Eaton® Enclosure Power Distribution Unit (ePDU®) G3

Troubleshooting Guide

Powering Business Worldwide

Class A EMC Statements

FCC Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

ICES-003

This Class A Interference Causing Equipment meets all requirements of the Canadian Interference Causing Equipment Regulations ICES-003.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Eaton is not responsible for damage to this product resulting from accident, disaster, misuse, abuse, non-Eaton modification of the product, or other events outside the reasonable control of Eaton or not arising under normal operating conditions.

Special Symbols

The following are examples of symbols used on the ePDU to alert you to important information:

RISK OF ELECTRIC SHOCK - Observe the warning associated with the risk of electric shock symbol.

CAUTION: REFER TO OPERATOR'S MANUAL - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.

This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

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Chapter 1 Introduction

The Eaton® Enclosure Power Distribution Unit (ePDU®) G3 is an intelligent ePDU that is designed to distribute power within a standard 19-inch rack. The ePDU models allow you to connect and manage a wide variety of outlets from a single power connection.

This document describes troubleshooting problems you might encounter with ePDU hardware and firmware setup and operation. Information is provided to help you identify problems, suggest actions you might take to resolve the problem, and clear expired problem notifications.

Alerts and notifications display on both the ePDU LCD front panel and the Web interface. In addition to displaying as real-time notifications on user interfaces, alarms and events are recorded in the history log as records of when alerts occurred and, if applicable, when they were cleared.

The ePDU provides you with the following types of operation status notifications:

- **Alarms**
  - Alarm messages indicate a fault condition is active or imminent.
  - Alarms require a response.
- **Events**
  - Event messages are conditions recorded in the event log as status information, such as Power On.
  - Events do not require a response.
- **Error Messages**
  - Error messages display due to incorrect entries or failed processes.
  - An error message prompts you to provide correct information or retry an operation.

Identifying Problems

The system provides a rich troubleshooting toolset to help isolate and analyze problems that affect or prevent proper ePDU operation. The ePDU is designed for durable, automatic operation. If a potential operating problem occurs, the ePDU issues a notification to alert you.

NOTE The ePDU serial interface does not provide operating status or problem notifications.

Four significant problem isolation tools for ePDU troubleshooting are:

- On the **LCD interface**, the existing LCD display is replaced by the Active Alarms screen and the backlight is blinking red when an alarm is generated. Also, the communication ports have LED status lights.
- **Outlet indicator lights** on the Switched (SW), Managed (MA), and Metered Input (MI) models indicate outlet status.
- On the **Web interface**, two easily identified active alarm notifications are provided:
  - In the menu hierarchy, the text for Active Alarms is red when alarms are active.
  - In the bottom of the window (the refresh bar), a message displays, such as "Warning, some alarms fired, please refer to the Active Alarms | Last Refresh: dd/mm/yyyy - hh:hh:ss." The words "Active Alarms" in the message provide a link to the Active Alarms page.
- **E-mail notification** of an event history log at regular intervals.

Checking the LCD Panel for Notifications

The ePDU has a four-button, graphical LCD panel. The LCD front panel is located on the top surface of the ePDU. You can use the LCD front panel interface buttons to retrieve current ePDU alarm data or to change ePDU operation settings to resolve problems (see Figure 1).

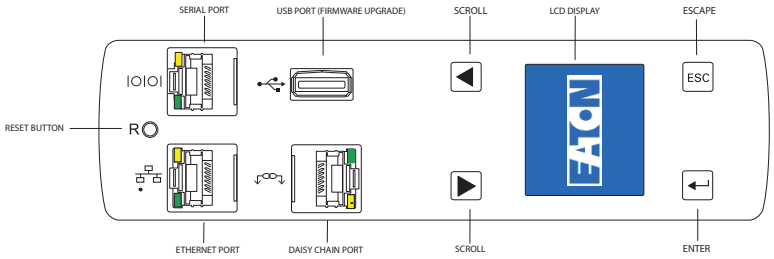

Figure 1. ePDU LCD Front Panel Window and Buttons

Using the LCD interface buttons, scroll up or down to highlight Active Alarms on the Main Menu. Press ENTER to display the first active alarm screen. Scroll up or down if needed to view active alarm data. When you finish your review, press ESC to return to the previous menu. If the backlight was blinking red to indicate an active alarm, the backlight returns to normal (see Figure 3).

Alarms can also display in the LCD display automatically. For example, the LCD display can show active alarms as they occur, or updates due to a change in operating state.

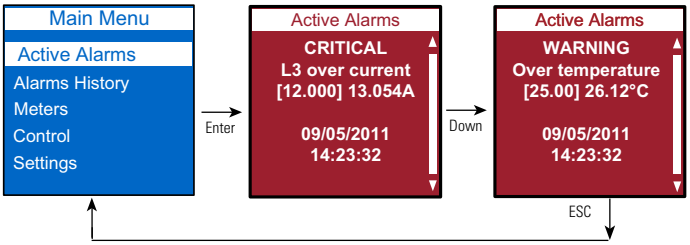

Figure 2. LCD Alarm Display

Adjacent to the LCD front panel, the LED indicators on the ports provide operating and activity status to assist in troubleshooting (see Figure 3 and Table 1).

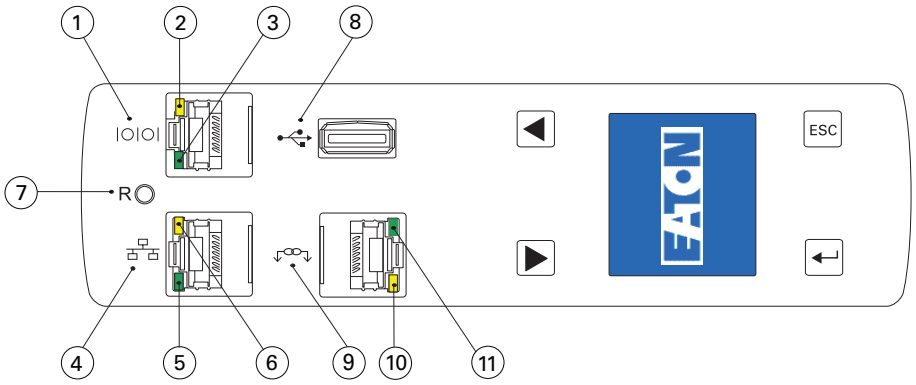

Figure 3. ePDU LCD Port LEDs

Table 1 provides operation details for the LED indicators that convey the activity status of ports.

Table 1. Ports and LED Indicators

Number Reference	Description
1	Serial or Environmental Monitoring Probe (EMP) Port
2	Yellow Serial/EMP Port LED: RS-232 Operation and Activity Status **OFF**: No EMP connected **FLASHING**: EMP connected
3	Green Serial/EMP Port LED: ePDU Communication Status **OFF**: ePDU start-up in progress **FLASHING**: eNMC module operational
4	Ethernet 10/100 Base-T Port
5	Green Ethernet Port LED: Operation Transfer Rate Status **OFF**: Port operating at 10 Mbits/s **ON**: Port operating at 100 Mbits/s
6	Yellow Ethernet Port LED: Connection and Transmission Activity Status **OFF**: ePDU not connected to the network **ON**: ePDU connected to the network, but no activity **FLASHING**: Port is sending or receiving (transmission active)
7	Reset Button **NOTE**To restart the eNMC module, insert a probe and press the button. This does not reset power to the outlets.
8	USB Port: Used for firmware upgrade and configuration file download/upload **NOTE**Refer to the *Eaton ePDU G3 Operations Manual* for more information.
9	Daisy Chain Port
10	Yellow Daisy Chain Port LED: Transmission Activity Status **FLASHING**: ePDU is transmitting data
11	Green Daisy Chain Port LED: Role Assignment in Communication Protocol **ON**: Device **FLASHING**: Host

Checking Outlet Indicators for Status

For Switched (SW) and Managed (MA) models, each output receptacle has a bi-color LED to indicate the outlet status.

