Eaton® Network Card-MS

User's Guide

Powering Business Worldwide

Class B EMC Statements

FCC Part 15 Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Requesting a Declaration of Conformity

Units that are labeled with a CE mark comply with the following harmonized standards and EU directives:

- Safety for ATI: IEC/EN 60950-1 2002
- EN 61000-6-2 (2002)
  EN 61000-6-3 (2002)
  IEC/EN 62040-2 (2002).
- EU Directives: 99/336/EEC and 93/68/EEC.
  Low voltage: 73/23/EEC and 93/68/EEC.

The EC Declaration of Conformity is available upon request for products with a CE mark. For copies of the EC Declaration of Conformity, contact:

Eaton Power Quality Oy
Koskelontie 13
FIN-02920 Espoo
Finland
Phone: +358-9-452 661
Fax: +358-9-452 665 68

Special Symbols

The following are examples of symbols used on the UPS or accessories 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 the UPS or the UPS batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

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.

Table of Contents

Chapter 1 Introduction

The Eaton® Network Card-MS works with Eaton UPS Management Software to monitor, manage, and protect uninterruptible power supplies (UPSs) through standard Web pages, a Network Time Protocol (NTP) server, and Secure Sockets Layer (SSL) security protocol. The Network Card-MS can support up to five connected browsers at a time, or three with SSL protocol.

You can configure the card while the UPS is online with any one of the following options:

- Web browser
- Telnet, Secure Shell (SSH), and command line interface (CLI)
- Local serial link using network parameters
- Bootstrap Protocol/Dynamic Host Configuration Protocol (BOOTP/DHCP) using network parameters
- Uses the following well-known and registered port numbers for protocol connections:
  - BootP, DHCP UDP: 68, 67
  - HTML TCP: 80
  - SSL TCP: 443
  - NSM in connected mode TCP: 5000
  - NSM in UDP broadcast mode: 4679 and 4680
  - SMTP: 25
  - NTP: 123
  - SNMP V1&V3: 161
  - TRAP SNMP: 162
  - TELNET: 23
  - SSH: 22
- In addition, the Network Card-MS has the following features:
- Simultaneous access of up to five connected browsers (three in SSL)
- Configuration of automatic e-mail message in response to UPS alarms and to transmit periodic reports
- Control of UPS on/off switching with a Web browser
- Adjustment and control of load segments through the Web interface, including sequential starting of the installation and optimization of backup time by shutting down non-priority systems
- Automatic shutdown of UPS-protected computers with NetWatch client software
- Measurement of humidity and temperature with the optional Environmental Monitoring Probe (EMP)
- Automatic data and time adjustment through an NTP server
- Protection by encrypted password
- Protection by secure SSL connection
- Log storage in the non-volatile memory
- Available languages:
  - English
  - French
  - German
  - Italian
  - Spanish
  - Portuguese

  - Chinese Simplified
  - Japanese
  - Korean
  - Chinese Traditional
  - Russian
  - Czech
- Online Help (English only)
- Card firmware updated through the network
- Fast Ethernet 10/100 MB compatibility with auto-negotiation on the RJ-45 port
- Recording of events and measurements in the card log
- Connection to the card with straight Category 5 RJ-45 network cables [maximum card distance is 20m (65 ft)]
- Can be installed while the UPS is online, maintaining the highest system availability
- Secure management through Simple Network Management Protocol SNMP v3
- Support of dual stack IPv4/IPv6
- Compatibility with the following Management Information Bases (MIBs):
  - MIB II (RFC 1213)
  - Internet Engineering Task Force (IETF) Standard UPS MIB (RFC 1628)
  - Eaton PowerMIB
  - Eaton Pulsar MIB (MGE MIB)

NOTE See Chapter 5, “MIB Objects” on page 63.

Chapter 2 Getting Started

This chapter explains:

- Unpacking the card
- Installing and connecting the card
- Installing the optional Environmental Monitoring Probe (EMP)
- Configuring and the card

Unpacking the Card

Verify the package contents:

- Network Card-MS
- Serial cable
- Installation instructions

Installation Checklist

1. Verify that all of the following items are available:
   - Network Card-MS package contents
   - Phillips® screwdriver
   - Ethernet cable
   - Available serial port (RS-232)
   - HyperTerminal® (ships with Microsoft® Windows®) or equivalent terminal emulation application
   - Web browser (Microsoft Internet Explorer® or Mozilla® Firefox® recommended)
2. Provide the local network administrator with the card's MAC address:
   - MAC Address Port: _____
   - The MAC address is located on the label on the front of the card (see Figure 1).

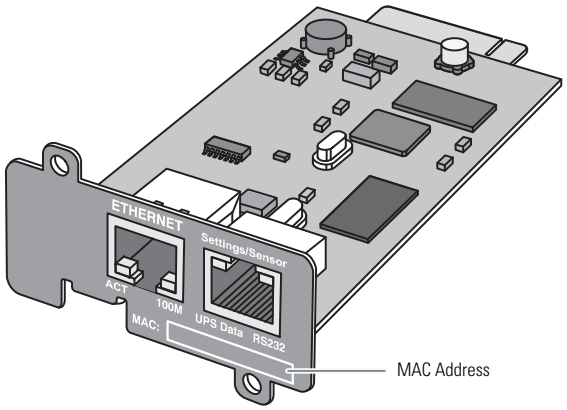
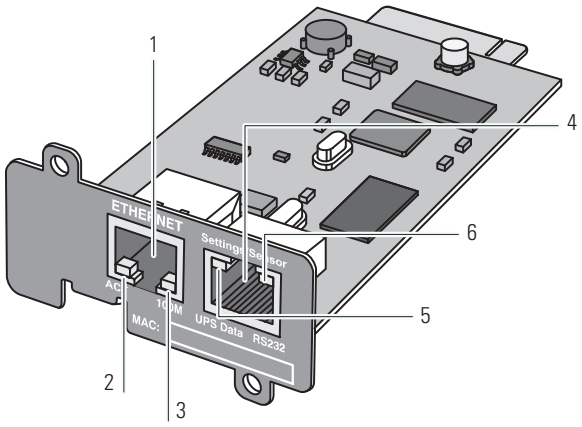


Figure 1. MAC Address Location

Card Details



1. Ethernet Port (10/100BaseT)
2. ACT LED (green)
3. 100M LED (orange)
4. Settings/Sensor Port
5. UPS Data LED (green)
6. RS232 LED (orange)

Figure 2. Network Card-MS Details

Table 1. Indicator Descriptions

Ethernet Port (10/100BaseT)		
ACT LED (green)	Off	Card is not connected to the network
	On	Card is connected to the network, but no activity
	Flashing	Card is sending/receiving
100M LED (orange	Off	Port is operating at 10 Mbits/s
	On	Port is operating at 100 Mbits/s
Settings/Sensor Port		
UPS Data LED (green)	Off	Card is starting
	On	Card is communicating with the UPS
	Flashing	Normal operation; communication with the UPS is operational
RS-232 LED (orange)	Off	Configuration menu is activated
	On	Normal operation; Configuration menu is not activated
	Flashing	Card is communicating with the EMP

Card Defaults

Table 2 lists the Network Card-MS default parameters.

Table 2. Default Parameters

Function On	Parameter	Default Value	Possible Values
Network	IP Address	192.168.1.2	Network IP address
	Subnet Mask	255.255.0.0	Network IP address
	Gateway Address	0.0.0.0	Network IP address
	BOOTP/DHCP	Enabled	Enabled / Disabled
	IPv6 Enabled	Disabled	Enabled / Disabled
	IPv6 Auto Config Enabled	Disabled	Enabled / Disabled
	SNMP version	V1 & V3	V1, V3, V1 & V3
	Firmware Upload	Enabled	Enabled / Disabled
	SMTP Server	smtpserver	49 characters maximum
System	UPS Contact	Computer Room Manager	49 characters maximum
	UPS Contact	Computer Room	31 characters maximum
	History Log Interval	60 seconds	10 to 99999 seconds
	Environmental Log Interval	300 seconds	10 to 99999 seconds
	Default Language	English	English / French / German / Italian / Spanish / Portuguese / Chinese Simplified / Chinese Traditional / Japanese / Korean / Russian/ Czech
Notified Applications Table	—	Empty	—
Access Control	User Name	admin	10 characters maximum
	Password	admin	10 characters maximum
	Community Name Read	Public	49 characters maximum
	Trap Port	162	Non-configurable
	Telnet Access Enabled	Enabled	Enabled / Disabled
	Telnet Security Enabled	Disabled	Enabled / Disabled
	Console Interface	Menu	CLI / MENU
Date and Time	Date and Time Adjustment	Accept automatic update from NSM or EPM	Synchronize with an NTP server / Accept automatic update from NSM or EPM
	NTP Server	Ntpserver	49 characters maximum
Serial Link	Speed	9600 baud	Non-configurable
	Data Bits	8	Non-configurable
	Stop Bits	1	Non-configurable
	Parity	None	Non-configurable
	Flow Control	None	Non-configurable

Installing the Card

The Network Card-MS can be installed in any Eaton UPS equipped with a communication bay without turning off the UPS or disconnecting the load.

To install the Network Card-MS:

1. Remove the communication bay cover from the UPS. Retain the screws.
2. If not already done, record the card's MAC address for future reference (see "Installation Checklist" on page 3).
3. To prevent electrostatic discharge (ESD), place one hand on a metal surface.
4. Slide the card into the open slot and secure with the screws removed in Step 1(see Figure 3).

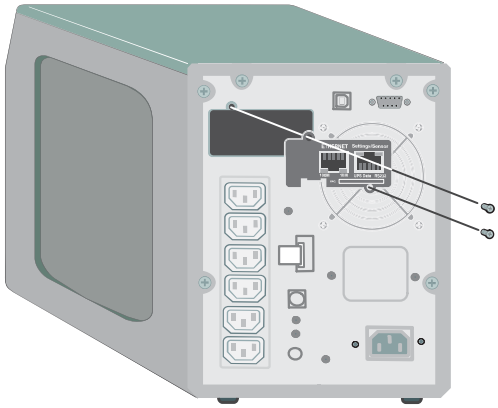


Figure 3. Installing the Card

Installing the Optional Environmental Monitoring Probe

The EMP is available as an option.

The EMP allows remote monitoring of the UPS's environment through regular measurements of temperature and humidity through two external contacts.

On UPSs with the EMP installed you can:

- Set temperature and humidity thresholds.
- Configure the system to send notification of environmental alarms through e-mail messages and SNMP traps.
- Monitor current and historical environmental data.

The EMP is connected to the Settings/Sensor port directly on the Network Card-MS with a standard Ethernet cable (20 meters maximum). Recognition is automatic. An Environment section is added to the main menu of the Web interface (see Figure 4).

