OPERATION MANUAL

EPS-120-48V AND EPS-200-48V COMMUNICATIONS

REF.: NP-2719 and NP-2716

Manufactured by **PREMIUM S.A.**
www.premium.es
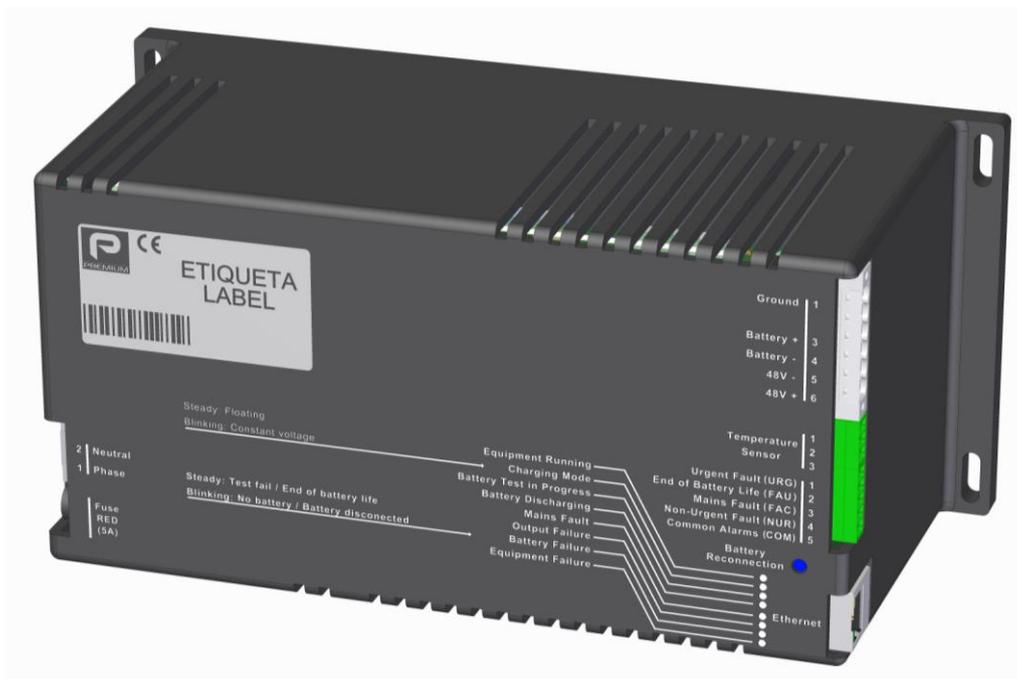
CONTENTS

1   EQUIPMENT DESCRIPTION

This section describes the most important equipment features related to communications.

1.1   INTRODUCTION

The EPS-120-48V and EPS-200-48V chargers allow web services that can be accessed via an RJ45/Ethernet port.

The equipment has two dedicated microcontrollers: one to control the charger and another to control communications. This means that each one has its own firmware.

The diagram in Figure 1.1 depicts internal data flow in the charger.
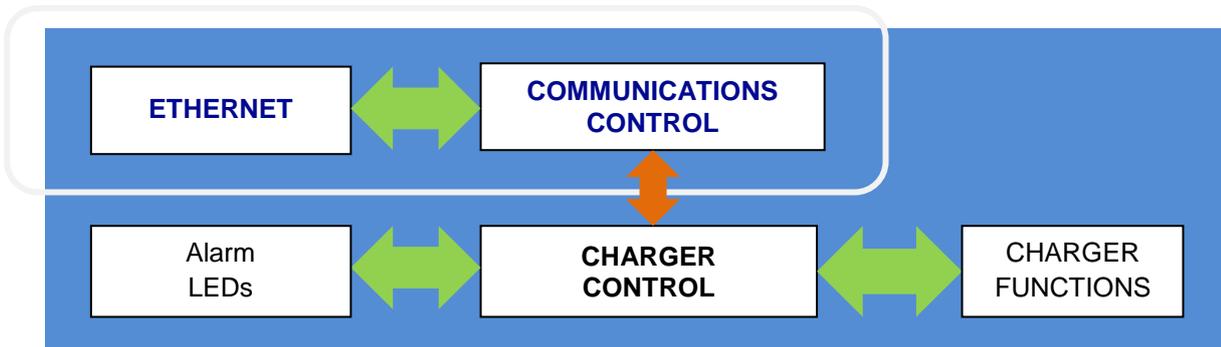
Figure 1.1 - Internal data flow diagram

1.2   SUPPORTED PROTOCOLS

Table 1.1 lists the communication protocols supported and the equipment functions to which they are related.

Table 1.1 - Protocols

Protocol	Function
TCP/IP	Ethernet/IPv4 communication
DHCP	Dynamic IP address assignment
ICMP	Equipment pinging
HTTP	Web access
SNTP	Time synchronization
LDAP	User authentication

1.3 PHYSICAL INTERFACE

Physical access to the equipment will be needed to perform any of the actions described in this manual. The physical interface is a single button, as shown in Figure 1.2, labeled as "Battery Reconnection" and located near the Ethernet port.
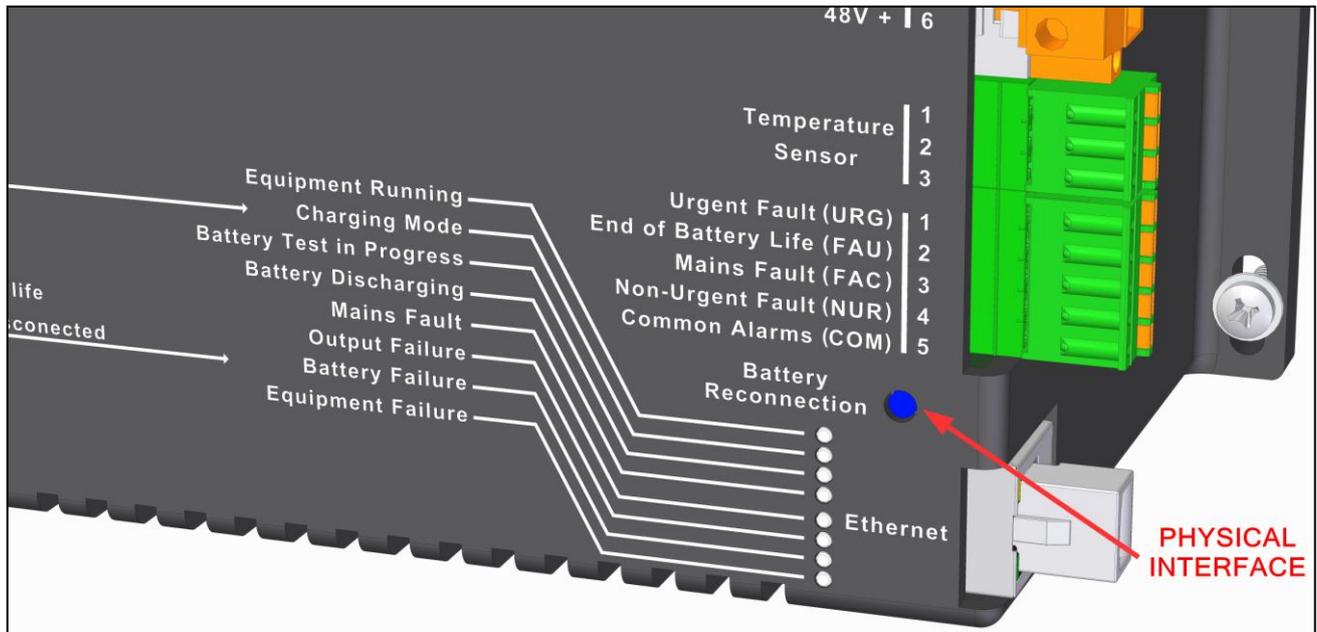
Figure 1.2 - Physical interface

This interface allows access to the equipment in local mode; this point is described in section 2.4 Local access.

2   WEB ACCESS

This section describes the steps to be taken for web access to the equipment.

2.1   ETHERNET CONNECTION

Any web access to the equipment will require an active Ethernet connection. For this purpose, connect the equipment using an **Ethernet cat5e** or higher cable with an **RJ45** connector. Connect a unit set up within the same IP range as the equipment to the other end of the cable.

2.2   WEB CONNECTION

The equipment is accessed via the web through a PC, using one of the compatible browsers listed in Table 2.1.

Table 2.1 - Compatible browsers

Browser	Version
Mozilla Firefox	26 or higher
Google Chrome	29.0 or higher
Internet Explorer	11 or higher

To access, enter the equipment IP address in the address bar. As specified in Table 2.2, this IP address may be assigned in three different ways.

Table 2.2 – IP address assignment methods

Assignment type	Default value assigned	Configurable
Remote	100.0.0.100	YES
DHCP	Disabled	YES
Local	**100.0.0.1**	NO

2.3   USER TYPES

Two user types are related to the editing modes allowed by the charger. These are defined by LDAP server access. Table 2.3 provides an overview of the modes available and the functions allowed.

Table 2.3 - Access modes

Mode	Functions allowed
View	View Overview Data, Alarms, Measurements, Communications, Equipment, Parameters and Network settings View Log Download XML Setup
Administrator	View Overview Data, Alarms, Measurements, Communications, Equipment settings View Log Download XML Setup View and change Parameters and Network settings Perform Control actions Update Firmware

2.4 LOCAL ACCESS

The equipment has a method to access web services through a direct (local) connection.

This mode permits the same actions as with remote access, but with the following characteristics:

* No LDAP server access is required for authentication
* The same IP address (**100.0.0.1**) is always used for access
* The user/password relationship is preset

To access this mode, use a PC and follow the steps listed below:

1. Check that the equipment is on ("Equipment Running" LED is on)
2. Press and hold the "Battery Reconnection" pushbutton for more than 10 seconds
3. Check that all LEDs have started blinking

The setup recommended for the PC is specified in Table 2.4.

Table 2.4 - Recommended PC setup

Parameter	Value
IP	100.0.0.2
Subnet mask	255.255.255.0
Browser	*See Table 2.1*

This mode is enabled for up to 20 minutes, but the user can exit once all desired actions have been completed.

In local mode, access is done using the login data listed in Table 2.5. One provides the user with access in view mode and the other provides access in administrative mode.

Table 2.5 - Local mode login data

Mode	User	Password
View	consulta	consulta
Administrator	*	

* Request credentials if needed

To exit this mode, follow the steps below:

1. Check that all LEDs are blinking
2. Press and hold the "Battery Reconnection" pushbutton for more than 10 seconds
3. Check that all LEDs have stopped blinking and are steady with normal operation

3   WEB PAGE

This section describes the various web pages and their functionality.

3.1   GENERAL LAYOUT

Figure 3.1 describes the various parts that make up a standard web page hosted on the equipment.
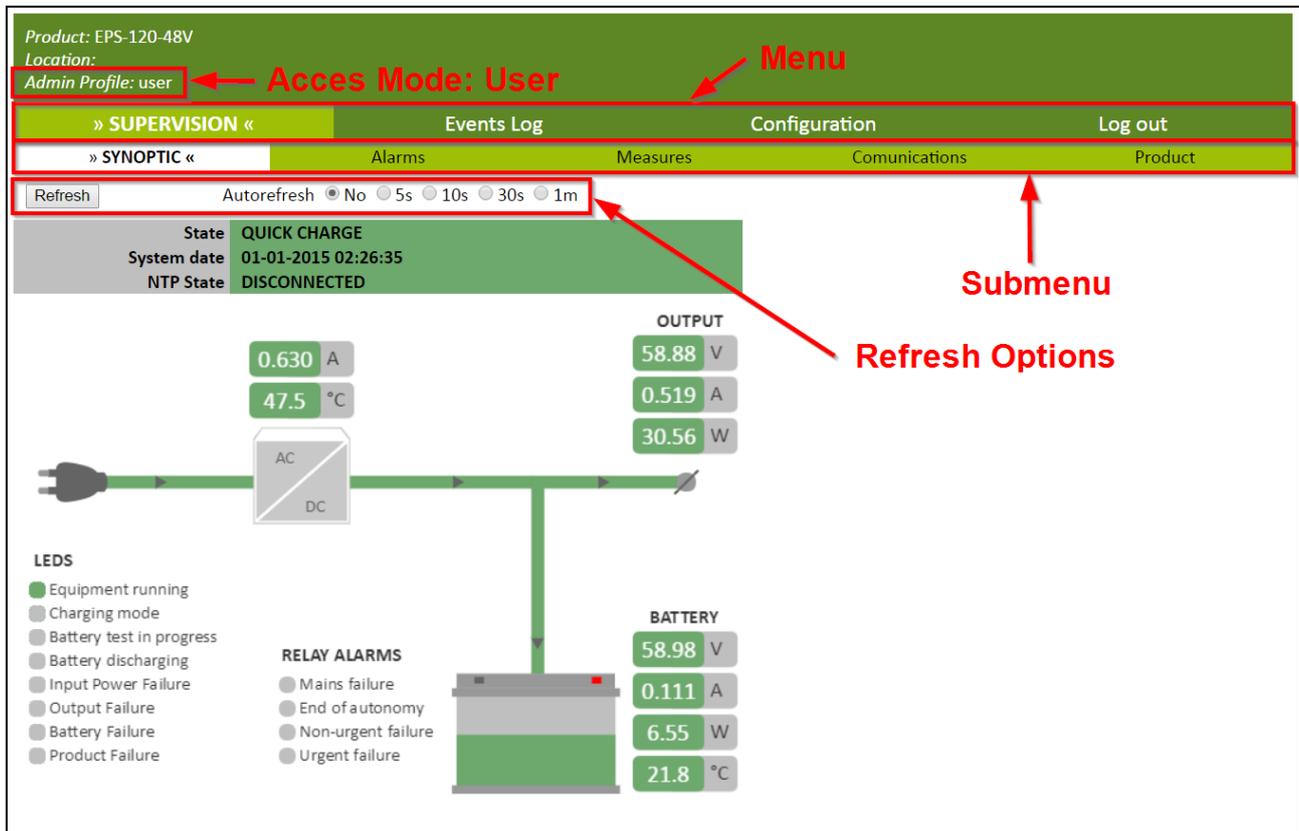
Figure 3.1 - Web page layout

3.2 SITE MAP

Once authenticated, the user can access the different web pages available for the respective mode. Table 3.1 shows the relationship between access modes and accessible web pages.

