

ePDU Installation Guide

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ePDU Installation Guide

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This leaflet describes the installation and use of Eaton's ePDU (enclosure PDU) products, supplied for use in 19" racking cabinets.

Use of the ePDU in other applications is not precluded but other precautions may need to be taken specific to the nature of the application which may not be covered within this leaflet.

Inspection

Inspect the product before installation. If product is damaged in any way please contact the supplier.

Safety warnings

ePDUs should be installed and tested by a competent service person. It is the installer's responsibility to ensure that the selected product is installed to meet national and local safety regulations.

Ensure that all equipment is unplugged from ePDU outlets before carrying out any testing.



CAUTION

Use only in dry locations. Indoor use only.



NOTICE

For pluggable equipment, the socket outlet shall be installed near the equipment and shall be easily accessible



NOTICE

For permanently connected equipment, a readily accessible disconnect device shall be incorporated external to the equipment



NOTICE

To avoid risk of overload, do not plug additional multiple outlet power distribution devices into the ePDU socket outlets.



CAUTION

The installer must connect the ePDU to an electrical supply that has a protective earth conductor.

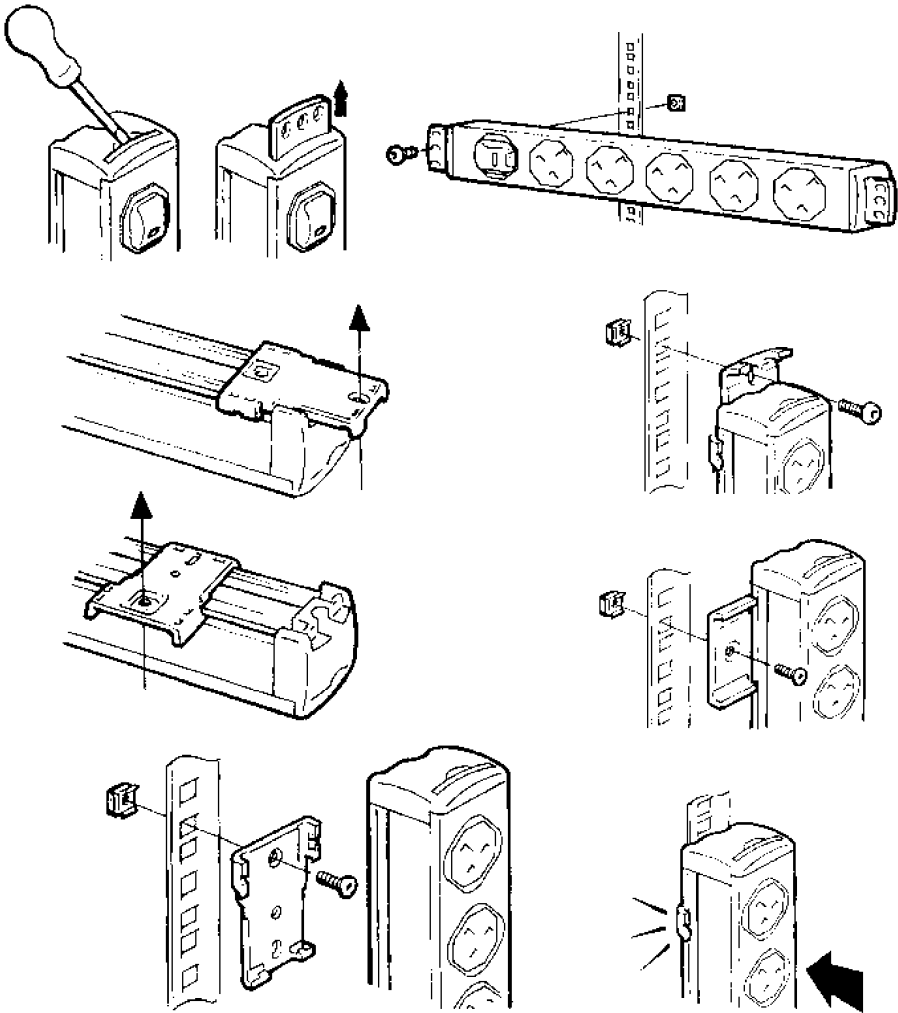
Installation

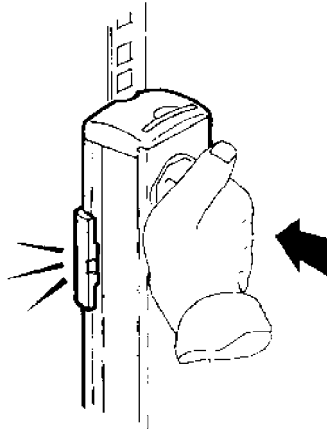
Ensure that the ePDU is installed with adequate support for the supply cable to avoid excessive strain on the cable gland or damage to the cable.