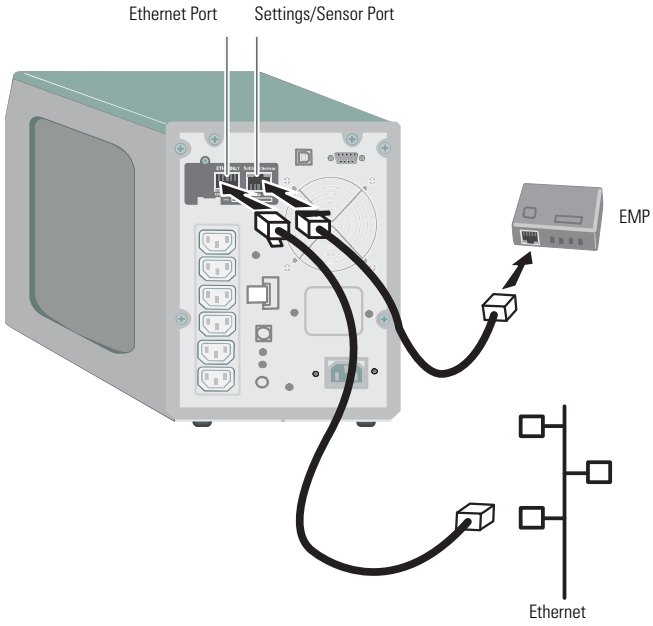


Figure 4. Installing the EMP

Connecting the Card

To connect the card to the computer and start the configuration:

1. Plug the RJ-45 end of the supplied serial cable into the Settings/Sensor port on the card (see Figure 5).

NOTE You can set the card parameters through the Settings/Sensor port even if the network is not connected. The Ethernet port on the card does not work for configuration.

2. Plug the other end of the serial cable into the serial COM port on the computer.
3. Connect an active Ethernet cable (not supplied) to the Ethernet port on the Network Card-MS (see Figure 5).

   Wait approximately two minutes until the UPS Data LED flashes regularly, indicating normal operation.

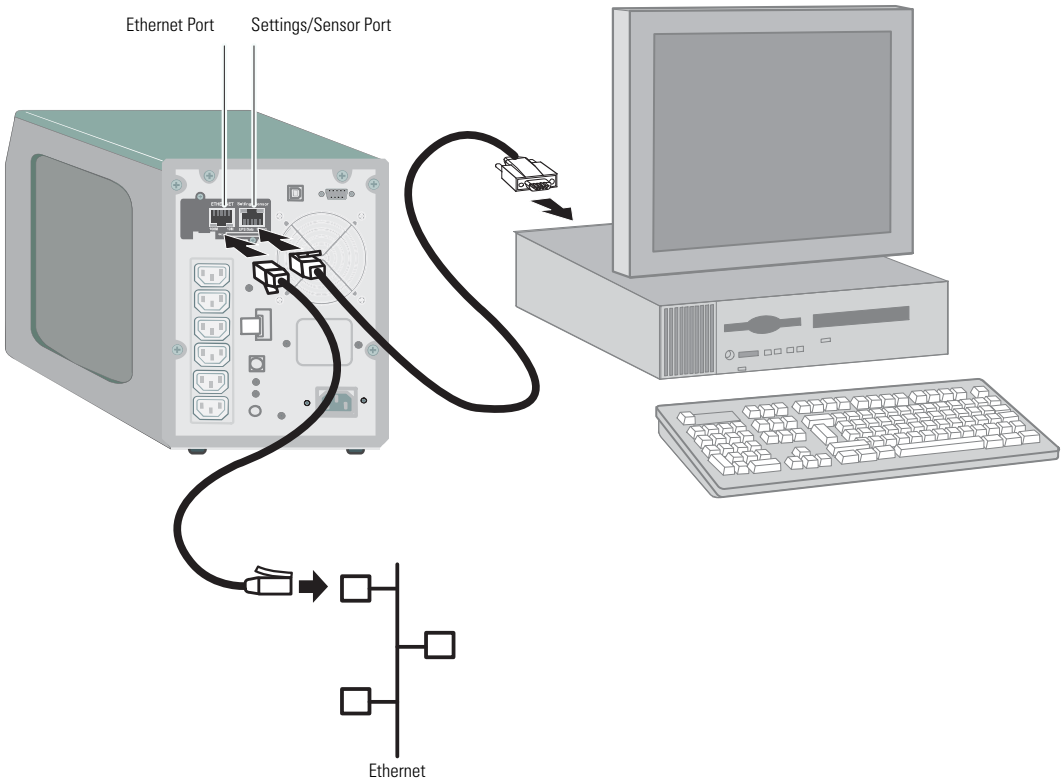


Figure 5. Connecting the Card

Configuring the Card

To configure the card:

1. Verify that the serial cable (supplied) is connected to the card's Settings/Sensor port and the computer's COM port.
2. Open your terminal emulation program (such as HyperTerminal).
3. Select the serial connection (such as COM1).
4. Set the serial line to **9600 baud**, **8 data bits**, **no parity**, **1 stop bit**, **no flow control** (see Figure 6).

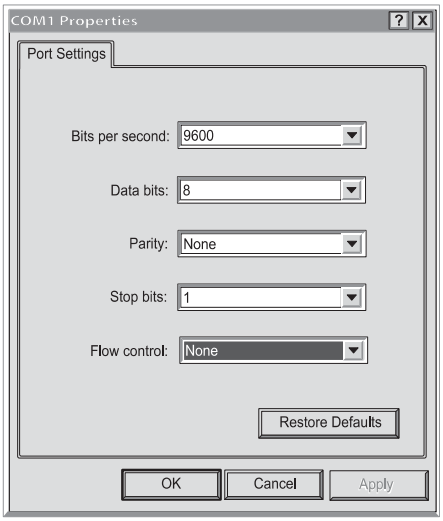


Figure 6. Configuring Port Settings

5. Verify that the UPS is turned on.

   The initialization process completes, and you are prompted enter the password (see Figure 7).

```
------------------------------------------------------------------
End of Init, card is ready ...
Enter password to activate Maintenance Menu :
Warning: for SMTP server resolution don't forget to set DNS
File RAM0/ConfigurationData.xml created with 17096 bytes
File FLASH0/ConfigurationData.xml written in Flash with 17096 bytes
------------------------------------------------------------------
```

Figure 7. Card Initialization

6. Enter **admin**. The main menu displays (see Figure 8).

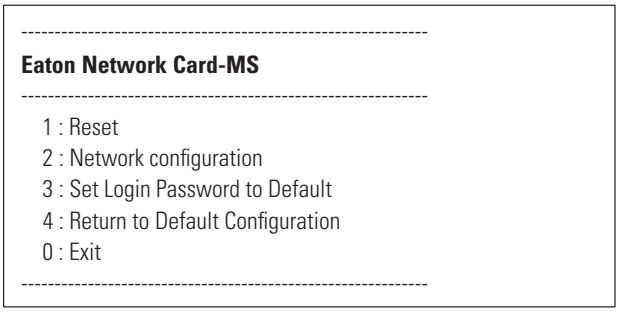


Figure 8. Network Card-MS Main Menu

Configuring the Network With a DHCP Server

The card automatically collects the IP parameters from the server by default.

NOTE When the card is not connected to the network, it continuously attempts to connect. When the connection is established, the LEDs indicate the status (Table 1 on page 4).

To view the parameters:

1. From the main menu, type **2** and press **Enter**. The Network Settings menu displays (see Figure 9).

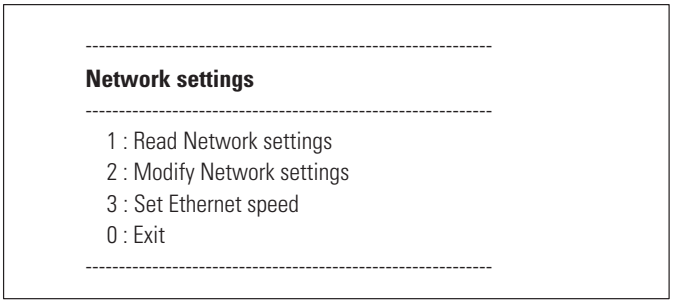


Figure 9. Network Settings Menu

2. Type **1** and press **Enter**. The card displays the settings supplied by the server (see Figure 10).

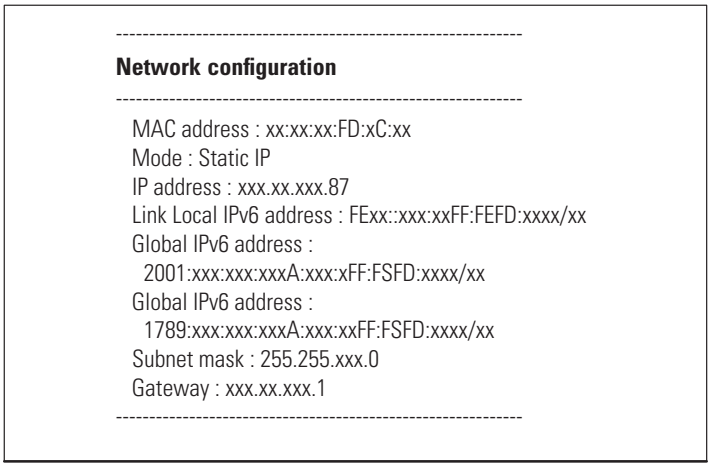


Figure 10. Network Configuration Menu

3. Record the IP address. The IPv6 parameters are read only.
4. To exit, type **0** and press **Enter**; then type **0** and press **Enter** again. The card is now operational.

NOTE As long as the card is not connected to the network, it continuously attempts to make connection. Once the connection has been established, the operational mode presended in the table becomes effective.

Configuring the Network Without a DHCP Server

To set the network configuration manually:

1. From the main menu, type **2** and press **Enter**. Type **2** and press **Enter** again to modify the network settings. The Network Settings menu displays (see Figure 11).

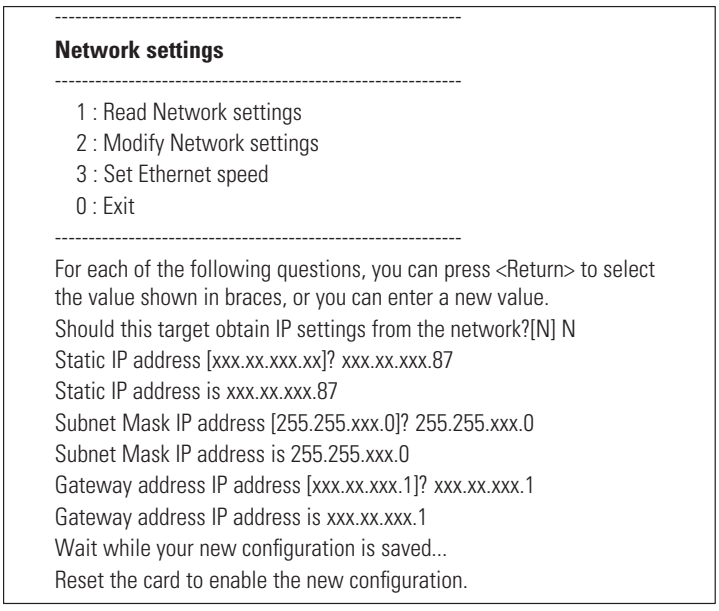


Figure 11. Modifying the Network Settings

2. Follow the instructions and enter the static IP parameters.

   Wait until **Done** displays, indicating that the IP parameters have been saved.

