OPERATION MANUAL

EDS-500 COMUNICATIONS

Premium

Manufactured by **PREMIUM S.A.**
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1 EQUIPMENT DESCRIPTION

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

1.1 INTRODUCTION

The EDS-500 power supply-charger has WEB services that can be accessed through an RJ45/Ethernet port. The equipment has two microcontrollers, one is dedicated to charger control and the other to communications control. This means that each one has its own firmware.

The diagram in Figure 1 shows the internal stream of information in the charger.

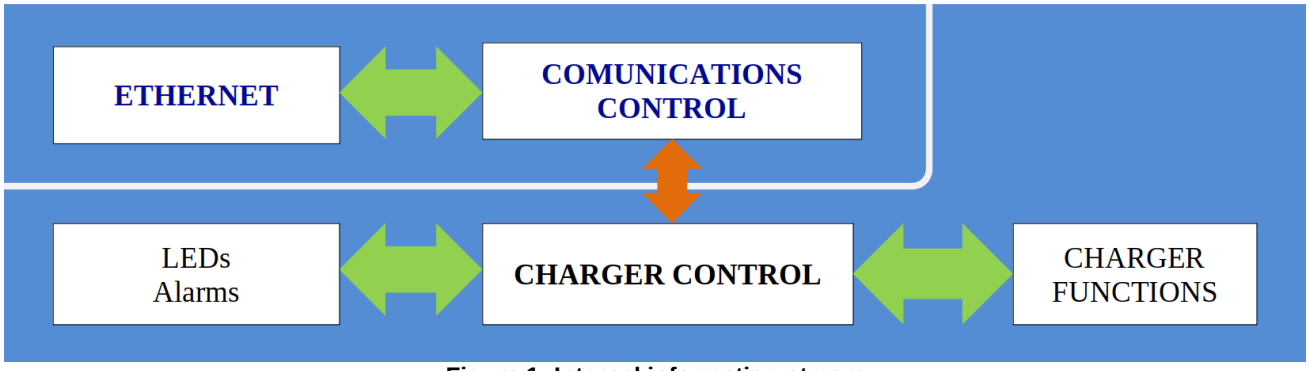

Figure 1: Internal information stream

1.2 SUPPORTED PROTOCOLS

The Table 1 shows the supported communications protocols and the equipment functionalities which are related.

Table 1: Protocols

Protocol	Function
TCP/IP	Ethernet/IPv4 comunication
DHCP	Dynamic IP address assignment
ICMP	Ping to equipment
HTTP	WEB access
SNTP	Time synchronization
SNMP	Network administration

2 WEB ACCESS

2.1 ETHERNET CONNECTION

For any web access to the equipment, there must be an active Ethernet connection. To do so, the connection must be done using an **Ethernet cat5e** or higher cable with **RJ45** connector. At the other end of the cable, a device configured within the same IP range as the equipment will be connected.

2.2 WEB CONNECTION

To access, the IP address of the equipment must be typed in the address bar. As specified in the Table 2, this IP address can be assigned in 3 different ways.

Table 2: IP address assignment methods

TYPE ASSIGNMENT	Default value	Configurable
Remote	200.0.0.1	YES
DHCP	Disabled	YES
Local	200.0.0.1	NO

The default access to the device is by using the remote IP address. This IP address can be configured by webpage. This device can also be configured to receive an IP address from a DHCP server.
A local IP address can be also set by pressing the “Battery reconnection” button for 10 to 20 seconds while battery is connected. Once the device is in local IP mode, the LEDs will blink constantly, and the local IP address will be configured.
To get back to the last mode, press the button again during the same amount of time.

2.3 USER TYPES

The Table 3 gives an overview of the available modes and allowed functions.

Table 3: Access modes

Mode	Allowed functions
Viewer	View values of Sinoptic, Alarms, Measurements, Communications, Equipment, etc. Consult History Download XML Configuration View Parameter and Network values
Advanced	View values of Synoptic, Alarms, Measurements, Communications, Equipment, etc. Consult History Download XML Configuration View and modify Parameter and Network values

	Perform Control actions Update Firmware

3 WEB

This section describes the different web pages and their functionalities.

3.1 GENERAL STRUCTURE

The Figure 2 shows the layout of a standard website hosted on the computer.