Table 3.1 - Site map

Menu	Submenu	Available in mode	
		View	Administrator
MAINTENANCE	Overview	✔	✔
	Alarms	✔	✔
	Measurements	✔	✔
	Communications	✔	✔
	Equipment	✔	✔
LOG	-	✔	✔
SETUP	XML setup	✔*	✔
	Parameters	✔*	✔
	Control	✘	✔
	Network	✔*	✔
	Firmware	✘	✔
EXIT	-	✔	✔

* Only parameter viewing is allowed

3.3 AUTHENTICATION

When the EPS-120-48V or EPS-200-48V is first connected, an authentication window will be displayed as shown in Figure 3.2.

To access a mode, enter the respective user name and password.
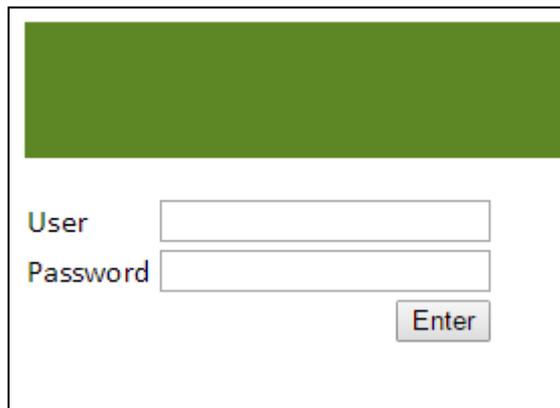
Figure 3.2 - Authentication

If the user and password entered are valid, a menu will be displayed as shown in Figure 3.3 and the desired and/or allowed access mode can be selected.

Figure 3.3 - Authentication menu

The equipment limits the maximum number of simultaneously authenticated users for each mode as specified in Table 3.2. If this limit is exceeded, the user will be prompted on whether or not to disconnect any of the previously authenticated users.

Table 3.2 - Limit of authenticated users

Mode	Maximum number of users
View	4
Administrator	1

3.4 MAINTENANCE

The following section describes the web pages that can be accessed from the Maintenance menu and the functions available on these pages.

3.4.1 OVERVIEW DIAGRAM

The Overview Diagram page (Figure 3.4) displays key information on the current status of the equipment.

The main component is an overview diagram of the various items that comprise the equipment (AC input, battery and output) and how they are interconnected.

The lines that connect the charger components have two statuses:

* **Green:** The components are interconnected and electric current direction in this section is shown.
* **Gray:** No current flow and/or section has been disconnected.

Section 4.1 Overview scenarios in the appendix shows different snapshots that have been added to show the various connection line statuses based on equipment status.

The diagram also displays the LED statuses as shown on the equipment itself and the status of the alarm relays. Red indicates that the relay is closed.
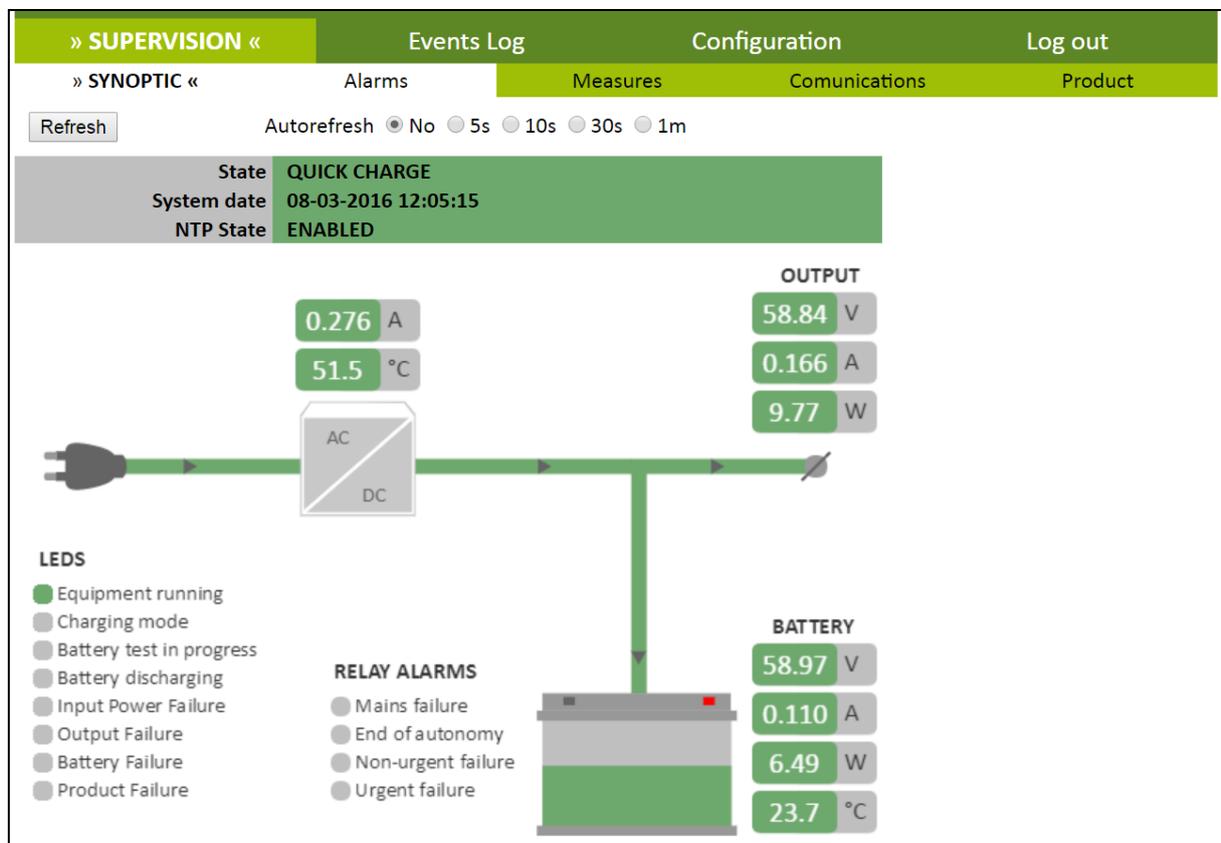
Figure 3.4 –Overview diagram. Rapid charging with no active alarms

This page is accessed once the user has been authenticated in the equipment.

The **Autorefresh** option for access is disabled (NO option) by default, similar to all pages with this option.

HEADER

The header contains the following fields:

- **Status:** Displays the current status of the equipment (see Table 3.3)
- **System date:** Date currently being used by the system
- **NTP status:** Indicates if the equipment date and time are synchronized with an NTP server. The possible settings are ON / OFF

Table 3.3 - Statuses

Status	Description
STARTUP	Equipment performs the initial checks before startup
RAPID CHARGING	Battery charging at constant current
FLOATING	Battery charging at constant voltage
NO BATTERY	No battery connected to the equipment or Equipment has disconnected battery due to serious battery error
AC INPUT ERROR	Mains voltage is out of range
BATTERY TEST	Battery test underway to check battery capacity status
OVERLOAD	Equipment has entered protection due to overload
OVERLOAD TEST	Equipment is restarting after shutdown due to overload
CHARGER FAULT	Internal charger fault; if not recovered, equipment must be replaced
NO BATTERY TEST	Equipment is checking whether or not a battery is connected
BATTERY CHARGED	Battery has remained in floating long enough to be considered charged
STARTUP FAULT	In a startup, the equipment has not achieved minimum voltage within 1 second
BATTERY RECOVER	Severely discharged battery has been connected and recovery is being attempted

LEDs

Table 3.4 describes the possible statuses of the LED indicators.

If a LED is gray, it means that the situation indicated by the LED is not occurring.

Table 3.4 - LEDs

LED	Color	Lighting Mode	Indication
Equipment running	Green	Steady	Charger in progress
Charging mode	Green	Steady	Battery charging in floating mode
		Blinking	Battery charging in constant voltage mode
Battery test in progress	Green	Steady	Battery test in progress
Battery discharging	Yellow	Steady	Battery discharging
Input power fault	Red	Blinking	Out-of-range mains input voltage
Output abnormality	Red	Blinking	Out-of-range output voltage
Battery abnormality	Red	Steady	Failed battery test, end of battery life
		Blinking	Out-of-range battery voltage
Equipment abnormality	Red	Steady	Battery temperature sensor error
		Blinking	Internal charger error

ALARM RELAYS

Table 3.5 describes the possible statuses of the ALARM RELAYS indicators.

Table 3.5 - ALARM RELAYS

Alarm Relay	Status	Operating logic

Urgent fault	**Red**
	Closed relay
		- Under normal charger operation, indication not enabled.
		- Switch off and on are timed (5 s).
		- Indicator is red if:
		    - No battery is connected.
		    - Battery test fault.
		    - Battery defective or deteriorated.
		    - Urgent internal rectifier fault.
		    - Out-of-range equipment temperature.

End of battery runtime	**Red** Closed relay	- Under normal charger operation, the contact is open. - Switch off and on are timed (15 s). - Indicator is red when battery is discharging and the voltage drops to minimum set point
Mains fault	**Red** Closed relay	- Under normal charger operation, the contact is open. - Switch off and on are timed (5 s). - Indicator is red if AC mains voltage is out of range or a power failure has occurred.

Non-urgent fault	**Red**
	Closed relay
		- Under normal charger operation, the contact is open.
		- Switch off and on are timed.
		- Indicator is red if:
		    - Battery overvoltage is measured.
		    - Temperature sensor error.
		    - Out-of-range output voltage.
		    - Out-of-range battery temperature.

3.4.2 ALARMS

This page (Figure 3.5) displays the status of the various alarms. The information displayed corresponds to the last time the page was refreshed.

Each alarm can be in two statuses:

∗ **Green:** Alarm is off

∗ **Red:** Alarm is on

Furthermore, the alarms shown on this page are grouped into four blocks. Each of these blocks can be in two different statuses:

∗ **Green:** All block alarms are off

∗ **Red:** One or more block alarms are on

Point 4.2 Alarm scenarios in the appendix shows different examples according to the active alarms.

Figure 3.5 – Alarms

3.4.3 MEASUREMENTS

This page (Figure 3.6) displays the values of the most significant measurements of the equipment.

The values are grouped into three blocks, according to whether they affect charger, battery or battery test parameters. All parameters shown on this page are described briefly below.

- **CHARGER**
  - o **Status:** Current equipment status (see Table 3.3)
  - o **Charger current:** Rectifier supply current (A)
  - o **Output Voltage:** Equipment output voltage (V)
  - o **Output Current:** Equipment output current (A)
  - o **Output Power:** Overall power (W) at output
  - o **Temperature:** Internal equipment temperature (ºC)
- **BATTERY**
  - o **Voltage:** Battery voltage (V)
  - o **Current:** Battery current (A); a negative value indicates that it is discharging
  - o **Power:** Battery power (W), both in supply and charging operations
  - o **Temperature:** Sensor-measured temperature (ºC)
- **BATTERY TEST**
  - o **Time for Next Battery Test:** Remaining time for next battery test
  - o **Battery Discharge Capacity:** Measured battery capacity (mAh)
  - o **Discharging Time:** Discharge time (min) measured in last battery test

» SUPERVISION «	Events Log	Configuration	Log out
Synoptic	Alarms	» MEASURES «	Comunications	Product

Refresh   Autorefresh ● No ○ 5s ○ 10s ○ 30s ○ 1m

PRODUCT MEASURES

CHARGER	
State	QUICK CHARGE
Charger Current	0.140 A
Output Voltage	58.87 V
Output Current	0.000 A
Output Power	0.00 W
Temperature	47.4 °C

BATTERY	
Voltage	58.97 V
Current	0.112 A
Power	6.60 W
Temperature	21.8 °C

BATTERY TEST	
Time for next Battery Test	111 d 23 h 17 m 33 s
Discharge Battery Capacity	0 mAh
Discharge Time	0 min

Figure 3.6 - Measurements

Similar to the previous pages, there is an option to autorefresh the information of the variables displayed, at different time intervals, and to force reload with the **Refresh** button.

3.4.4 COMMUNICATIONS

This page (Figure 3.7) displays the settings that affect equipment communications. The information displayed corresponds to the last time the page was refreshed.

The only action that can be taken on this page is to refresh the information by clicking the **Refresh** button.

Figure 3.7 - Communications

3.4.5 EQUIPMENT

This page (

» SUPERVISION «	Events Log	Configuration	Log out
Synoptic	Alarms	Measures	Communications	» PRODUCT «

Refresh

PRODUCT

Product type	CB-CT1-PB
Model	EPS-120-48V
Manufacturer	PREMIUM
Serial number	071900000
MAC Address	00:00:00:00:00:00
Hardware version	1.0
Software version	2.9
Software Identificator	EPS-120-48V v29
Communication Software version	2.1
Part Number	NP-0719
Sigrid Code	
Configuration version	
Date of last upload configuration	150101014245

Figure 3.8) displays the equipment measurement status; the information displayed corresponds to the last time it has been refreshed.