Table 2 provides an LED outlet indicator function matrix.

Table 2. LED Outlet Indicators

LED Indication	Description	SW Outlet	MA Outlet
Solid Red	Outlet OFF	•	•
Flashing Red	Outlet ON, but Breaker OFF	•	•
Solid Green	Outlet ON	•	•
NOTE	In vertical units, LEDs are located adjacent to each outlet. In horizontal units, LEDs are grouped together.		

Table 2. LED Outlet Indicators (Continued)

LED Indication	Description	SW Outlet	MA Outlet
Flashing Green	Outlet ON, Outlet Warning or Critical Overload	—	•
Alternate Flashing Green and Red	Outlet ON, Breaker Overload	•	•
LED OFF	Not used	—	—

NOTE In vertical units, LEDs are located adjacent to each outlet. In horizontal units, LEDs are grouped together.

Checking the Web Interface for Notifications

The ePDU Web interface allows you to remotely connect to ePDUs using a PC with an Ethernet connection to an Internet browser. If the ePDU is experiencing active system alarms, the Web interface prominently displays alarm information for the ePDU model you are using (see Figure 4):

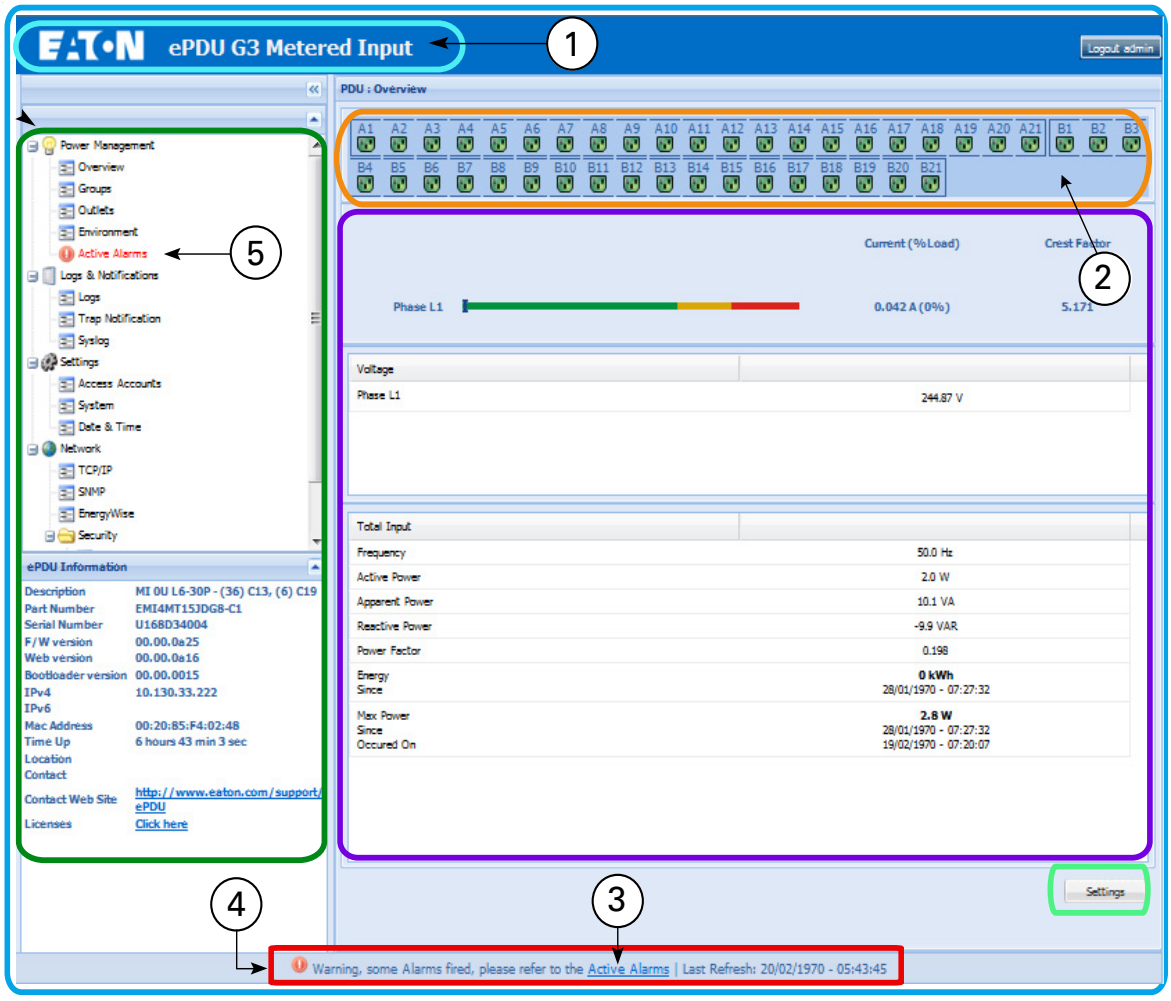

Figure 4. ePDU Web Interface Opening Window

NOTE The data that displays on the Web interface depends on the type of ePDU model you are using.

Table 3 provides descriptions of the Web interface components that help you troubleshoot alarms.

Table 3. Web Page Notifications Areas

Area	Description
1 - Application Header Bar	The header bar identifies which Eaton Eaton ePDU Web application is within the host window (Managed [MA], Metered Input [MI], Metered Outlet [MO], In-Line Metered [IL], or Switched [SW]).
2 - Outlet Icons	Roll over any outlet icon to see the type of outlet and whether there is an alarm. (A gray outlet status indicates that the outlet management feature could be damaged.) **Outlet is Off**  **Outlet is on** 
3 - Active Alarms Page Link (when active)	The words "Active Alarms" in the alarm notification sentence link to the Active Alarms page.
4- Current Alarms (when active)	A message notifies you that there are active alarms, such as: "Warning, some alarms fired, please refer to the Active Alarms | Last Refresh: *dd/mm/yyyy - hh:hh:ss"* An alarm indicator also appears as a notification in the refresh bar at the bottom of the window. The alarm symbols that can display are: **Active Alarms Present**  **High Critical Threshold Alarm**  **High Warning Threshold Alarm**  **Low Warning Threshold Alarm** 
5- Active Alarms Menu Selection	This indicator alerts you to the presence of currently active system alarms. It is in the menu hierarchy. When alarms are active, the text for Active Alarms is red. Selecting Active Alarms opens the Active Alarms page and displays the current active alarms.