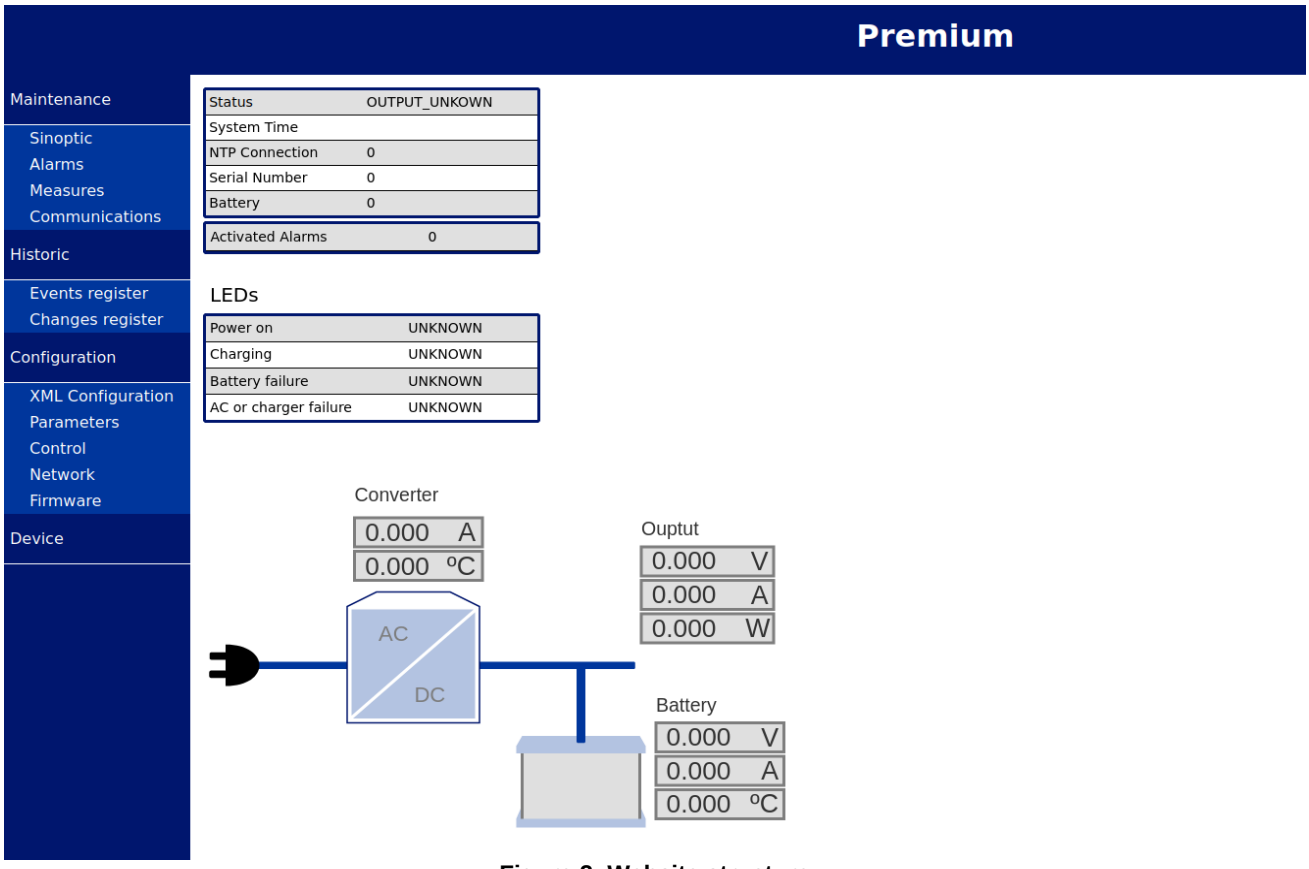

Figure 2: Website structure

1.1 WEB MAP

Once successfully authenticated, the user will have access to the different web pages available for the mode. The Table 4 shows the relation between access modes and accessible web pages.

Table 4: Web map

		Available in	
Menu	**Submenu**	**Viewer**	**Advanced**
MAINTENANCE	Sinoptic	✓	✓
	Alarms	✓	✓
	Measures	✓	✓
	Communications	✓	✓
HISTORIC	Events register	-	-
	Changes register	-	-
CONFIGURATION	XML configuration	-	-
	Parameters	✓	✓
	Control	✓	✓
	Network	✓	✓
	Firmware	✗	✗

3.2 AUTHENTICATION

The first time a connection is established to an EDS-500, an authentication window will appear as shown in the Figure 3.

It must be entered a user name associated with the mode in which access is desired and a correct password

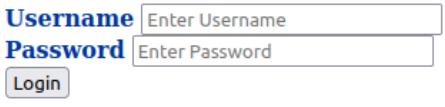

Figure 3: Authentication

If the user and password entered are valid, a menu will appear as shown in the Figure 4 where it will be possible to select the desired and/or permitted access mode.

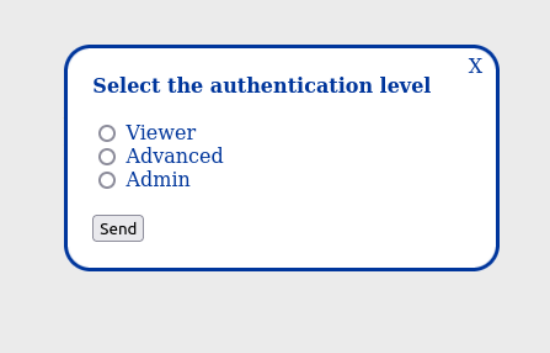

Figure 4: Authentication menu

3.3 MAINTENANCE

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

3.3.1 SINOPTIC

The Figure 5 shows the most important information of the current status of the equipment.

The main element is a schematic representation of the different elements that compose the equipment (AC Input, Battery and Output) and their interconnection.