» SUPERVISION «	Events Log	Configuration	Log out
Synoptic	Alarms	Measures	Communications	» PRODUCT «

Refresh

PRODUCT

Product type	CB-CT1-PB
Model	EPS-120-48V
Manufacturer	PREMIUM
Serial number	071900000
MAC Address	00:00:00:00:00:00
Hardware version	1.0
Software version	2.9
Software Identificator	EPS-120-48V v29
Communication Software version	2.1
Part Number	NP-0719
Sigrid Code	
Configuration version	
Date of last upload configuration	150101014245

Figure 3.8 - Equipment

Note: The **COMMUNICATIONS SOFTWARE VERSION** field is the one used as a reference to determine the equipment version (2.1 at the time of publication of this manual).

Other fields that mention software versions correspond to builds of the main firmware (communications software version).

3.5 LOGS

This page allows the user to view events logged by the equipment. Figure 3.9 shows the page as it appears before the user checks any event information.

Two actions can be performed on this page:

* Save all events to a CSV file
* Filtered view of all events on website

Data display format

The data shown on this website use the frame shown in Table 3.6.

Table 3.6 - Log entry format

N	NTP	DATE	TIME	GROUP	TYPE	DESCRIPTION	ACTIVE	TRAP	TRAP No.
1-400	S/C	dd/mm/yyyy	hh:mm:ss.mmm	0-5	1-255	Alarm/event name	YES/NO	YES/NO	1-x

Each field is described briefly below:

* **N**: Value between 1 and 400; indicates the entry number.
* **NTP**: "S" (suspect) is shown to indicate unreliable time when the NTP server does not synchronize for at least a "yes_tfail" time; if the NTP server is synchronized and the time is reliable, "C" (correct) will be displayed.
* **DATE**: Indicates the date: two digits for day, two digits for month and four digits for year, all separated by a slash (/).
* **TIME**: Composed of two digits for the hour (24-hour clock), two digits for minutes and two digits for seconds, all separated by a colon (:), and three digits for thousandths of a second, separated from the seconds by a period (.)
* **GROUP**: Associated with the group classification as shown in Table 3.7.
* **TYPE**: Associated with the type classification as shown in Table 3.7.
* **DESCRIPTION**: Displays a specified value according to Table 3.7.
* **ACTIVE**: Indicates the on (YES) or off (NO) status of this event or alarm.
* **TRAP**: This field contains no useful information and should be omitted.
* **TRAP No.**: This field contains no useful information and should be omitted.

Table 3.7 - Logged events

Classification	Group	Type	Name	Description
Urgent Fault	1	1	Charger fault	Internal equipment malfunction.
		2	High Temperature	High equipment temperature.
		3	Battery Absent	Battery not available.
		4	Test fault	Regular battery test result: failed.
Non-urgent fault	2	1	High Voutput	Out-of-range output voltage: Overvoltage.
		2	Low Voutput	Out-of-range output voltage: Undervoltage.
		3	Maximum Vbat	Out-of-range battery voltage: Overvoltage.
		4	High Battery Temperature	High battery temperature.
		5	Temperature Sensor fault	Temperature sensor not detected.
Events	3	1	Absent Vmains	No AC input voltage.
		2	Low Vmains	Out-of-range AC input voltage: Undervoltage.
		3	High Vmains	Out-of-range AC input voltage: Overvoltage.
		4	End of Battery Runtime	Battery is flat.
Other events	4	1	Forced: Local	Forcing of local IP from pushbutton.
		2	Forced: Battery	Forcing of battery reconnection from pushbutton.
		3	Forced: Test	Forcing of battery test.
		4	Forced: Rapid charging	Forcing of startup of rapid charging.
		5	Forced: Floating	Forcing of startup of floating.
		6	Power UP	Equipment startup.
		7	Setup Change	Change made to equipment setup.
		8	Overload	Equipment in overload.
		9	Temp. limitation	Power limitation due to high equipment temperature.
		10	Test OK	Regular battery test result: correct.
		11	Rapid charging	Battery under rapid charging.
		12	Discharging	Battery discharging.
High occurrence	5	1	NTP fault	NTP server connection fault.
		2	SNMP fault	TRAP SNMP upload fault.
Manufacturer	0	1	LDAP connection fault	LDAP connection fault.
		2	Firmware fault	Firmware fault.
		3	Updated firmware	Updated firmware.
		4	Forced RESET	Control RESET forcing requested.
		5	Display Connected	Display user connected.
		6	Admin Connected	Administrator user connected.
		7	Display Disconnected	Display user disconnected.
		8	Admin Disconnected	Administrator user disconnected.
		9	Local Display Connected	Local display user connected.
		10	Local Admin Connected	Local administrator user connected.
		11	Local Display Disconnected	Local display user disconnected.
		12	Local Admin Disconnected	Local administrator user disconnected.
		13	Wrong XML	Wrong XML file upload.
		14	Pushbutton start	Equipment has been started from the pushbutton.
		15	Forced: Website battery	Forcing of battery reconnection from website.
		16	Forced: Charged battery	Forcing of startup of charged battery.
		17	Forced: LEDs and relays	LED and relay status is being forced.
		18	Forced: Non-urgent fault relay	Turn-on of the non-urgent fault relay has been forced.
		19	Forced: AC fault relay	Turn-on of the AC fault relay has been forced.
		20	Forced: End of battery runtime relay	Turn-on of the End of Battery Runtime relay has been forced.
		21	Forced: Urgent fault relay	Turn-on of the urgent fault relay has been forced.
		22	Forced: LEDs and relays ON	LED and relay turn-on has been forced.
		23	Forced: LEDs and relays OFF	LED and relay shutdown has been forced.
		24	Battery test, failed try	Regular battery test result: failed try.
		25	Battery defective	Indicates that the battery is damaged or defective and the equipment has disconnected it.

Figure 3.9 - Log start page

CSV file download

The equipment allows all events to be downloaded and saved to a **CSV** (comma-separated values) file that can be directly edited in a spreadsheet editor. The format of the resulting file is shown in Figure 3.10.

To download, click on **Export All Events to CSV**.

By default, the file name generated is **PSU_log.csv**.

	A	B	C	D	E	F	G	H	I	J
1	MODEL	MANUFACTURER	SERIAL NUMBER	CODE	LOCATION	SIGRID				
2	EPS-120-48V	PREMIUM	071900000	NP-0719						
3										
4	N	NTP	DATE	HOUR	GRUP	TYPE	DESCRIPTION	ACTIVE	TRAP	TRAP NUM
5	1	S	1/01/2015	1:00:16.000	0	6	Administrator user connected.	SI	NO	0
6	2	S	1/01/2015	1:00:10.000	4	6	Equipment startup.	NO	NO	0
7	3	S	1/01/2015	1:00:08.000	4	6	Equipment startup.	SI	NO	0
8	4	S	1/01/2015	1:00:08.000	2	2	Out-of-range output voltage: Undervoltage.	SI	NO	0
9	5	S	1/01/2015	1:00:08.000	4	8	Equipment in overload.	SI	NO	0
10	6	S	1/01/2015	1:00:06.000	4	6	Equipment startup.	NO	NO	0
11	7	S	1/01/2015	1:29:24.000	0	6	Administrator user connected.	SI	NO	0
12	8	S	1/01/2015	1:27:13.000	0	6	Administrator user connected.	SI	NO	0
13	9	S	1/01/2015	1:27:11.000	0	8	Administrator user disconnected.	SI	NO	0
14	10	S	1/01/2015	1:24:50.000	5	1	NTP server connection fault.	SI	NO	0

Figure 3.10 - CSV event log file open in spreadsheet editor

Web query

To view logged events on the website, click on the **View Log** button.

As shown in Figure 3.11, the web page displays the events in blocks containing up to 10 events each.
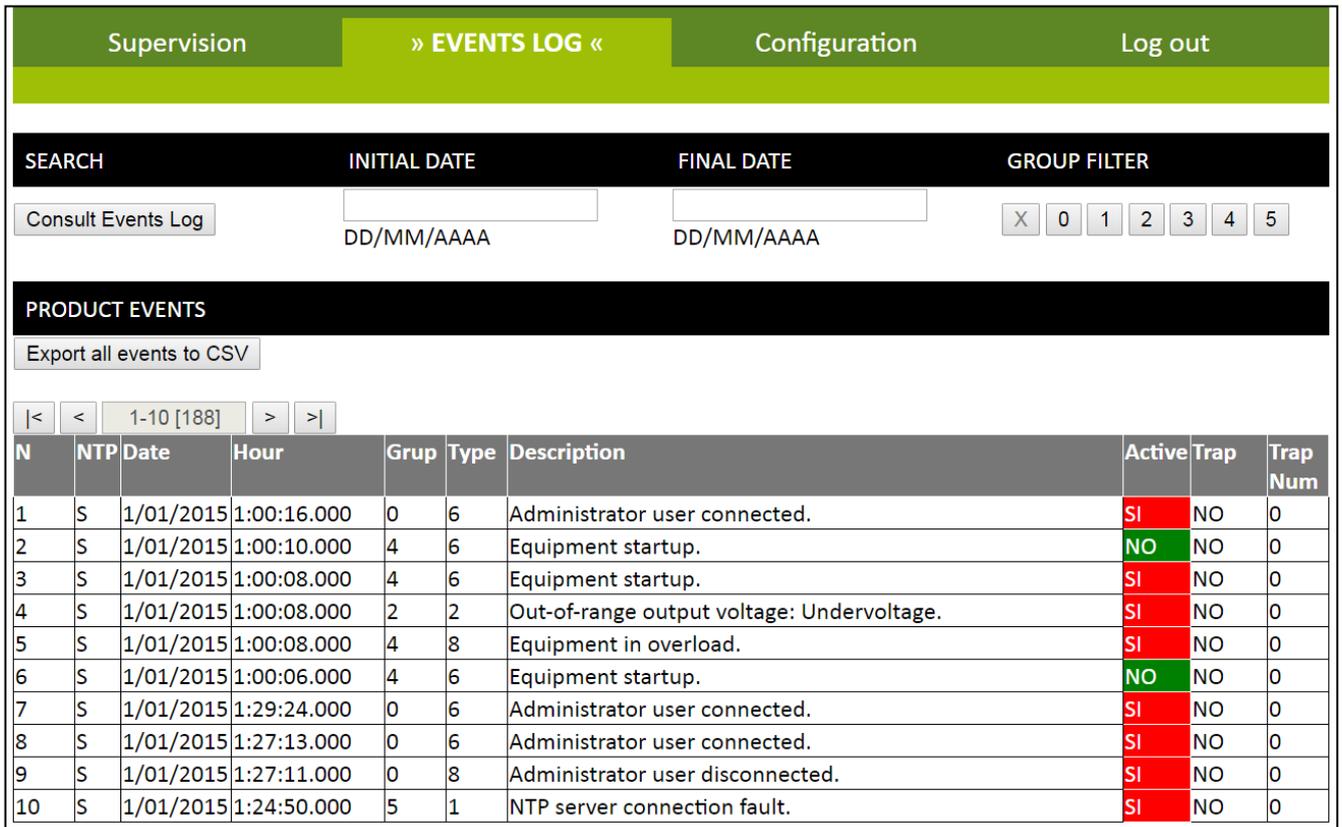
Supervision	» EVENTS LOG «	Configuration	Log out

SEARCH	INITIAL DATE	FINAL DATE	GROUP FILTER
Consult Events Log	DD/MM/AAAA	DD/MM/AAAA	X 0 1 2 3 4 5

PRODUCT EVENTS

Export all events to CSV

|< | < | 1-10 [188] | > | >|

N	NTP	Date	Hour	Grup	Type	Description	Active	Trap	Trap Num
1	S	1/01/2015	1:00:16.000	0	6	Administrator user connected.	SI	NO	0
2	S	1/01/2015	1:00:10.000	4	6	Equipment startup.	NO	NO	0
3	S	1/01/2015	1:00:08.000	4	6	Equipment startup.	SI	NO	0
4	S	1/01/2015	1:00:08.000	2	2	Out-of-range output voltage: Undervoltage.	SI	NO	0
5	S	1/01/2015	1:00:08.000	4	8	Equipment in overload.	SI	NO	0
6	S	1/01/2015	1:00:06.000	4	6	Equipment startup.	NO	NO	0
7	S	1/01/2015	1:29:24.000	0	6	Administrator user connected.	SI	NO	0
8	S	1/01/2015	1:27:13.000	0	6	Administrator user connected.	SI	NO	0
9	S	1/01/2015	1:27:11.000	0	8	Administrator user disconnected.	SI	NO	0
10	S	1/01/2015	1:24:50.000	5	1	NTP server connection fault.	SI	NO	0

Figure 3.11 - Log. View of 10 events (no filter)

The start of the table allows scrolling to show more events. The functionality of these arrows is described in Table 3.8.

Table 3.8 - Log. Scroll arrows

Symbol	Function
|<	Move to the start of event logging
<	Scroll back 10 positions in the event log
>	Scroll forward 10 positions in the event log
>|	Move to the end of event logging

The box between the scroll arrows also indicates the relationship between the events shown and the total as described below:

$$A - B [T]$$

- **A**: Entry number for the first event shown
- **B**: Entry number for the last event shown
- **T**: Total number of events in the log

Web: viewing with filter

Web viewing allows results to be filtered to show only the information of interest. To do so, enter the filter parameters and click on **View Log**.

The filter options make it possible to filter according to:

- Group
- Date

Filtering by group

Figure 3.12 shows filtering by group: this is done by selecting the button with the number of the group to be displayed. The group number is assigned as specified in Table 3.7.

The **X** button is used to select no group and leave the filter in its default status.

Figure 3.12 - Log. View with filtering by group

Filtering by date

The date filter consists of the start date and the end date, using the **dd/mm/yyyy** format.

