300W, with specific battery configuration possibilities with the help of the front button (electronic LVD) |
| \* Added debug features to analyze Modbus problems (connection timeout, new sockets, etc.) |

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| 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. |

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| 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 if sent to another id, the dc system 1 will reply. |

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| 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) |

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| Revision 0.1.0.80 (16/06/2011) |
| - 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. |
| + Support of rack CAPTIN 300W |
| + Initial support for Alpha Cordex Rectifiers regulation of the dc system |

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| Revision 0.1.0.78 (30/05/2011) - SOFT 00031 17 |
| + Added support of PLC functions for es1 device. |

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| Revision 0.1.0.76 (27/05/2011) - SOFT 00031 17 |
| \* RS485 communications was corrupted when interrupted by another task with higher priority. |

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| Revision 0.1.0.74 (24/05/2011) |
| - BSP 3.9 new Ethernet driver is now synchronous to solve problems when communication is very high – Microsoft bug (Mobdus fast request in loop for instance) |
| \* New production tool – display instructions also in English |
| \* New operating system – BSP 3.9 |
| \* New CAN driver – reduced CPU usage by up to 30%. |

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| Revision 0.1.0.72 (20/05/2011) |
| + Added hidden function to clear registry (may be required after OS update) |

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| Revision 0.1.0.70 (10/05/2011) |
| + Initial support of predefined configurations |
| + Initial support of independent LVD |
| + Possibilities to rename descriptions, alarms, data, configuration and control elements with the configuration.xml file |
| + Possibilities to auto save records in xml, download files from web interface, and delete files. |

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| Revision 0.1.0.68 (20/04/2011) |
| - Hardware watchdog – forgot to uncomment after test. |

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| Revision 0.1.0.66 (20/04/2011) |
| - Records of the energy system pulse counter were loaded twice with a PM9C device |
| + Added zip extraction functions : Extract Zip File in user-upload |

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| Revision 0.1.0.64 (16/04/2011) |
| + 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 |
| + The zip files are analysed to discover the compressed file. (Only one file by zip is allowed to avoid unmanageable folder structure) |
| + The exe file are analysed to retrieve the software revision |
| + New web page accessible from “Advanced” : manage\_files.html |
| + Support for the http post of files |
| + Added description at site level : Operating System Revision |
| + Added data at site level: ‘CPU Percentage Usage’ and ‘Free Flash Memory Space’, with associated records. |
| + Support of remote upgrade of the operating system and boot loader. (very advanced, necessary only for specific new functionalities) |

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| Revision 0.1.0.62 (10/04/2011) |
| - Snmp walk was buggy with some PLC data configurations |
| \* 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) |
| \* Support of snmp get bulk |

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| Revision 0.1.0.60 (6/04/2011) |
| + Improved support of default snmp oid (1.3.6.1.2.1.1.4,5,6,9.1.3 |
| + Initial support of snmp get bulk |
| + Added configuration parameters to force the Ethernet mode (10-100Mb – Half-full duplex. (Require OS 3.5 at least) |

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| 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) |

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| Revision 0.1.0.56 (9/03/2011) |
| + Support of PM9C energy counter over RS485 |
| + Support of additional extensions for Opera Net Project (sensors and actuators) |

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| Revision 0.1.0.54 (21/02/2011) |
| \* Added PLC functions to get site level info |
| + CANOpen LSS master implementation |
| + Initial support of Alpha rectifiers |

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| Revision 0.1.0.52 (6/01/2011) |
| \* Added entry 151 in Modbus |
| + Initial support of RS485 Modbus Master |

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| Revision 0.1.0.50 (29/10/2010) - SOFT 000031 16 |
| \* Improved support of 300W rack family |

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| Revision 0.1.0.48 (18/10/2010) |
| + Initial support of 300W rack family |

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| Revision 0.1.0.46 (29/06/2010) |
| \* Support of 3 dc-system over Modbus interface |

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| Revision 0.1.0.44 (3/06/2010) |
| \* Added concept of dc system and rectifier models (for smart functions) |

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| Revision 0.1.0.42 (20/04/2010) |
| - Bug correction of removed rectifiers if not declared in large systems |
| \* Improved support of CET inverters |

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| Revision 0.1.0.40 (21/01/2010) - SOFT 000031 14 |
| - Correction of Ethernet bug with HUB (drivers was switching of the Ethernet devices if disconnected from hub) |
| \* Change of OS, minor security updates (BSP 0.5) |
| + Minor support of CET inverters |

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| Revision 0.1.0.38 (19/01/2010) |
| \* Review of the logic for ac fail conditions |

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| Revision 0.1.0.34 (24/11/2009) |
| \* Increased reliability of the CAN bootloader reset algorithm |

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| Revision 0.1.0.32 (19/11/2009) |
| + Support of large system with CAN regulation (up to 90x2600W rectifiers) |

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| Revision 0.1.0.30 (19/10/2009) |
| \* Changed remote system type name (3x120w, etc) |
| + Support of MCU0548 |