3. To exit, type **0** and press **Enter**.

4. Type **1** and press **Enter**, and then type **2** and press **Enter** to restart.

   The card restarts with the new IP settings in approximately one minute.

NOTE The IPv6 parameters are read only through the serioal line configuration menu. If IPv6 is enabled, all IPv6 addresses of the card can be read from the HyperTerminal® (see the previous section, "Configuring the Network With a DHCP Server" on page 10).

Testing the Configuration

To verify that the Network Card-MS is operational:

1. Open a Web browser from a station connected to the same subnet as the card.

2. Enter the card's **IP address** in the address bar. The home page displays (see Figure 12).

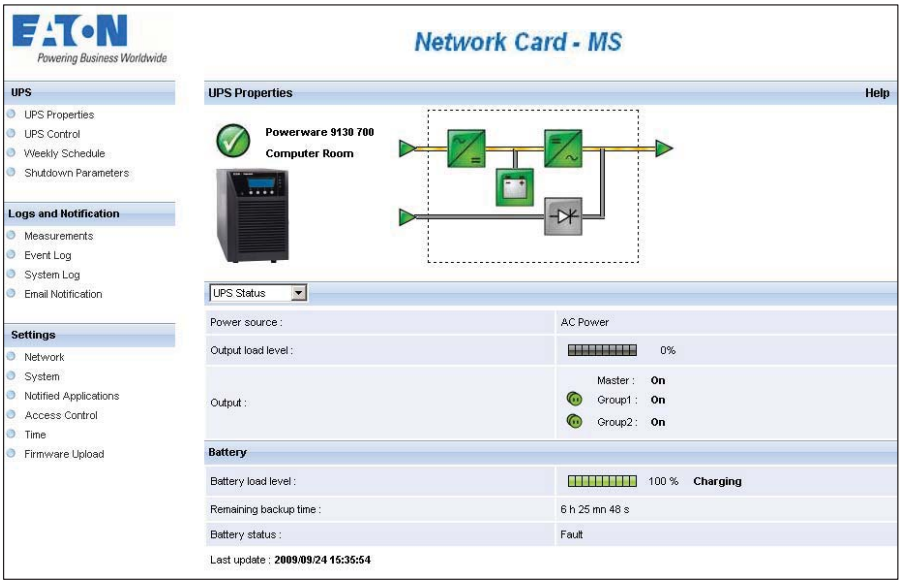


Figure 12. Home Page

Continue to Chapter 3, "Configuring the Card" on page 13 for additional configuration options.

Chapter 3 Configuring the Card

This chapter explains:

- Navigating the card's Web page
- Understanding UPS properties
- UPS power management
- Understanding UPS measurements, Event log, and System log
- Configuring e-mail notification
- Configuring Simple Network Management Protocol (SNMP) options and managing from an SNMP network management system (NMS)
- Setting up access control
- Setting the date and time
- Setting environmental thresholds

NOTE You must be logged in as admin to configure the card.

Navigating the Card's Web Page

Figure 13 shows the different areas and features of the card's Web page. The UPS Properties page is the home page that displays after you log on to the Web interface.

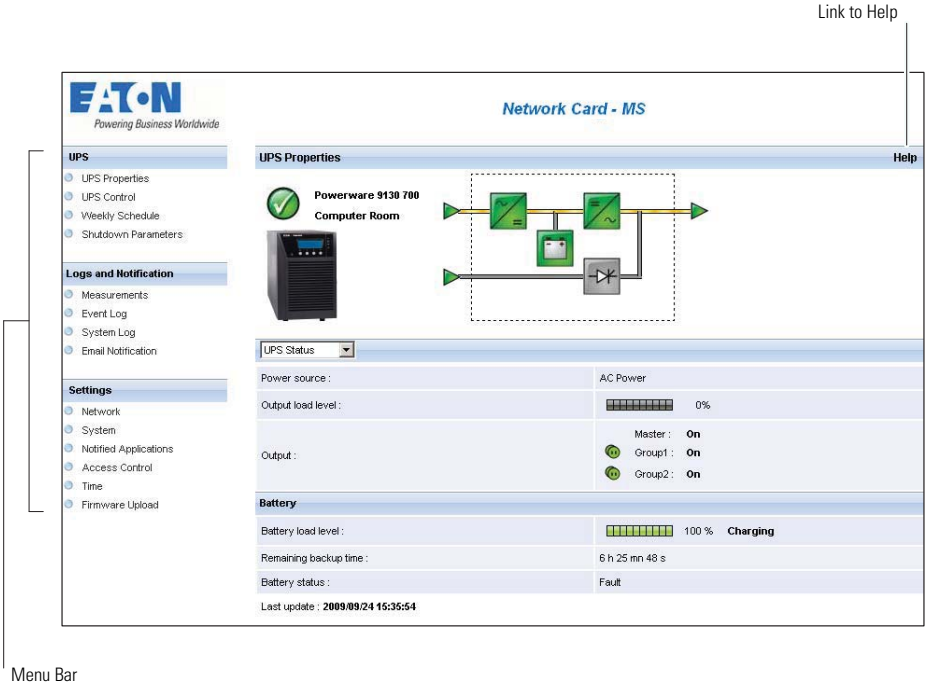


Figure 13. Navigating the Card's Web Page

The menu bar to the left of the page contains links to the card's additional pages for status information and configuration options.

Logging In

By default, the user name and password are both **admin** (see Figure 14).

Figure 14. Login Window

Both the user name and password fields accept a maximum of ten characters. After five minutes have elapsed without activity on the Web page, or if the browser is closed and reopened, you must re-enter the user name and password.

An error in either field results in rejection of the requested action (such as save, page access, or card reboot). After three unsuccessful login attempts, you must restart the browser. Both the user name and password fields are encrypted with an MD5 type algorithm, ensuring total security.

See "Option 3: Set Login Password to Default" on page 72 to reset the password.

Optimizing Browser Performance

To view status changes on the UPS in real time, configure the browser so that it automatically refreshes all the objects on the current page.

For example, if you are using Internet Explorer:

1. Go to **Tools > Internet Options > General > Temporary Internet files > Settings**.
2. Select **Every visit to the page**.
3. Click **OK** to close the Settings window, and then click **OK** again to close the Internet Options window.

Online Help

The Network Card-MS's online Help provides information on all main menu items.

NOTE The Help is in English only.

To access Help:

1. Click **Help**. The Help page opens (see Figure 15).
2. Select a Help topic from the menu bar. The corresponding Help content displays on the right.

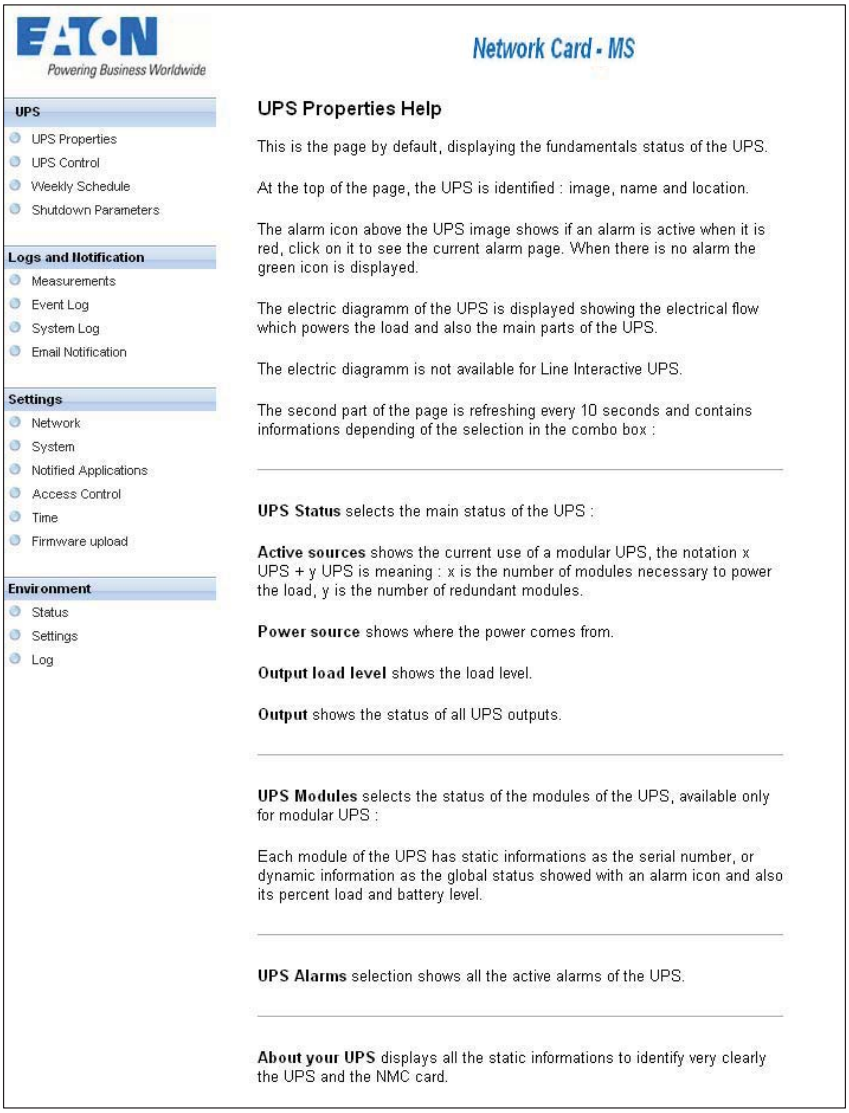


Figure 15. Online Help Example

UPS Properties

Essential information about the UPS status is available on the UPS Properties page (see Figure 16), which refreshes automatically every ten seconds.

The UPS Properties page shows an image and generic name of the UPS. You can customize the default location **Computer Room** to name the location of your system (see "System Settings" on page 39).

An animated diagram displays for online UPSs showing an overview of the current UPS operating mode.

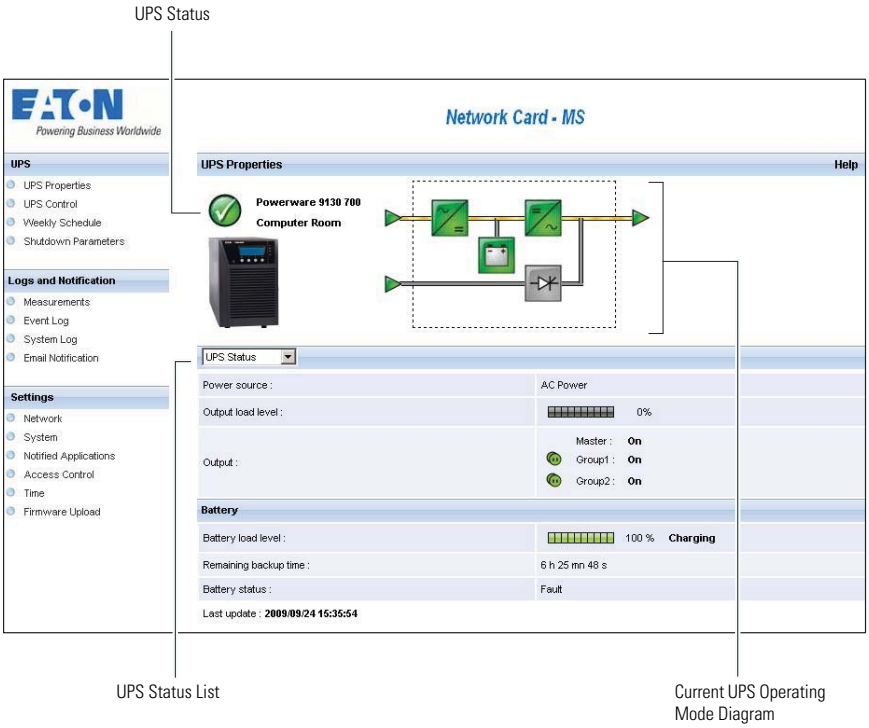


Figure 16. UPS Properties Page

UPS Measurements Detail

Place the cursor over an element in the diagram to display the UPS measurements detail (see Figure 17). These measurements are available for Normal mode, Battery mode, and Bypass mode. The available measurements depend on the UPS model.

