E3METER® Smart PDU User Manual

RIEDO NETWORKS Ltd / Route de la Fonderie 6 / CH-1700 Fribourg / Switzerland / +41 26 505 50 00 / info@riedonetworks.com / www.rnx.ch

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Safety instructions

Danger to life from electric current!

Contact with live parts poses an immediate risk of fatal injury from electric shock. Damage to the insulation or individual components can be fatal.

- The PDU is only to be installed and manipulated by trained IT personnel or electricians.
- The PDU is used to supply power and measure the energy consumption of electronic devices in a rack (e.g. in server rooms). The rated power of the PDU must not be exceeded.
- Only connect the PDU to an adequately secured power socket.
- Only use the PDU in a dry environment.

Table of Contents

Document History

Date	Revision	Who	Comment
2023-06-13	1.0	FRIE	V4.8

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1. Introduction

Thank you for purchasing the Riedo Networks E3METER Smart PDU. Whether used together with other products from Riedo Networks or individually, the E3METER forms the basis of an intelligent energy management system.

Please read these operating instructions carefully and follow the usage and safety instructions to ensure optimal and safe use.

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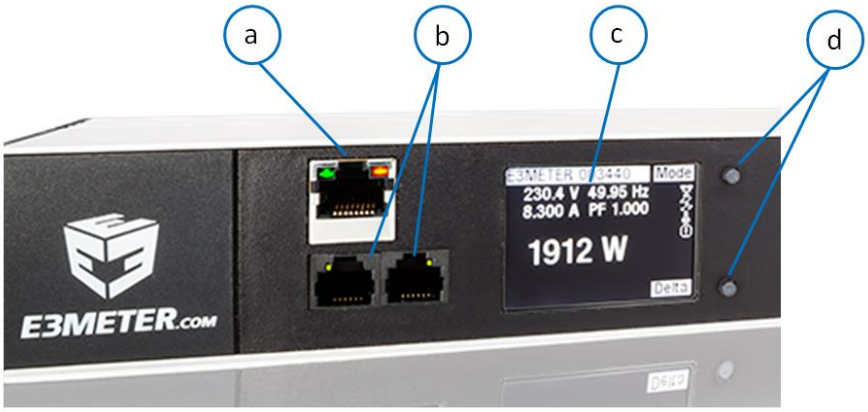
2. Operation via Display

2.1. Front Panel



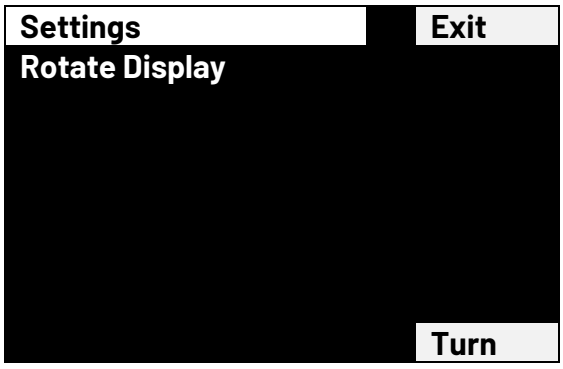
a) Ethernet interface
b) Sensor interfaces (RJ12)
c) Display
d) Control buttons

2.2. Wake up the display from sleep mode

1. After 15 minutes, the display will go into sleep mode. To wake up the display, press one of the two buttons.
2. The display will light up and show the Main Screen or the last selected mode.