1U and 2U ePDU products with steel enclosures have mountings suitable for horizontal rack mount in the U-space of the cabinet.

0U ePDU products with extruded aluminium enclosures are supplied with accessories that allow a range of mounting options as shown below, including horizontal mount in the rack U-space for ePDUs specified for this.

The plastic mounting brackets provide isolation between the ePDU enclosure earth and the rack earth.





Note for some mounting options the installer should first fix the plastic mounting feet to the rack, and then clip the ePDU to them.

0u ePDU earth terminal and cable entry

The terminal type is a 6.3mm FASTON, suitable for straight or flag receptacles. This may be used for supplementary earth bonds to rack metalwork.

Ensure that space is allowed for power cable bend radius to avoid stress of the cable.

Input supply wiring details



CAUTION

It is essential that this system is connected to an electrical supply that has a protective earth conductor.



CAUTION

The ePDU must be connected to a supply with an overload / short circuit current protection device rated not higher than the input current rating as stated on the rating label of the ePDU.

Where supplied with fitted cord, the unit cannot be re-wired by the user and must be returned to the factory for cord replacement.

Some ePDUs are specified with a power input cable but no plug, for permanent connection to a supply. These ePDUs must be wired to the supply by a competent person, in line with the above cautions and any local wiring regulations. The following information is provided as a guide and may also be used for re-wireable plugs.

Cable rating information:

| | |
|----------------------|------|
| 1.25 mm ² | 13 A |
| 1.50 mm ² | 16 A |
| 4.00 mm ² | 32 A |

Wire colours

| | Single phase cable | Three phase cable |
|---------------|--------------------|-------------------|
| Live (L1) | Brown | Brown |
| Live (L2) | - | Black |
| Live (L3) | - | Grey |
| Neutral (N) | Blue | Blue |
| Earth \perp | Green/Yellow | Green/Yellow |

Single circuit ammeter details

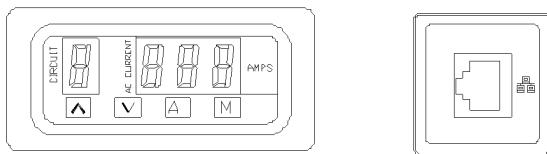
For products with a single circuit ammeter:

The ammeter indicates the ePDU input current. The maximum permissible input current is shown on the product rating label.

Use the ammeter to prevent an overload that will trip the supply protection device - disconnect equipment from the ePDU socket outlets to work within its current rating.

Multiple circuit ammeter

The multiple circuit ammeter is shown below, with the IP communications port used for remote monitoring.



The ammeter can indicate input and output load currents of the ePDU. A minimum of one, and a maximum of eight circuits will be displayed, dependant upon product specification. The circuits measured are defined by labels on the product and in the product specification sheet supplied with this Installation Guide. The maximum load current value for each circuit is defined in this information.

Ammeter Display

When power is applied to the ePDU the ammeter operates in "Auto" mode.

- "CIRCUIT" A single digit on the display indicates the circuit being monitored and will be aligned to labelling of circuits on the product and the product specification sheet.
- "AMPS" The three digit display shows the true RMS current of the measured circuit to 1/10 of an Amp. Accuracy is +/- 5%.
- "A" Select to place ammeter in AUTO mode. In this mode, the ammeter automatically scrolls through the applicable circuits sequentially. The ammeter operates in AUTO mode when first energized.

“M” Select to place ammeter in MANUAL mode. In this mode the scroll UP or DOWN keys may be used.



Scroll UP / DOWN keys manually select the circuit being monitored.

“A” & “M” Depress A & M together to allow the user to set the POLL rate of the ammeter display (this will not effect the IP network output), the circuit number will now flash. Use the scroll up/down keys to select between 1 and 9 seconds per channel.

As more equipment is plugged into the ePDU, monitor the load current level of each circuit using the ammeter. Do not exceed the maximum limit of the circuit. This may cause circuit overload protection to operate and the supply will be disconnected.