The date and group filter can be combined as shown in Figure 3.13.
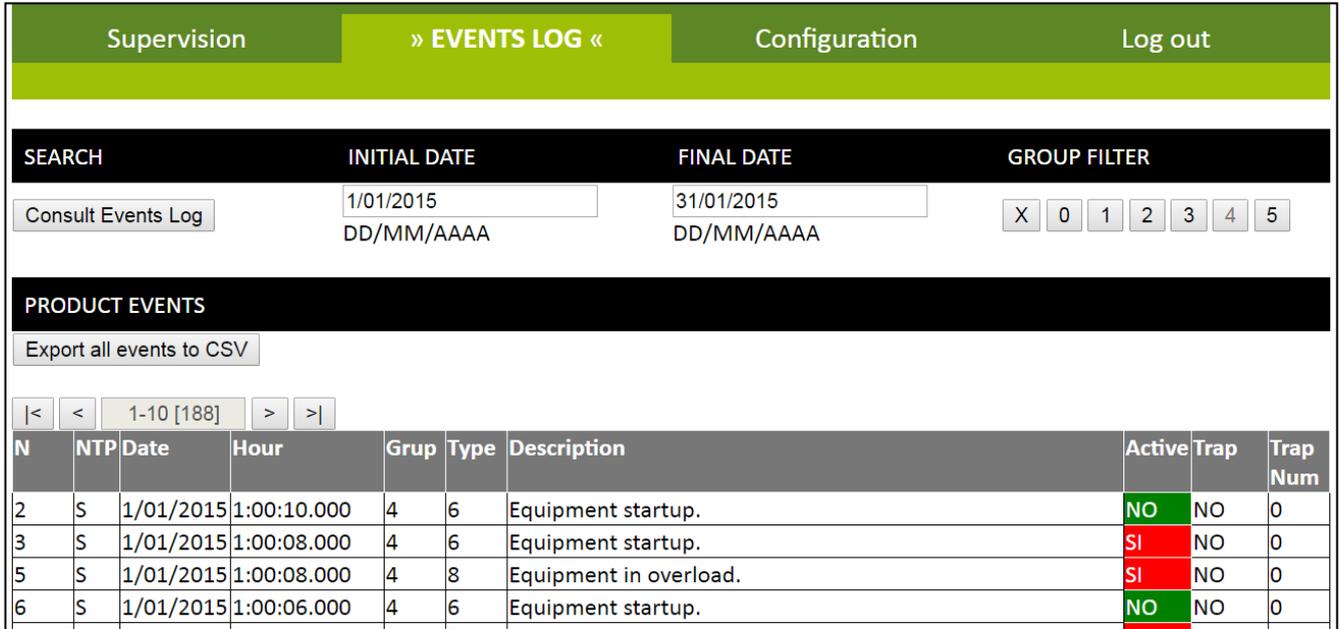
Supervision	» EVENTS LOG «	Configuration	Log out

SEARCH	INITIAL DATE	FINAL DATE	GROUP FILTER
Consult Events Log	1/01/2015 DD/MM/AAAA	31/01/2015 DD/MM/AAAA	X 0 1 2 3 4 5

PRODUCT EVENTS

Export all events to CSV

|< < 1-10 [188] > >|

N	NTP	Date	Hour	Grup	Type	Description	Active	Trap	Trap Num
2	S	1/01/2015	1:00:10.000	4	6	Equipment startup.	NO	NO	0
3	S	1/01/2015	1:00:08.000	4	6	Equipment startup.	SI	NO	0
5	S	1/01/2015	1:00:08.000	4	8	Equipment in overload.	SI	NO	0
6	S	1/01/2015	1:00:06.000	4	6	Equipment startup.	NO	NO	0

Figure 3.13 - Log. Viewing with filtering by date and group

No filtering

If the **View Log** button is clicked without specifying any filter parameter, the web page will display all the entries contained in the log as shown in Figure 3.14.

Supervision	» EVENTS LOG «	Configuration	Log out

SEARCH	INITIAL DATE	FINAL DATE	GROUP FILTER
Consult Events Log	DD/MM/AAAA	DD/MM/AAAA	X 0 1 2 3 4 5

PRODUCT EVENTS

Export all events to CSV

|< < 1-10 [188] > >|

N	NTP	Date	Hour	Grup	Type	Description	Active	Trap	Trap Num
1	S	1/01/2015	1:00:16.000	0	6	Administrator user connected.	SI	NO	0
2	S	1/01/2015	1:00:10.000	4	6	Equipment startup.	NO	NO	0
3	S	1/01/2015	1:00:08.000	4	6	Equipment startup.	SI	NO	0

Figure 3.14 - Log. Viewing with no filter

3.6 SETUP

This section describes the web pages that can be accessed from the Setup menu and the functions available on these pages.

3.6.1 XML SETUP

The equipment allows XML files to be loaded to change the setup according to specification. To do so, follow the process described below Figure 3.15.

Figure 3.15 - XML setup in administrative mode

XML file upload

The process used to upload the setup by this method is as follows:

1. Click on **SELECT FILE**

2. Select the **.XML** file that contains the setup to be uploaded into the equipment

3. Click on **UPLOAD SETUP**

     The button will be enabled as soon as an accepted file has been selected

4. Click on **APPLY SETUP**

     The button will be enabled if the file sent was valid

5. Click on **OK** in the warning window that is opened

6. According to process result

     a. The page will show a message indicating that the setup has been uploaded

     b. Any errors in the setup will be flagged and no settings will be changed

Section 4.3 of the appendix shows all the messages displayed during the XML file upload process.

XML file download

The user can also download an XML file with the current setup parameters of the charger. The process used to download this file is as follows:

1. Click on **DOWNLOAD SETUP**
2. Select where to save the **psu_config.xml** file

View Mode

If this page is accessed in view mode, as seen in Figure 3.16, the only action allowed is XML setup file download.

Figure 3.16 - XML setup in view mode

3.6.2 PARAMETERS

This page allows the user to change the parameters one by one manually if the user name has been authenticated in administrator mode. The process used to make these changes is as follows:

1. Change the form fields that are to be changed
2. Click on **APPLY CHANGES**
3. Click on **OK** in the warning window that is opened (see Figure 3.18)
4. According to process result
   a. The page will reload and display the modified settings in green (see Figure 3.19)
   b. If the setup contains any errors, the field with the error will be displayed with an orange background and none of the settings entered will be loaded (see Figure 3.20)

The **Apply Changes** button is at the start of the page. Next to each section title, there is a **^** symbol that moves the page to the start when clicked.

Supervision	Events Log	» CONFIGURATION «	Log out
Configuración XML	» SETTINGS «	Control Network	Firmware

PRODUCT SETTINGS

Refresh   Apply changes

PRODUCT	
Product type	CB-CT1-PB
Product	EPS-120-48V
Manufacturer	PREMIUM
Serial number	071900000
Date configuration	150101014245
Configuration version	
Location name	
SIGRID code	

PARAMETER	DESCRIPTION	RANGE [min/defecto/max]	ACTUAL VALUE	UNITS
^AC INPUT				
vin_max	Maximum input voltage	[90.0/270.0/300.0]	270.0	V
vin_min	Minimum input voltage	[90.0/180.0/300.0]	180.0	V
^DC OUTPUT				
vo1_nom	Output voltage: Nominal value	[30.00/54.96/61.00]	54.24	V
vo1_max	Output voltage: Maximum value	[50.00/60.00/61.00]	60.00	V
vo1_min	Output voltage: Minimum value	[30.00/39.00/45.00]	39.00	V

Figure 3.17 - Parameters in administrator mode
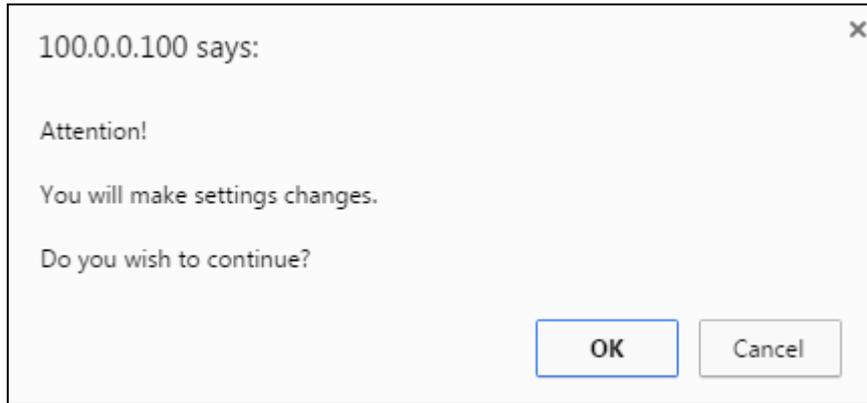
Figure 3.18 - Warning message

Figure 3.19 - Setup change with no errors

Figure 3.20 - Setup change with error

Table 3.9 - Parameters for EPS-120-48V (NP-0719)

Name	Description	Format	Step	Min	Default	Max
AC INPUT						
vin_max	Maximum input voltage	V	0.1	90.0	270.0	300.0
vin_min	Minimum input voltage	V	0.1	90.0	180.0	300.0
DC OUTPUT:						
vo1_nom	Output voltage: Nominal value	V	0.01	30.00	54.96	61.00
vo1_max	Output voltage: Maximum value	V	0.01	50.00	60.00	61.00
vo1_min	Output voltage: Minimum value	V	0.01	30.00	39.00	45.00
BATTERY						
bat	Presence of battery	0: NO / 1: YES	1	0	1	1
tec	Technology type	Text		-	PB	-
cap	Battery capacity	Ah	0.01	1.00	2.50	38.00
BATTERY – REGULATION UNDER LOAD						
ilim	Maximum battery charging current	A	0.001	0.000	0.250	3.000
offset_tmax	Maximum temperature for temperature offset	ºC	1	0	40	80
offset_tmin	Minimum temperature for temperature offset	ºC	1	-20	0	80
BATTERY – REGULATION UNDER FLOATING						
v_flot	Battery charging voltage in floating	V	0.01	50.00	54.96	60.00
offset_fleet	Temperature offset in floating	mV/ºC	0.1	0.0	72.0	500.0
tmin_flot	Minimum time in floating for battery to be considered charged	h	1	1	13	24
BATTERY – RAPID CHARGING						
v_load	Rapid charging voltage	V	0.01	48.00	58.80	60.00
offset_load	Temperature offset	mV/ºC	0.1	0.0	72.0	500.0
hab_comp	Enable temperature offset in rapid charging	0: NO / 1: YES	1	0	0	1
i_fleet	Battery current to pass to floating	mA	1	1	15	500
tlim_charge	Maximum time to remain in rapid charging	h	1	1	8	24
BATTERY – BATTERY TEST						
v_end	Voltage limits to consider the test as failed	V	0.01	30.00	43.00	50.00
period	Period between each battery test	Weeks	1	1	16	60
disch_cap	Battery test: discharge capacity	Ah	0.01	0.00	1.00	38.00
tlim_test	Battery test: Time limit for each test try	h	1	1	24	99
rein	Number of retries	Units	1	0	1	9
BATTERY – ALARMS						
tbat_high	Maximum battery temperature	ºC	1	10	50	80
tbat_low	Minimum battery temperature	ºC	1	-20	0	80
BATTERY – DISCONNECTION						
disch_v_max	Disconnection voltage: upper limit	V	0.01	50.00	60.00	60.00
disch_v_min	Disconnection voltage: lower limit	V	0.01	30.00	42.00	50.00
disch_inm	Immediate disconnection time	V	0.01	30.00	39.00	50.00

Table 3.10 - Parameters for EPS-200-48V (NP-0716)

Name	Description	Format	Step	Min	Default	Max
AC INPUT						
vin_max	Maximum input voltage	V	0.1	90.0	270.0	300.0
vin_min	Minimum input voltage	V	0.1	90.0	180.0	300.0
DC OUTPUT:						
vo1_nom	Output voltage: Nominal value	V	0.01	30.00	54.24	61.00
vo1_max	Output voltage: Maximum value	V	0.01	50.00	60.00	61.00
vo1_min	Output voltage: Minimum value	V	0.01	30.00	39.00	45.00
BATTERY						
bat	Presence of battery	0: NO / 1: YES	1	0	1	1
tec	Technology type	Text		-	PB	-
cap	Battery capacity	Ah	0.01	1.00	13.00	38.00
BATTERY – REGULATION UNDER LOAD						
ilim	Maximum battery charging current	A	0.001	0.000	1.300	5.000
offset_tmax	Maximum temperature for temperature offset	ºC	1	0	40	80
offset_tmin	Minimum temperature for temperature offset	ºC	1	-20	0	80
BATTERY – REGULATION UNDER FLOATING						
v_flot	Battery charging voltage in floating	V	0.01	50.00	54.24	60.00
offset_fleet	Temperature offset in floating	mV/ºC	0.1	0.0	96.0	500.0
tmin_flot	Minimum time in floating for battery to be considered charged	h	1	1	13	24
BATTERY – RAPID CHARGING						
v_load	Rapid charging voltage	V	0.01	48.00	59.00	60.00
offset_load	Temperature offset	mV/ºC	0.1	0.0	96.0	500.0
hab_comp	Enable temperature offset in rapid charging	0: NO / 1: YES	1	0	0	1
i_fleet	Battery current to pass to floating	mA	1	1	78	500
tlim_charge	Maximum time to remain in rapid charging	h	1	1	8	24
BATTERY – BATTERY TEST						
v_end	Voltage limits to consider the test as failed	V	0.01	30.00	43.00	50.00
period	Period between each battery test	Weeks	1	1	16	60
disch_cap	Battery test: discharge capacity	Ah	0.01	0.00	5.20	38.00
tlim_test	Battery test: Time limit for each test try	h	1	1	24	99
rein	Number of retries	Units	1	0	1	9
BATTERY – ALARMS						
tbat_high	Maximum battery temperature	ºC	1	10	50	80
tbat_low	Minimum battery temperature	ºC	1	-20	0	80
BATTERY – DISCONNECTION						
disch_v_max	Disconnection voltage: upper limit	V	0.01	50.00	60.00	60.00
disch_v_min	Disconnection voltage: lower limit	V	0.01	30.00	42.00	50.00
disch_inm	Immediate disconnection time	V	0.01	30.00	39.00	50.00

View Mode

If this page is accessed in view mode (see Figure 3.21), then the only action allowed is to refresh the values displayed.