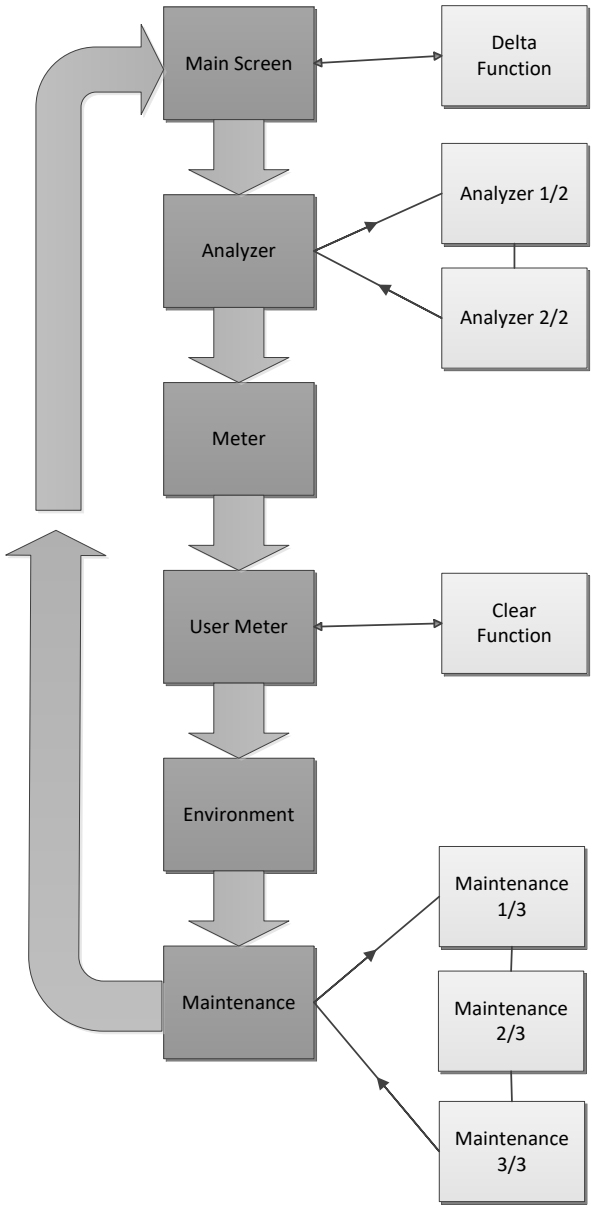
2.3. Turn Displays

1. To rotate the display, press and hold the mode button in the main menu.
2. When "Rotate Display" appears, press the Turn button to rotate the display.
3. Press the exit button to leave the menu



2.4. Menu Overview

The built-in TFT display with the buttons next to it offers the most direct method of operating the E3METER Smart PDU. The different modes are selected by pressing the mode button. This is shown schematically below (for a 1-phase PDU).



You can scroll through all pages in a particular mode by pressing the Page button.

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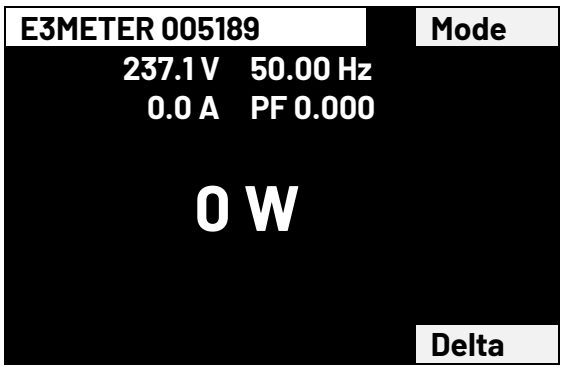
2.5. Main Screen

In the main menu, the active power currently consumed is displayed in watts.

Above it appears:

1. The voltage in Volt
2. The frequency in Hertz
3. The current in Ampère
4. The power factor



Note: In the case of the 3-phase PDU, the active powers of the 3 phases L1, L2 and L3 are displayed on the main screen in addition to the total active power.

Differential function (Delta)

Pressing the delta button displays the change in power. This allows one differential measurement to be carried out.

Fix the base:

1. Press Delta button
2. The difference value appears on the bottom line.

Reset difference value:

1. Press the Clear button
2. The difference value is reset.

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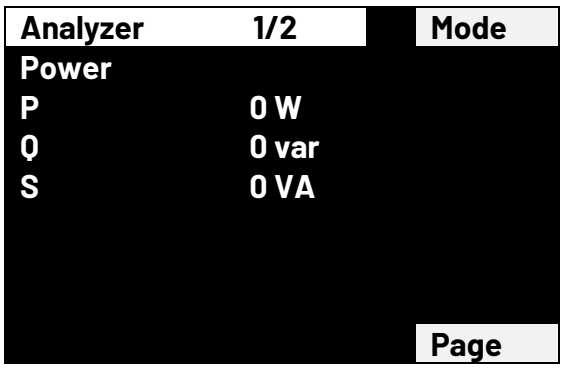
2.6. Analyzer mode

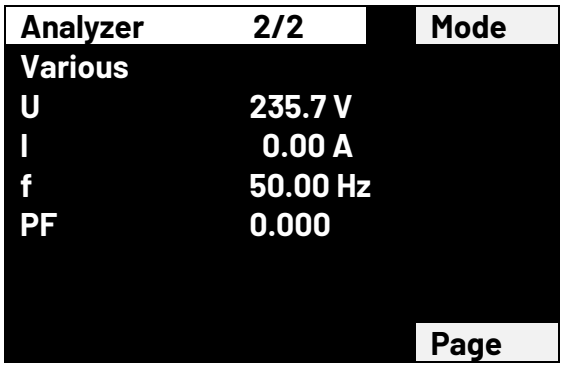
Pressing the mode button once takes you to analyzer mode. The values are displayed on the first page:

1. Active power (P) in Watt
2. Reactive power (Q) in Var
3. Apparent power (S) in Voltampère



Pressing the Page button takes you to the second page of the analyzer. Here are listed:

1. Voltage in Volt
2. Frequency in Hertz
3. Current in Ampère
4. Power factor



Note: In the case of the 3-phase PDU, the following measurements for the 3 phases and the total are displayed on 8 pages in the analyzer mode:

1. *Active power (P) in Watt*
2. Reactive power *(Q) in Var*
3. Apparent power *(S) in VA*
4. *Voltage in V*
5. *current in A*
6. *Frequency in Hz*
7. *Power Factor*
8. *Neutral current in A*

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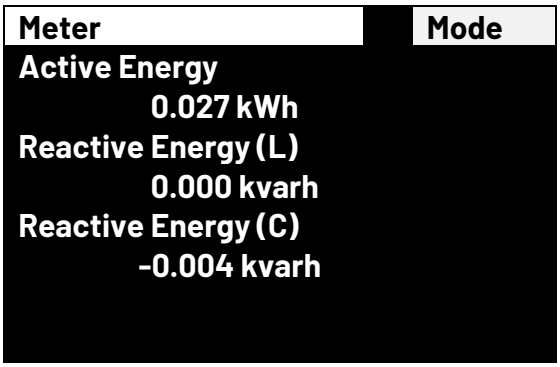
2.7. Meter mode