IP communications

Products supplied with an IP port may be connected to a network and the user may..

- Browse to the unit Graphical User Interface (GUI)
- Remotely monitor circuit load current readings
- Set traps for overload alarms
- Set up SNMP communication.

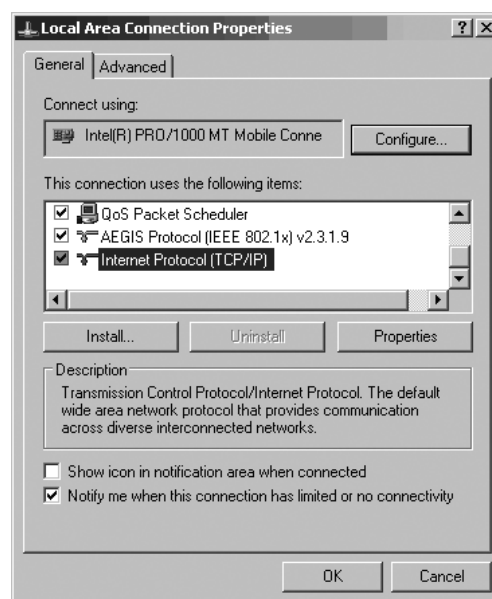
Eaton Intelligent Power ® Manager can discover and manage ePDUs through the network. A free version to manage up to 10 ePDUs (or nodes) is available at: <http://powerquality.eaton.com>

Internet Protocol Settings

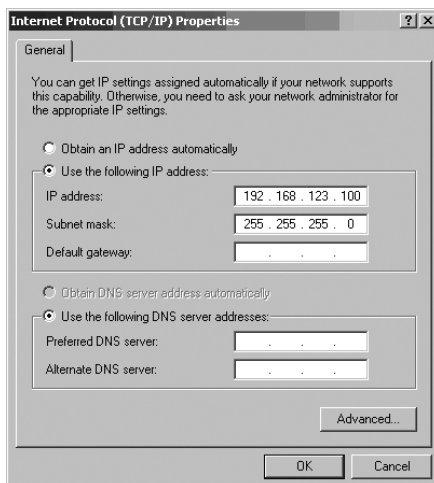
The GUI is accessible through web browsing software and presents the information transmitted from the ammeter. To access the in-built web page a PC directly connected to the ePDU IP port using a crossover cable must be configured so that it has a corresponding IP address.

For a PC running a windows operating system:

1. Browse to: **My Computer > Control Panel > Network Connections**
2. Right-click the connection that is on the same network/connected to ePDU and select **Properties**
3. The following window will open.



4. Highlight **Internet Protocol (TCP/IP)** and Click on **Properties**



5. Highlight the circle next to **Use the following IP address:**
6. Enter the following:
 IP address: 192 . 168 . 123 . 100 (Example IP address)
 Subnet mask: 255 . 255 . 255 . 0 (Default subnet mask)
 Default gateway: (Not required)
7. Click on the **OK** button then close the **Internet Connection Properties** window.
8. Once communications to the ePDU have been completed the IP address of the PC can be adjusted back to the original settings through the same method.

Graphical User Interface

To access the ePDU GUI ...

Open your web browsing software and type the IP address in the **Address** bar at the top of the window and press **Enter** or press the **Go** button.

The default IP address of the ePDU is: **192.168.123.123**

Notes:

- The default parameters will be restored by pressing briefly the reset button, (The reset button is accessible through a small hole in the IP port bezel. Insert a pin to do this.)
- Maintaining the reset button pressed during several seconds will force the upgrade mode. To return in normal operation mode, upload a firmware or unplug the ePDU power supply.

| ID | Name | Value | Units |
|----|----------|-------|-------|
| C1 | Server 1 | 0.3 | Amps |
| C2 | Server 2 | 0.2 | Amps |
| C3 | Server 3 | 0.6 | Amps |

Sensors

This is the default screen for the ePDU web interface.

This view displays the current readings per circuit (or Cx = Current Transformer).