Checking for E-mail Notifications with History Reports

Use the Web interface to set e-mail notifications (E-mail Notification page) and trap receivers (Trap Notification page). E-mail notifications include comprehensive or filtered event history reports attached to daily e-mail messages. The detailed data logs you receive can be useful for historical statistical analysis and diagnostics.

Resolving Problems

After the issue is identified and isolated, try to determine the root cause and then resolve the problem. For example, the issue may be a physical or mechanical problem, a problem with connectivity, or a problem with the existing settings for value ranges and thresholds.

First, check the troubleshooting reference tables in "Troubleshooting" on page 10 in this document. There are eight tables associated with different categories of problems.

Find the table that is associated with the type of problem you are investigating, including the following:

- Power Outlets
- Chassis and Installation
- Circuit Breakers
- LCD Alarms
- COM Ports
- ePDU Web Interface Alarm and Events
- Error Messages
- Accessories

Most troubleshooting tables define problems or specify interface messages, provide possible root causes, and suggest actions that may help you solve problems. The alarms and events table provides the alarm/event identification code and name, a description of the alarm/event, and suggested troubleshooting actions.

If you cannot find a resolution to a problem in the tables, contact customer service or a local representative for guidance or product part replacement.

Clearing Alarm Notifications

The are several ways to clear alarm notifications. For example, you can clear the event logs using the Web interface or suppress blinking alarm indicators on the ePDU.

Clear the Web Interface Event Log

To clear the Web interface Event Log, go to the ePDU Web interface menu bar and select "Logs" under "Logs & Notifications." The "Logs" page displays the current Event Log. Click **Clear**.

Suppress ePDU Alarm Indicators

To suppress ePDU alarm indicators, such as blinking LCD alarm displays, touch any control button on the panel.

NOTE Not all alarms or events need to be cleared. Some alarms automatically clear when the condition resolves. For example, if a load over current alarm is generated, the alarm is cleared when the current drops 0.25A below the level (alarm hysteresis).

Contacting Service and Support

If you have any questions or problems with the Eaton Enclosure Power Distribution Unit (ePDU) G3, call your **Local Distributor** or the **Help Desk** at one of the following telephone numbers and ask for an ePDU technical representative:

United States:	**1-800-356-5737**
Canada:	**1-800-461-9166 ext 260**
All other countries:	**Call your local service representative**

Please have the following information ready when you call for service:

- Model number
- Serial number
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information

Table 4 provides the Eaton catalog part number for ordering optional and spare parts for the ePDU. Contact your local service representative for more information.

Table 4. Optional and Spare Parts

Eaton Catalog Number	Optional or Spare Part	Americas/APAC Market	EMEA/APAC Market	Description
EMP001	Optional	•	•	Eaton Environmental Monitoring Probe
SPK012	Spare Part	•	—	ePDU G3 Installation Spare Pack (Americas)
SPK013	Spare Part	•	—	ePDU G3 Network Spare Part Pack (Americas)
KSP020	Spare Part	—	•	ePDU G3 Installation and Network Spare Pack (EMEA)
SUB-HRDW-3007	Spare Part	•	•	eNMC Module Replacement Pack

Chapter 2 Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS — SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and operation of the Eaton Enclosure Power Distribution Unit (ePDU) G3. Please read all instructions before operating the equipment and save this manual for future reference.

DANGER

This ePDU contains **HAZARDOUS VOLTAGES**. All repairs and service should be performed by **AUTHORIZED SERVICE PERSONNEL ONLY**. There are **NO USER SERVICEABLE PARTS** inside the ePDU. **SYSTEMS SHOULD ONLY BE INSTALLED, TESTED, AND CONFIGURED BY A COMPETENT PERSON. IT IS ESSENTIAL THAT THIS EQUIPMENT IS CONNECTED TO AN ELECTRICAL SUPPLY THAT HAS PROTECTIVE GROUND CONDUCTOR.**

CAUTION

- To reduce the risk of fire or electric shock, install this Eaton ePDU in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Do not operate near water or excessive humidity (95% maximum).
- Both the room and rack air temperature must be within the operating range of the selected model.
- Do not use a two-wire power cord in any product configuration.
- Test AC outlets at your computer and monitor for proper polarity and grounding. Use only with grounded outlets at both the computer and monitor.
- The installation power outlet used for the power supply to this equipment must be installed near the equipment and must be easily accessible.
- When installing this product, it is essential that the distribution circuit supplying the product is protected by a branch circuit protection device with a maximum rating to suit the product maximum rating.
- TO ISOLATE THIS EQUIPMENT, DISCONNECT ALL OF THE POWER SUPPLY PLUGS.
- This product has been designed to conform to the latest safety requirements. In addition to compliance with standards for general use, it has been factory configured for use in rack mounting environments, aiding the installer in providing systems compliant with relevant standards.
- Only use supplied ePDU mounting hardware and accessories. If necessary, contact your customer service representative for replacement parts.
- This equipment is intended for installation in Restricted Access Locations such as computer rooms, network closets, and equipment racks.

CAUTION

This product contains a lithium battery on the internal ePDU Network Management and Control (eNMC) module:

- The battery is not user-replaceable. There is risk of explosion if battery is replaced by an incorrect type.
- Ensure that used batteries are disposed of according to the instructions. For more information, contact your local recycling/reuse or hazardous waste center for proper disposal information.

Chapter 3 Troubleshooting

This chapter provides details for troubleshooting power outlets for the Eaton Enclosure Power Distribution Unit (ePDU) G3 models. The following tables list fault conditions, potential causes, and possible troubleshooting actions you can take in response to problems.

IMPORTANT

Be aware that unplugging the ePDU from the power source will turn off power to all connected loads and equipment.

Power Outlets

Table 5. Power Outlet Troubleshooting

Problem	Possible Root Cause	Actions
Outlet LED is Off: No power to the outlet, but the Web interface reports that the outlet is On	• Web interface is locked • Communication issue • Internal issue • Wrong IP address: You are monitoring the wrong ePDU	1 - Press the F5 or page refresh button in the Web browser. 2 - Close and restart the Web browser or try another Web browser, such as Google Chrome, Firefox, or Opera. 3 - Refer to the *Eaton ePDU G3 Operations Manual* and/or restart the ePDU Network Management and Control module with the reset button (R) on the product (press for 1 or 2 seconds). Outlets will not restart during this process. 4 - Cycle the outlet control (On/Off) using the Web interface. If the outlet LED is still Off, restart the ePDU and then reconnect the device to the ePDU. 5 - Check the Media Access Control (MAC) address on the device and check the MAC address in the Web interface.
Outlet LED is On, but there is no power to outlet	• Circuit breaker (CB) has tripped • Internal issue (outlet relay is open)	1 - Check the CB state on the ePDU. **NOTE** **For Managed (MA), Switched (SW), and (optionally) Metered Input (MI) ePDUs, the LED normally flashes RED when a CB is tripped. If the LED is alternately flashing green and red, the outlet is On, but there is a breaker overload.** 2 - Restart the ePDU and check again.
Outlet LED is Off, but there is power to outlet	• Internal failure	1 - Cycle the outlet (On/Off) using the Web interface. 2 - Restart the product and check again.
Outlet LED is blinking	• Critical alarm on the outlet • Internal failure	1 - Check the LCD screen. If the LCD screen is flashing red, a critical alarm is present. Check the outlet settings, measurements, and electrical conditions. The alarm does not clear until the outlet condition is back to normal (cannot manually suppress the alarm).
IEC plug falls from the ePDU during normal operation	• The cord was not fully seated before the lever grip switch was set to close • The lever grip switch is set to open rather than close	1 - Reseat the plug in the outlet, then ensure that the lever grip switch is pointing to the + sign.