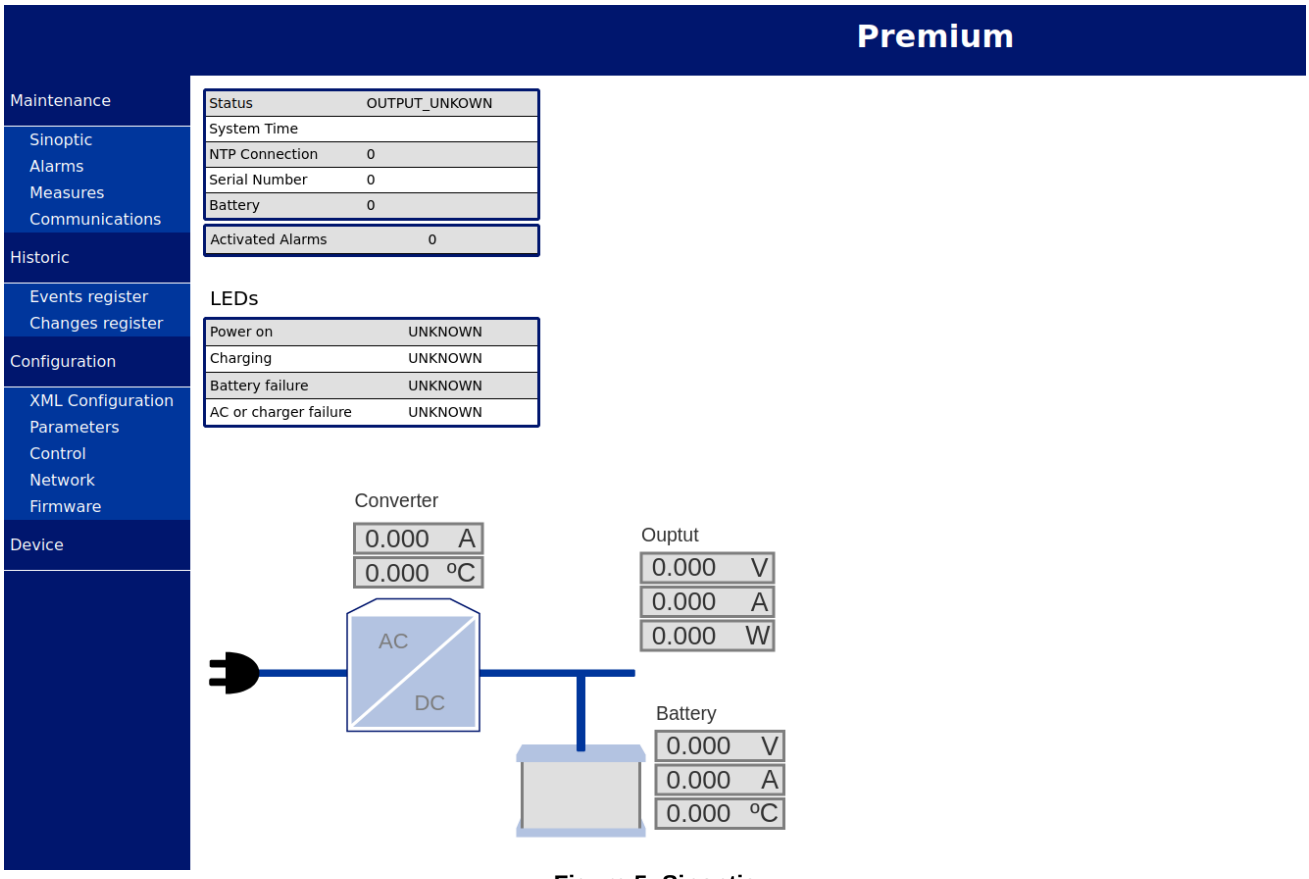

Figure 5: Sinoptic

HEADER

- **Status:** Displays the status of the equipment.
- **System time:** It indicates date and time.
- **NTP Connection:** Indicates whether the device has synchronized the date and time with an NTP server. Possible values are 1 (ACTIVE)/0 (DISCONNECTED).
- **Serial number:** Serial number assigned to the device.
- **Battery:** Indicates whether the battery is connected
- **Activated alarms:** Indicates the number of active alarms at that moment.

LEDs

Table 5he Table 5 describes the possible states of the LED indicators.

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

Table 5: LED status

LED	Color	Mode	Indication
Equipment in operation	Green	Fixed light	Charger in operation
Loading rate	Ambar	Fixed light	Battery charging
Battery failure	Red	Fixed light	Test error
		Slow blinking	Battery not available
		Slow blinking	Temperature sensor not available
Charger or power failure	Red	Fixed light	Output voltage out of range
		Slow blinking	AC input voltage out of range

3.3.2 ALARMS

The Figure 6 shows the status of the different alarms. The information shown corresponds to the last time the page was refreshed.