The number of displayed Cx's varies depending upon the product specification. The name displayed regarding the Cx ID is a friendly name that is user configurable. (See Configuration)

A value displayed in red exceeds the thresholds configured by the user. (See Configuration)

Configuration

UNIT SETTINGS

Unit Name:

Location:

Contact:

Part Number:

DHCP:

IP Address:

Subnet Mask:

Default Gateway:

MAC Address:

SNMP Read Community:

SNMP Trap IP Address:

SNMP Trap Community:

ACCESS CONTROL

Username:

Password:

| Enable | IP Address |
|--------------------------|--|
| <input type="checkbox"/> | <input type="text" value="192.168.122.255"/> |
| <input type="checkbox"/> | <input type="text" value="192.168.122.255"/> |
| <input type="checkbox"/> | <input type="text" value="192.168.122.255"/> |

Notes

- Once enabled, only packets from the above IP addresses will be accepted.
- If the web interface becomes inaccessible, a manual reset is required to disable Access Control.

ALARM SETTINGS

| Channel ID | Channel Name | Upper Threshold |
|------------|----------------------------------|----------------------------------|
| C1 | <input type="text" value="CT1"/> | <input type="text" value="0.8"/> |
| C2 | <input type="text" value="CT2"/> | <input type="text" value="0.8"/> |
| C3 | <input type="text" value="CT3"/> | <input type="text" value="0.8"/> |
| C4 | <input type="text" value="CT4"/> | <input type="text" value="1"/> |
| C5 | <input type="text" value="CT5"/> | <input type="text" value="0.8"/> |
| C6 | <input type="text" value="CT6"/> | <input type="text" value="1"/> |
| C7 | <input type="text" value="CT7"/> | <input type="text" value="1"/> |
| C8 | <input type="text" value="CT8"/> | <input type="text" value="1.2"/> |

EPDU COMMUNICATIONS RESTART

Press the button to restart the ePDU communications.

Notes

- The outlets will remain in their current state.
- The ePDU will retain it's last known IP address.
- If DHCP is enabled the IP address will change once a new address is received from the DHCP server.

FIRMWARE UPDATE

Press the button to enable the upgrade mode. It will launch a TFTP server.

Notes

- The outlets will remain in their current state.
- The ePDU will retain it's last known IP address.

Monitored ePDU
v1.0

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- Unit Name:** This allows the user to set the name displayed at the top right hand side of the screen.
- Location:** This allows the user to describe the location of the ePDU.
- Contact:** This allows the user to indicate the name of a contact for the ePDU.
- Part Number:** This display the Part Number of the ePDU. This is fixed and cannot be altered by the user.
- DHCP:** This allows the user the choice between a Static IP address, or a DHCP address mode.

Note: After several seconds, when the ePDU communication card fails to get a DHCP address, the card will start with its last known IP address and will keep it until the the communication card is restarted.



Network Settings: in Static IP address mode, the IP address and the Subnet mask can be altered so that the ePDU can be configured for use on a local area network.

The Gateway is the IP address of an internet router / modem connected to the same network as the ePDU. This will allow the unit to be browsed from the internet. The router must be set up accordingly.

The MAC (Media Access Control) address is a unique identifier for the device. This is fixed and cannot be altered by the user.

SNMP Settings: Simple Network Management Protocol settings. These settings will define the location that alarm traps are to be sent to and the community that are allowed to access the alarm information.

Read community Acts as a password to stop unauthorized users from monitoring the power strip.

Trap IP address Network address of the computer or network management system that is to receive SNMP traps.

Trap community Defines the password to access the alarm traps sent by the unit.

Authentication: This allows the user to define a personal secured (Base 64 encoded) login / password to access to the configuration menu.

Access control List (ACL): IP addresses may be defined. Access to the ePDU GUI is then restricted to these devices.

Alarm Settings: The alarms send out SNMP alerts if one of the current readings exceeds the set integer value limit and the SNMP settings are present. If an alarm is triggered the CT reading will change from black to red on the Sensors screen.

Healthy:

| CURRENT MEASUREMENTS | | | |
|----------------------|------|-------|-------|
| ID | Name | Value | Units |
| C1 | CT1 | 0.3 | Amps |
| C2 | CT2 | 0.2 | Amps |
| C3 | CT3 | 0.0 | Amps |

Alarm triggered (Current limit exceeded)

| CURRENT MEASUREMENTS | | | |
|----------------------|------|-------|-------|
| ID | Name | Value | Units |
| C1 | CT1 | 0.3 | Amps |
| C2 | CT2 | 0.2 | Amps |
| C3 | CT3 | 0.0 | Amps |

Firmware upgrade

Firmware upgrade

Press the button to enable the upgrade mode. It will launch a TFTP server.

