



Operation/Reference Guide

# NXA-PDU-1508-08

Power Distribution Unit  
(240V / 10A)



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# NXA-PDU-1508-8

## Overview

The NXA-PDU-1508-8 Power Distribution Unit - 240V / 10A (FG673-02) provides switching of mains power to each of eight AC power outlets. The two built-in AxLink bus strips provide connectivity (AxLink data / power) for up to eight AxLink connections.

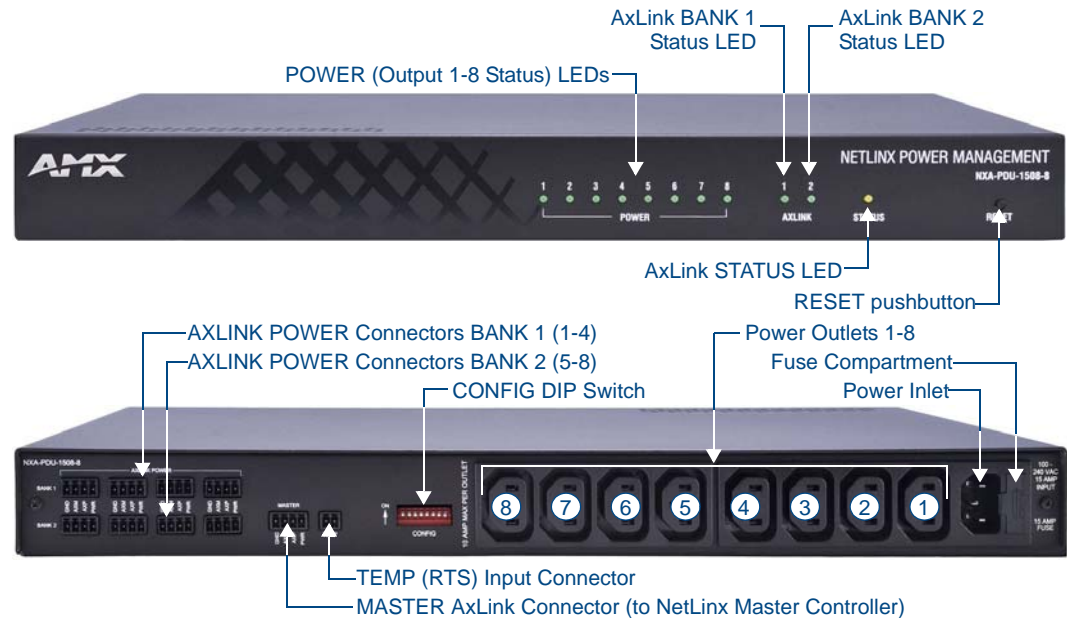


FIG. 1 NXA-PDU-1508-8

## Features

- Supplies, controls, and monitors power to other electronics, to allow power staging and monitoring as well as management of standby power consumption.
- Measures current on each power outlet, as well as the total current draw of the entire PDU.
- The AxLink bus strip power line is divided into two banks of four connectors each (“Bank 1” and “Bank 2”), with power switched separately to the two banks.

## Product Specifications

NXA-PDU-1508-8 (240V) Specifications	
Power Specifications:	<ul style="list-style-type: none"> <li>• Powered via 240VAC, 50/60Hz mains power on an IEC-320 C-14 connector.</li> <li>• Required voltage = 240VAC, 50/60Hz</li> <li>• Total Combined Current (including AxLink): 10A</li> <li>• Idle current draw (240VAC 50/60HZ): 0.5W max</li> </ul>
Front Panel Components:	
POWER LEDs (1-8):	Eight green LEDs illuminate to indicate that the associated Power Outlet (#1 - #8) is in use.
AXLINK LEDs:	Two green LEDs illuminate to indicate when the associated AxLink Bus Strips (Bank 1 or Bank 2) on the PDU is in use.
STATUS LED:	Yellow LED illuminates to indicate AxLink communication activity between the PDU and the NetLinx Master: <ul style="list-style-type: none"> <li>• ON - power, no master connection</li> <li>• OFF - no power</li> <li>• Blink - powered, communicating with master</li> </ul>