Each alarm can be in two states:

- **Green**: Alarm is not active
- **Red**: Alarm is active

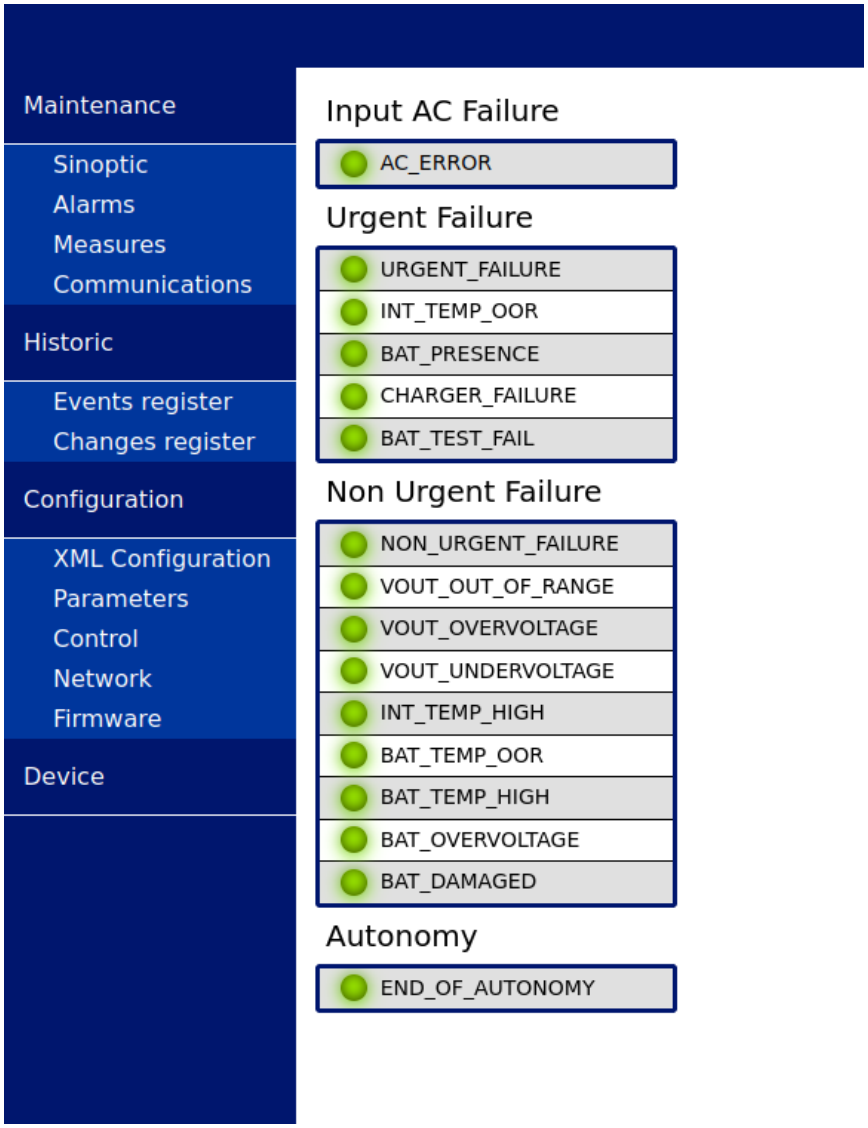

Figure 6: Alarms menu

1.1.1 MEASURES

The Figure 7 shows the values of the most significant measurements of the equipment.

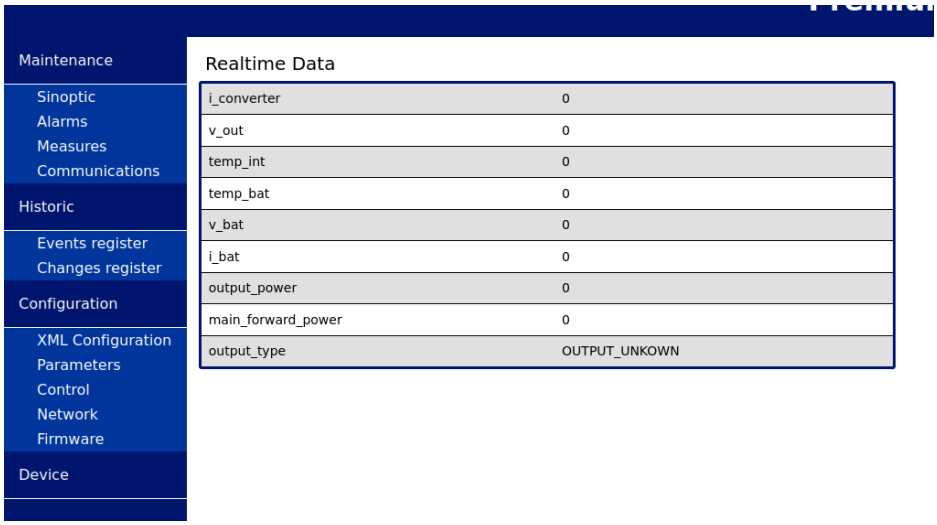

Figure 7: Measures

Table 6: Measures description

Output	Description
i_converter	Current (mA) supplied by the converter
v_out	Total output voltage (mV)
temp_int	Internal temperature (ºC)
temp_bat	Temperature (ºC) of the battery. If no battery is connected, it will return "NOT CONNECTED".
v_bat	Voltage (mV) supplied by the battery
i_bat	Current (A) supplied by the battery
output_power	Total output power (W)
main_forward_power	Power (W)
output_type	Device output type

3.3.3 COMUNICATIONS

The Figure 8 shows the values related to the equipment's communications. The information shown corresponds to the last time the page was refreshed.