NOTE If the actions listed in this table do not resolve the problem, contact customer service or a local representative for guidance and/or replacement (see "Contacting Service and Support" on page 5).

Chassis and Installation

This section provides chassis and hardware installation troubleshooting for the Eaton ePDU models. Table 6 lists fault conditions, potential causes, and possible troubleshooting actions you can take in response to problems.

Table 6. Chassis and Hardware Installation Troubleshooting

Problem	Possible Root Cause	Actions
Keyhole button: Does not fit intended rack (cannot insert or support product)	• The rack used is different and the wall thickness does not match the keyhole design • Keyhole part is defective	1 - Unscrew the keyhole button and turn it to the other side (2.1 mm on one side and 2.2 mm on the other). Reattach the keyhole button.
Indirect mounting using clip feet (with keyhole button system): Difficulty aligning the keyhole buttons with the rack keyholes	• Clip feet and keyhole buttons were incorrectly pre-assembled on the ePDU before rack installation	1 - First, try to assemble the clip feet and keyhole buttons. Then, place the two subassemblies in the rack keyholes. Finally, clip the ePDU inside the installed clip feet. (You should hear a clicking sound.)
Direct keyhole mounting: stripping the hole while threading the hole with the mounting screw	• Screwing torque is to high or too fast and has damaged the thread (screw should not suffer damage)	1 - Try a different hole (shifting the ePDU) or use the clip foot assembly **NOTE CAUTION. There is a safety risk if you do not use the screws that are supplied. Do not use a substitute.**

NOTE If the actions listed in this table do not resolve the problem, contact customer service or a local representative for guidance and/or replacement (see "Contacting Service and Support" on page 7).

Circuit Breakers

This section provides circuit breaker (CB) troubleshooting for the Eaton ePDU models. Table 7 lists fault conditions, potential causes, and possible troubleshooting actions you can take in response to problems.

Table 7. Circuit Breaker Troubleshooting

Problem	Possible Root Cause	Actions
CB makes vibration noise during current overloading state before tripping	• Due to the impact of the electromagnetic field on the CB internal parts	1 - This is normal behavior if overload is present. Reduce the current load on the breaker. This action should reduce or eliminate the noise.

NOTE If noise persists at or under nominal current, power off your ePDU and contact customer service or a local representative for guidance and/or replacement (see "Contacting Service and Support" on page 7).

LCD Operation

This section provides LCD operation troubleshooting for the Eaton ePDU models. Table 8 lists fault conditions, potential causes, and possible troubleshooting actions you can take in response to problems.

Table 8. LCD Alarm Troubleshooting

Problem	Possible Root Cause	Primary Actions
LCD is not backlit	• Energy Saving mode has been activated and the backlight has been switched off (normal action after no action for 15 minutes) • LCD internal failure	1 - Push one of the LCD control buttons.
LCD display quality is poor and the display is difficult to read	• LCD contrast is not adjusted to eye level • LCD internal failure	1 - Adjust the LCD contrast using the following configuration menu path: ENTER > SETTINGS > DISPLAY> CONTRAST> Drop-down list selection> ENTER> ESC> ESC
"No active alarm" continuously displays on the LCD	Known behavior state after an ePDU alarm	1 - The display will change if any alarm is triggered. 2 - Press the ESC button of the ePDU for 3 seconds. The screen saver should restart.
Alarm does not display on the LCD, even though condition exists	• Settings are not kept in ePDU memory after a power cycle (On/Off) if the value is outside of the current or voltage thresholds range • LCD internal failure	1 - Check the settings again. They may have to be reset within the the current or voltage thresholds range.
LCD is frozen and buttons are not working	Firmware or hardware issue	1 - Restart the eNMC module by pushing the recessed reset button and waiting 40 seconds for the connection to be re-established. 2 - Restart the ePDU by unplugging it from the power source. **NOTE ATTENTION. Unplugging the ePDU from the power source will power off the loads.**

NOTE If the actions listed in this table do not resolve the problem, contact customer service or a local representative for guidance and/or replacement (see "Contacting Service and Support" on page 7).

IMPORTANT

Some LCD alarm values are not retained after a power cycle (On/Off).

If the threshold settings for certain LCD warnings and critical alarms are out of range, the settings are not retained after a power cycle (On/Off). These settings may have to be reset after the power cycle to ensure that the corresponding alarms display.

NOTE All the current thresholds can be configured in the interval [0...125%*I-rating].The voltage thresholds can be configured in the interval [0...500 volts].

COM Ports

This section provides COM port troubleshooting for the Eaton ePDU models. Table 9 lists fault conditions, potential causes, and possible troubleshooting actions you can take in response to problems.

Table 9. COM Port Troubleshooting

Problem	Possible Root Cause	Actions
COM port LEDs (green and orange) are not illuminated	• COM port LEDs not powered • COM port LEDs defective • Internal failure - COM card may be damaged	1 - Verify that the unit is powered. 2 - Verify that the ePDU and your PC are communicating. 3- Using the Web interface, verify if the unit shows an ePDU internal communication failure.
COM port LEDs are On, but do not flash	• Communication issue • Internal failure	1 - Make sure that IP settings and communication parameters (PC and ePDU) are set according to the *Eaton ePDU G3 Operations Manual* and normal protocols. 2 - Restart the eNMC module by pushing the recessed reset button and waiting 40 seconds for the connection to be re-established. **NOTE** **Pushing the reset button will not power off the loads**. 3 - Restart the ePDU by unplugging the mains and waiting 40 seconds after power has been re-established. **NOTE** **ATTENTION: Unplugging the ePDU from the power source will power off the loads**. 4 - Try uploading the eNMC module firmware using instructions in the *Eaton ePDU G3 Operations Manual*.

NOTE If the actions listed in this table do not resolve the problem, contact customer service or a local representative for guidance and/or replacement (see "Contacting Service and Support" on page 7).

ePDU Web Interface Alarms and Events

This section provides ePDU Web interface alarm and event troubleshooting for the Eaton ePDU models. Although alarms require a response, events rarely require troubleshooting actions. However, for these ePDUs, some events for eNMC module operation include troubleshooting actions.

Identifying the Alarm or Event Condition on the Web Interface

You can derive defining information about the alarm or event from the associated number code. Figure 5 shows the location of the associated alarm number code in the Code column on the Logs page of the Web interface.