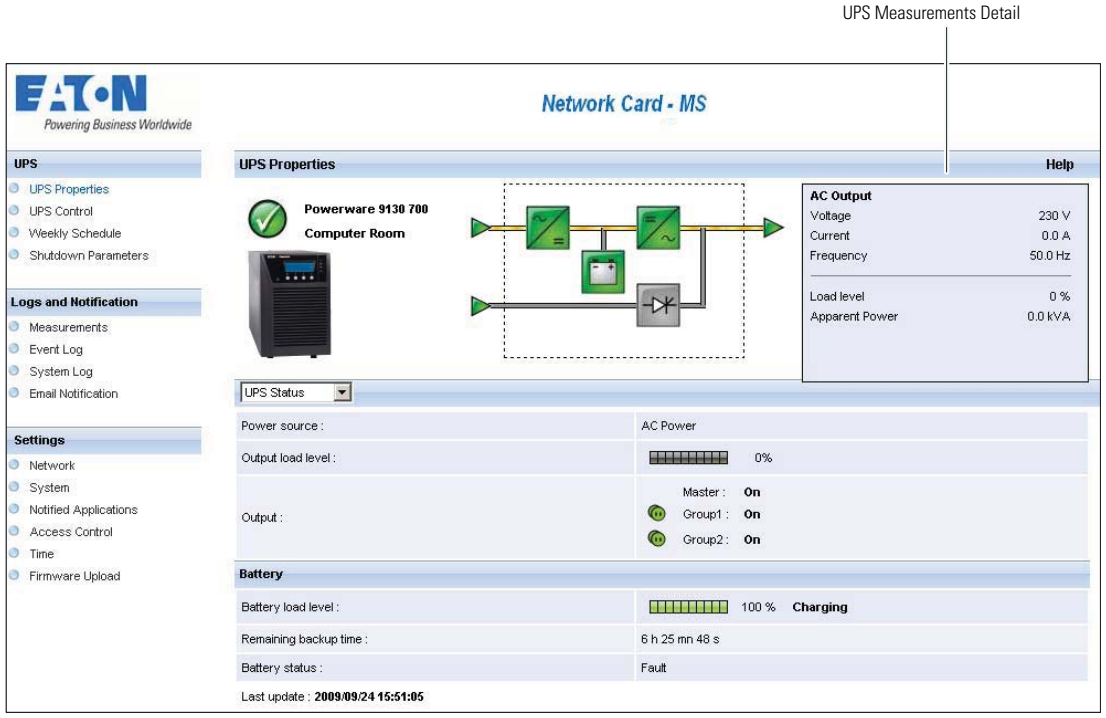


Figure 17. UPS Measurements Detail (AC Output Detail Shown)

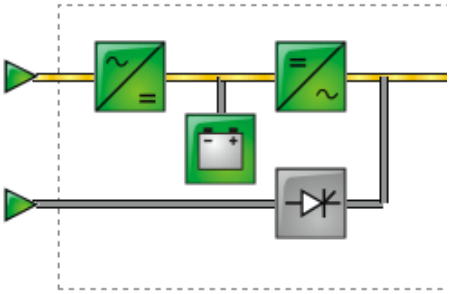
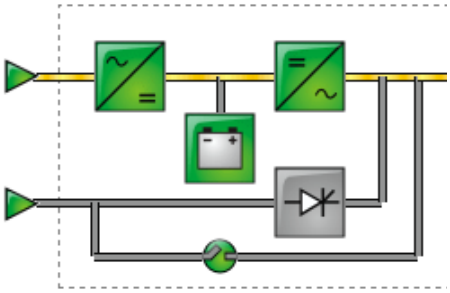
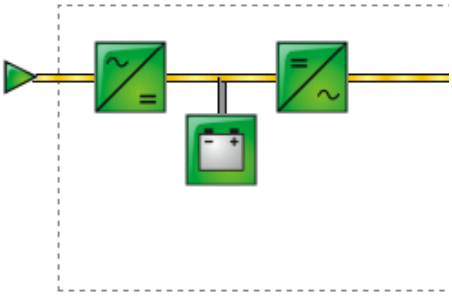
UPS Status Icons

Table 3 lists the UPS status icons. Table 4 shows examples of the online UPS current operating modes.

Table 3. UPS Status Icons

Icon	Description
Green	Normal operation
Red	Alarm present This element links directly to the alarm page
Gray	Loss of communication with the UPS

Table 4. Operating Mode Diagrams

Operating Mode	Diagram
UPS with Automatic Bypass	
UPS with Automatic and Manual Bypass	
UPS without Automatic Bypass	

NOTE If communication with the UPS is lost, all diagrams appear gray.

Table 5 lists all the elements that can appear in a UPS operating mode diagram.

Table 5. Diagram Elements

Type	Element	Description
AC Normal Input	 Green	In tolerance
	 Gray	Out of tolerance
AC Normal Flow	Yellow	AC to DC converter powered by normal AC
	Gray	AC to DC converter not powered by normal AC
AC to DC Converter	 Green	Powered
	 Gray	Not powered
	 Red	Internal failure
Battery	 Green	Remaining capacity > 50%
	 Yellow	Remaining capacity ≤ 50%
	 Red	Battery to be checked (battery test result)
Battery Output Flow	Yellow	AC to DC converter powered by battery
	Gray	AC to DC converter not powered by battery

Table 5. Diagram Elements (Continued)

Type	Element	Description
DC to AC Converter Input Flow	Yellow	Energy flow present
	Gray	No energy flow
DC to AC Converter	Green	Powered
	Gray	Not powered
	Red	Internal failure
DC to AC Converter Output Flow	Yellow	Energy flow present
	Gray	No energy flow
AC Bypass Input	Green	In tolerance
	Red	Out of tolerance
AC Automatice Bypass Flow	Yellow	Energy flow present
	Gray	No energy flow
AC Automatic Bypass Status	Green	Powered
	Gray	Not powered
	Red	Internal failure

Table 5. Diagram Elements (Continued)

Type	Element	Description
AC Manual Bypass Flow	Yellow	Energy flow present
	Gray	No energy flow
AC Manual Bypass Status	 Green	Open
	 Red	Closed
AC Output Flow	Yellow	Energy flow present
	Gray	No energy flow
AC Output	 Green	Load protected
	 Red	Load not protected

UPS Status List

Select an item from the UPS Status list to view specific information about the UPS (see Figure 18). Table 6 lists the UPS status items available. The following sections describe each item in detail.

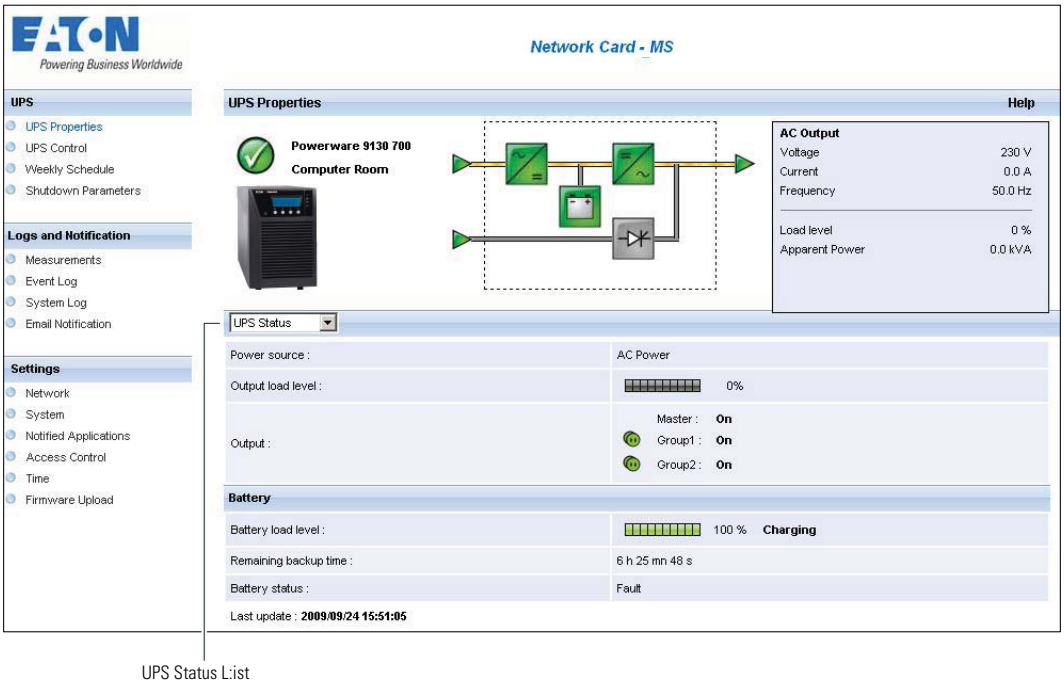


Figure 18. UPS Status List (Default UPS Status View Shown)

Table 6. UPS Status List

Item	Description
UPS Status	(Default view) Provides essential information about the power status of the UPS
UPS Alarms	Displays a list of current alarms
About Your UPS	Provides information about the model and firmware version of the UPS and the card

UPS Status

The UPS Status view displays the following basic information about power and output (see Table 7):

- **Power source:** Indicates whether power comes from the utility or from the UPS battery.
- **Output load level:** Indicates the power percentage used at UPS output.
- **Output:** Indicates whether the individual UPS outputs are protected.
  - **Master (UPS):** Indicates whether the UPS main output is protected.
  - **Group 1 and Group 2:** Indicates whether the controlled load segments (if available) are powered (see Table 7).

Table 7. UPS Output Status

Element	Description
 Green	Receptacle powered
 Red	Receptacle not powered or not protected

- **Battery load level:** Remaining battery charge (in percent).

  The battery load level is further described by this additional information:

  - **Charging:** Indicates whether the utility power is present and the battery charge is in progress.
  - **Discharging:** Indicates whether the UPS is operating on battery.
  - **Fault:** Indicates whether the battery is faulty.
- **Remaining backup time:** Estimates the battery's maximum backup time remaining before UPS shutdown.
- **Battery status:** Displays result of the last automatic battery test carried out by the UPS. Possible values are:
  - **OK:** The test completed correctly.
  - **NOK:** The battery needs to be checked.
  - **Deactivated:** The automatic battery test was not validated on the UPS.