NXA-PDU-1508-8 (240V) Specifications (Cont.)	
RESET pushbutton:	The RESET pushbutton is a momentary breaker reset switch for the MASTER power connection. Tripping of the RESET pushbutton causes a 0.5 second toggle on the AxLink power line. Press the RESET button to reset the PDU.
Rear Panel Components:	
AXLINK POWER connectors (8):	A 13.5VDC, 6.5A power supply is provided for AxLink power. Eight 3.5mm (4-pin) AxLink captive-wire connectors provide power and data to up to eight AxLink devices. <ul style="list-style-type: none"> <li>AxLink power is switched in two banks of four outputs each.</li> <li>BANK 1 contains AxLink connectors 1-4</li> <li>BANK 2 contains AxLink connectors 5-8</li> <li>The PDU provides 6.5A total across all AxLink outputs.</li> </ul>
MASTER connector	3.5mm Phoenix (4-pin) AxLink connector provides connectivity to the NetLinx Master (always on).
TEMP (RTS) input:	3.5mm Phoenix (2 pin) connector provides connection to a Remote Temperature Sensor (RTS).
CONFIG DIP Switch:	Eight-position DIP switch sets the AxLink device address.
International Power Outlets (8):	Connector Type: IEC C-13, 10A Maximum allowable current on a single high-voltage output: 8A
International Power Inlet (1):	<ul style="list-style-type: none"> <li>Connector Type: IEC C-14, 10A (10A Input)</li> <li>Equipped with a safety fuse (see <i>Included Accessories</i>)</li> </ul>
Dimensions (HWD):	<ul style="list-style-type: none"> <li>1 3/16" x 17" x 9 11/16" (2.97cm x 43.18cm x 24.54 cm)</li> <li>1 RU</li> </ul>
Weight:	9 lbs (4.08 kg)
Enclosure:	Steel, black powder coated finish.
Environmental:	<ul style="list-style-type: none"> <li>Operating Environment: 0°C - 40°C (32°F - 104°F)</li> <li>Storage Environment: -10°C - 60°C (14°C - 140°F)</li> <li>Relative Humidity: 5% - 85%, non-condensing</li> </ul>
Certifications:	<ul style="list-style-type: none"> <li>CE</li> <li>CB Scheme</li> <li>SGS</li> <li>C-Tick</li> </ul>
Included Accessories:	<ul style="list-style-type: none"> <li>ENV-VST-TSO Indoor/ Outdoor Temperature Sensor (FG2050-22)</li> <li>Removable rack ears</li> <li>Safety Fuse: 10A @ 240VAC</li> </ul> <p><b>Note:</b> When replacing the fuse, use only a 10A 240V Slo-Blo fuse</p>
Other AMX Equipment:	<ul style="list-style-type: none"> <li>ENV-VST-TSF Flush-Mount Indoor Temperature Sensor (FG2050-21)</li> <li>NEMA to C14 Power Cable (FG10-673-02)</li> </ul>

## SAFETY INSTRUCTIONS

- There are NO user serviceable parts within the NXA-PDU-1508-8.
- DO NOT install or operate the NXA-PDU-1508-8 in an area where the ambient temperature exceeds 40°C (104°F) or falls below 0°C (32°F).
- DO NOT install or operate the NXA-PDU-1508-8 in an area in which the ambient relative humidity exceeds 85% or an area that is prone to condensation.
- DO NOT install or operate the NXA-PDU-1508-8 near water or in a location which may be prone to water seepage, dripping or splashing.
- DO NOT place objects containing liquids on the NXA-PDU-1508-8.
- DO NOT operate the NXA-PDU-1508-8 externally.

## Rack-Mounting



NOTE

For safety, the socket-outlet should be installed near the NXA-PDU-1508-8 and must be easily accessible.

Before rack mounting the PDU, pay particular attention to the following factors:

- **Temperature:** Since the temperature within a rack assembly may be higher than the ambient room temperature, check that the rack-environment temperature is within the specified operating temperature range.
- **Mechanical Loading:** Do not place any equipment on top of a rack-mounted unit.
- **Circuit Overloading:** Be sure that the supply circuit to the rack assembly is not overloaded.
- **Grounding:** Rack-mounted equipment should be properly grounded. Particular attention should be given to supply connections other than direct connections to the mains.