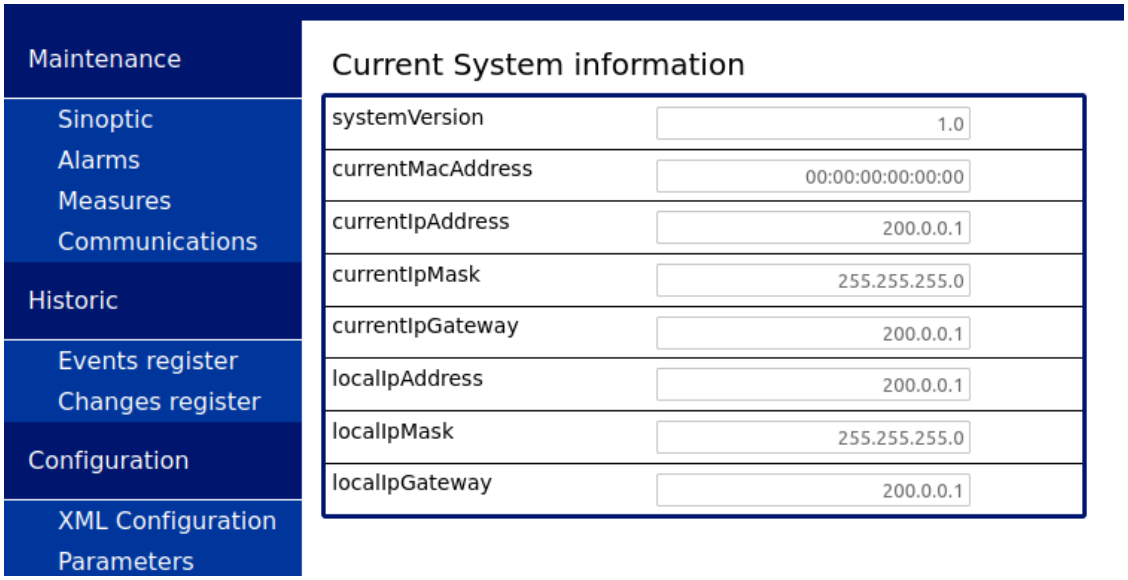

Figure 8: Communications parameters

3.4 CONFIGURATION

3.4.1 CONTROL

From this page, it is possible to modify the parameters one by one manually. The process to make these changes is:

1 Modify the form fields to be modified.

2 Press **Send data.**

3 Depending on the outcome of the process.

3.a The page will show the modified values in green.

3.b If the configuration contains an error, the value containing the error will be displayed in red and none of the values entered will be loaded.

The **Send data** is located at the bottom of the page.

Figure 9: EDS-500-48V parameters

Table 7: Parameters description

Name	Format	Descripción	Min	Default	Max
v_flot	mV	Output voltage in floating state in mV	50000	54200	60000
v_carga	mV	Output voltage in quick charge state in mV	48000	58000	60000
v_fin	mV	Limit voltage to consider a battery test failed in mV	30000	43000	50000
cap_desc	mAh	Capacity discharged in a battery test to finish it in mAh	0	5200	38000
desc_v_max	mV	Disconnection voltage upper bound in mV	50000	60000	60000
desc_v_min	mV	Disconnection voltage lower bound in mV	30000	42000	50000
desc_inm	mV	Immediate disconnection voltage in mV	30000	39000	50000
vout_nom	mV	Nominal output voltage in mV	30000	54240	66000
vout_max	mV	Maximum output voltage in mV	50000	60000	65000
vout_min	mV	Minimum output voltage in mV.	30000	38000	46000
ilim	mA	Maximum charging current in mA.	630	4000	5000
comp_flot	mV/ºC	Temperature compensation in floating state in mV/ºC	0	720	10000
comp_carga	mV/ºC	Temperature compensation in quick charge state in mV/ºC	0	960	10000
i_flot	mA	Battery current for transition to floating from quick charge in mA.	80	250	500
comp_t_max	dºC	Maximum temperature to apply temperature compensation in dºC	0	400	800
comp_t_min	dºC	Minimum temperature to apply temperature compensation in dºC	0	0	800
t_min_flot	hours	Minimum time to consider battery charged from floating state in hours.	0	13	24
t_lim_carga	hours	Maximum time of quick charge state in hours	0	8	24
periodo	weeks	Period of the battery test in weeks	1	16	60
tlim_prueba	hours	Maximum time of an attempt of battery test	1	24	99
rein		Number of retries of battery test	0	1	9

t_rein	minutes	Retry time of a failed battery test in minutes	1	1	30
tbat_alta	mºC	Maximum battery temperature in mºC.	10000	50000	80000
tbat_baja	mºC	Minimum battery temperature in mºC	-20000	0	80000
hab_comp		Enable compensation	0	0	1
bat_presence		Battery presence.	0	1	1
time_between_overload_retries	seconds	Time between test to overcome overload state in seconds	30	60	600
RCVcte_TempPasoFlot	ms	Time in ms that conditions have to be met constantly to change from quick charge to floating state.	10000	30000	300000
PrbBat_TTensLim	seconds	Time in seconds in a battery test that voltage must be below v_fin to consider the attempt failed.	3	15	30
TFinAutDesc	minutes	Time in minutes for disconnection of the battery when AC is not available.	2	5	10
TempAlarmFinAut	seconds	Time in seconds for the end of autonomy alarm to trigger.	5	15	30
PowerUP_TempReint	minutes	Time between power up retries in minutes.	1	1	5
PowerUP_NumReint		Maximum number of power up retries.	1	3	5
TAlarmOffBatTensMax	seconds	Time in seconds to disconnect the battery when above the maximum output voltage.	5	60	600
NumReint_BatTensMax		Number of times a battery can be above maximum output voltage.	2	3	3
TempEspFin_BatTensMax	minutes	Timeout in minutes to clear the number of times a battery is over maximum voltage.	2	5	30
number_of_overload_retries		Number of overloads allowed.	0	3	9
maximum_recovering_battery_time	minutes	Maximum time in minutes in recovering battery state.	1	15	30

3.4.2 NETWORK

The Network page (Figure 10) allows to check and modify all the parameters related to the unit's communications.