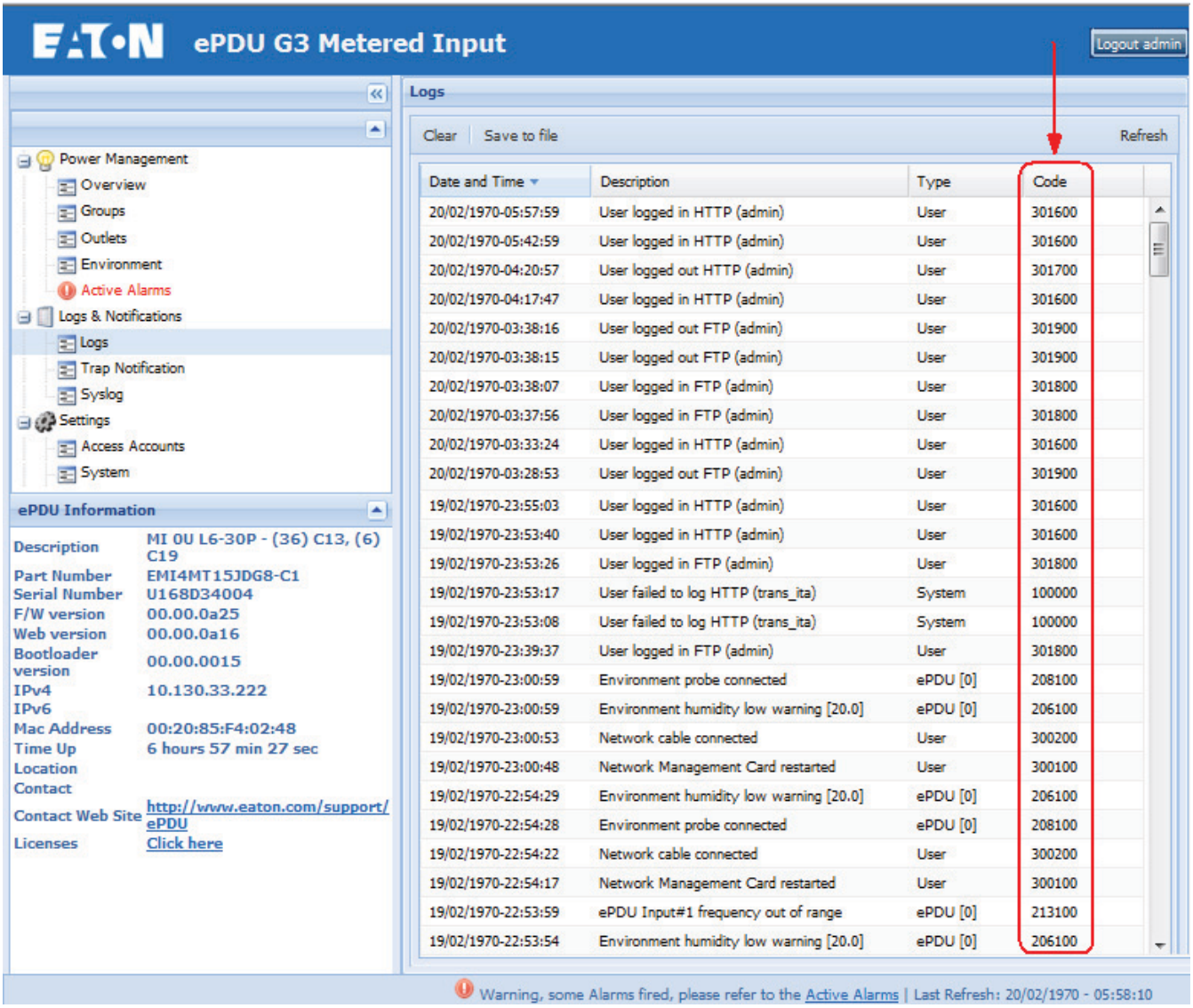

Figure 5. Location of Alarm Code on Web Interface

- The alarm number code is a six-digit number starting with a 0, 1, 2, or 3.
- The first digit in the number conveys the source of the alarm or event.
- The remaining five digits in the number code further identify and define the type of alarm (see Figure 6).

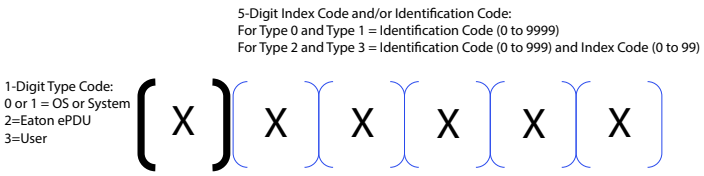

Figure 6. Alarm Number Code

Type Code 0 or 1 (OS or System)

IMPORTANT

For Type Code 0 and Type Code 1, always contact customer support for assistance. These errors are not user-correctable.

Figure 7 provides an example of a Type Code 1 system alarm number code.

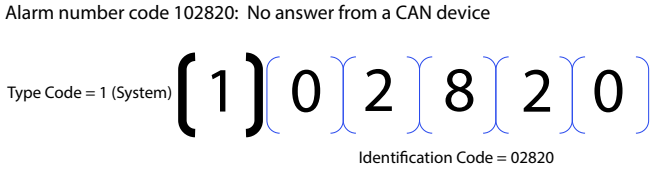

Figure 7. Example Type 1 (System) Code

Table 10 lists System alarms and events.

Table 10. OS or System Alarms and Events

Type Code	Identification Code	Alarm or Event
1	03073	Code unreachable
1	03074	Heap overflow
1	03075	Not enough memory in Heap
1	02817	A command is sent to an unavailable device CAN
1	02818	*Not used
1	02819	Impossible to open a session with a CAN device
1	02820	No answer from a CAN device
1	02821	*Not used
1	02822	The number of CAN devices discovered on CAN bus is too great
1	02823	Command unknown
1	02824	Device CAN Id out of range
1	02825	Time duration of a command is too long
1	02826	Report acquired from CAN device is wrong
1	02827	Report descriptor acquired from CAN device is wrong
1	01281	Mutex not available
1	01282	HID object Id out of range
1	01283	Report empty or not valid
1	01284	Report Id out of range
1	01285	Not enough memory in HEAP

Table 10. OS or System Alarms and Events (Continued)

Type Code	Identification Code	Alarm or Event
1	01286	Duration of the acquisition of Teridian is too long
1	01282	HID object Id not in list of data saved in EEPROM
1	02561	*Not used
1	02562	*Not used
1	02563	*Not used
1	02564	Wrong data type
1	02565	String too long
1	02566	*Not used
1	02567	*Not used
1	01025	*Not used
1	01026	Semantic error
1	01027	Impossible to open log file
1	01028	Impossible to write data in log file
1	01029	Impossible to seek data in log file
1	01030	Impossible to read data in log file
1	01031	Mutex not available
1	01032	*Not used
1	01033	Impossible to clear LOG file
1	03585	Initialization of SSH task failed
1	03586	Reading of the host key file (or table) failed
1	03587	Listening of SSH socket failed
1	03588	Acceptance of SSH socket failed
1	03589	Break received
1	03590	Max number of SSH connection reached
1	03591	Certificate error
1	03592	*Not used
1	03841	SNMP bad trap number

Type Code 2 or 3 (Eaton ePDU or User)

- Type 2 alarms and events are triggered from the Eaton ePDU.
  - These alarms and events are primarily threshold crossings when the operation measurement is beyond the threshold value range setting.
  - These alarms and events also provide the state of optional connected equipment.
- Type 3 alarms and events are triggered from user actions.

Figure 8 provides an example of a Type Code 2 system alarm number code.