View Current Alarms

Select **UPS Alarms** from the UPS Status list to display the list of current alarms (see Figure 19).Table 8 lists the alarm severity levels. Table 9 and Table 10 list the managed UPS and system alarms.

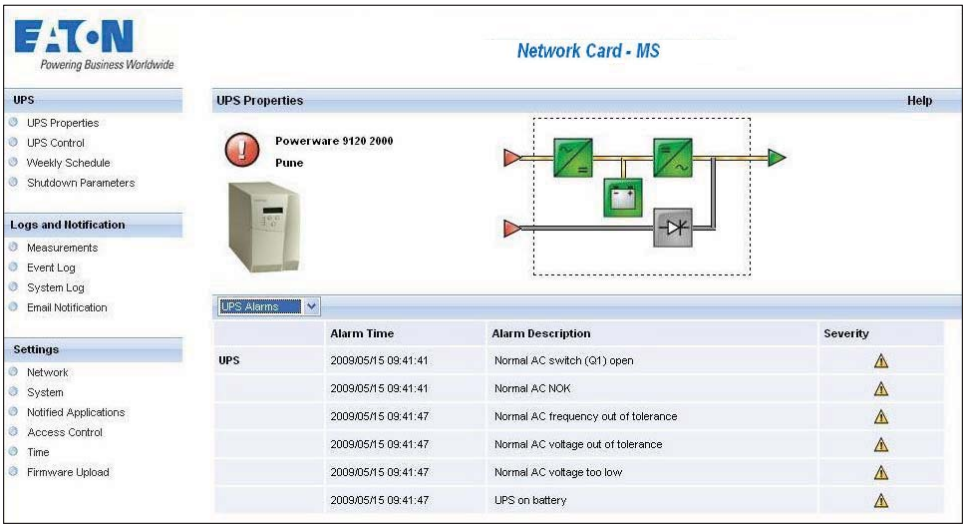


Figure 19. UPS Alarms Display

Table 8. Security Levels

Icon	Level
 Red	Critical
 Yellow	Warning
 Gray	Unknown

Table 9. UPS Alarms

Alarm On	Alarm Off
Battery fuse blown	Battery fuse OK
No Battery	Battery present
Battery temperature fault	Battery temperature OK
Battery charger fault	Battery charger OK
Battery fault	Battery OK
MAX charger voltage fault	Charger voltage OK
MIN charger voltage fault	Charger voltage OK
Charger temperature fault	Charger temperature OK
Rectifier fault	Rectifier OK
Chopper fault	Chopper OK
Normal AC frequency out of tolerance	Normal AC frequency OK
Normal AC fuses blown	Normal AC fuses OK
Normal AC module fault	Normal AC module OK
Normal AC voltage out of tolerance	Normal AC voltage OK
Normal AC NOK	Normal AC OK
Site wiring fault	Site wiring OK
Bypass AC frequency out of tolerance	Bypass AC frequency OK
Bypass AC phase out of tolerance	Bypass AC phase OK
Bypass AC voltage out of tolerance	Bypass AC voltage OK
Automatic Bypass fault	Automatic Bypass OK
Automatic Bypass overload	Automatic Bypass load OK
Automatic Bypass overtemperature	Automatic Bypass temperature OK
Automatic Bypass thermal overload	Automatic Bypass load OK
Automatic Bypass switch (Q4S) open	Automatic Bypass switch (Q4S) closed
Normal AC switch (Q1) open	Normal AC switch (Q1) closed
Battery switch (QF1) open	Battery switch (QF1) closed
Manual Bypass switch (Q3BP) closed	Manual Bypass switch (Q3BP) open
UPS on manual bypass	—
Output switch (Q5N) open	Output switch (Q5N) closed
Single wave load fault	Load OK
Negative DC bus too high	Negative DC bus OK

Table 9. UPS Alarms

Alarm On	Alarm Off
Positive DC bus too high	Positive DC bus OK
Negative DC bus too low	Negative DC bus OK
Positive DC bus too low	Positive DC bus OK
Inverter limitation	Inverter end of limitation
Inverter fuses blown	Input fuses OK
Inverter fault	Inverter OK
Inverter overload	Inverter load OK
Inverter over temperature	Inverter temperature OK
Inverter short circuit	Inverter OK
Inverter thermal overload	Inverter load OK
Load not protected - On Automatic Bypass	Load protected - Return from Bypass
Load short circuit	Load OK
Load not powered	Load powered
Protection Lost	Protection OK
Emergency button ON	Emergency button OFF
Fan fault	Fan OK
Redundancy Lost	Redundancy OK
Low battery	Battery OK
UPS communication failed	UPS communication restored
UPS data base not available	UPS data base OK
UPS on battery	UPS on normal AC
UPS internal fault	UPS OK
UPS overload	UPS returns to normal load
UPS overtemperature	UPS temperature OK
Imminent UPS shutoff	UPS OK
<Sensor name>: Temperature is above high threshold xx°C	<Sensor name>: Temperature is below high threshold xx°C
<Sensor name>: Humidity is above high threshold xx %	<Sensor name>: Humidity is below high threshold xx %
<Sensor name>: Temperature is below low threshold xx°C	<Sensor name>: Temperature is above low threshold xx°C
<Sensor name>: Humidity is below low threshold xx %	<Sensor name>: Humidity is above low threshold xx %
<Sensor name>: <Input #1 label> <when closed label>	<Sensor name>: <Input #1 label> <when closed label>
<Sensor name>: <Input #1 label> <when open label>	<Sensor name>: <Input #1 label> <when open label>
<Sensor name>: <Input #2 label> <when closed label>	<Sensor name>: <Input #2 label> <when closed label>
<Sensor name>: <Input #2 label> <when opem label>	<Sensor name>: <Input #2 label> <when open label>

Table 10. System Alarms

Network Card-MS startup
Send test mail SUCCESS
Send test mail ERROR
Send mail to <recipient> ERROR
<Sensor name> Communication failure
<Sensor name> Communication restored
Firmware upgraded
Connected NSM list Full, last connection refused
sendTrap() -> Unable to resolve hostname <hostname>
SNMP Send Trap # <num> failure to <hostname>
Time changed by user with yyyy/mm/dd hh:mm:ss
Time synchronized by NSM or EPM with yyyy/mm/dd hh:mm:ss

View UPS and Card Information

Select **About Your UPS** from the UPS Status list to display information about the UPS and the card (see Figure 20).

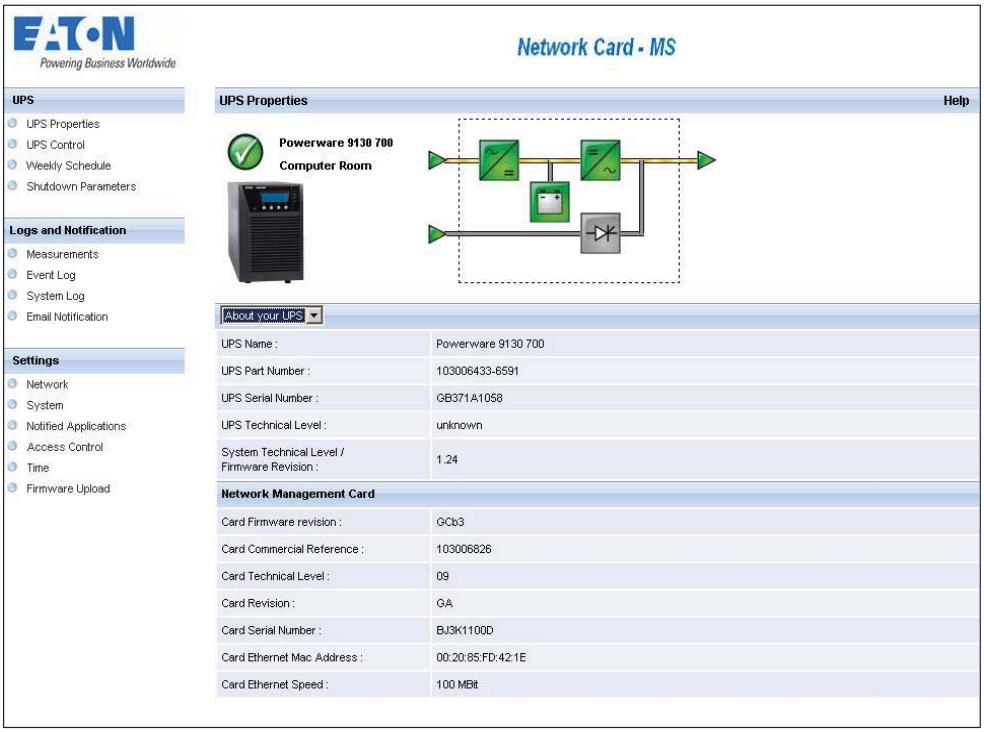


Figure 20. About Your UPS Display

UPS Control

Select **UPS Control** from the menu bar to open the UPS Control page (see Figure 21).

NOTE The UPS Control page requires that you are logged in. If you are not logged in when you select UPS Control, the Login window opens (see "Logging In" on page 14).

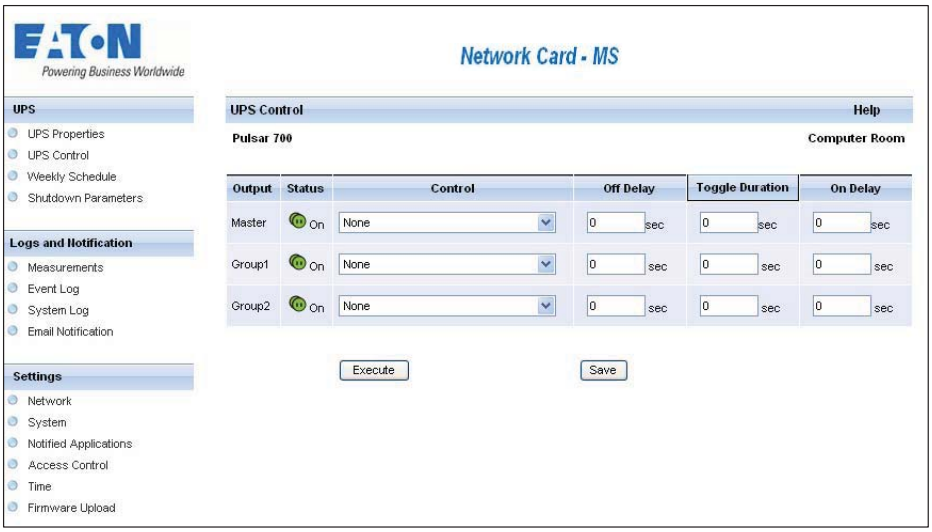


Figure 21. UPS Control Page

The UPS Control page enables triggering of startup and shutdown sequences for the UPS main output and load segments.

The status of each output displays by a icon associated with the Off label (red icon) or On label (green icon).

The shutdown sequences allow time for the registered servers to shut down without losing data (see "Shutdown Parameters" on page 29).

The Master has priority over the load segments. Shutdown of the Master causes the load segments to shut down. Load segments can be started only if the Master is on.