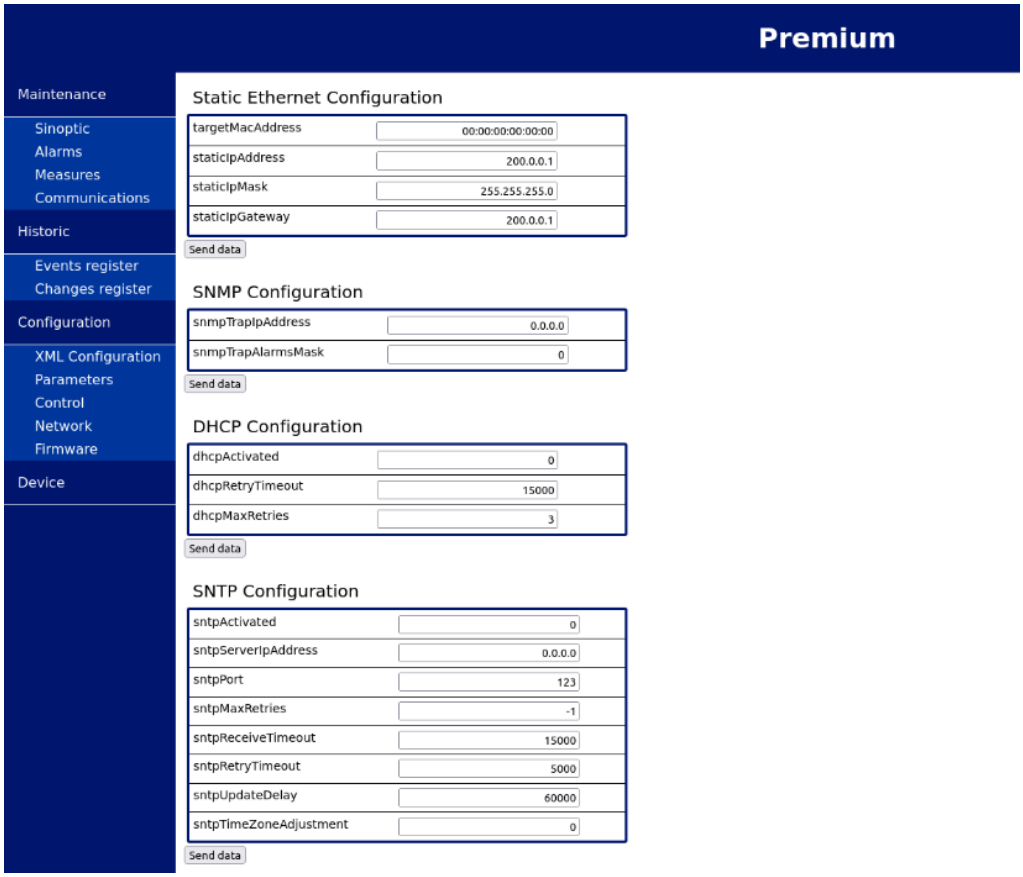

Figure 10: Network website

To apply changes, the process is the same as the one described in the previous item 3.4.1.:

1 Modify the form fields to be changed.

2 Click **Send Data.**

3 Depending on the outcome of the process.

3.a The page will show the modified values in green.

3.b If the configuration contains an error, the value containing the error will be displayed in red and none of the values entered will be loaded.

* **NOTE** The changes made may leave the equipment without communication and therefore **NOT OPERATIVE.**

3.4.3 FIRMWARE

From the Firmware page (see Figure 11) it is possible to update all the firmware and web pages of the unit with a single file. Other types of files can also be updated, due to the built-in flash memory of the unit.