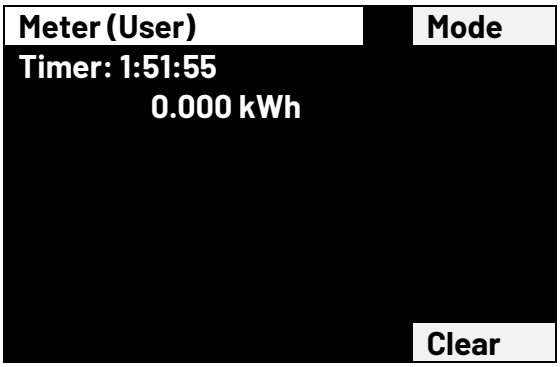
Another press of the mode button displays the non-resettable energy meter for active and reactive energy.



Note: In case of the 3-phase PDU, these values are displayed on 3 pages.

2.8. User Meter mode

By pressing the mode button again, the resettable energy meter and its running time are displayed.



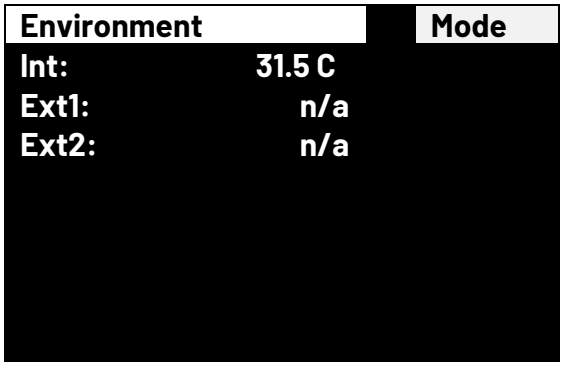
Reset energy counter:

1. Press the Clear button
2. The values are reset and start again at 0.

Note: The 3-phase PDU shows the values for the 3 phases on this page.

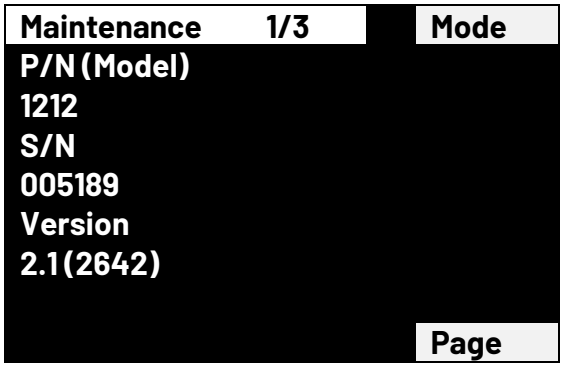
2.9. Environment mode

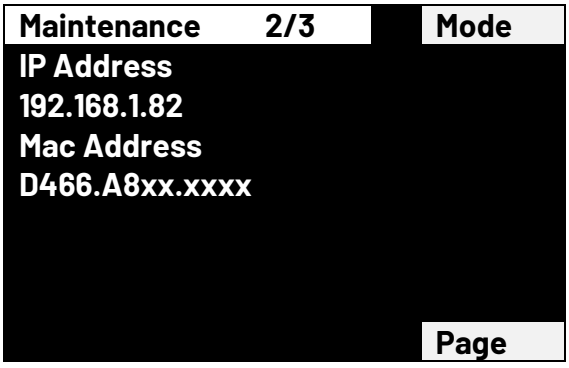
By pressing the mode button again, the values of the internal and external temperature sensors are displayed. If no external sensors are connected, "n/a" is displayed instead.

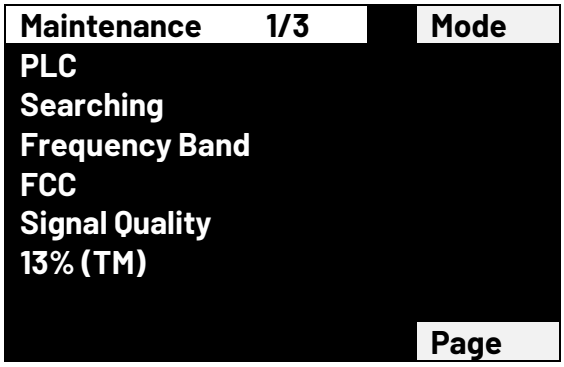


2.10. Maintenance mode

Pressing the mode button again displays the settings of the PDU. You can scroll between the subpages by pressing the Page button.