Supervision	Events Log	» CONFIGURATION «	Log out
Configuración XML	» SETTINGS «	Network	

PRODUCT SETTINGS

Refresh

PRODUCT	
Product type	CB-CT1-PB
Product	EPS-120-48V
Manufacturer	PREMIUM
Serial number	071900000
Date configuration	150101040016
Configuration version	
Location name	
SIGRID code	

PARAMETER	DESCRIPTION	RANGE [min/defecto/max]	ACTUAL VALUE	UNITS
∧AC INPUT				
vin_max	Maximum input voltage	[90.0/270.0/300.0]	270.0	V
vin_min	Minimum input voltage	[90.0/180.0/300.0]	160.0	V
∧DC OUTPUT				
vo1_nom	Output voltage: Nominal value	[30.00/54.96/61.00]	54.24	V
vo1_max	Output voltage: Maximum value	[50.00/60.00/61.00]	60.00	V
vo1_min	Output voltage: Minimum value	[30.00/39.00/45.00]	39.00	V

Figure 3.21 - Parameters in view mode

3.6.3   CONTROL

On this page, the equipment allows a series of remote operations. In the section on forcing (see Figure 3.22), the equipment can be forced to a given status even if the conditions are not those specified for normal operations. In the maintenance section (see Figure 3.22), physical LED and relay activation can be forced. The functioning of each one is described in detail below.

Supervision	Events Log	» CONFIGURATION «	Log out
XML Configuration	Settings	» CONTROL «	Network	Firmware

ENFORCED

Battery Test	Enforced	Enforce "Battery Test"
Fast charge	Enforced	Enforce switch to "quick charge"
Floating	Enforced	Enforce switch to "floating"
Battery charged	Enforced	Enforce switch to "battery charged"
Reconnection / Battery Absence Test	Enforced	Enforce battery presence test
Product Reset	Enforced	Enforce power control reset

SUPERVISION

LEDs and Relays Activation	All ON	All OFF	Exit	Enforce enable/disable all LEDs and relays
Relay 'Mains failure AC input'	Enforce ON		Exit	Enforce AC INPUT FAILURE relay closed
'End of Autonomy' relay	Enforce ON		Exit	Enforce END OF AUTONOMY relay closed
'Non Urgent Failure' relay	Enforce ON		Exit	Enforce NON URGENT FAILURE relay closed
Relay 'Urgent Failure'	Enforce ON		Exit	Enforce URGENT FAILURE relay opened

Figure 3.22 - Control

Forcing

Reset: Performs a reset of equipment control. The required condition is that the equipment must not be in "No AC mains input" status because the equipment will shut down if reset is performed with the battery only. Reset is timed to delay 5 seconds so that communications control can be detected.

Battery Test: Starts battery test to measure discharging capacity. This test can be started from floating, charged battery or rapid charging status. For the test to be reliable, the equipment must be in charged battery status and this status must not been reached in an unforced way. When the test is forced, the battery test alarm also starts if another test with failed outcome has been previously carried out.

Rapid Charging: Switching to rapid charging status is forced in the case of the following statuses: floating, charged battery or battery test. If the pre-forced status is the battery test status, the test will be considered successful.

Floating: Switching to floating status is forced in the case of the following statuses: rapid charging, charged battery or battery test. If the pre-forced status is the battery test status, the test will be considered successful.

Battery Charged: Switching to charged battery status is forced in the case of the following statuses: rapid charging, floating or battery test. If the pre-forced status is the battery test status, the test will be considered successful.

Battery Reconnection/Absent Test: A battery absent test is forced in the case of the following statuses: rapid charging, floating, charged battery or no battery. This forcing also starts all battery-related alarms and allows another to be connected. If the test detects that there is a battery, it will return to the previous forced status.

Maintenance

LED and Relay Activation: Clicking on ON will turn all LEDs on and close all relays, and clicking on OFF will turn them off. To return to the normal operation status, click on Exit or wait 20 seconds.

"AC input mains fault" relay: Clicking on ON will close the relay; clicking on Exit will return the relay to normal operating status. After 30 seconds, it will also exit forcing automatically.

"Battery Runtime Fault" relay: Clicking on ON will close the relay; clicking on Exit will return the relay to normal operating status. After 30 seconds, it will also exit forcing automatically.

"Non-urgent Fault" relay: Clicking on ON will close the relay; clicking on Exit will return the relay to normal operating status. After 30 seconds, it will also exit forcing automatically.

"Urgent Fault" relay: Clicking on ON will close the relay; clicking on Exit will return the relay to normal operating status. After 30 seconds, it will also exit forcing automatically.

∗   **NOTE:** Because the forcings have restrictions, there may be questions about whether a forcing process has been discarded or not. Therefore, to check the forcing result, go to the log page (see section **¡Error! No se encuentra el origen de la referencia. ¡Error! No se encuentra el origen de la referencia.**) and check that it has been logged.

Table 3.7 lists the codes related to these events.

3.6.4   NETWORK

The NETWORK page (see Figure 3.23) allows the user to view and change any parameters related to equipment communications.

Figure 3.23 - Network in administrator mode

The process used to apply changes is the same process described in point 3.6.2:

1.   Change the form fields that are to be changed
2.   Click on **APPLY CHANGES**
3.   Click on **OK** in the warning window that pops up
4.   According to process result
     a.   The page will reload and display the modified settings in green
     b.   If the setup contains any errors, the field with the error will be displayed with an orange background and none of the settings entered will be loaded

∗   **NOTE:** The changes made can leave the equipment without communication and therefore **DISABLED**

Table 3.11 - Network parameters (NP-0719)

Name	Description	Format	Step	Min	Default	Max
IP IN USE						
ip	Current IP address in use	20 char	---	0.0.0.0	---	255.255.255.255
mask	Current subnet mask in use	20 char	---	0.0.0.0	---	255.255.255.255
gtw	Current gateway in use	20 char	---	0.0.0.0	---	255.255.255.255
LOCAL						
ip	IP address	20 char	---	---	100.0.0.1	---
mask	Subnet mask	20 char	---	---	255.255.255.0	---
DHCP						
dhcp	IP assignment at access port	0: NO/1: YES	1	0	0	1
ip	IP address	20 char	---	0.0.0.0	100.0.0.100	255.255.255.255
mask	Subnet mask	20 char	---	0.0.0.0	255.255.255.0	255.255.255.255
gtw	Gateway	20 char	---	0.0.0.0	0.0.0.0	255.255.255.255
NTP						
ip	IP address	20 char	---	0.0.0.0	100.0.0.1	255.255.255.255
area	Adjust time zone	h	1	-12	1	12
LDAP						
ip	IP address	20 char	---	0.0.0.0	100.0.0.100	255.255.255.255
port	Port		1	0	389	65535
tact	Deactivation time for LDAP user with no traffic underway	min	1	1	10	60
cat1		12 char	---	---	---	---
cat2		12 char	---	---	---	---
cat3		12 char	---	---	---	---
cat4		12 char	---	---	---	---
cat5		12 char	---	---	---	---
cat6		12 char	---	---	---	---
cat7		12 char	---	---	---	---
cat8		12 char	---	---	---	---
SNMP						
ip	IP address	20 char	---	0.0.0.0	100.0.0.1	255.255.255.255
PROTOCOLS						
t_syncreq	Server polling period	min	1	1	15	1440
t_syncwait	Wait time for synchronization server response before unicast request	s	1	1	5	60
yes_tfail	Time without synchronizing to consider the internal clock unsynchronized	min	1	1	120	1440
RETRY						
n	Number of retries to each server: LDAP, NTP, SNMP	retries	1	1	3	6
t	Time between retries in the servers: DHCP, LDAP, NTP, SNMP	s	1	1	5	600
TRAPS						
traps	Trap activation	0: NO/1: YES	1	0	0	1
trap_period	Time between Traps	min	1	0	240	1440
rcom	Reading Community	8 char	---	---	---	---
trap_com	Trap Community	8 char	---	---	---	---

Table 3.12 - Parameters for Net (NP-0716)

Name	Description	Format	Step	Min	Default	Max
IP IN USE						
ip	Current IP address in use	20 char	---	0.0.0.0	---	255.255.255.255
mask	Current subnet mask in use	20 char	---	0.0.0.0	---	255.255.255.255
gtw	Current gateway in use	20 char	---	0.0.0.0	---	255.255.255.255
LOCAL						
ip	IP address	20 char	---	---	100.0.0.1	---
mask	Subnet mask	20 char	---	---	255.255.255.0	---
DHCP						
dhcp	IP assignment at access port	0: NO/1: YES	1	0	0	1
ip	IP address	20 char	---	0.0.0.0	0.0.0.0	255.255.255.255
mask	Subnet mask	20 char	---	0.0.0.0	255.255.255.0	255.255.255.255
gtw	Gateway	20 char	---	0.0.0.0	0.0.0.0	255.255.255.255
NTP						
ip	IP address	20 char	---	0.0.0.0	0.0.0.0	255.255.255.255
area	Adjust time zone	h	1	-12	1	12
LDAP						
ip	IP address	20 char	---	0.0.0.0	0.0.0.0	255.255.255.255
port	Port		1	0	389	65535
tact	Deactivation time for LDAP user with no traffic underway	min	1	1	10	60
cat1		12 char	---	---	---	---
cat2		12 char	---	---	---	---
cat3		12 char	---	---	---	---
cat4		12 char	---	---	---	---
cat5		12 char	---	---	---	---
cat6		12 char	---	---	---	---
cat7		12 char	---	---	---	---
cat8		12 char	---	---	---	---
SNMP						
ip	IP address	20 char	---	0.0.0.0	0.0.0.0	255.255.255.255
PROTOCOLS						
t_syncreq	Server polling period	min	1	1	15	1440
t_syncwait	Wait time for synchronization server response before unicast request	s	1	1	5	60
yes_tfail	Time without synchronizing to consider the internal clock unsynchronized	min	1	1	120	1440
RETRY						
n	Number of retries to each server: LDAP, NTP, SNMP	retries	1	1	3	6
t	Time between retries in the servers: DHCP, LDAP, NTP, SNMP	s	1	1	5	600
TRAPS						
traps	Trap activation	0: NO/1: YES	1	0	0	1
trap_period	Time between traps	min	1	0	240	1440
rcom	Reading community	8 char	---	---	---	---
trap_com	Trap community	8 char	---	---	---	---

View mode

If this page is accessed in view mode, as shown in Figure 3.24, then the only action allowed is to refresh the settings displayed.

Supervision	Events Log	» CONFIGURATION «	Log out
XML Configuration	Settings	» NETWORK «	

NETWORK SETTINGS

Refresh

PARAMETER	DESCRIPTION	RANK [min/defecto/max]	CURRENT VALUE	UNITS
∧IP IN USE				
ip	Current IP address		100.0.0.100	
mask	Current subnet mask		255.255.255.0	
gtw	Current gateway		0.0.0.0	
∧LOCAL				
ip	IP Address		100.0.0.1	
mask	Subnet mask		255.255.255.0	
∧DHCP				
dhcp	Dynamic Host Configuration Protocol (1: Enabled | 0: Disabled)	[0/0/1]	0	
ip	IP Address		100.0.0.100	
mask	Subnet mask		255.255.255.0	
gtw	Gateway		0.0.0.0	
∧NTP				
ip	IP Address		100.0.0.1	
zone	Time zone adjust	[-12/1/12]	1	h

Figure 3.24 - Network in view mode

3.6.5 FIRMWARE

The Firmware page (see Figure 3.25) allows the user to update all equipment firmware and web pages with a single file.
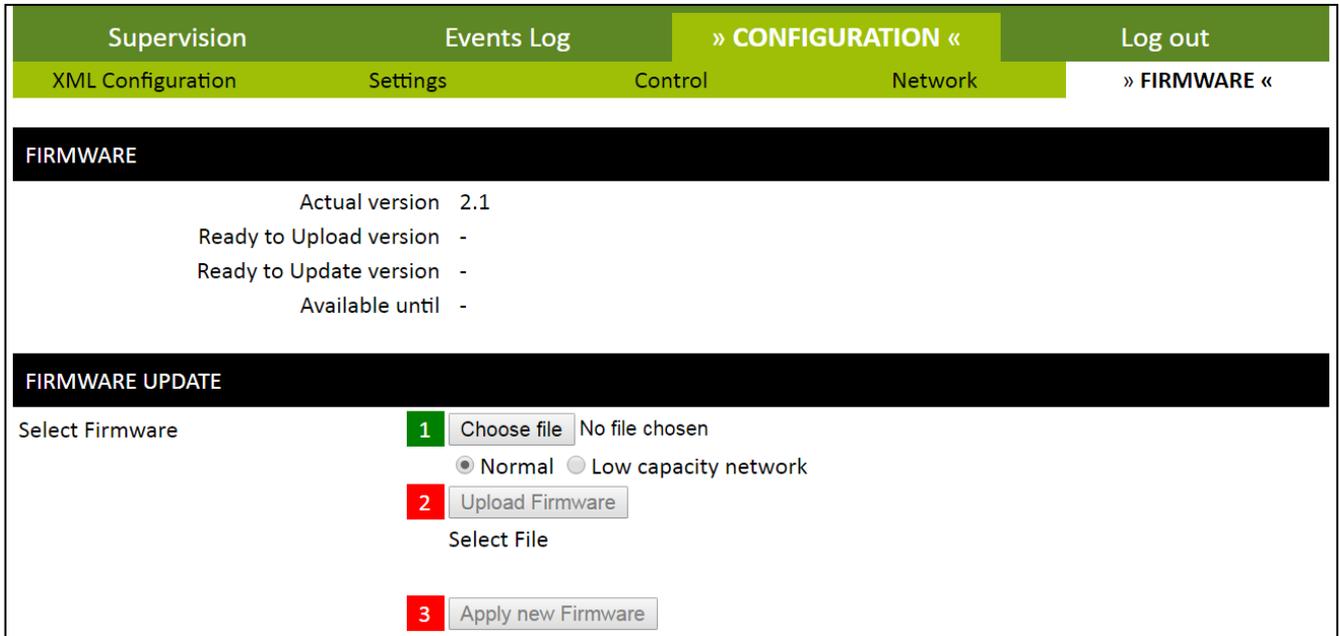
Figure 3.25 - Firmware

The page items are described below:

- **Current version**: Indicates the equipment firmware version. Matches the **Communications Software Version** field, which can be viewed in the MAINTENANCE menu, EQUIPMENT submenu.
- **Version to be sent**: Firmware version that contains the selected file
- **Pending version**: Firmware version of a file sent but whose firmware has not been applied
- **Valid until**: Date on which firmware file sent will be deleted if the update is not applied earlier

Update Firmware

1. Click on **SELECT FILE** and select the file that contains the update.

   This file must be a **valid file** with the **PRZ** extension

2. Select the type of network in which the equipment is installed (Normal / Slow Networks)

   Slow Networks for low-quality / small bandwidth GPRS environments

   Normal for normal conditions

3. Click on **SEND FIRMWARE**

   This button will remain disabled until a valid file has been selected.