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| Revision 0.1.0.28 (19/10/2009) - SOFT 000031 13 |
| - Modification of one registry parameter, to disable the “auto sense mode” of Ethernet, which was disabling the Ethernet when connected to a hub. |
| \* 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) |
| \* Added support of energy consumption measurement at the energy system level (pulse counter) |
| \* Full support of SNMP V3 traps |
| \* Support of compressed XML file in ZIP (xml.zip) |
| \* Optimization of the XML file generation |
| \* Data records are reloaded on startup |
| \* Data records are now stored in XML, and are auto-saved |

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| Revision 0.1.0.26 (16/06/2009) |
| - Bug in the data record queue for last days and last hours records. |
| \* Updated version of operation system, with latest windows update and latest drivers. (in production with SOFT 000031 12) |
| \* Web page layout changed from Cherokee to Mitra E&I |
| \* Compilation in VS2008 |
| \* Added support of remote power feeding systems |
| \* Added support for SNMP V3, with updated libraries |

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| Revision 0.1.0.24 (27/03/2009) |
| \* Optimization of the CAN driver |
| \* Added support of MCU3048M6 |

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| Revision 0.1.0.22 (1/10/2008) - SOFT 000031 12 |
| - DC System Refresh Task buggy if only one rectifier in current limitation --> nothing was refreshed |
| \* (Updated OS drivers on 25 March 2009, because of new booloader on Comp@s card.) |

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| Revision 0.1.0.20 (1/09/2008) - SOFT 000031 11 |
| - With a very low probability, the application could crash during startup. (It restarted correctly after 5 minutes thanks to the watchdog). |
| \* Support of XXXXconfigurationYYYY.xml files in Factory folder. This allows naming easily the configuration files. |
| \* With the Modbus interface, the currents are now given in 0.1A as unit. |

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| Revision 0.1.0.18 (1/08/2008) |
| \* PLC license is now included in the Asset license. |
| \* Functional battery test is configured (1000A as discharge current, 0% of discharge capacity, duration of 10 minutes). --> Must me correctly configured with the battery parameters for reliable battery test. |
| \* No current limitation by default (1000A by default, must be set correctly). |
| \* Modbus compatibility improvements |
| \* 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: Note that the same behavior with primary/secondary server is used. |
| \* 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. |

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| Revision 0.1.0.16 (1/07/2008) |
| - On system reboot, the set delay of the alarms was replaced by the clear delay. |
| - On system reboot, for alarm related events, the datetime is not parsed correctly |
| - The web server function ‘processXML.cgi’ processed only site level configuration |
| - Firmware boot loading may fail under some circumstances |
| \* CSV Log file of battery tests can be downloaded from web interface |
| \* Comp@s Display Module Support (CDM) |
| \* MCU30110 support |
| \* New Modbus license option |

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| Revision 0.1.0.14 (28/05/2008) - SOFT 000031 10 |
| - Possible web server crash if socket not correctly closed |
| - XML event posting locked when server answers badly |
| - The system time could be badly loaded during booting |
| + Daylight Saving Time |
| + Time Zone support |
| \* Web page generation 4x faster |
| \* Web interface compatible with older browser (Internet Explorer 6) |

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| Revision 0.1.0.12 (14/02/2008) - SOFT 000031 09 |
| - The severy\_type attribute in the XML syntax was not correctly encoded |
| + PLC module added (customization of data and alarm) |
| + Support of 2x6x1800W DC systems (with 2 MCU1848) |
| + Support of multi-language web interface |

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| Revision 0.1.0.8 (6/01/2008) - SOFT 000031 06 |
| - Problem with reload of customized alarm related to the digital inputs of the dc system. |
| - DC system alarm relay configuration was not saved if configured on ‘0’. |
| \* Improvement of the logic of the site access control with SAM0948. Any digital input can be associated with a door. |
| + Support of 3U rack with up to 8 CAR0948TN. |
| \* The default value of the minimal number of rectifier is 0, to avoid alarm by default. |

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| Revision 0.1.0.2 (1/11/2007) |
| - Configuration of the SAM0948 was not kept after system reboot |
| \* Added configuration parameter “Minimal number of rectifier” at DC system level |
| \* Added alarm “Missing Rectifiers” at DC system level |
| + Support of MCU1848 |

# 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?](#scroll-bookmark-202)
* [What are the requirements?](#scroll-bookmark-203)
* [How to run the emulator?](#scroll-bookmark-204)
* [How to use the emulator?](#scroll-bookmark-205)
* [Simulating a network of Comp@s system](#scroll-bookmark-206)
* [Where can I get the emulator?](#scroll-bookmark-207)
* [Remarks](#scroll-bookmark-208).