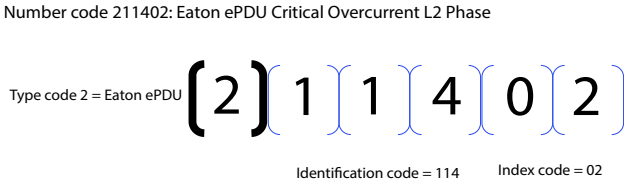

Figure 8. Example Type Code 2 (Eaton ePDU) Code

Table 11 lists fault conditions, potential causes, and possible troubleshooting actions you can take in response to Type Code 2 or Type Code 3 problems.

Table 11. ePDU and User Alarms and Events

Type Code	Identification and Index Code	Alarm or Event	Description
2	201000	Dry Contact 1 Not Active	The signal for Dry Contact 1 is active.
2	201100	Dry Contact 1 Active	The signal for Dry Contact 1 is not active.
2	202000	Dry Contact 1 Open	Dry Contact 1 is open.
2	202100	Dry Contact 1 Closed	Dry Contact 1 is closed.
2	203000	Dry Contact 2 Not Active	The signal for Dry Contact 2 is active.
2	203100	Dry Contact 2 Active	The signal for Dry Contact 2 is not active.
2	204000	Dry Contact 2 Open	Dry Contact 2 is open.
2	204100	Dry Contact 2 Closed	Dry Contact 2 is closed.
2	205000	Sensor Probe Communication Failure Cleared	Sensor Probe communication failure is cleared
2	205100	Sensor Probe Communication Failure	Sensor probe communication failure detected
2	208000	Sensor Probe Not Connected	Sensor probe not connected since firmware startup
2	208100	Sensor Probe Connected	Sensor probe connected at least once since firmware startup
2	206000	Humidity No Threshold	No humidity threshold has been triggered.
2	206100	Humidity Warning Low Threshold	The humidity level reading is less than the value configured as the low humidity warning threshold.
2	206200	Humidity Critical Low Threshold	The humidity level reading is less than the value configured as the low humidity critical threshold.
2	206300	Humidity Warning High Threshold	The humidity level reading is greater than the value configured as the high humidity warning threshold.
2	206400	Humidity Critical High Threshold	The humidity level reading is greater than the value configured as the high humidity critical threshold.
2	207000	Temperature No Threshold	No temperature threshold has been triggered.
2	207100	Temperature Warning Low Threshold	The temperature level reading is less than the value configured as the low temperature warning threshold.
2	207200	Temperature Critical Low Threshold	The temperature level reading is less than the value configured as the low temperature critical threshold.
2	207300	Temperature Warning High Threshold	The temperature level reading is greater than the value configured as the high temperature warning threshold.

Table 11. ePDU and User Alarms and Events (Continued)

Type Code	Identification and Index Code	Alarm or Event	Description
2	207400	ePDU Temperature Critical High Threshold	The temperature level reading is greater than the value configured as the high temperature critical threshold.
2	211000	Eaton ePDU Input 1 Current No Threshold	No section current threshold has been triggered.
2	211100	Eaton ePDU Input 1 Low Current Warning	The current amperage (A) reading for the specified section is less than the value configured as the low current warning alarm threshold.
2	211200	Eaton ePDU Input 1 Low Current Critical	The current amperage (A) reading for the specified section is less than the value configured as the low current critical alarm threshold.
2	211300	Eaton ePDU Input 1 Over Current Warning	The specified section current amperage (A) reading is greater than the value configured as the over current warning threshold.
2	211400	Eaton ePDU Input 1 Over Current Critical	The specified section current amperage (A) reading is greater than the value configured as the over current critical alarm threshold.
2	212000	Eaton ePDU Input 1 Voltage No Threshold	No section voltage threshold has been triggered.
2	212100	Eaton ePDU Input 1 Low Voltage Warning	The specified section voltage reading is less than the value configured as the low voltage warning threshold.
2	212200	Eaton ePDU Input 1 Low Voltage Critical	The specified section voltage reading is less than the value configured as the low voltage critical threshold.
2	212300	Eaton ePDU Input 1 Over Voltage Warning	The specified section voltage reading is greater than the value configured as the over voltage warning threshold.
2	212400	Eaton ePDU Input 1 Over Voltage Critical	The specified section voltage reading is greater than the value configured as the over voltage critical threshold.
2	213000	Eaton ePDU Input 1 Frequency OK	Utility frequency is within the +/- 3 Hz of Nominal frequency.
2	213100	Eaton ePDU Input 1 Frequency Out of Range	Utility frequency greater or less than +/- 3 Hz of Nominal frequency.
2	214000	Eaton ePDU Input 2 Current No Threshold	No section current threshold has been triggered.
2	214100	Eaton ePDU Input 2 Low Current Warning	The current amperage (A) reading for the specified section is less than the value configured as the low current warning alarm threshold.
2	214200	Eaton ePDU Input 2 Low Current Critical	The current amperage (A) reading for the specified section is less than the value configured as the low current critical alarm threshold.
2	214300	Eaton ePDU Input 2 High Current Warning	The specified section current amperage (A) reading is greater than the value configured as the over current warning threshold.
2	214400	Eaton ePDU Input 2 High Current Critical	The specified section current amperage (A) reading is greater than the value configured as the over current critical alarm threshold.
2	215000	Eaton ePDU Input 2 Voltage No Threshold	No section voltage threshold has been triggered.
2	215100	Eaton ePDU Input 2 Low Voltage Warning	The specified section voltage reading is less than the value configured as the low voltage warning threshold.

Table 11. ePDU and User Alarms and Events (Continued)

Type Code	Identification and Index Code	Alarm or Event	Description
2	215200	Eaton ePDU Input 2 Low Voltage Critical	The specified section voltage reading is less than the value configured as the low voltage critical threshold.
2	215300	Eaton ePDU Input 2 High Voltage Warning	The specified section voltage reading is greater than the value configured as the over voltage warning threshold.
2	215400	Eaton ePDU Input 2 High Voltage Critical	The specified section voltage reading is greater than the value configured as the over voltage critical threshold.
2	216000	Eaton ePDU Input 2 Frequency OK	The frequency is not out of range.
2	216100	Eaton ePDU Input 2 Frequency out of +/- 3 Hz tolerance	The frequency is out of range.
2	221000	Eaton ePDU Gang Phase Input Current No Threshold	No section current threshold has been triggered.
2	221100	Eaton ePDU Gang Phase Low Current Warning	The current amperage (A) reading for the specified section is less than the value configured as the low current warning alarm threshold.
2	221200	Eaton ePDU Gang Phase Low Current Critical	The current amperage (A) reading for the specified section is less than the value configured as the low current critical alarm threshold.
2	221300	Eaton ePDU Gang Phase Over Current Warning	The specified section current amperage (A) reading is greater than the value configured as the over current warning threshold.
2	221400	Eaton ePDU Gang Phase Over Current Critical	The specified section input current amperage (A) reading is greater than the value configured as the over current critical alarm threshold.
2	222000	Eaton ePDU Gang Phase Voltage No Threshold	No section voltage threshold has been triggered.
2	222100	Eaton ePDU Gang Phase Low Voltage Warning	The specified section voltage reading is less than the value configured as the low voltage warning threshold.
2	222200	Eaton ePDU Gang Phase Low Voltage Critical	The specified section voltage reading is less than the value configured as the low voltage critical threshold.
2	222300	Eaton ePDU Gang Phase Over Voltage Warning	The specified section voltage reading is less than the value configured as the over voltage warning threshold.
2	222400	Eaton ePDU Gang Phase Over Voltage Critical	The specified section voltage reading is less than the value configured as the over voltage critical threshold.
2	223000	Eaton ePDU Gang Breaker Reset	No alarm has been triggered.
2	223100	Eaton ePDU Gang Breaker Tripped	An alarm has been triggered.
2	241000	Communication OK	No communication failure detected on Teridian RS-485 bus
2	241100	Communication Lost	Communication failure detected on Teridian RS-485 bus
2	251000	Daisy Chain Communication OK	No communication failure detected on Daisy Chain
2	251100	Daisy Chain Communication Alarmed	Communication failure detected on Daisy Chain
2	231000	Eaton ePDU Outlet Current No Threshold	No outlet current threshold has been triggered.