The list in the Control column displays the following commands, which are initialized by clicking **Execute**. These commands include:

- **Safe power down:** Immediately launches a sequence to switch off output power. The command shuts down the supplied systems while the shutdown sequence runs, then switches off the output.
- **Safe power down & reboot:** Immediately launches a sequence to switch off and then restore output power. It shuts down the powered systems during the shutdown sequence, and then switches off the output. Finally, it launches the restart sequence at the end of the time delay specified in the **Toggle duration** parameter. The output status is updated.
- **Immediate On:** Immediately launches a sequence to switch on output power. The output is re-powered. This command can start the system if the system's basic input/output system (BIOS) settings allow a reboot.
- **Delayed, safe power down:** This is the same switch off sequence as for the **Safe power down** command, but postponed by the number of seconds programmed in the **Off Delay** parameter.

- **Delayed, safe power down & reboot:** This is the same switch off and then on sequence as for the **Safe power down & reboot command**, but postponed by the number of seconds programmed in the **Off Delay** parameter.
- **Delayed On:** This is the same switch on sequence as for the **Immediate On** command, but postponed by the number of seconds programmed in the **On Delay** parameter.

Selecting **Save** saves the **Off Delay**, **Toggle Duration**, and **On Delay** parameters on the card.

NOTE For security purposes, the administrator must click **Save** and enter the admin user name and password to save modifications or run commands. The default user name and password are both **admin**.

UPS Weekly Schedule Programming

Select **Weekly Schedule** from the menu bar to set up the timing of specific weekly actions (see Figure 22).

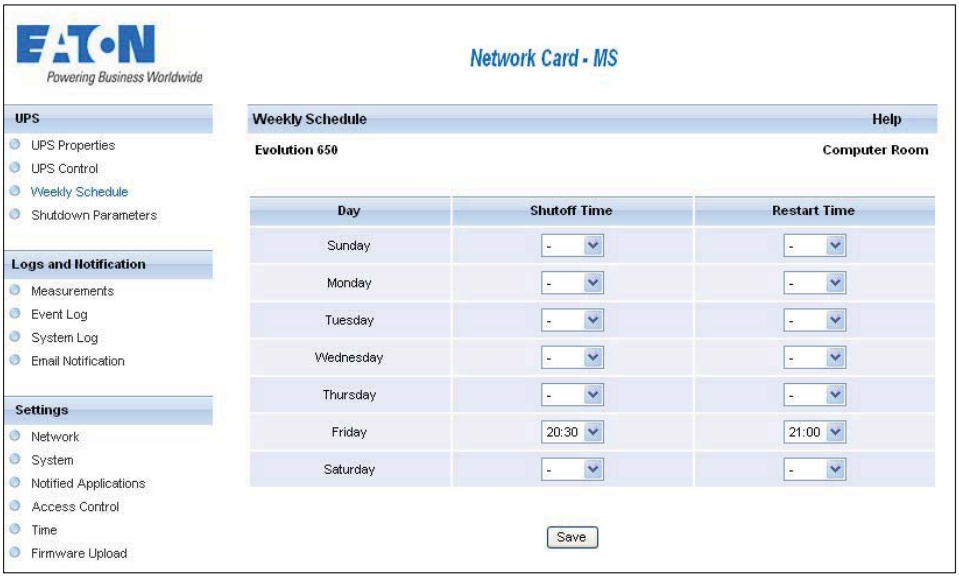


Figure 22. Weekly Schedule Page

NOTE UPS configuration can prevent the shutdown and restart commands from running properly. Refer to the UPS user's guide for more information.

The weekly schedule enables the administrator to optimize power consumption or program a reboot of the protected equipment at a set time.

In a shutdown sequence, the Eaton UPS Management Software connected to the card is informed, ensuring that each machine is shut down correctly before the UPS output is switched off. You can program up to seven UPS shutdown sequences in one week, with a minimum shutdown delay of 30 minutes.

The On/Off sequences are valid only if the card's time has been set properly.

NOTE For security purposes, the administrator must click **Save** and enter the admin user name and password to save modifications or run commands. The default user name and password are both **admin**.

Shutdown Parameters

Select **Shutdown Parameters** from the menu bar to view and configure UPS operating parameters in battery mode and for power restoration (see Figure 23).

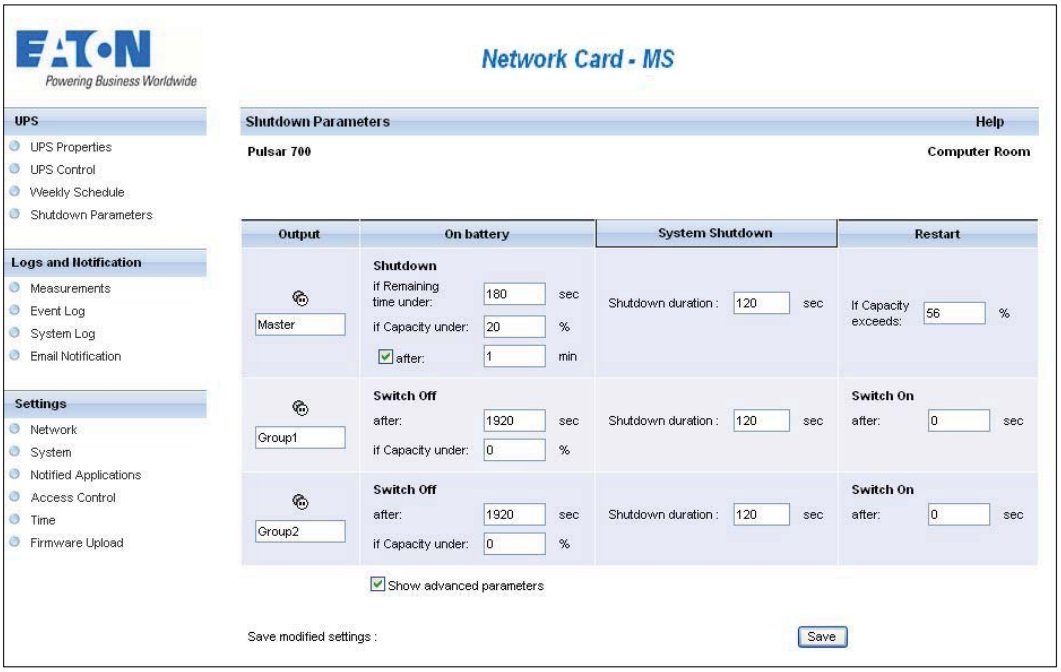


Figure 23. Shutdown Parameters Page (Advanced Parameters Shown)

Click **Show advanced parameters** to display additional parameters for adjusting specific thresholds related to the percentage of remaining battery charge level.

The Output column allows you to name each receptacle (maximum 20 characters).

Since priority is given to the main receptacle, the card cannot supply power to the load segments when the main receptacle power is off.

NOTE For security purposes, the administrator must click **Save** and enter the admin user name and password to save modifications or run commands. The default user name and password are both **admin**.

UPS Shutdown (Master)

- **Shutdown if Remaining time under:** Values are 0 to 99999 seconds (180 by default). This value is the minimum remaining backup time before the shutdown sequence is launched.
- **Shutdown if Capacity is under:** (Advanced parameter.) Values are 0 to 100%. The percentage cannot be less than that of the UPS and is the minimum remaining battery capacity level before the shutdown sequence launches.
- **Shutdown after:** (Advanced parameter.) Values are 0 to 99999 minutes, not validated by default. This value is the operating time in minutes left for users after a switch to backup before starting the shutdown sequence.
- **Shutdown duration** The default values is 120 seconds. This value is the time required for complete shutdown of systems when a switch to backup time is long enough to trigger the shutdown sequences. It is calculated automatically at the maximum of **Shutdown duration of subscribed clients**, but can be modified in the Advanced mode.
- **Restart If Capacity exceeds:** (Advanced parameter.) This value is the minimum battery level to reach before restarting the UPS after utility is restored.

Load Segments Shutdown (Group 1 and Group 2)

NOTE Some UPSs do not support the load segments control feature.

To program the operation time and level in backup mode to manage receptacle load shedding in the event of electric power failure, set the following parameters:

- **Switch Off after:** Values are 0 to 99999 seconds (default is 65535 seconds). The time during which the load segment is supplied, starting from the moment of utility failure.

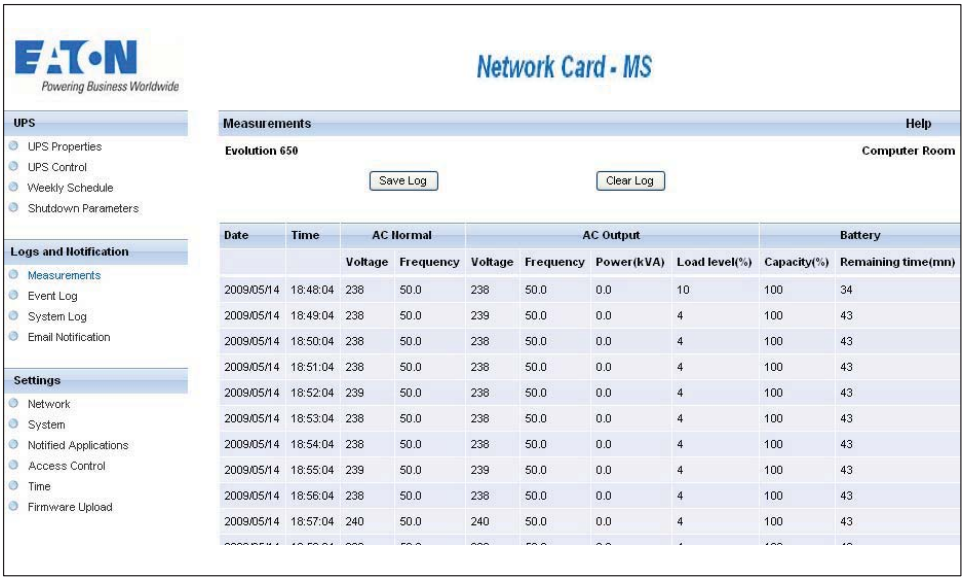
NOTE The **Switch Off after** time includes the load segment shutdown duration.

- **Switch Off if Capacity under:** (Advanced parameter.) Default is 0%. An extra condition for load segment shutdown that can trigger the shutdown sequence before the shutdown duration runs out.
- **Shutdown duration:** The time required for complete shutdown of the systems supplied by the load segment when a load segment shutdown sequence launches. Time can be modified in the Advanced mode.
- **Switch On after:** Values are 0 to 99999 seconds (default is 65535 seconds). The period between main output startup and startup of the relevant programmable load segment; therefore load segment startup can be delayed in relation to the main output.

NOTE Some UPSs do not support the **Switch On after** option.

Measurements

Select **Measurements** from the menu bar to view the measurements for a single-phase UPS (see Figure 24).