The NXA-PDU-1508-8 can be mounted in a standard 19-inch equipment rack:

1. Attach the brackets to the PDU using the screws provided in the Bracket Mounting Kit (FIG. 2).

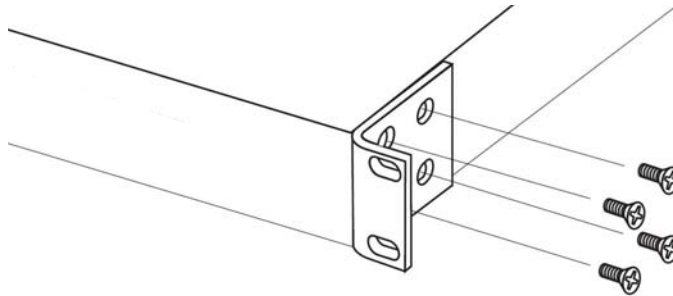


FIG. 2 Attaching the Brackets

2. Mount the PDU in the rack, using 4 rack-mounting screws (not provided, see FIG. 3).

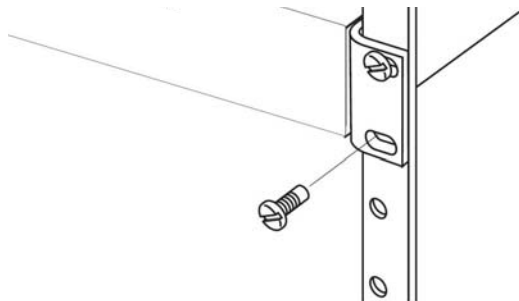


FIG. 3 Installing the Switch in a Rack





# Installation

## Front Panel Components

The front panel components of the NXA-PDU-1508-8 are shown in FIG. 4:

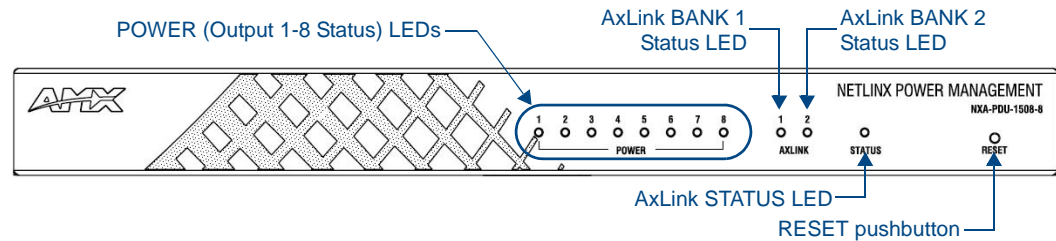


FIG. 4 NXA-PDU-1508-8 - Front Panel Components



NOTE

See the Specifications table for descriptions of the LEDs on the front panel.

### RESET Pushbutton

The RESET pushbutton is a momentary breaker reset switch for the MASTER AxLink power connection. Press the RESET button to reset the PDU in the event that the PDU's circuit breaker is tripped (due to overcurrent protection).

Tripping of the RESET pushbutton causes a 0.5 second toggle on the AxLink power line.

## Rear Panel Components

The rear panel components of the NXA-PDU-1508-8 are described below (FIG. 5):

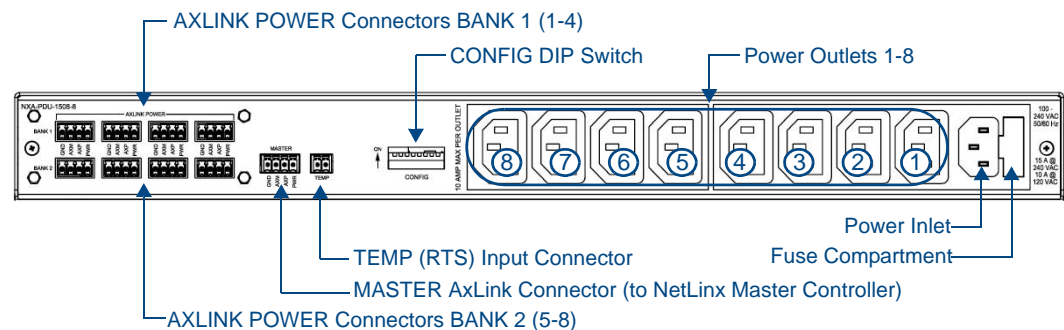
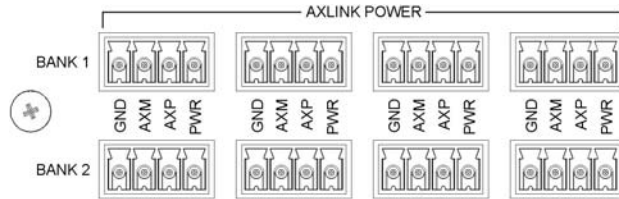