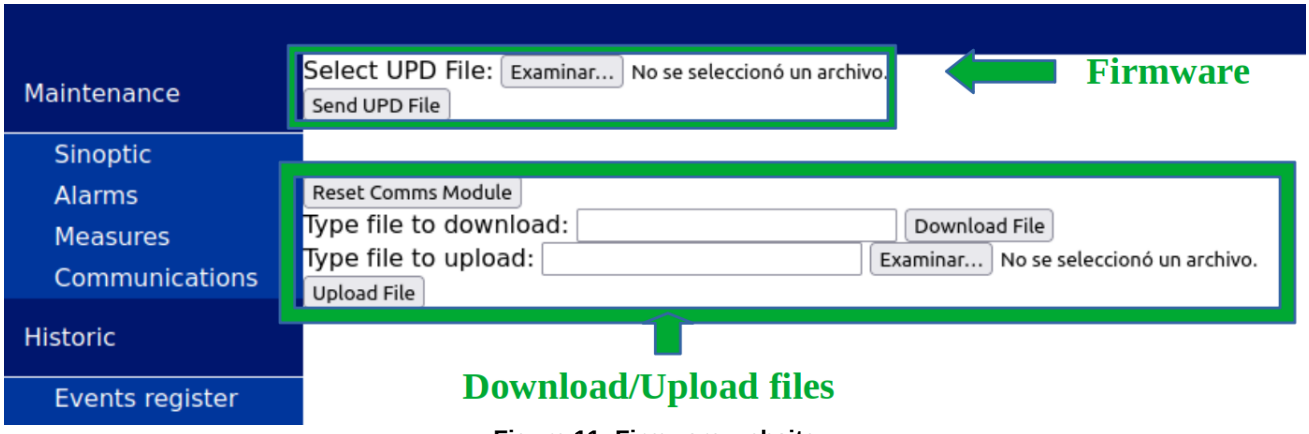

Figure 11: Firmware website

Update Firmware

1 Click on **Examinar** and select the file containing the update.
This file must be a **valid file** with **UPD** extension.
2 Click on **Send UPD File.**
3 Wait for the message "Uploading UPD file..." to change to "OK".

Download file

1 Type in the field designated for downloading files the name of the file.
2 Click on **Download File.**

Upload file

1 Click on **Examinar** and select the file to be uploaded.
2 Click **Send UPD File.**
3 Wait until the message "Uploading file..." changes to "OK".

4 SNMP V2

SNMP protocol is working under the device **IP**. The default port for SNMP which is **161**.

Base OID 1.3.6.1.4.1.57339.500.1

Table 8: SNMP parameters

Parameter	Description	Parent Name	OID
deviceId	Device ID	deviceInfo	(Base_OID). 1.1.0
serialNumber	Device serial Number	deviceInfo	(Base_OID). 1.2.0
commsVersion	Communications module version	deviceInfo	(Base_OID). 1.3.0
controlVersion	Control module version	deviceInfo	(Base_OID). 1.4.0
systemState	Control State	system	(Base_OID). 2.1.0
systemTemperature	Internal temperature in mºC	system	(Base_OID). 2.2.0
systemDatetime	Current system datetime	system	(Base_OID). 2.3.0
inputVoltage	Input Voltage	acInput	(Base_OID). 3.1.0
rectifierState	Control State	rectifier	(Base_OID). 4.1.0
rectifierVoltage	Output voltage in mV	rectifier	(Base_OID). 4.2.0
rectifierCurrent	Current out of the AC/DC converter in mA	rectifier	(Base_OID). 4.3.0
rectifierPower	Main Forward Power	rectifier	(Base_OID). 4.4.0
batteryVoltage	Battery voltage in mV	battery	(Base_OID). 5.1.0
batteryCurrent	Overall battery current in mA. Positive values correspond to charging and negatives to discharging	battery	(Base_OID). 5.2.0
batteryTemperature	Temperature sensed in the battery current probe in mºC	battery	(Base_OID). 5.3.0
batteryCurrentCharge	Current sensed charging the battery in mA	battery	(Base_OID). 5.4.0
batteryCurrentDischarge	Current sensed discharging the battery in mA	battery	(Base_OID). 5.5.0
outputVoltage	Output voltage in mV	dcOutput	(Base_OID). 6.1.0
outputCurrent	Current out of the AC/DC converter in mA	dcOutput	(Base_OID). 6.2.0
outputPower	Output Power	dcOutput	(Base_OID). 6.3.0
outputType	Output Type	dcOutput	(Base_OID). 6.4.0
actions	Actions to perform	control	(Base_OID). 7.1.0
voutNom	Nominal output voltage in mV	config	(Base_OID). 8.1.0

voutMax	Maximum output voltage in mV	config	(Base_OID). 8.2.0
voutMin	Minimum output voltage in mV	config	(Base_OID). 8.3.0
ilim	Maximum charging current in mA	config	(Base_OID). 8.4.0
habComp	Enable compensation	config	(Base_OID). 8.5.0
PowerUpNumReint	Maximum number of power up retries	config	(Base_OID). 8.6.0
PowerUPTempReint	Time between power up retries in minutes	config	(Base_OID). 8.7.0
tbatAlta	Maximum battery temperature in mºC	config	(Base_OID). 8.8.0
tbatBaja	Minimum battery temperature in mºC	config	(Base_OID). 8.9.0
compTMax	Maximum temperature to apply temperature compensation in dºC	config	(Base_OID). 8.10.0
compTMin	Minimum temperature to apply temperature compensation in dºC	config	(Base_OID). 8.11.0
vFlot	Output voltage in floating state in mV	config	(Base_OID). 8.12.0
compFlot	Temperature compensation in floating state in mV/ºC	config	(Base_OID). 8.13.0
tMinFlot	Minimum time to consider battery charged from floating state in hours	config	(Base_OID). 8.14.0
iFlot	Battery current for transition to floating from quick charge in mA	config	(Base_OID). 8.15.0
RCVcteTempPasoFlot	Time in ms that conditions have to be met constantly to change from quick charge to floating state	config	(Base_OID). 8.16.0
vCarga	Output voltage in quick charge state in mV	config	(Base_OID). 8.17.0
compCarga	Temperature compensation in quick charge state in mV/ºC	config	(Base_OID). 8.18.0
tLimCarga	Maximum time of quick charge state in hours	config	(Base_OID). 8.19.0
descVMax	Disconnection voltage upper bound in mV	config	(Base_OID). 8.20.0
descVMin	Disconnection voltage lower bound in mV	config	(Base_OID). 8.21.0
descInm	Immediate disconnection voltage in mV	config	(Base_OID). 8.22.0
TFinAutDesc	Time in minutes for disconnection of the battery when AC is not available	config	(Base_OID). 8.23.0
vFin	Limit voltage to consider a battery test failed in mV	config	(Base_OID). 8.24.0
periodo	Period of the battery test in weeks	config	(Base_OID). 8.25.0
capDesc	Capacity discharged in a battery test to finish it in mAh	config	(Base_OID). 8.26.0
PrbBatTTensLim	Time in seconds in a battery test that voltage must be below v_fin to consider the attempt failed	config	(Base_OID). 8.27.0
tRein	Retry time of a failed battery test in minutes	config	(Base_OID). 8.28.0
tlimPrueba	Maximum time of an attempt of battery	config	(Base_OID).