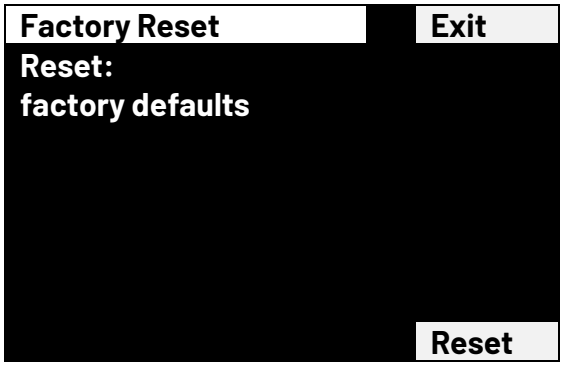


2.11. Restart the electronics

1. The electronics is restarted (reset) by pressing and holding both buttons on the main screen.
2. If you remain on the buttons until the LEDs are off (visible in the sensor sockets), the electronics remain switched off. To switch the electronics back on, keep both buttons pressed until the LEDs light up again.

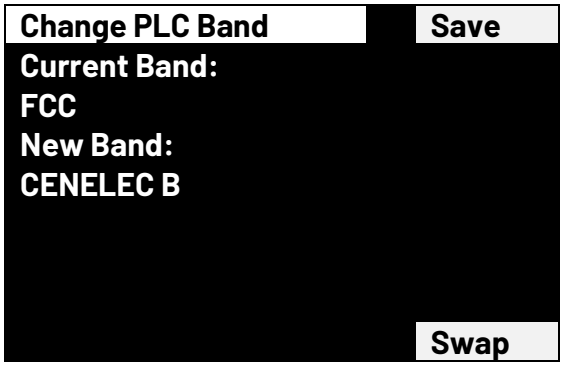
2.12. Factory reset

1. To reset the PDU to factory settings, press and hold the Delta button in the main menu.
2. As soon as the "Factory Reset" display appears, you can reset to the factory settings by pressing the reset button or exit the menu with the exit button.



2.13. Change frequency band

1. To change the frequency band, press and hold the Mode button in Maintenance/PLC.
2. As soon as "Change PLC Band" appears, the PLC band can be selected with the Swap button. FCC, CENELEC B, ENET or PLC-off appears under "New Band".
3. Press the Save button to save the frequency band setting



Attention:

Communication via PLC can only be used in combination with the E3METER Data Concentrator (RN1401). Instead of PLC communication, the IPS can also be connected to the data concentrator via Ethernet Layer 2. To do this, the IPS and the data concentrator must be in the same VLAN. No IP address or other configuration is required on the IPS. Parallel access to the IPS via IP, e.g. g. http, SNMP, Syslog, Telnet, is still possible, but not required for operation with Data Concentrator. PLC is disabled when the IPS is working in ENET mode.

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3. Operation via web browser

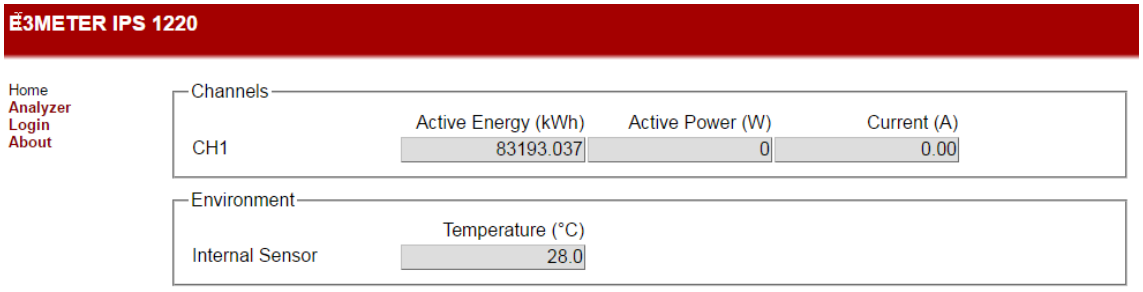
3.1. Ethernet Access (TCP/IP)

After installing and connecting the PDU, you can access the user interface using a web browser.

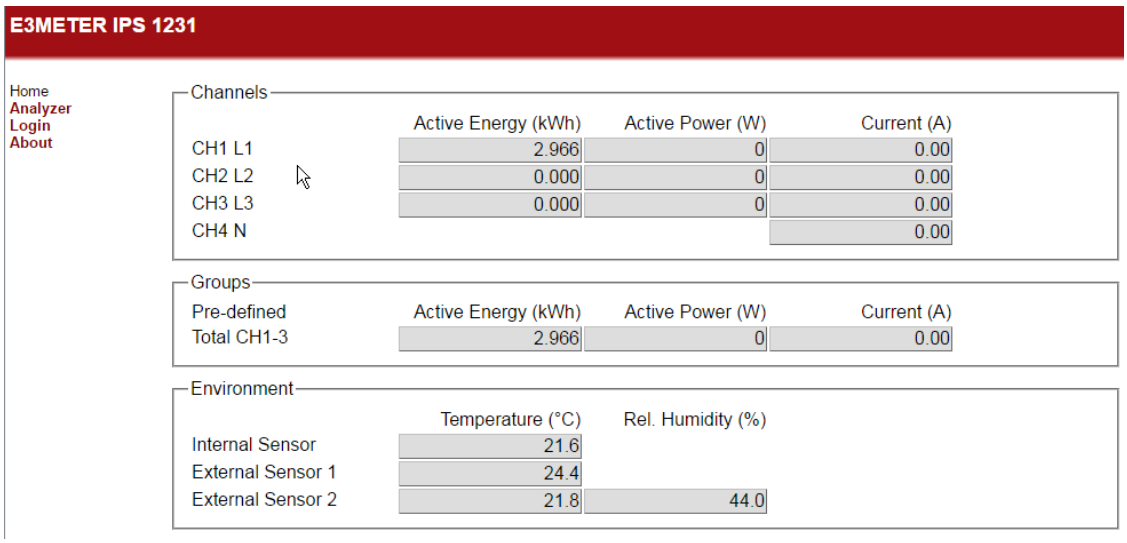
Note: By default, the PDU obtains an IP address from a DHCP server. If no DHCP server is available, the PDU switches to Auto IP.