FIG. 5 NXA-PDU-1508-8 - Rear Panel Components

### AXLINK POWER Connectors 1-8

The 8 AxLink connectors (labelled “AXLINK POWER” are standard 4-pin AxLink captive-wire connectors that provide data and power to up to 8 AxLink devices. (FIG. 6):



**FIG. 6** AxLink Connectors 1-8

The AxLink device connectors are separated into two Banks:

- **BANK 1** includes AxLink connectors 1-4
- **BANK 2** contains connectors 5-8

The PDU provides switched power to banks 1 and 2.

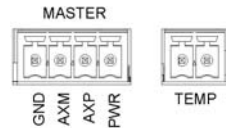


NOTE

*The AxLink bus strip does not provide switching on AxLink data lines.*

### MASTER Connector

The 4-pin captive-wire AxLink connector labelled “MASTER” provides AxLink connectivity between the PDU and the NetLinx Master.



**FIG. 7** MASTER (4-pin AxLink) and TEMP (2-pin) Connectors

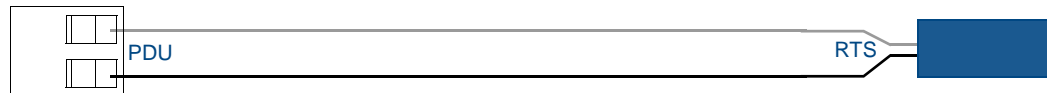


NOTE

*This connector is always ON.*

### TEMP Connector

The PDU measures temperature with an accuracy of 1 degree C) via a remote temperature probe. Temperature data is kept in non-volatile storage to retain across reboot. The 3.5mm Phoenix (2 pin) connector labelled “TEMP” allows you to connect a Remote Temperature Sensor (RTS) as an optional accessory (FIG. 8).



**FIG. 8** TEMP Connector

The PDU comes with one ENV-VST-TSF Flush Mount Indoor Temperature Sensor (FG2050-21).

Connect either wire from the RTS to either pin on the TEMP connector.



NOTE

*The NXA-PDU-1508-8 is also compatible with the ENV-VST-TSO Outdoor Temperature sensor (optional).*

### Preparing Captive Wires

1. Strip 0.25 inch (6.35 mm) of wire insulation off all wires.
2. Insert each wire into the appropriate opening on the connector according to the wiring diagrams and connector types described in this section.
3. Turn the flat-head screws clockwise to secure the wires in the connector.

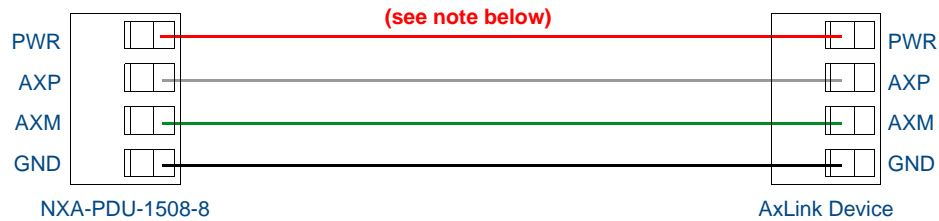


*Do not over-torque the screws; doing so can bend the seating pins and damage the connector.*

NOTE

### AxLink Data and Power Connections

Connect the AxLink device's AxLink connector to one of the AxLink connectors (1-8) on the rear panel of the PDU for data and 12 VDC power as shown in FIG. 9.