4. Click on **APPLY NEW FIRMWARE**

   This button will be enabled once the file has been uploaded and md5 has checked that the file has not been corrupted.

5. Click on **OK** in the warning window that is opened.

6. Wait for the time indicated on the website before performing any action with the charger

For safety reasons, the charger firmware cannot be updated in all charger statuses. The following table (Table 3.13) indicates when it is possible. If not possible, a warning message will be displayed after clicking on **Apply New Firmware**.

Table 3.13 - Charger and update statuses

#	CHARGER STATUS	ALLOWS UPDATE
1	STARTING	NO
2	RAPID CHARGING	YES
3	FLOATING	YES
4	NO BATTERY	YES
5	AC INPUT ERROR	NO
6	BATTERY TEST	NO
7	OVERLOAD	NO
8	OVERLOAD TEST	NO
9	CHARGER FAULT	NO
10	ABSENT BATTERY TEST	NO
11	CHARGED BATTERY	YES
12	FAULT AT STARTUP	NO
13	RECOVERING BATTERY	YES

The charger status can be viewed on the **Overview Diagram** and **Measurements** web pages.

3.7 EXIT

When this option is selected, the user connected at the moment will be deauthenticated.

The browser will be redirected to the home page.

3.8 LOGOFF DUE TO IDLE CONDITION

If the maximum idle time specified in the **tact** parameter is exceeded and an attempt is made to view any page or perform some action, a message will be displayed as shown in Figure 3.26 and the user will be redirected to the home page after clicking on OK.
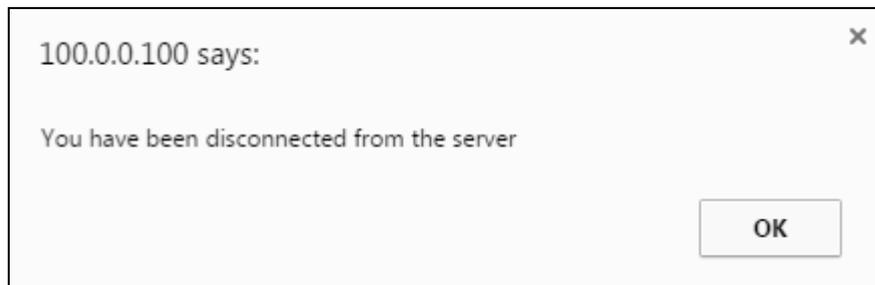
Figure 3.26 - Logoff message

4   APPENDIX

4.1   OVERVIEW SCENARIOS

This section shows different scenarios that summarize the potential statuses on the overview diagram.

Scenario description:

- **Scenario 1**: Normal equipment operation. Battery connected and charging.
- **Scenario 2**: Operation with no mains power and with battery. The battery provides power at the output.
- **Scenario 3**: Operation with temperature sensor disconnected. The equipment charges the battery and indicates the sensor absence in the overview diagram with "Sensor Error" in the battery temperature box, also indicating this in the LEDs and relays.
- **Scenario 4**: Operation with disconnected battery. The equipment supplies power at the output and the battery relay remains open. The LEDs and relays indicate battery absence.
- **Scenario 5**: Overload detection operation. The equipment disconnects the output and opens the battery relay, indicating with the LEDs and relays that the output voltage is out of range.

Scenario 1

Normal equipment operation. Battery connected and charging.
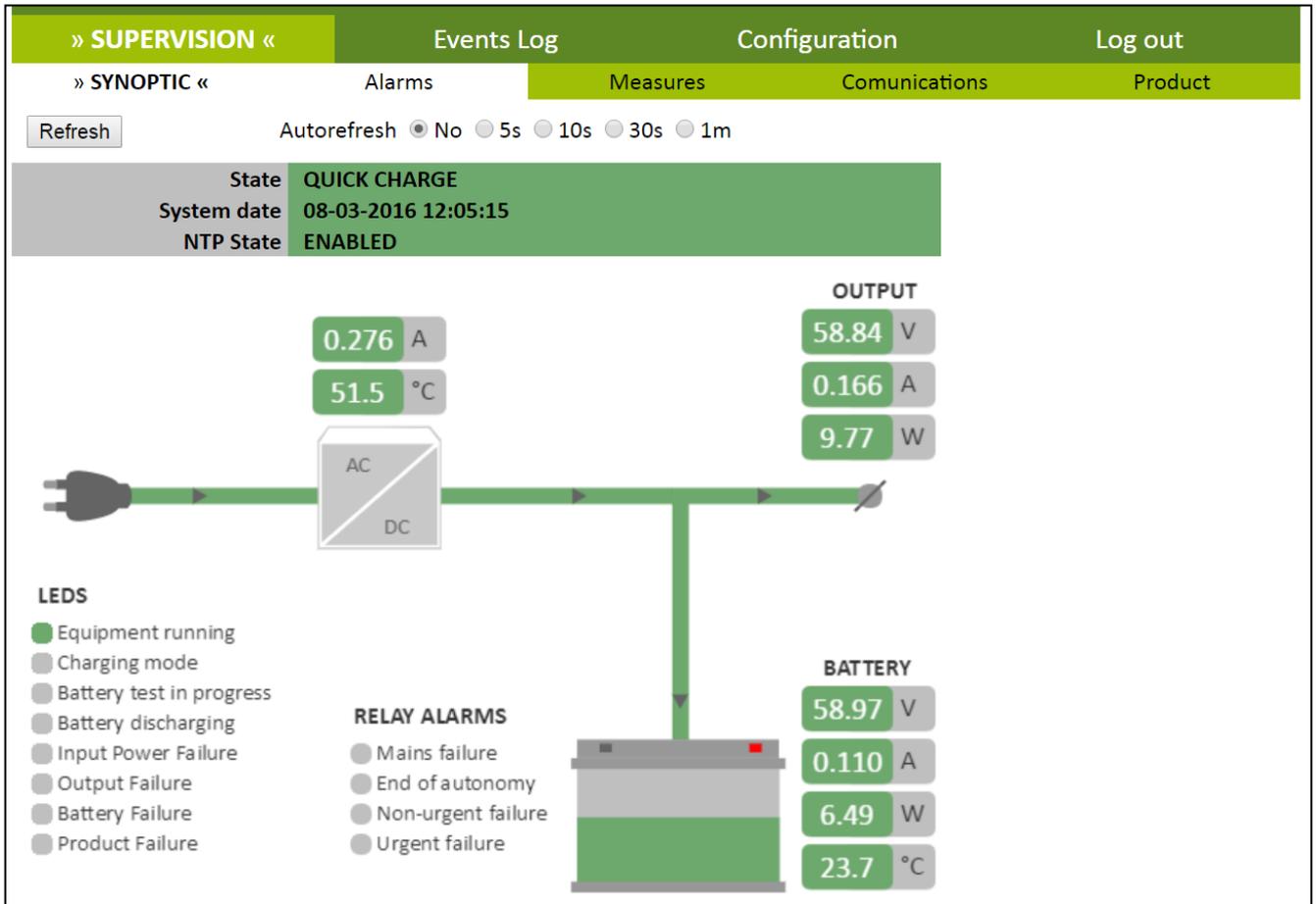
Figure 4.1 - Overview diagram. Scenario 1

Scenario 2

Operation with no mains power and with battery. The battery provides power at the output.
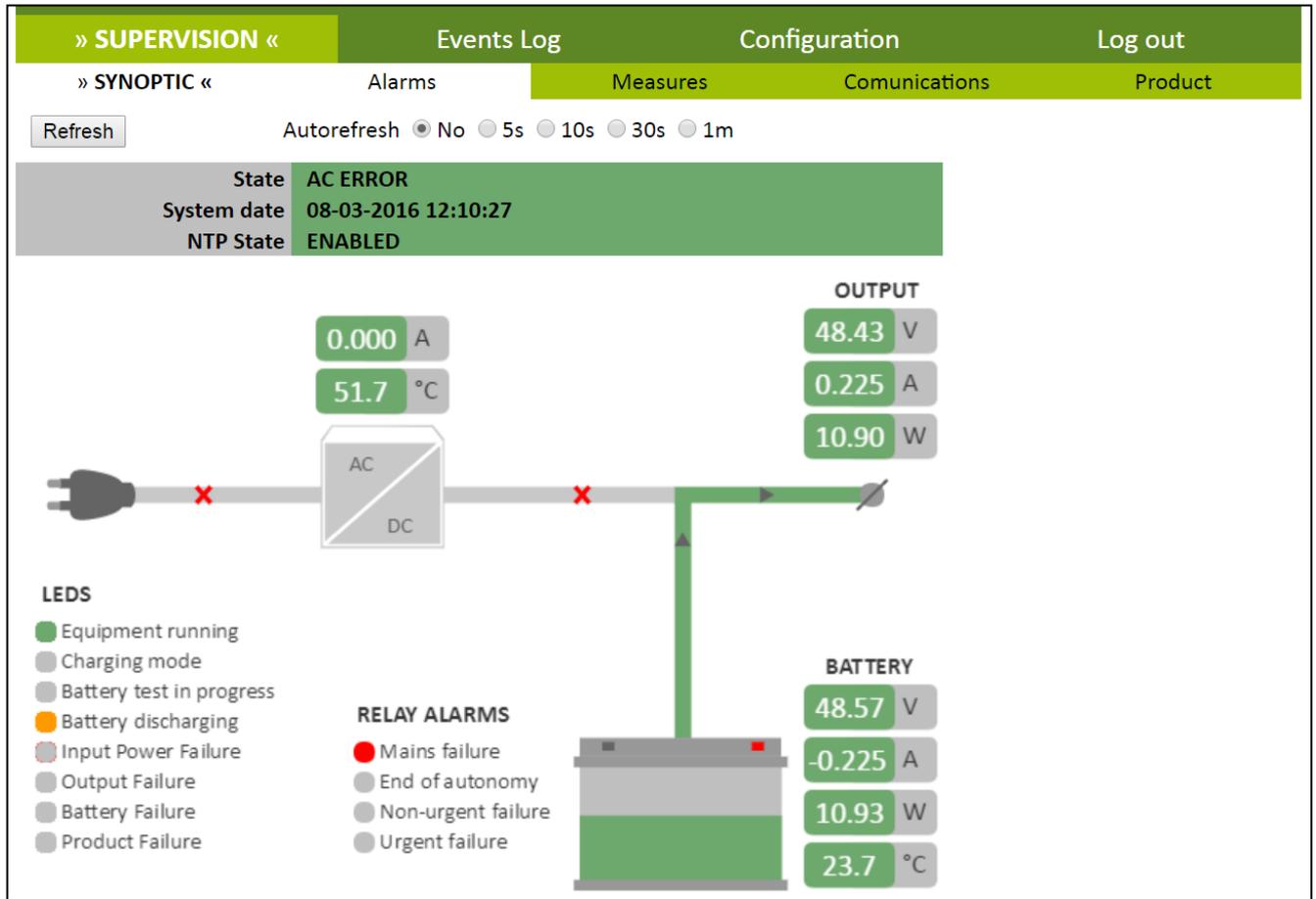
Figure 4.2 - Overview diagram. Scenario 2