1. Read the IP address on the PDU display under Maintenance page 2
2. Enter this IP address in the address line of the browser (http://'IP-address')
3. The following overview page appears:

Example of a 1-phase PDU:



Example of a 3-phase PDU:



The active energy (kWh), the active power (W) and the current (A) per phase and in total are displayed. The temperature of the internal sensor as well as the temperature and humidity of any connected external sensors are displayed as well.

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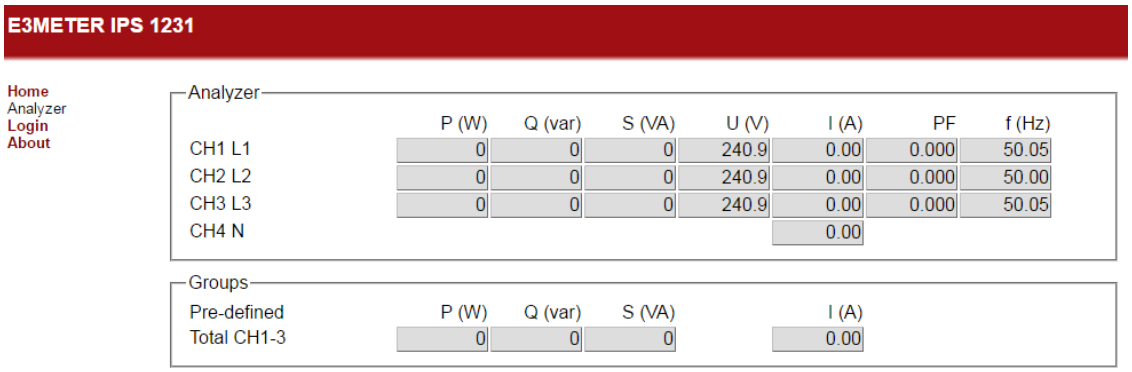
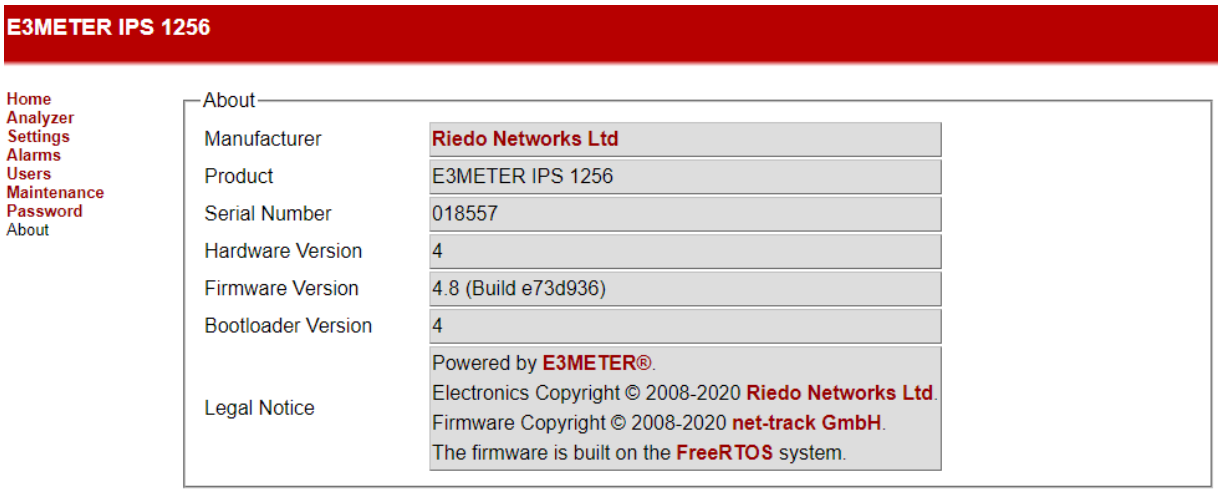
3.2. Analyzer



The following is displayed here: active power (W), reactive power (var), apparent power (VA), voltage (U), current (A), power factor, frequency (Hz).

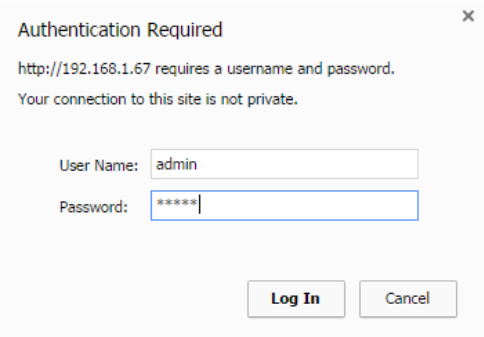
3.3. About



In addition to the manufacturer information, you will also find the product type, the serial number and the firmware version here.