**FIG. 9** AxLink straight-thru wiring



*If the PDU is connected to a NetLinx Master that is self-powered (powered by a stand-alone power supply other than the PDU, or the DVX-2100HD which features an internal power supply), do not use the AxLink Power connection between the PDU and the NetLinx Master.*

NOTE

### AxLink Wiring Guidelines

AxLink devices require 12 VDC power to operate properly. The necessary power is supplied via the AxLink cable. The maximum AxLink wiring distance is determined by power consumption, supplied voltage, and the wire gauge used for the cable.

Use the 3-step formula below to calculate the maximum wiring lengths allowable between the PDU and connected AxLink devices.

1.  $\langle \text{Total current consumption of all connected AxLink devices} \rangle \times \langle \text{Resistance/Foot} \rangle \times 2 = \langle \text{voltage drop per foot} \rangle$  (see table below for Resistance/Foot values.)
2.  $\langle \text{Power supply voltage} \rangle - 12 \text{ VDC} = \langle \text{surplus voltage dissipation for cable run} \rangle$ .
3.  $\langle \text{surplus voltage dissipation for cable run} \rangle / \langle \text{voltage drop per foot} \rangle = \text{Maximum distance in feet.}$

The following table lists the resistance factors used in the formula.

Cable Gauge/Resistance Factors		
	Solid Copper Wiring	Stranded Copper Wiring
Wire gauge	Resistance/Foot	Resistance/Foot
18 AWG	.00639	.00692
20 AWG	.0101	.01090
22 AWG	.0162	.01690
24 AWG	.0257	.02770

### CONFIG DIP Switch

The NXA-PDU-1508-8 uses an 8-position DIP Switch (labelled “CONFIG”) to specify a unique device address for itself in a NetLinx Control System (FIG. 10).

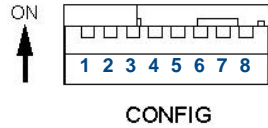


FIG. 10 CONFIG DIP Switch

### Setting the Device Address of the PDU

The NXA-PDU-1508-8 firmware implements 8 AxLink device IDs, starting from the device ID denoted by the DIP switch. The device IDs used by the NXA-PDU-1508-8 are as follows:

- **Dev 1:** (Power Outlet 1) + (AxLink-Bank 1 Power) + (Input Voltage) + (Temp)
- **Dev 2:** (Power Outlet 2) + (AxLink-Bank 2 Power)
- **Dev 3-8:** (Power Outlets 3-8)

To set the Device Address:

1. If connected, disconnect the power supply.
2. Set the CONFIG DIP switch according to the values shown below:

Switch	1	2	3	4	5	6	7	8
Value	1	2	4	8	16	32	64	128

The device number is set by the total value of DIP switch positions that are in the ON position. Note that the ON position is indicated on the DIP Switch.

If you later change the device number, remove and reconnect the power connector to enter the new device number into memory.



Use the "Dip Switch2" software application to calculate dip switch position values (available to download from [www.amx.com](http://www.amx.com)).

### Power Outlets 1-8

The eight 100-240VAC 50/60 Hz, IEC C-13, 10A AC Power Outlet Connectors provide AC power to connected devices (FIG. 11).

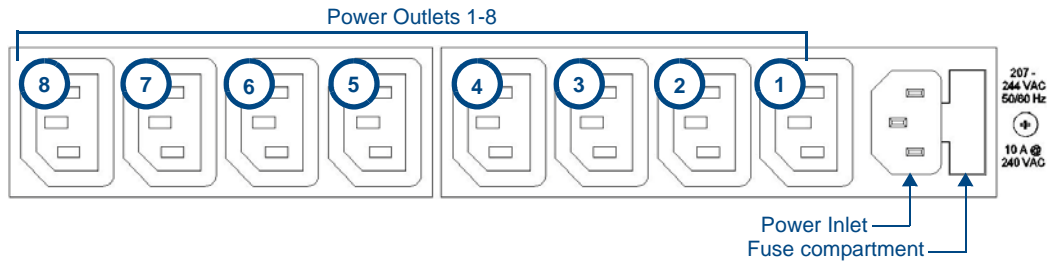


FIG. 11 Power Outlets 1-8

- The PDU measures current use of each individual power outlet, including the two AxLink power outputs, with an accuracy of 0.1A.
- The PDU also reports the total current use of the entire unit.