Scenario 3

Operation with temperature sensor disconnected. The equipment charges the battery and indicates sensor absence in the overview diagram with "Sensor Error" in the battery temperature box, also indicating this in the LEDs and relays.
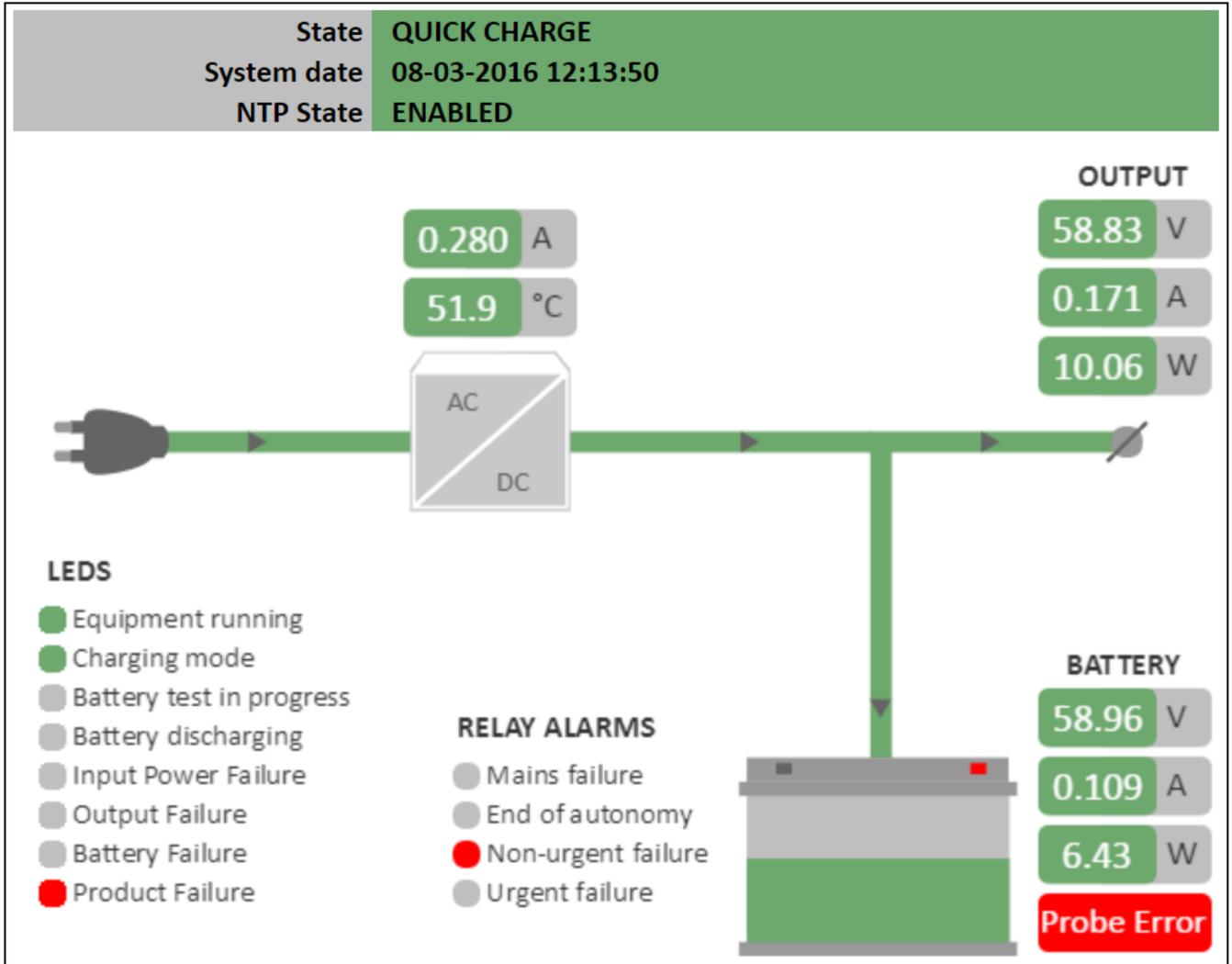
Figure 4.3 - Overview diagram. Scenario 3

Scenario 4

Operation with disconnected battery. The equipment supplies power at the output and the battery relay remains open. The LEDs and relays indicate battery absence.
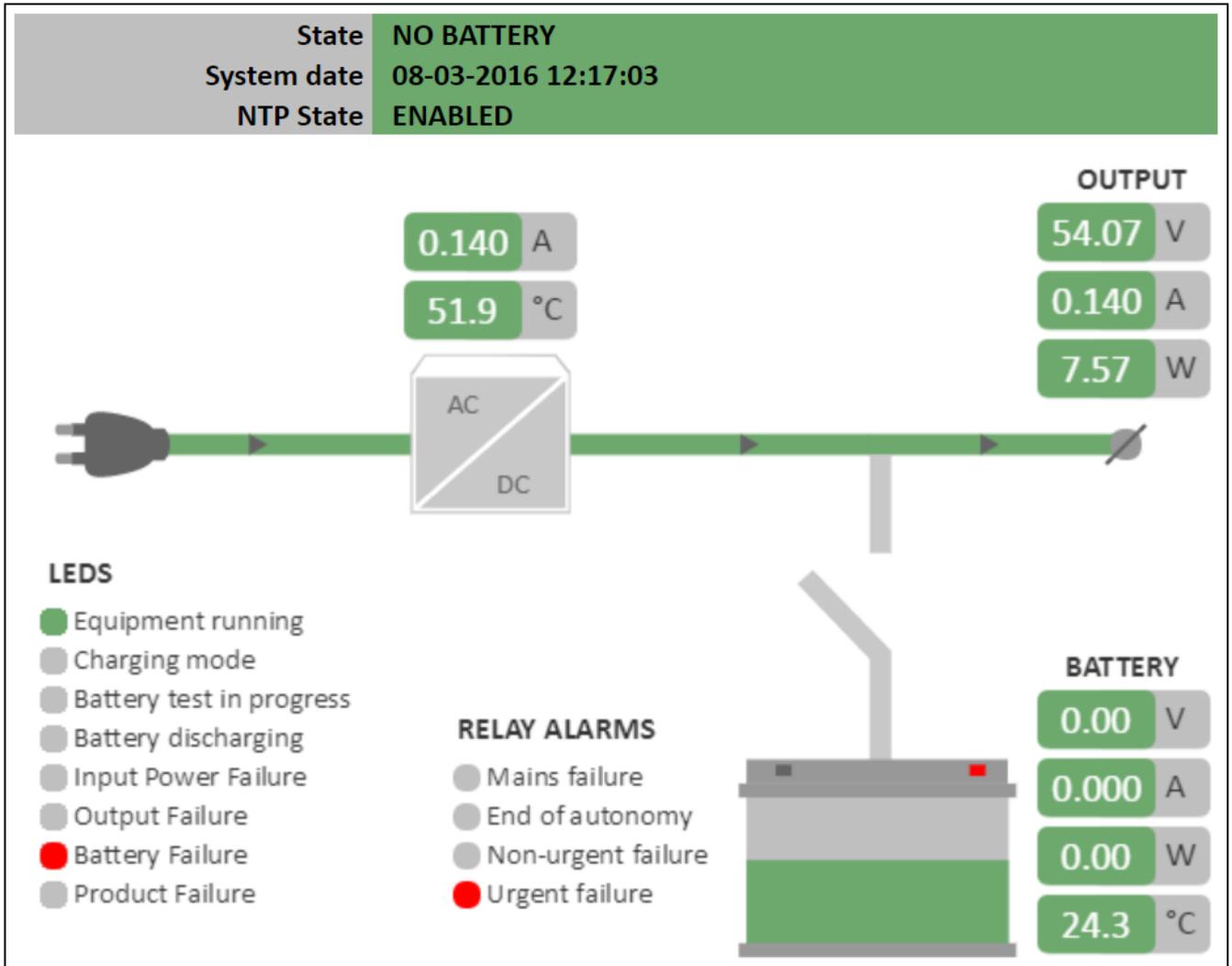
Figure 4.4 - Overview diagram. Scenario 4

Scenario 5

Overload detection operation. The equipment disconnects the output and opens the battery relay, indicating with the LEDs and relays that the output voltage is out of range.
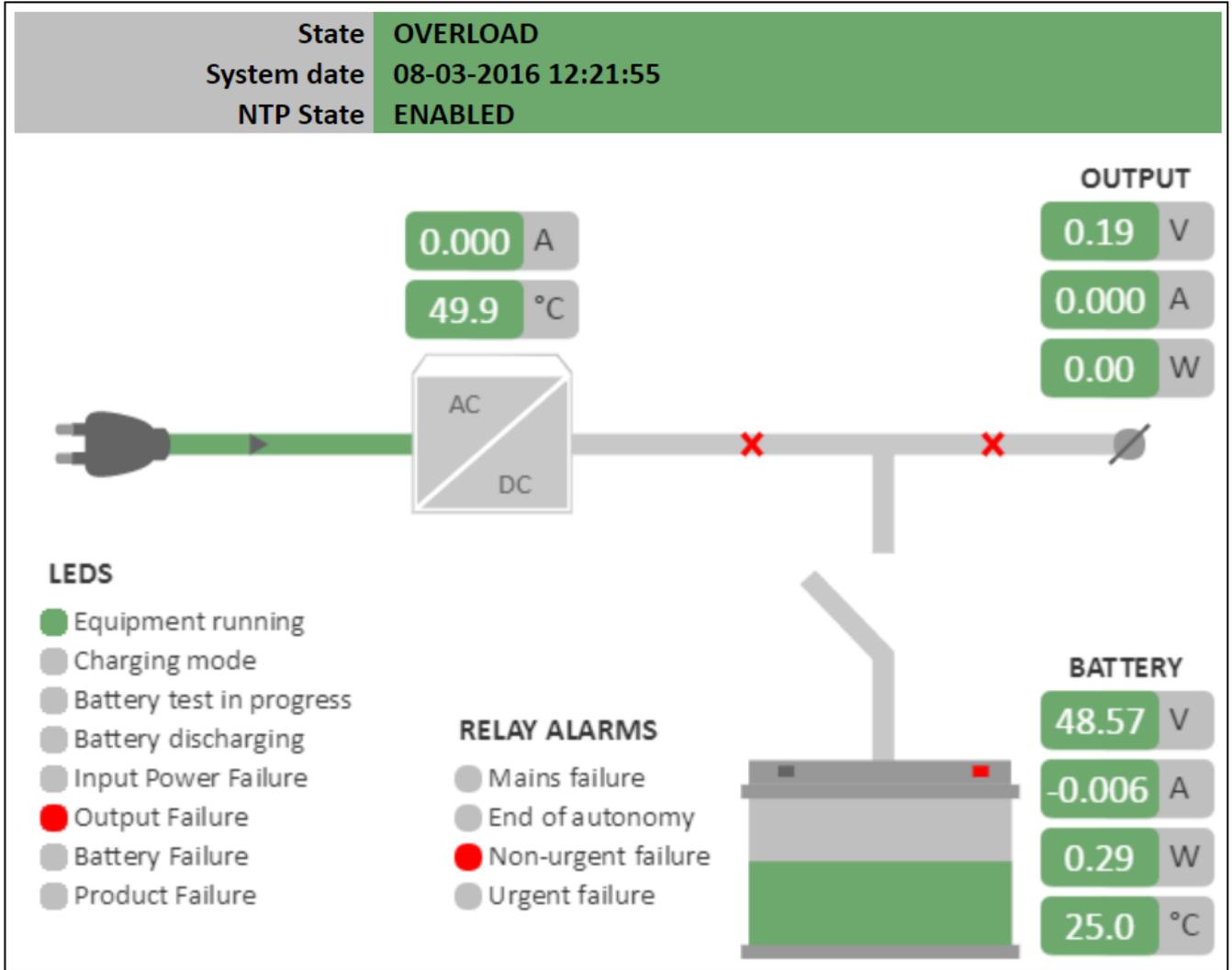
Figure 4.5 - Overview diagram. Scenario 5

4.2   ALARM SCENARIOS

This section shows different scenarios that summarize the potential statuses on the alarm web page.

Scenario description:

- **Scenario 1**: Indicators in normal operation, no alarms are generated.
- **Scenario 2**: Indicators in absence of input voltage with battery connected.
- **Scenario 3**: Indicators in absence of temperature sensor.
- **Scenario 4**: Indicators with disconnected battery.
- **Scenario 5**: Indicators for out-of-range output voltage due to detection of an overload.

Scenario 1

Indicators in normal operation, no alarms are generated.

Figure 4.6 - Alarms. Scenario 1

Scenario 2

Indicators in absence of input voltage with battery connected.

Figure 4.7 - Alarms. Scenario 2

Scenario 3

Indicators in absence of temperature sensor.

Figure 4.8 - Alarms. Scenario 3

Scenario 4

Indicators with disconnected battery.

Figure 4.9 - Alarms. Scenario 4

Scenario 5

Indicators for out-of-range output voltage due to detection of an overload.

Figure 4.10 - Alarms. Scenario 5

4.3 DETAILED XML SETUP FILE UPLOAD

This section provides a detailed view of the various screens and messages that can appear when uploading an XML setup file.