Date	Time	AC Normal		AC Output				Battery	
		Voltage	Frequency	Voltage	Frequency	Power(kVA)	Load level(%)	Capacity(%)	Remaining time(mn)
2009/05/14	18:48:04	238	50.0	238	50.0	0.0	10	100	34
2009/05/14	18:49:04	238	50.0	239	50.0	0.0	4	100	43
2009/05/14	18:50:04	238	50.0	238	50.0	0.0	4	100	43
2009/05/14	18:51:04	238	50.0	238	50.0	0.0	4	100	43
2009/05/14	18:52:04	239	50.0	238	50.0	0.0	4	100	43
2009/05/14	18:53:04	238	50.0	238	50.0	0.0	4	100	43
2009/05/14	18:54:04	238	50.0	238	50.0	0.0	4	100	43
2009/05/14	18:55:04	239	50.0	239	50.0	0.0	4	100	43
2009/05/14	18:56:04	238	50.0	238	50.0	0.0	4	100	43
2009/05/14	18:57:04	240	50.0	240	50.0	0.0	4	100	43

Figure 24. Measurements Page

The following measurements are saved and time-stamped:

- **AC Normal Voltage:** Value of the utility voltage supplying the UPS
- **AC Normal Frequency:** Value of the utility frequency supplying the UPS
- **AC Output Voltage:** Value of the UPS output voltage
- **AC Output Frequency:** Value of the UPS output frequency
- **AC Output Power (kVA):** Value of the UPS output power
- **AC Output Load level (%):** Value of the percentage of load at UPS output
- **Battery Capacity (%):** Percentage of charge available in the battery
- **Battery Remaining time (min):** Estimate of the remaining backup time

The save frequency of these values (60 seconds by default) is defined on the System page (see "System Settings" on page 39). Approximately 435 time-stamps can be stored on the card. When the system exceeds this threshold, the oldest time-stamps are deleted automatically.

Save Log enables you to open or save all saved values in comma separated values (CSV) format (compatible with Microsoft Excel type spreadsheets).

Clear Log enables you to delete all records. Enter the user name and password to validate this action.

Event Log

Select **Event Log** from the menu bar to view logged events (see Figure 25). The card can save up to 435 events. When this threshold is exceeded, the system deletes the oldest event when a new one occurs.

Save Log enables you to save values in CSV format.

Clear Log enables you to delete all records. Enter the admin user name and password to validate this action.

NOTE See Table 9 and Table 10 starting on page 24 for a list of managed alarms.

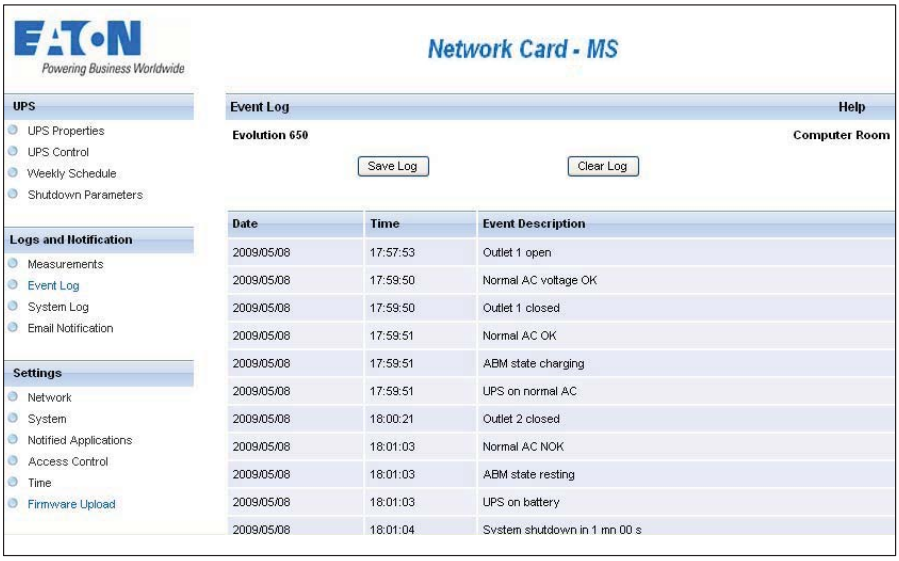


Figure 25. Event Log Page

System Log

Select **System Log** from the menu bar to view system events (see Figure 26.) The card can save up to 435 events. When this threshold is exceeded, the system deletes the oldest event when a new one occurs.

Save Log enables you to save values in CSV format.

Clear Log enables you to delete all records. Enter the admin user name and password to validate this action.

NOTE See Table 9 and Table 10 starting on page 24 for a list of managed alarms.

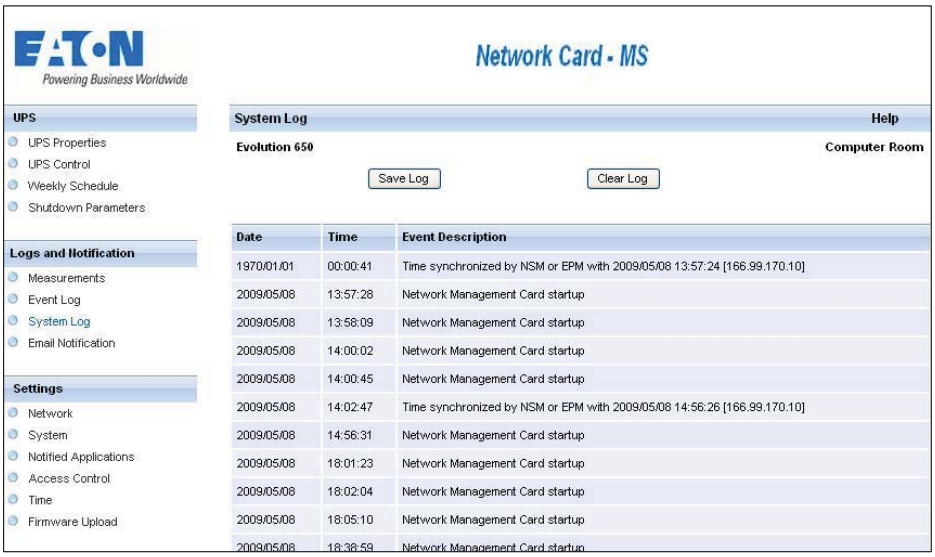


Figure 26. System Log Page

Notification

E-Mail Notification

The card can redirect UPS alarms to an e-mail server to distribute information to the appropriate recipients. The format of these e-mail messages is compatible with mobile telephone transfer systems using the short message service (SMS) standard for text messaging.

NOTE A third-party application is required to convert e-mail messages to SMS.

Select **Email Notification** from the menu bar to configure e-mail recipients (see Figure 27).

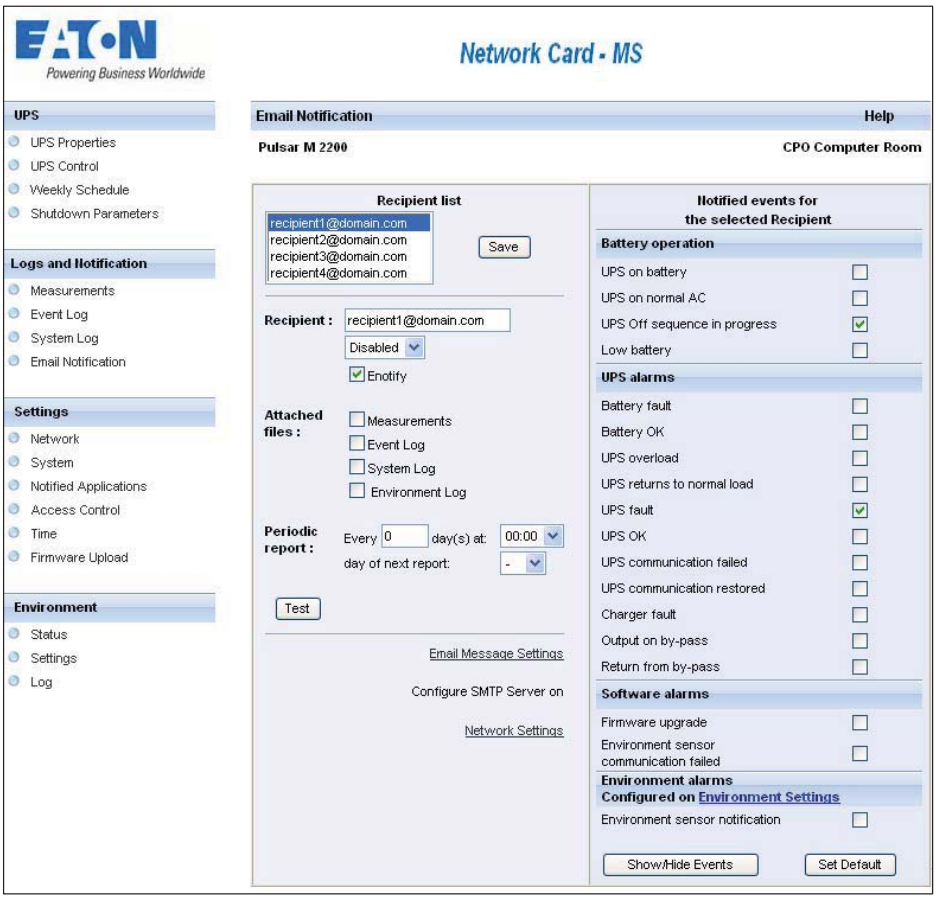


Figure 27. Email Notification Page (Shown with Environmental Monitoring Probe [EMP] option)

On the Email Notification page, you can configure up to four recipients in the Recipient list to receive e-mail messages initiated by the card. Each recipient receives an e-mail message based on specific trigger events, selected from the right side of the page. The card's log also indicates e-mail transmission errors.

Each recipient is configured with the following parameters:

- **Recipient (limited to 99 characters):** The e-mail address of the person or department to receive the e-mail.

  The default value is recipientx@domain.com.

  Select **Enabled** to enable the recipient to receive e-mail messages.

  Enotify: In addition to the Recipient list, you can include Eaton's eNotify Remote Monitoring and Diagnostics Service.
- **Attached files:** The files selected (Measurements, Event log, System log, Environment Log) are attached to the e-mail message. The files are sent in CSV format.
- **Periodic report:** In addition to the e-mail messages sent when events occur, you can send to the recipient at specified intervals a periodic e-mail message with the three (optionally four) log files attached. To configure the first transmission, specify the day, time, and frequency of the next transmission. After this date, the page shows the date and time of the next transmission. Data is sent in CSV format.
- **Email Message Settings:** Access to the message configuration page.
- **Network Settings:** Enables you to enter the name of the SMTP server (see "Network Settings" on page 37).

- **Test:** Enables you to send an e-mail message to the recipient immediately. Use this method to check e-mail transmission—particularly to check access to the SMTP server configured in the Network settings (see "Network Settings" on page 37). A transmission report is added to the system log. The event label in the subject and text of the message is replaced with a test label. If you make any modifications to the page, you must save them before using the Test function.
- **Save:** Saves any modifications.

The right side of the page shows the events that can require notification. By default, only main events, such as battery operation and a few of the UPS alarms, are accessible. All the events display if the Show/Hide Events option is selected. By default, only two events are selected for notification: **UPS Off sequence in progress** and **UPS fault**. You can modify this pre-selection by clicking on other events. You can restore the initial configuration by clicking **Set Default**.

For security purposes, you must click **Save** and enter the admin user name and password to preserve any modifications. By default, the user name and password are both **admin**.