3.4. Login for advanced features

After logging in, the advanced functions can be accessed.



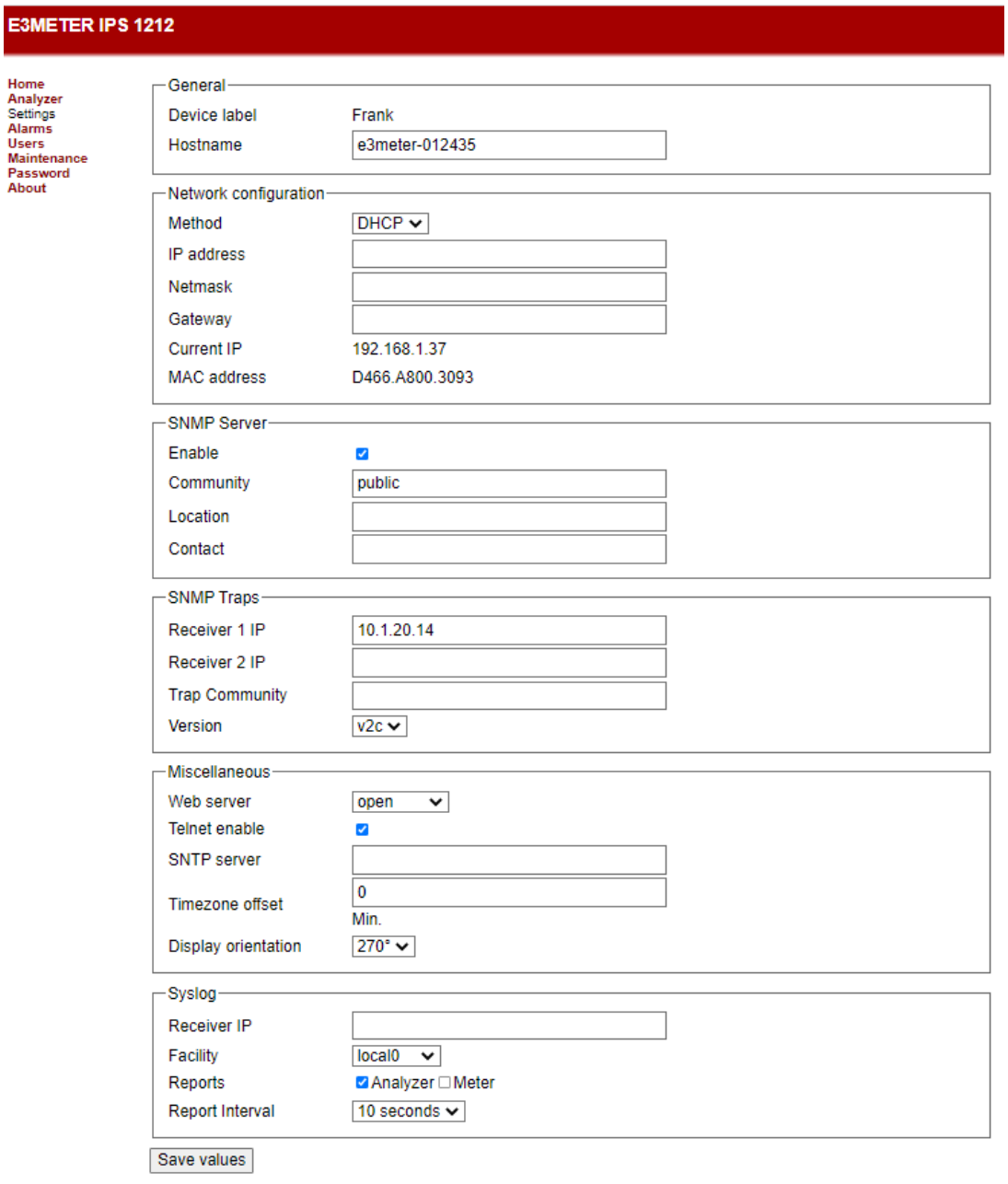
When logging in for the first time, please enter the following:

- User name: admin
- Password: admin

Please change the password after the first login (click on 'Password').

3.5. Settings

Under Settings you can edit the system settings.



General:

- **Device label**: This name is displayed on the PDU. The name can be queried via SNMP.
- **Hostname**: description of the DNS hostname of the PDU

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Network Configuration:

- **Method**: Here you can switch between static IP address and dynamic (DHCP).
- **IP address**: The static IP address is entered here.
- **Netmask**: The subnet mask is entered here.
- **Gateway**: The default gateway is entered here.
- **Current IP**: Your current IP address is displayed here.
- **MAC address** : Your current MAC address is displayed here.

SNMP Server

- **Enable**: SNMP can be enabled or disabled here.
- **Community**: The SNMP read community can be configured here.
- **Location**: he PDU location can be entered here.
- **Contact**: he responsible contact person can be entered here.