### Power Inlet

The IEC C-14, 10A Power Inlet Connector provides 100-240VAC, 50/60Hz mains power to the PDU (FIG. 11).

- The PDU measures the main input voltage with an accuracy of 1VAC
- The Power Inlet Connector is equipped with a safety fuse (10A @ 240VAC)



*When replacing the fuse, use only a 10A 240V Slo-Blo fuse*

### Powering On the NXA-PDU-1508-8

When power is applied to the PDU for the first time, the outlets are powered in sequence (1-8), with a delay of 0.5 second between outlets.

- The factory default state of all outlets upon initial power-up is ON.
- By default, Persistence for all outlets is set to ON.

Persistence can be turned off via the PERSIST SEND\_COMMAND (see page 11).

For subsequent power-ups (from a power off state or on system reset), the PDU will restore the last recorded state of any outlet in a sequenced fashion, starting from outlet 1 in numerical order, with a delay of 0.5 second between energizing any two outlets, assuming the default Persistence setting of ON has not been changed via the PERSIST command.



*Since the number of write cycles to the storage of the persistent data is limited, setting an outlet to PERSIST ON should only be used when absolutely necessary, and never for very frequent toggling operations.*



# NetLinX Programming

## Device IDs

The NXA-PDU-1508-8 uses 8 AxLink device IDs, starting from the device ID denoted by the DIP switch:

- **Dev 1:** Output 1 + AxLink Power 1 + Input Voltage + Temperature
- **Dev 2:** Output 2 + AxLink Power 2
- **Dev 3-8:** Outputs 3-8

## Supported SEND\_COMMANDs

SEND_COMMANDs	
<b>PERSIST</b>	<p>Configures the designated power outlet to return to the last state on loss of power or reset of the PDU.</p> <p>By default, a shipping PDU shall have all power outlets PERSIST setting ON.</p> <p>Syntax:</p> <pre>PERSIST-&lt;outlet #&gt;=&lt;value&gt;</pre> <p>Variables:</p> <ul style="list-style-type: none"> <li>• &lt;value&gt; may be ON or OFF</li> <li>• &lt;outlet#&gt; 1-8 for AC outlets, 9 and 10 for AxLink 1 and 2 bus power, respectively.</li> </ul> <p><b>Note:</b> As there are limited write cycles to the storage of the persistent data, setting an outlet to PERSIST ON should only be used when absolutely necessary, and never for very frequent toggling operations.</p>
<b>?PERSIST</b>	<p>Queries the PERSIST state of all outlets.</p> <p>Returns a comma-delimited list in the form:</p> <pre>PERSIST-1=&lt;value&gt;,2=&lt;value&gt;,3=&lt;value&gt;,4=&lt;value&gt;,5=&lt;value&gt;,6=&lt;value&gt;,7=&lt;value&gt;,8=&lt;value&gt;,9=&lt;value&gt;,10=&lt;value&gt;</pre> <p>&lt;value&gt; will be 1 for ON or 0 for OFF, (e.g.):</p> <pre>PERSIST-1=1,2=0,3=0,4=0,5=0,6=0,7=0,8=0,9=1,10=0</pre>
<b>?PHASEANGLE</b>	<p>Syntax:</p> <pre>?PHASEANGLE-&lt;outlet #&gt;</pre> <p>Responds with:</p> <pre>PHASEANGLE-&lt;outlet #&gt;=&lt;Phase Angle&gt;</pre> <p><b>Note:</b> "Phase angle" is the difference in phase between Voltage and Current, useful for determining inductive vs. capacitive loading.</p>
<b>RESET</b>	<p>Syntax:</p> <pre>RESET</pre> <p>Triggers a <i>Power-On-Reset</i> of the PDU. A Power-On-Reset toggles all interruptible power outlets.</p>
<b>?SERIAL</b>	<p>Syntax:</p> <pre>?SERIAL</pre> <p>Retrieves the 16-byte serial number assigned to the PDU.</p> <p>Responds with:</p> <pre>SERIAL &lt;XXXXXXXXXXXXXXXXXX&gt;</pre> <p>where &lt;XXXXXXXXXXXXXXXXXX&gt; is the 16-byte serial number assigned to the unit.</p>