Table 11. ePDU and User Alarms and Events (Continued)

Type Code	Identification and Index Code	Alarm or Event	Description
2	231100	Eaton ePDU Outlet Low Over Current Warning	The current amperage (A) reading for the specified outlet is less than the value configured as the low current warning alarm threshold.
2	231200	Eaton ePDU Outlet Low Over Current Critical	The current amperage (A) reading for the specified outlet is less than the value configured as the low current critical alarm threshold.
2	231300	Eaton ePDU Outlet High Over Current Warning	The specified outlet current amperage (A) reading is greater than the value configured as the over current warning threshold.
2	231400	Eaton ePDU Outlet High Over Current Critical	The specified outlet input current amperage (A) reading is greater than the value configured as the over current critical alarm threshold.
2	232000	Eaton ePDU Outlet switch off	The specified outlet is Off.
2	232100	Eaton ePDU Outlet switch on	The specified outlet is On.
3	300100	Communication module restarted	The communication module has been restarted by the user.
3	300200	Ethernet cable connected	The Ethernet cable is connected.
3	300300	Ethernet cable not connected	The Ethernet cable is not connected.
3	300400	Factory reset requested by <*interface*>	A factory reset has been requested through the specified user interface.
3	300500	Ethernet card restart requested by <*interface*>	An Ethernet card restart has been requested through the specified user interface.
3	300600	Switch to bootloader mode for upgrade by <*interface*>	A Switch to bootloader mode for upgrade has been requested through the specified user interface.
3	300700	Eaton ePDU & System Log cleared	The Eaton ePDU & System Log have been cleared.
3	300800	Daisy Chain device does not answer	The Daisy Chain device does not answer.
3	300900	Time changed	The time was changed by the user.
3	301000	Daisy chain device connected	The daisy chain device is connected.
3	301100	Daisy chain device disconnected	The daisy chain device is disconnected.
3	301200	Upgrade request by user	An upgrade was requested by the user.
3	301300	Sensor connected	The sensor was connected.
3	301400	Sensor disconnected	The sensor was disconnected.
3	301500	Send mail test by user	The user sent a mail test.
3	301600	User logged in	The specified user logged in by the specified protocol.
3	301700	User logged out	The specified user logged out by the specified protocol.
3	301800	User logged in FTP	The specified user logged in by FTP.
3	301900	User logged out FTP	The specified user logged out by FTP.
3	302000	User failed to log FTP	The specified user failed to log by FTP.
3	302100	Ethernet card restart in USB mode	The Ethernet card has been restarted in USB mode.
3	302200	Network settings file uploaded from USB	The network settings file has been uploaded from the USB.

Table 11. ePDU and User Alarms and Events (Continued)

Type Code	Identification and Index Code	Alarm or Event	Description
3	302300	eNMC module settings file uploaded from USB	The eNMC module settings file has been uploaded from the USB.
3	302400	ePDU settings file uploaded from USB	The ePDU settings file has been uploaded from the USB.
3	302500	Send test syslog message to the server	The user sent a test syslog message to the server.

Error Messages

This section provides error message troubleshooting for the Eaton ePDU models. Table 12 lists fault conditions, potential causes, and possible troubleshooting actions you can take in response to problems.

Table 12. Error Message Troubleshooting

Problem	Possible Root Cause	Primary Actions
Failed to retrieve data from the eNMC module. Retry later.	Request sent to refresh the Web interface content failed	1 - Refresh the page manually (F5). 2 - Confirm that you can ping the eNMC module. 3 - If the issue persists, check the following: • ePDU installation and Ethernet cable • IP addresses of the eNMC module from the ePDU LCD screen menus • network and access settings of your eNMC module from the RS-232 interface • your network configuration and network state
Failed to upload the file	Configuration file upload procedure failed	1 - Try to upload the configuration file again. 2 - Check the configuration file content. It must conform to the XML format and the maximum sizes are: • 13.125 Kbytes for the eNMC module configuration file • 20 Kbytes for the ePDU configuration file
Failed to send a request to the eNMC module. Retry later.	Configuration request failed	1 - Try to upload the configuration file again for the operation that just failed. 2 - Confirm that you can ping the eNMC module. 3 - If the issue persists, check the following: • ePDU installation and Ethernet cable • IP addresses of the eNMC module from the ePDU LCD screen menus • network and access settings of your eNMC module from the RS-232 interface • your network configuration and network state
You do not have the required permissions to execute this action.	User is not logged in with the appropriate permissions (security level) to execute the action	1 - Log out and then log in again with an authorized account.
Password and Confirm Password do not match.	User entered different values in the Password and Confirm Password fields	1 - Enter the same value in the Password and Confirm Password fields.
Negative values are not accepted.	User entered a negative value in a field that allows only zero or positive value	1 - Enter a zero or positive value.
Be sure not to leave empty fields.	Mandatory fields not completed properly	1 - Enter a value for each mandatory field.

Table 12. Error Message Troubleshooting (Continued)

Problem	Possible Root Cause	Primary Actions
The minimum SNMP v3 authentication password length is 8 characters. The maximum SNMP v3 authentication password length is 24 characters.	User entered an authentication password for a Simple Network Management Protocol Version 3 User-based Security Model (SNMPv3 USM) user with an incorrect number of characters	1 - Enter a password with a minimum of 8 characters and a maximum of 24 characters.
The minimum SNMP v3 privacy key length is 8 characters. The maximum SNMP v3 privacy key length is 24 characters.	User entered a privacy key for a SNMPv3 USM user with an incorrect number of characters	1 - Enter a key with a minimum of 8 characters and a maximum of 24 characters.

NOTE If the actions listed in this table do not resolve the problem, contact customer service or a local representative for guidance and/or replacement (see "Contacting Service and Support" on page 7).

Accessories

This section provides accessory troubleshooting for the Eaton ePDU models. (Accessories are optional and must be purchased separately.) Table 13 lists fault conditions, potential causes, and possible troubleshooting actions you can take in response to problems.

Table 13. Accessories Troubleshooting

Problem	Possible Root Cause	Actions
EMP (P/N: EMP001): No temperature and/or humidity information displays on the interface after connection to the ePDU	• Communication issue: no data is provided to the ePDU • EMP failure	1 - Check the cables and connection as specified in the *Eaton ePDU G3 Operations Manual*. (Ensure that the EMP connection is made to the serial port.) Verify that temperature and/or humidity information displays on the Web interface. 2 - Restart the eNMC module by pushing the recessed reset button and waiting 40 seconds for the connection to be re-established. Verify that temperature and/or humidity information displays on the Web interface. **NOTE** **Pushing the reset button will not power off the loads**.