	test		8.29.0
rein	Number of retries of battery test	config	(Base_OID). 8.30.0
numberOfOverloadRetries	Number of overloads allowed	config	(Base_OID). 8.31.0
timeBetweenOverloadRetries	Time between test to overcome overload state in seconds	config	(Base_OID). 8.32.0
batPresence	Battery presence	config	(Base_OID). 8.33.0
TAlarmOnBatTensMax	Time in seconds to disconnect the battery when above the maximum output voltage	config	(Base_OID). 8.34.0
TAlarmOffBatTensMax	Time in seconds to clear a battery overvoltage alarm	config	(Base_OID). 8.35.0
NumReintBatTensMax	Number of times a battery can be above maximum output voltage	config	(Base_OID). 8.36.0
TempEspFinBatTensMax	Timeout in minutes to clear the number of times a battery is over maximum voltage	config	(Base_OID). 8.37.0
maximumRecoveringBatteryTime	Maximum time in minutes in recovering battery state	config	(Base_OID). 8.38.0
TempAlarmFinAut	Time in seconds for the end of autonomy alarm to trigger	config	(Base_OID). 8.39.0
currentMacAddress	Device current MAC Address	ethernetInfo	(Base_OID). 9.1.0
currentIpAddress	Current IP address	ethernetInfo	(Base_OID). 9.2.0
currentIpMask	Current IP Mask	ethernetInfo	(Base_OID). 9.3.0
currentIpGateway	Current IP Gateway	ethernetInfo	(Base_OID). 9.4.0
localIpAddress	Local IP address	localIpInfo	(Base_OID). 10.1.0
localIpMask	Local IP Mask	localIpInfo	(Base_OID). 10.2.0
localIpGateway	Local IP Gateway	localIpInfo	(Base_OID). 10.3.0
targetMacAddress	Device target MAC Address	ethernetConfiguration	(Base_OID). 11.1.0
staticIpAddress	Static IP address	ethernetConfiguration	(Base_OID). 11.2.0
staticIpMask	Static IP Mask	ethernetConfiguration	(Base_OID). 11.3.0
staticIpGateway	Static IP Gateway	ethernetConfiguration	(Base_OID). 11.4.0
applyStaticIp	Apply static IP configuration	ethernetConfiguration	(Base_OID). 11.5.0
snmpTrapIpAddress	SNMP Trap IP address	snmpConfiguration	(Base_OID). 12.1.0
snmpTrapAlarmsMask	Mask to configure which alarms will generate SNMP traps	snmpConfiguration	(Base_OID). 12.2.0
dhcpActivated	DCHP service enabled/disable state	dhcpConfiguration	(Base_OID). 13.1.0
dhcpRetryTimeout	Time before DHCP service performs the next connection retry in milliseconds	dhcpConfiguration	(Base_OID). 13.2.0
dhcpMaxRetries	DHCP maximum number of connection retries	dhcpConfiguration	(Base_OID). 13.3.0
sntpActivated	SNTP service enabled/disable state	sntpConfiguration	(Base_OID). 14.1.0

sntpServerIpAddress	SNTP server IP address	sntpConfiguration	(Base_OID).14.2.0
sntpPort	SNTP port	sntpConfiguration	(Base_OID).14.3.0
sntpMaxRetries	SNTP maximum number of connection retries. Any negative number in max retries represents infinite retries	sntpConfiguration	(Base_OID).14.4.0
sntpReceiveTimeout	Maximum SNTP service waiting time in milliseconds. Must not be beolw 15 seconds by specification	sntpConfiguration	(Base_OID).14.5.0
sntpRetryTimeout	Time before SNTP service performs the next connection retry in milliseconds	sntpConfiguration	(Base_OID).14.6.0
sntpUpdateDelay	SNTP service update delay in millisecond	sntpConfiguration	(Base_OID).14.7.0
sntpTimeZoneAdjustment	Timezone adjustment in hours	sntpConfiguration	(Base_OID).14.8.0