Notes:

- The outlets will remain in their current state.
- The ePDU will retain it's last known IP address.

Upgrade Firmware



NOTICE

Pressing the upgrade button will restart the card in upgrade mode. This will also freeze the web interface which will not be available until the upgrade is completed!

It is possible to upgrade the firmware of his product with new versions that could be provided through Eaton web site.<http://www.epdu.com>

How to upgrade ePDU communication card with a new firmware release:

1/ Get the firmware file form the Eaton web site

- Check www.epdu.com to see if there are upgrades for your unit available and download

2/ Enable the upgrade mode

- Once you have the downloaded file, in the ePDU web interface select 'Upgrade Firmware'
- Validate the action by clicking "Yes" in the prompt window.
- Wait few seconds to let the ePDU communication card restart in firmware upgrade mode (until the green LED is lit).
- The firmware upgrade mode is now enabled (TFTP server enabled).
- The ePDU Communication card will keep the same IP address.

3/ Transfer the firmware to the ePDU

- From a TFTP client "PUT" the new binary firmware (port 69).
- The transfer will last approximately 6 seconds.
- Once the transfer is competed, the ePDU communication card will restart.

Notes:

- The IP access control is disabled during the firmware upgrade.
- To escape the firmware upgrade mode: Press and release the reset button.
(The parameters remain unchanged; the card will only restart in normal operation mode)



NOTICE when the ePDU communication card does not start/respond:

Forced firmware upgrade mode:

1/ Get the firmware file form the Eaton web site

- Check www.ePDU.com to see if there are upgrades for your unit available, and download it.

2/ Force the upgrade mode

- Power off the ePDU.
- Press and maintain the reset button.
- Power on the ePDU.
- Wait 3 seconds (until the green LED is lit) and release the reset button.
- The firmware upgrade mode is enabled.

The communication card will temporarily use the default factory network settings (when the firmware upgrade is completed or the firmware upgrade mode is escaped, the user network settings are restored):

- . IP address: 192.168.123.123,
- . Subnet mask: 255.255.0.0,
- . Gateway IP: 0.0.0.0.
- . No IP access control.

3/ Transfer the firmware to the ePDU

- From a TFTP client "PUT" the new binary firmware (port 69).
- The transfer will last about 6 seconds.
- Once the transfer is completed, the ePDU communication card will restart.

Notes:

- The IP access control is disabled during the firmware upgrade.
- To escape the firmware upgrade mode: Press and release the reset button.
(The parameters remain unchanged; the card will only restart in normal operation mode)

XML

Extensible Markup Language – Click on the XML tab to download the xml document for the ePDU.

MIB

Management Information Base – This specifies the management data of the monitored ePDU which is used by an SNMP client to monitor the current over a network. This can be downloaded by clicking on the **MIB** icon and selecting **Save to Disc** and selecting a location. The MIB can then be loaded into the SNMP client.

Communication reset

ePDU Communications restart

Press the button to restart the ePDU communications

Notes:

- The outlets will remain in their current state.
- The ePDU will retain it's last known IP address.
- If DHCP is enabled the IP address will change once a new address is received from the DHCP server.

Restart ePDU communications card

This button allows resetting the communication card without impacting the outlets status.

Warranty

The product is warranted against defects in design, materials and workmanship for a period of twenty four (24) months from its original date of purchase. The local office or distributor may grant a warranty period different to the above and refer to local terms of liability as defined in the supply contract.

ePDU's that are the subject of a warranty claim shall be returned as received to vendor for analysis, confirmation of faults, and warranty repair or replacement.

The ePDU manufacturer is not responsible for

- Any costs resulting from a failure if the installation, commissioning, repair, alternation, or ambient conditions of the equipment do not fulfil the requirements specified in the documentation delivered with the unit and other relevant documentation.
- Equipment subjected to misuse, negligence or accident
- Equipment comprised of materials provided or designs stipulated by the purchaser.

Under no circumstances shall the manufacturer, its suppliers or subcontractors be liable for special, indirect, incidental or consequential damages, losses or penalties.

The technical data, information and specifications are valid at the time of printing. The ePDU manufacturer reserves the right to modifications without prior notice.

Recycling the used ePDU

Do not discard waste ePDUs in the trash.

For proper disposal, contact your local collecting/recycling/reuse center and follow the local recycling legislation.