NOTE If the actions listed in this table do not resolve the problem, contact customer service or a local representative for guidance and/or replacement (see "Contacting Service and Support" on page 7).

Chapter 4 Warranty

Two-Year Limited Warranty (USA and Canada)

Eaton Enclosure Power Distribution Units (ePDUs)

WARRANTOR: The warrantor for the limited warranties set forth herein is Eaton Corporation, an Ohio Corporation Company ("Company").

RACKMOUNTED LIMITED WARRANTY: This limited warranty (this "Warranty") applies only to the original End-user (the "End-user") of any Eaton Rackmounted Power Distribution Units (the "Product") purchased on or after June 1, 2004, and cannot be transferred. This Warranty applies even in the event that the Product is initially sold by Company for resale to an End-user.

LIMITED WARRANTY PERIOD: The period covered by this Warranty for the Product installed [and currently located] in the fifty (50) United States, the District of Columbia and Canada is twenty-four (24) months from the date of purchase.

WHAT THIS LIMITED WARRANTY COVERS: The warrantor warrants that the Product (the "Warranted Item") is free from defects in material and workmanship. If, in the opinion of Company, a Warranted Item is defective and the defect is within the terms of this Warranty, Company's sole obligation will be to repair or replace such defective Warranted Item (including by providing service, parts and labor, as applicable), at the option of Company.

PROCEDURES FOR REPAIR OR REPLACEMENT OF WARRANTED ITEMS:

Standard Product: Defined as ePDU product with the product number sequence PWxxxxxxxxxx, (whereas x can be any value). The Warranted item will be replaced by the Company.

Custom Product: Defined as ePDU product with any product number sequence that does not equal a standard product as noted above. The Warranted item will be repaired at a Company site or such other location as determined by Company.

If the Warranted Item is to be replaced by Company, and the End-user supplies a credit card number or purchase order for the value of the replacement Product, Company will use commercially reasonable business efforts to ship (via standard ground shipment and at no cost to the End-user) the replacement Warranted Item to the End-user within one (1) business day after Company receives notice of the warranty claim. In such case, the End-user must return (at Company's expense) the defective Warranted Item to Company in the same packaging as the replacement Warranted Item received by the End-user or as otherwise instructed by Company. If Company does not receive the defective Warranted Item, Company will either charge the End-user's credit card, or send the End-user an invoice (which the End-user agrees to pay), for the value of the replacement Product.

If the Warranted Item is to be replaced by Company, but the End-user is unwilling or unable to supply a credit card number or purchase order for the value of the replacement Product, Company will use commercially reasonable business efforts to ship (via standard ground shipment and at no cost to the End-user) the replacement Warranted Item to the End-user within one (1) business day after Company receives the defective Product from the End-user.

In any case, Company will provide shipping instructions and will pay its designated carrier for all shipping charges for return of defective equipment and replacement of Warranted Items. Any returned Warranted Item or parts that are replaced may be new or reconditioned. All Warranted Items returned to Company and all parts replaced by Company shall become the property of Company.

WHAT THIS LIMITED WARRANTY DOES NOT COVER: This Warranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) neglect, accident, abuse, misuse, misapplication or incorrect installation; (d) repair or alteration not authorized in writing by Company personnel or performed by an authorized Company

Customer Service Engineer or Agent; (e) improper testing, operation, maintenance, adjustment or modification of any kind not authorized in writing by Company personnel or performed by an authorized Company Customer Service Engineer or Agent; or (f) use of the Product under other than normal operating conditions or in a manner inconsistent with the Product's labels or instructions.

This Warranty is not valid if the Product's serial numbers have been removed or are illegible. Any Warranted Items repaired or replaced pursuant to this Warranty will be warranted for the remaining portion of the original Warranty subject to all the terms thereof.

Company shall not be responsible for any charges for testing, checking, removal or installation of Warranted Items.

COMPANY DOES NOT WARRANT EQUIPMENT NOT MANUFACTURED BY COMPANY. IF PERMITTED BY THE APPLICABLE MANUFACTURER, COMPANY SHALL PASS THROUGH SUCH MANUFACTURER'S WARRANTIES TO END-USER.

COMPANY DOES NOT WARRANT SOFTWARE (IF APPLICABLE TO THE PRODUCT), INCLUDING SOFTWARE EMBEDDED IN PRODUCTS, THAT IS NOT CREATED BY COMPANY. WITHOUT LIMITING THE FOREGOING, COMPANY SPECIFICALLY DOES NOT WARRANT SOFTWARE (SUCH AS LINUX) THAT WAS CREATED USING AN "OPEN SOURCE" MODEL OR IS DISTRIBUTED PURSUANT TO AN OPEN SOURCE LICENSE.

THIS WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OFFERED BY COMPANY WITH RESPECT TO THE PRODUCTS AND SERVICES AND, EXCEPT FOR SUCH FOREGOING WARRANTY COMPANY DISCLAIMS ALL OTHER WARRANTIES INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY, TITLE, NON-INFRINGEMENT AND FITNESS FOR A PARTICULAR PURPOSE. CORRECTION OF NONCONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE COMPANY'S SOLE LIABILITY AND ENDUSER'S EXCLUSIVE REMEDY FOR FAILURE OF COMPANY TO MEET ITS WARRANTY OBLIGATIONS, WHETHER CLAIMS OF THE END-USER ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE.

LIMITATION OF LIABILITY: The remedies of the End-user set forth herein are exclusive and are the sole remedies for any failure of Company to comply with its obligations hereunder. In no event shall Company be liable in contract, in tort (including negligence or strict liability) or otherwise for damage to property or equipment other than the Products, including loss of profits or revenue, loss of use of Products, loss of data, cost of capital, claims of customers of the End-user or any special, indirect, incidental or consequential damages whatsoever. The total cumulative liability of Company hereunder whether the claims are based in contract (including indemnity), in tort (including negligence or strict liability) or otherwise, shall not exceed the price of the Product on which such liability is based.

Company shall not be responsible for failure to provide service or parts due to causes beyond Company's reasonable control.

END-USER'S OBLIGATIONS: In order to receive the benefits of this Warranty, the End-user must use the Product in a normal way; follow the Product's user's guide; and protect against further damage to the Product if there is a covered defect.

OTHER LIMITATIONS: Company's obligations under this Warranty are expressly conditioned upon receipt by Company of all payments due to it (including interest charges, if any). During such time as Company has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Company shall have no obligation under this Warranty. Also during such time, the period of this Warranty shall continue to run and the expiration of this Warranty shall not be extended upon payment of any overdue or unpaid amounts.

COSTS NOT RELATED TO WARRANTY: The End-user shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Warranty, including without limitation, site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses or labor of Company representatives outside the terms of this Warranty will be borne by the End-user.

OBTAINING WARRANTY SERVICE: In the USA, call the Customer Reliability Center 7x24 at 800.356.5737. Outside of the USA, contact your local Eaton product sales or service representative, or call the Customer Reliability Center in the USA at 919.870.3149. For comments or questions about this Warranty, write to the Customer Quality Representative, 3301 Spring Forest Road, Raleigh, North Carolina 27616 USA.