## 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.

## 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.

## 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.

## How to use the emulator?

* Start the Compas\_Emulator.exe application
* Testing the Web Server :
  1. Start you favorite web browser (Firefox 2.x or Internet Explorer 7.x)
  2. Browse to http://127.0.0.1/ or http://localhost/
  3. You are asked for a login/password which is admin/compas by default
  4. Please refer to 5.3. to use the Web Interface
* Testing SNMP :
  1. You need a SNMP MIB browser (see [Using the Comp@s SNMP Agent](#scroll-bookmark-34))
  2. The MIB can be downloaded through the web interface
  3. You can test the SNMP agent at the ip 127.0.0.1 (port 162)
  4. Read Community is admin:compas by default
  5. Write Community is admin:compas by default
  6. Please refer to [SNMP Agent](#scroll-bookmark-82) for more information.

## 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”.

## Where can I get the emulator?

Please contact your vendor.

## 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 80 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.

# Frequently Asked Questions

* [USB Connection Troubles](#scroll-bookmark-210)

## 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:

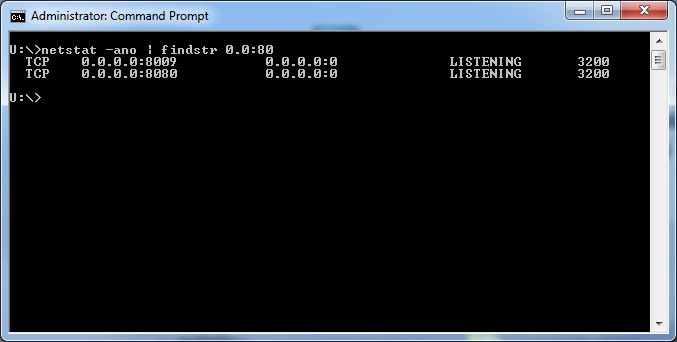


Figure 66 Administrator Command Prompt

* 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:

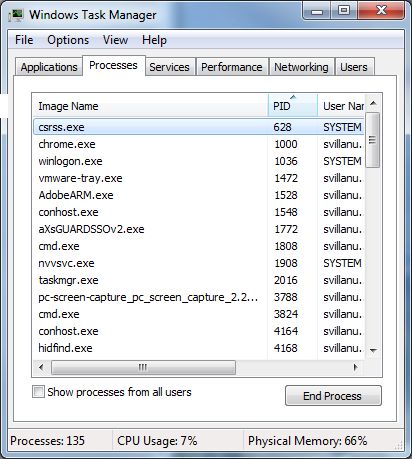


Figure 67 Windows Task Manager

* 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:

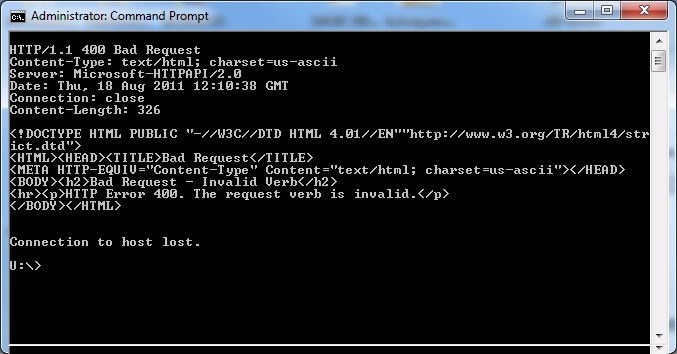


Figure 68 ISS Shutdown

* 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”:

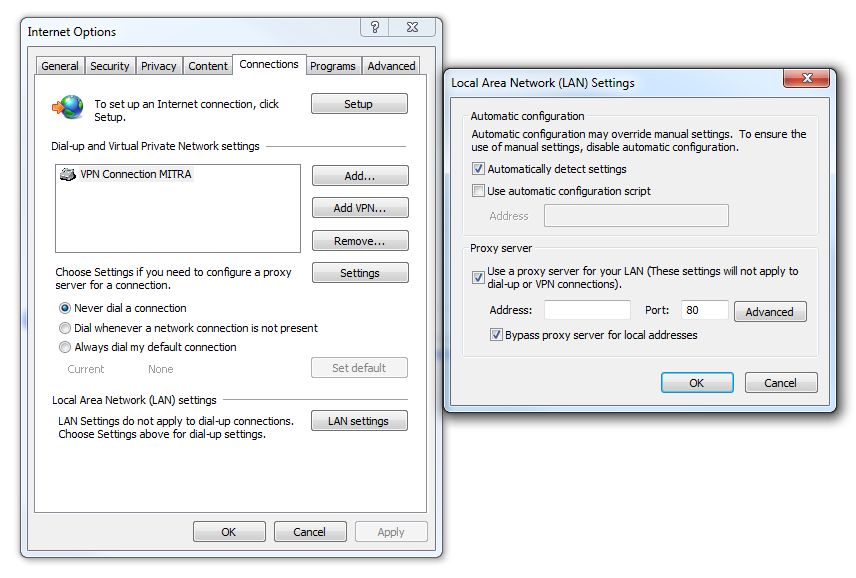


Figure 69 Bypass Proxy Server for Local Address

# 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.