Figure 4.11 shows the screen status once a valid XML file has been selected.
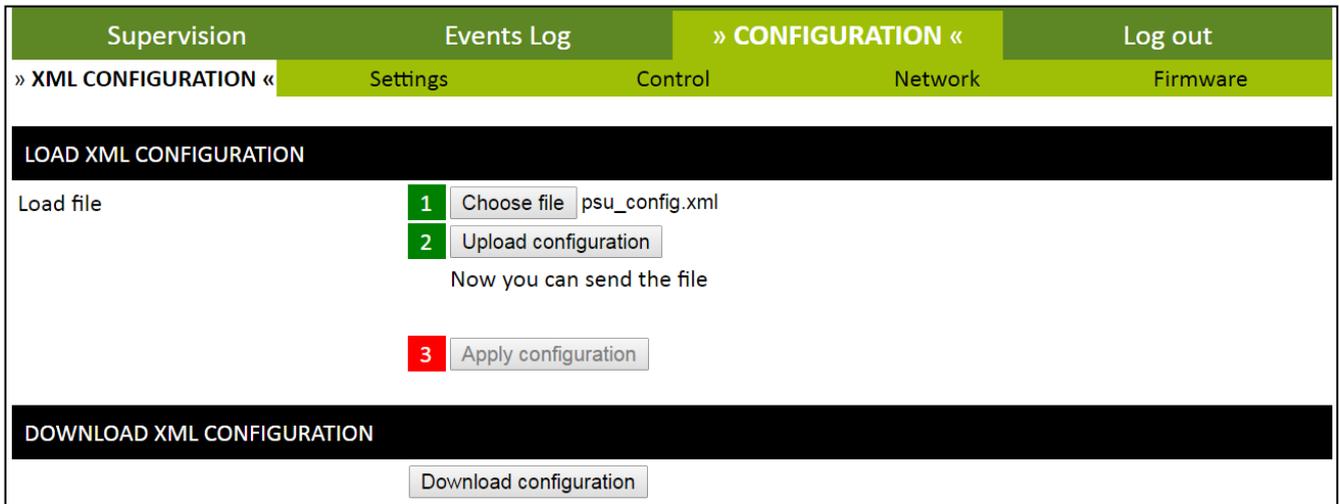
Figure 4.11 - XML setup upload. File selected

The following image (Figure 4.12) shows that after clicking on **Upload Setup**, the file starts to be uploaded and the page indicates the file percentage that has been uploaded.
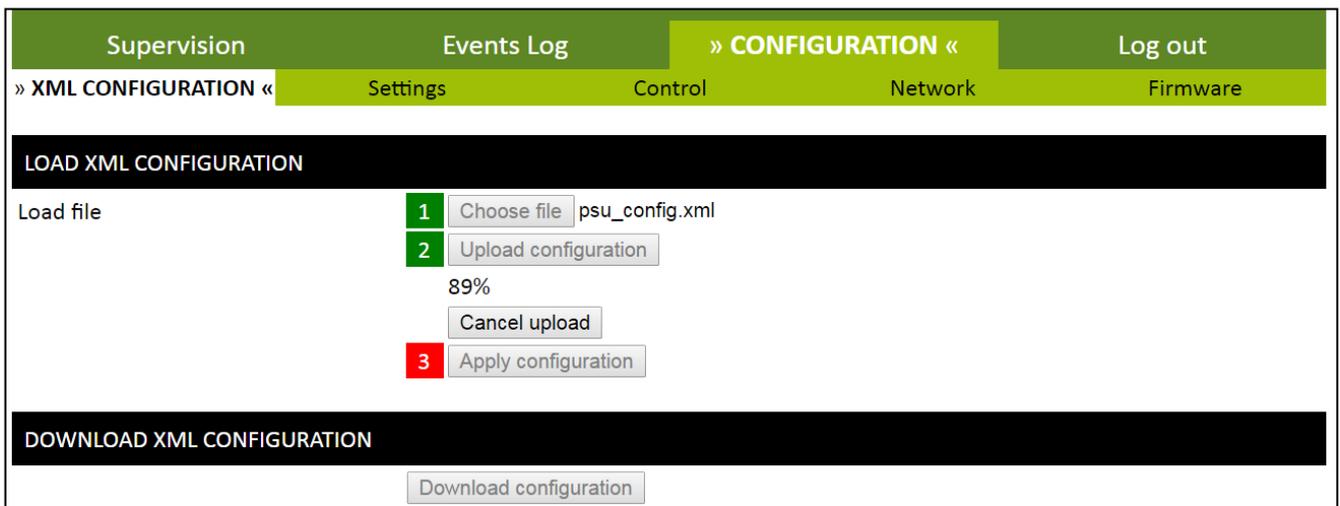
Figure 4.12 - XML setup upload. Uploading file

Once a file has been sent, a message is displayed and the **Apply Setup** button is enabled as shown in Figure 4.13.
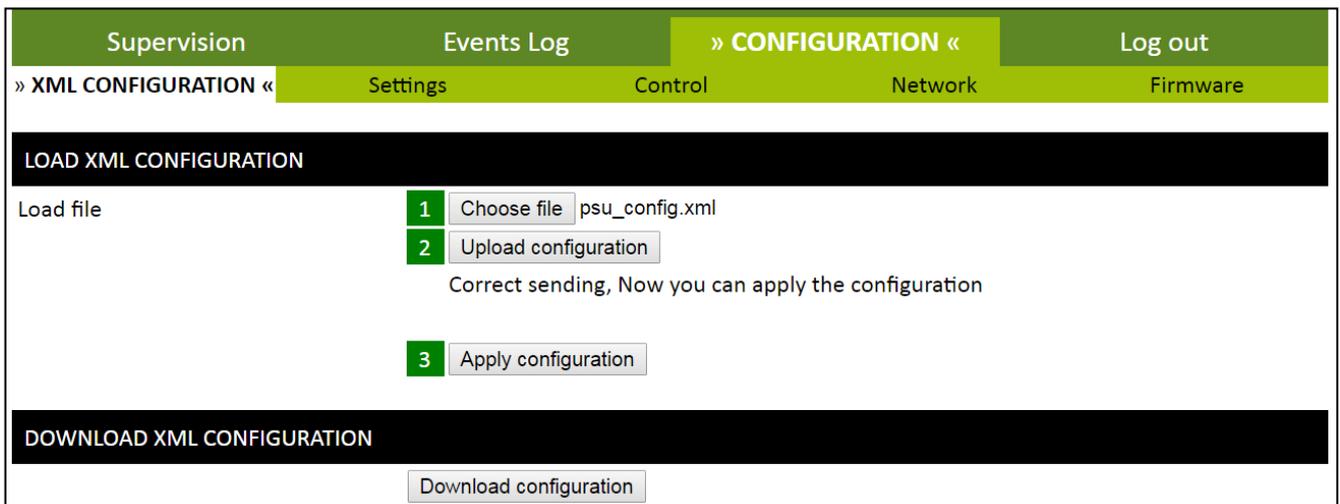
Figure 4.13 - XML setup upload. File uploaded

After clicking on the **Apply Setup** button, a warning message will displayed as shown in Figure 4.14.
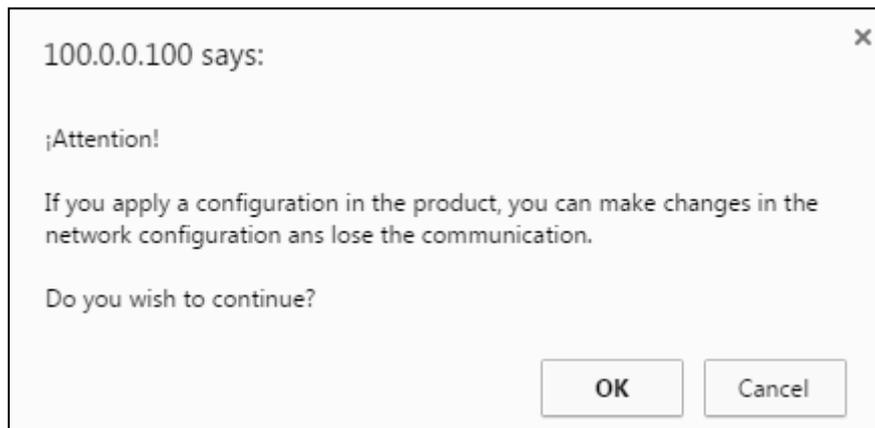
Figure 4.14 - XML setup upload. Warning to apply setup

If the file has been correctly uploaded and had no errors, a message will be displayed as shown in Figure 4.15 after applying the setup.
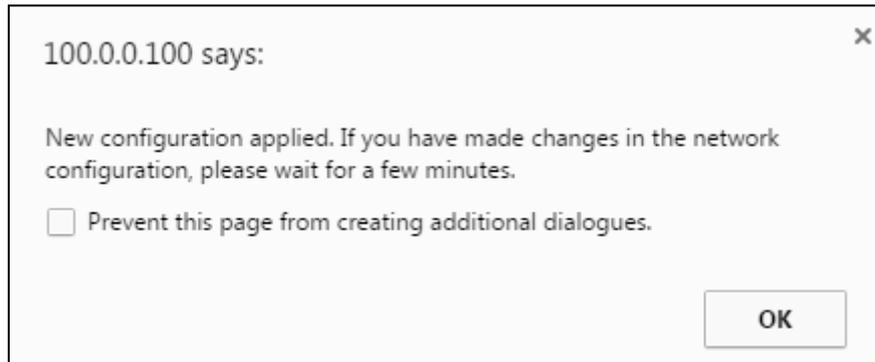
Figure 4.15 - XML setup upload. Correct setup message

After this message on the website (see Figure 4.16), **Setup Applied** will also be indicated.
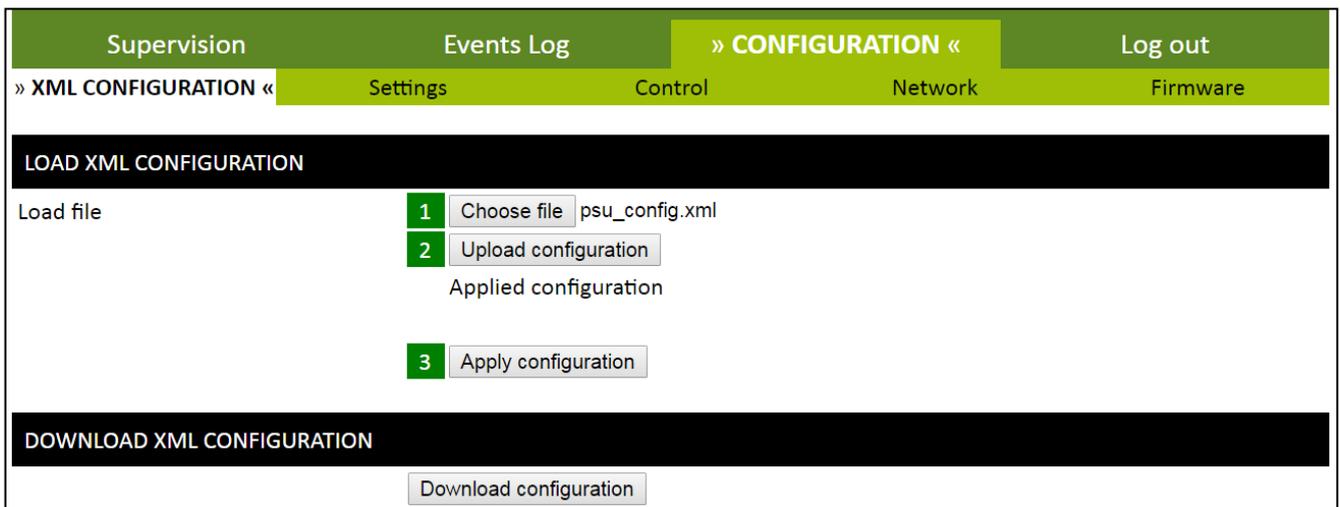
Figure 4.16 - XML setup upload. Correct website setup

If the file contained any errors, a warning message will be displayed as shown in Figure 4.17.
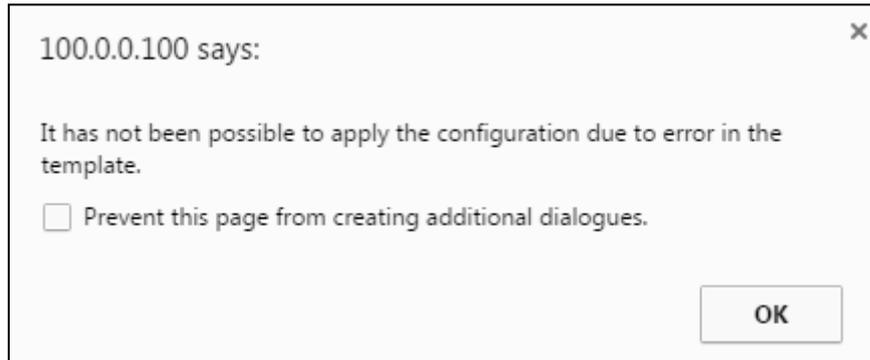
Figure 4.17 - XML setup upload. Incorrect setup message

After displaying the above message, the web page will also indicate (see Figure 4.18) that **The setup has not been applied due to template errors**.
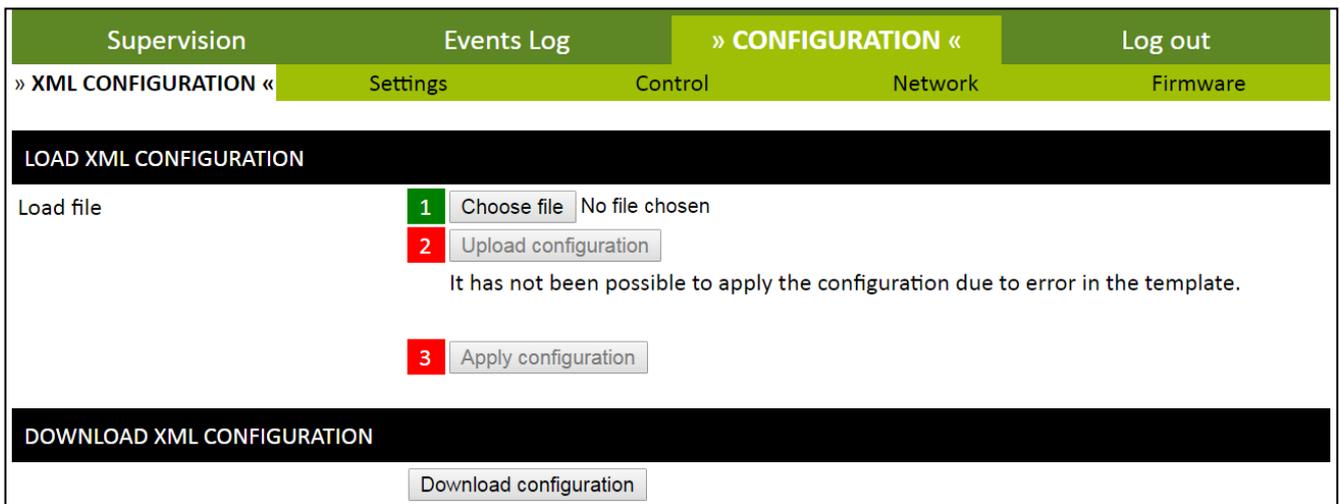
Figure 4.18 - XML setup upload. Incorrect website setup