SNMP Traps

- **Receiver 1 IP**: IP address of a traps receiver
- **Receiver 2 IP**: IP address of another traps receiver
- **Trap community**:
- **Version**: choice between V1 and V2c

Miscellaneous

- **Web server**: The operating mode of the web server can be configured here. The following operating modes are available:
  - **open**: Allows access to the Home and Analyzer pages without prior login.
  - **restricted**: Requires a prior login to the web server for all pages.
  - **off**: Disables the web server.

  

  Attention: *In order to reactivate the web server of the PDU, access via the serial interface is required.*
- **Telnet enable**: This can be used to disable Telnet access.
- **SNTP Server**: An SNTP time server can be specified here.
- **Timezone offset**: Specifies the offset to GMT in minutes.
- **Display orientation**: Orientation of the display. Depending on how the PDU is installed, the display can be rotated for better legibility in 90° steps.

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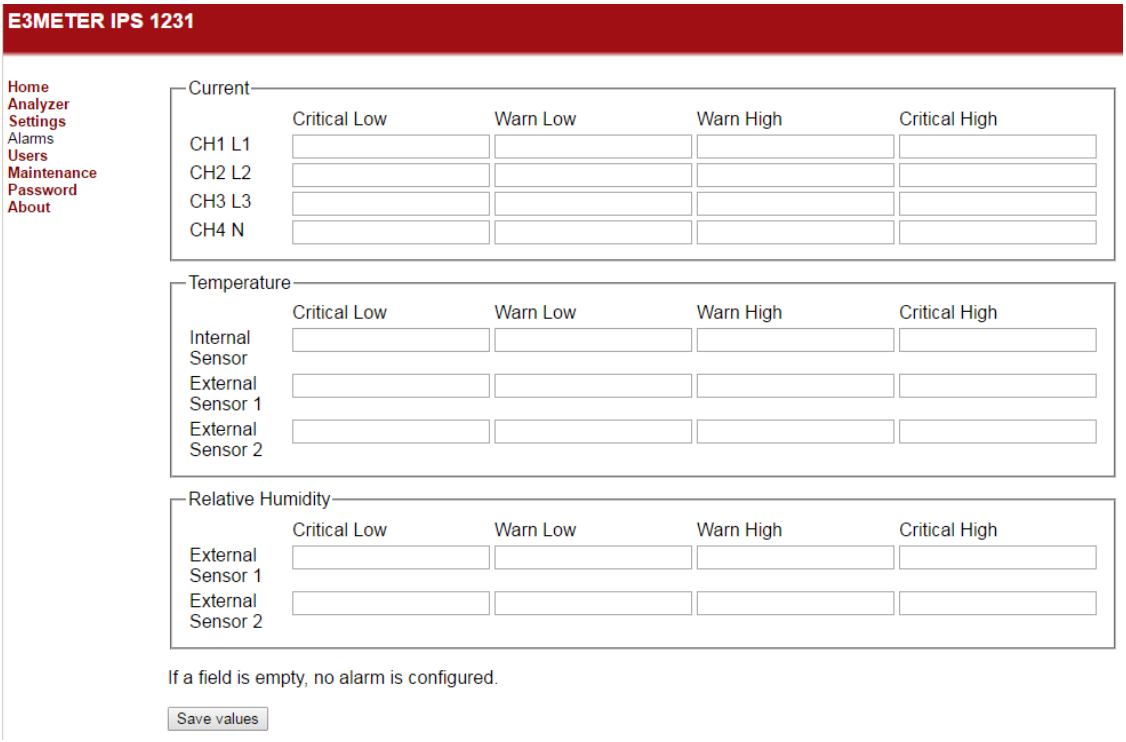
Syslog

- Settings for receiving syslog messages:
  - **Receiver IP**:
  - **Facility**:
  - **Reports**:
  - **Report interval**:

All changes are saved on the PDU with 'Save values'.

3.6. Alarms



In this menu you can configure the threshold values for warnings and alarms. 2 threshold values (low and high) for a warning and 2 threshold values (low and high) for an alarm can be defined for the following measurements:

- Power (1-phase PDU: CH1. 3-phase PDU: all 3 phases and neutral)
- Temperature for the internal sensor and, if present, for the external sensors
- Humidity if external sensors are present

If a threshold value is exceeded or not reached, a message is sent via SNMP traps.