SEND_COMMANDs (Cont.)	
<b>TRIGGER</b>	<p>Syntax: TRIGGER-&lt;outlet #&gt;=&lt;Power Sense Trigger&gt;</p> <p>Sets the Power Sense Trigger of the specified outlet to the specified value in tenths of Watts.</p> <p><b>Note:</b> A "Trigger" is a current level which will cause a power sense channel to activate if the current exceeds the value.</p>
<b>?TRIGGER</b>	<p>Syntax: ?TRIGGER-&lt;outlet #&gt;</p> <p>Responds with: TRIGGER-&lt;outlet #&gt;=&lt;Power Sense Trigger&gt;</p> <p>to report the trigger value in use on the outlet.</p>
<b>VER</b>	<p>Syntax: VER</p> <p>Responds with: Version (string) - example: "Vx.xx"</p>
<b>ZAP!</b>	<p>Syntax: ZAP!</p> <p>Restores all settings on the PDU to factory default settings.</p>



Unsupported options in responses are ignored / not reported.

NOTE

## Channels

The PDU uses channels as specified in the following table.

Channel	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6	Dev 7	Dev 8
<b>1</b>	Relay On/Off	Relay On/Off	Relay On/Off	Relay On/Off	Relay On/Off	Relay On/Off	Relay On/Off	Relay On/Off
<b>2</b>	Temp Scale (off=C/on=F)							
<b>3</b>	Ax 1 On/Off	Ax 2 On/Off						
<b>255</b>	Power Sense	Power Sense	Power Sense	Power Sense	Power Sense	Power Sense	Power Sense	Power Sense

- **Relay On/Off:** relay status
- **Temp Scale:** Off = C, On = F  
The PDU measures temperature with an accuracy of 1 degree C) via a remote temperature probe. Temperature kept in non-volatile storage to retain across reboot.
- **Power Sense:** Signals that power (in watts) is above or below the specified trigger level (set via the TRIGGER command).



## Levels

16-bit Level	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6	Dev 7	Dev 8
1	Power	Power	Power	Power	Power	Power	Power	Power
2	Current	Current	Current	Current	Current	Current	Current	Current
3	Power Factor	Power Factor	Power Factor	Power Factor	Power Factor	Power Factor	Power Factor	Power Factor
4	Energy	Energy	Energy	Energy	Energy	Energy	Energy	Energy
5	Input Voltage	Ax Voltage						
6	Ax 1 Power	Ax 2 Power						
7	Ax 1 Current	Ax 2 Current						
8	Temp							

- **Power (W):** Resolution to 0.1W (data scale factor = 10)
- **Current (A):** Resolution to 0.1A (data scale factor = 10)
- **Voltage (V):** Resolution to 0.1V (data scale factor = 10)
- **Power Factor:** W/VA, 2 decimal places (data scale factor = 100).

*"Power Factor " is the ratio of real power to apparent power.*



NOTE

For power factor, AMX has added an offset of 100 to the value to cope with the possibility of negative numbers. To obtain the correct value of the power factor, first subtract 100 from the level returned by the PDU, then divide by 100.

Example:

$fPowerFactor1 = (LEVEL.VALUE - 100) / 100.0$  //NB fPowerFactor1 is a FLOAT variable"

The level range is 0-200.

- **Energy (W-hr):** Power over time, resolution to 0.1W-hr (Data scale factor = 10, writing 0 resets counter)
- **Temp (Degrees C or F):** Resolution to 0.1C (data scale factor = 10)

### Resetting Level 4 (Accumulated Energy Reading)

The Level 4 value (accumulated energy reading) can be reset to 0 (zero) in three ways:

1. When the PDU is reset or power cycled, Level 4 will go to 0 on all outputs (see *Powering On the NXA-PDU-1508-8* on page 9).
2. If `SEND_LEVEL <PDU dev>,4,0` is sent, Level 4 will go to 0 on that output (if not already at 0).
3. The max value of the level is **65535**, if that is exceeded the level will roll over to 0.

## Overcurrent Reporting

The PDU reports alerts of overcurrent via the following AxLink string:

```
OVERCURRENT-<Outlet #>=<Current>
```



NOTE

If reporting overcurrent for the entire unit, the outlet # is specified as **0** (zero).







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