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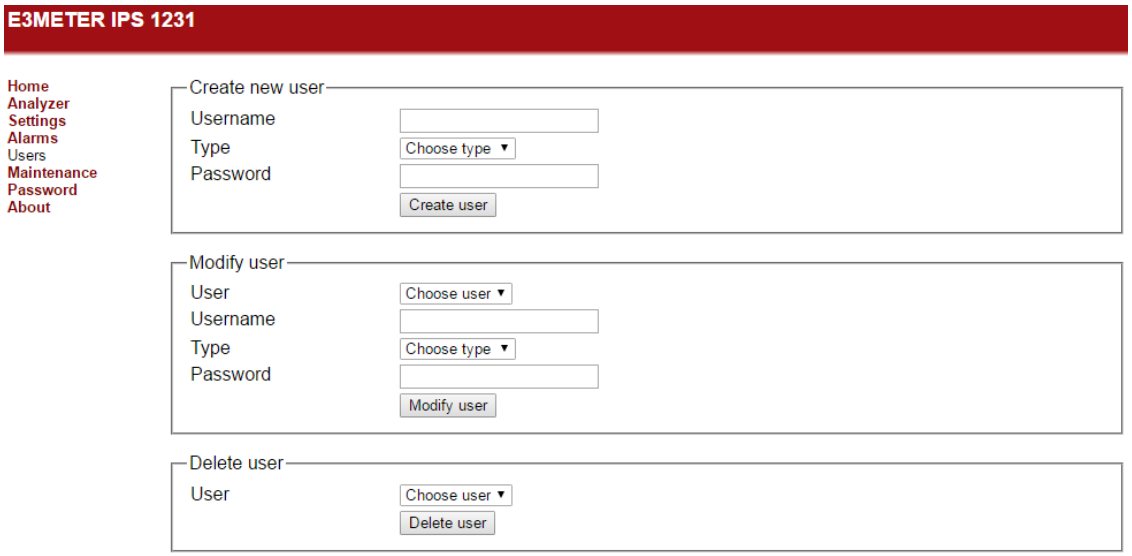
3.7. Users



Create new user → Create a new user

- **Username**: Enter new username
- **Type**: Select user type:
  - Administrator: Full access rights to the entire system
  - User: Access to Home and Analyzer (useful in connection with the system setting: Web server > Restricted).
- **Password**: Enter the password for the new user

Create the new user with 'Create user'

Modify user → Edit existing user

- **User**: Select user
- **Username**: Enter existing or new username
- **Type**: Select user type
- **Password**: If desired, enter a new password

Save the user changes with 'Modify user'

Delete user → Delete an user

- **User**: elect the user to delete

Delete the user with 'Delete user'

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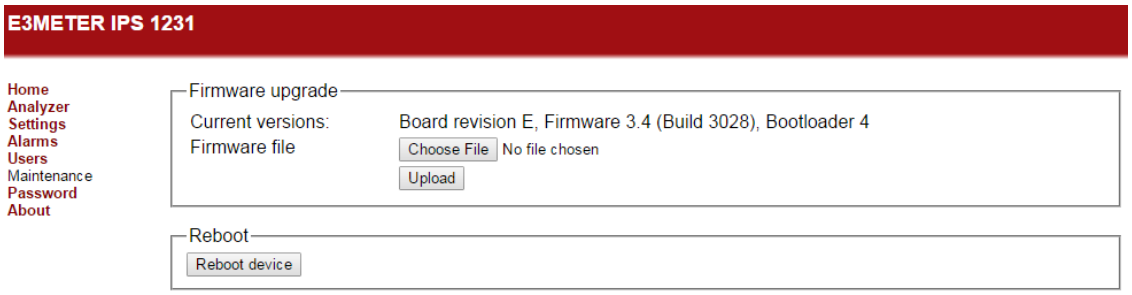
3.8. Maintenance



In Maintenance, firmware upgrades can be carried out and the PDU restarted (reboot).

Firmware upgrade

- **Current versions**: The currently installed firmware version is displayed here.
- **Firmware file**: Here you can upload a new firmware image. Please visit https://www.rnx.ch/support or contact us (info@riedonetworks.com) so that we can send you the download link: Click on 'Upload' to start the update process. After a successful update, the bar will restart with the new firmware.

  Bemerkung: Falls Sie Ihre PDUs mit einem Data Concentrator verwalten, können diese automatisch auf die jeweils letzte Firmware aktualisieren werden (Meters Upgrade in der CTR Monitoring Software dazu auf Auto setzen Note: If you manage your PDUs with a data concentrator, they can be automatically updated to the latest firmware (set Meters Upgrade to Auto in the CTR Monitoring Software).

Reboot

- **Reboot device**: The PDU is restarted by clicking on 'Reboot device'. This does not affect the power supply of the connected devices.

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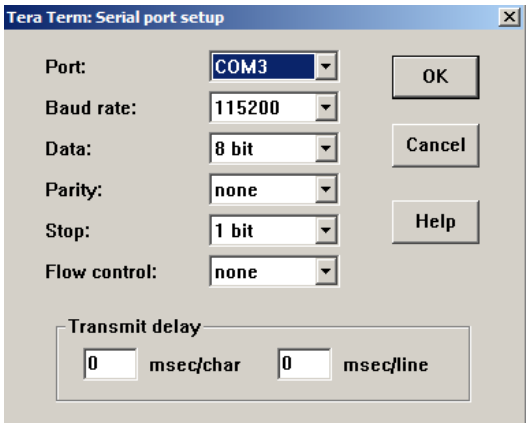
4. Serial interface

Without a network connection, the PDU can be connected to a serial USB port using the USB adapter RN1080. To do this, connect the USB adapter to the left RJ12 sensor socket.

Connect the USB Adapter RN1080 here

- Start Tera Term, PuTTy (or similar)
- Check in the Device Manager which USB port is being used
- elect the correct port and set the baud rate to 115200



The cli Commands List (E3METER Smart PDU Console and Telnet Command List) can be downloaded here:

https://www.rnx.ch/support

Entering 'help' gives the list of commands.

5. Technical support

- https://www.rnx.ch/support
- support@riedonetworks.com
- +41 26 505 50 00