E-Mail Message Settings

Use the Email Message Settings page to customize the content of e-mail messages initiated by the card (see "E-Mail Notification" on page 33). See Figure 28.

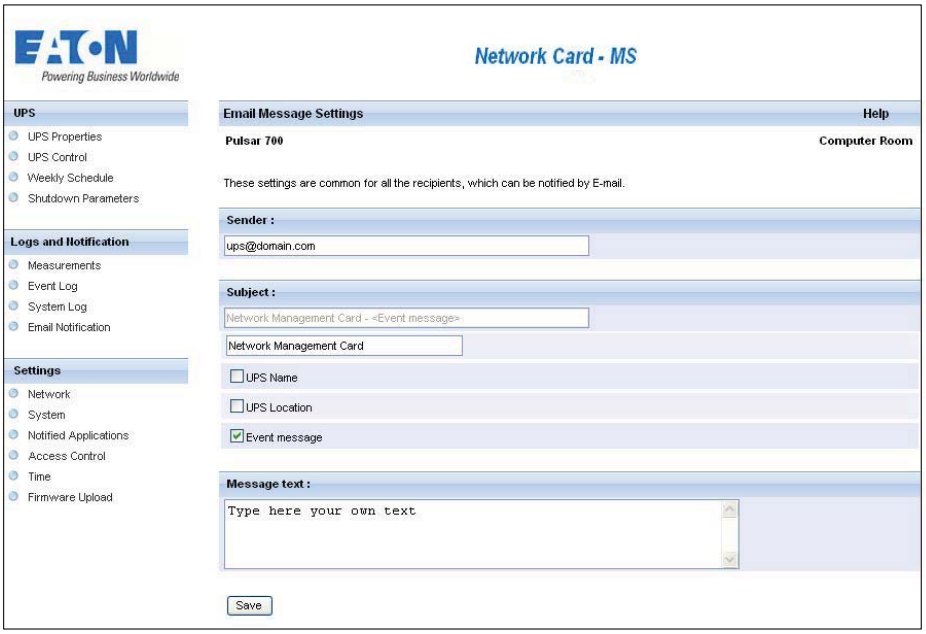


Figure 28. Email Message Settings Page

Common settings for all e-mail message recipients follow:

- **Sender (59 characters maximum):** Identifies the source of the message. The default value is ups@domain.com.

  This field allows free text. However, depending on the SMTP server configuration, the server may check that the domain name contained in the Sender address exists and that the user in the Sender address belongs to this domain.
- **Subject:** Identifies the subject of the e-mail message to be sent. Enter text and select from the following optional check boxes to build the message subject:
  - **UPS Name** specifies the name of the UPS.
  - **UPS Location** displays the geographic location of the UPS (see "System Settings" on page 39).
  - **Event Message** identifies the event generating the e-mail message.

- **Message text:** Allows a maximum of 255 characters.

  As shown in Figure 30, the body of the e-mail message contains:

  - Message text
  - The date and time of the event, as saved in the log
  - URL of the card, enabling a direct link with the card to be established
  - Attachments, as configured for the e-mail recipients
  - Duplication of the subject, if configured

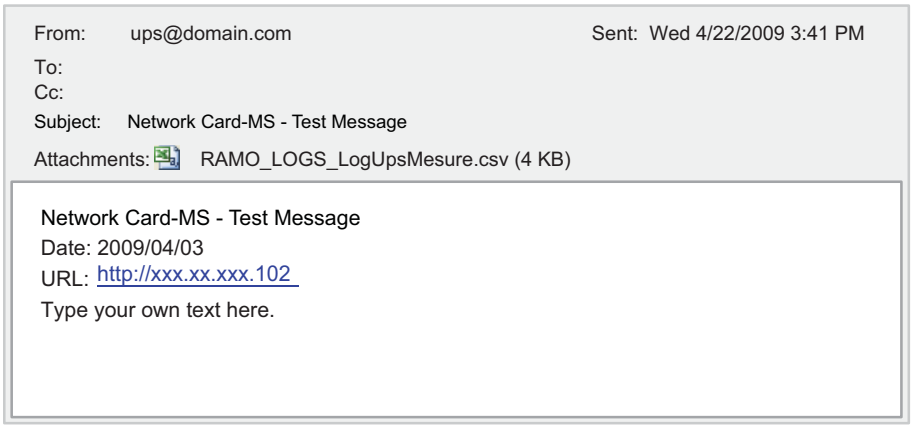


Figure 29. E-Mail Message Example

Sending Text Messages

The card can redirect UPS alarms to an e-mail server. The format of these e-mail messages is compatible with mobile telephone E-mail/SMS transfer systems used by Internet Service Providers (ISPs). The format to be used depends on the service provider.

NOTE A third-party application is required to convert e-mail messages to SMS.

Network Settings

Select **Network** from the menu bar to configure the network parameters of the card and authorize the remote upgrade of the embedded system (see Figure 30).

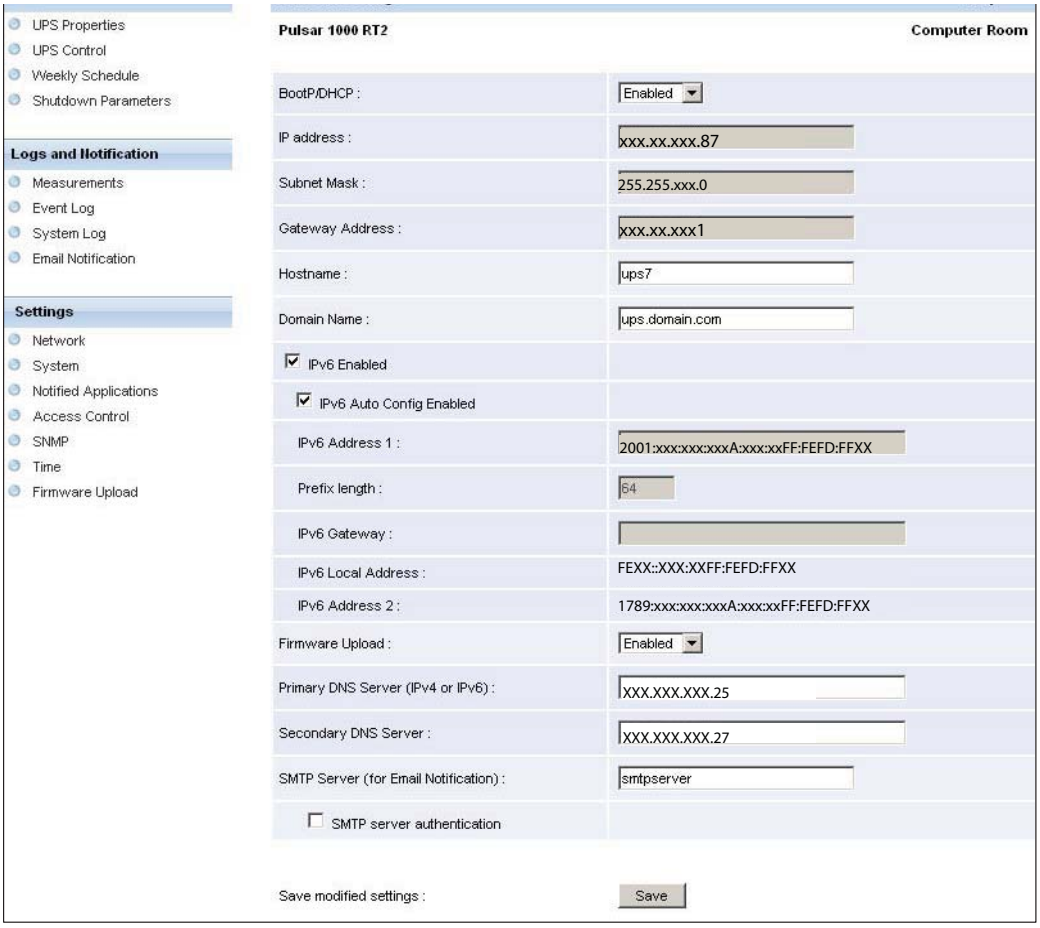


Figure 30. Network Settings Page

Configurable network settings are:

- **IP Address:** Indicates the IP address of the card.
- **Subnet Mask:** Indicates the mask of the subnet of your network.
- **Gateway Address:** Provides the IP address of the gateway to access the stations located outside the card's subnet.
- **Hostname:** Indicates the card host name. The host name is the first part of the fully qualified domain name used by the DNS.

  Since the card does not support NetBIOS protocol, the host name is sent to DNS only if the DHCP server sends the host name with the new IP address. This mechanism is described in the update of the DNS protocol RFC 2136.
- **Domain Name:** Indicates the domain to which the card belongs. The domain name is the part of the fully qualified domain name that follows the host name and is used by the DNS. The default value of the two parameters comprising the fully qualified domain name: **ups.domain.com**.
- **IPv6 Enabled:** Authorizes (choose 'Enabled') IPv6 support.

- **IPv6 Auto Config Enabled:** Authorizes (choose 'Enabled') the card to obtain configuration of IPv6 parameters from an IPv6 router. In this case, no IPv6 parameters are editable.
- **IPv6 Address 1:**
  - If Auto Config is enabled, this field displays the first IPv6 address built from the IPv6 router (not editable).
  - If Auto Config is not enabled, this field is editable and allows users to set a static IPv6 address.

  Prefix length:
  - If Auto Config is enabled, this field displays the prefix received from the router (not editable).
  - If Auto Config is not enabled, this field is editable and allows setting a prefix.

  IPv6 Gateway:
  - If Auto Config is enabled, this field is empty and not editable.
  - If Auto Config is not enabled, this field is editable and allows users to set the default gateway.

  IPv6 Local Address: Displays the IP local address of the card, built from the MAC address. This field is not editable. This field is always available when the IPv6 is enabled.

  IPv6 Address 2:
  - If Auto Config is enabled, this field displays the second IPv6 address built from the IPv6 router (not editable).
  - If Auto Config is not enabled, this field is empty and not editable.

NOTE 1 If the host name is not used, the IP address supplied by the DHCP server must be assigned through Static DHCP Assignment to maintain the connection with the clients installed on the stations to be protected.

NOTE 2 During the first connection, if the DHCP query is not successful, the Network Card-MS starts with the following IP configuration:
IP Address: 192.168.1.2
Subnet Mask: 255.255.255.0
Gateway Address: 0.0.0.0

- **Firmware Upload:** When Firmware Upload is set to **Enabled**, the system authorizes remote updating of the card's embedded software. The default is **Enabled**.
- **Primary DNS Server:** Indicates the IP address of the main DNS server ensuring conversion of the domain name to IP address.
- **Secondary DNS Server:** Indicates the IP address of the secondary DNS server, ensuring conversion of the domain name to IP address if the primary DNS server is not available.
- **SMTP Server (for Email Notification):** Indicates the name or IP address of the local server with which the card connects to send e-mail messages. You can fill in the field either as host + domain name (DNS resolution) or directly with the IP address.

  The default value is **smtpserver**. The card uses the standard port (25) for sending e-mail messages.
- **SMTP server authentication:** Optional. To select this option, select the checkbox and enter the SMTP server user name and password.

For security purposes, you must click **Save** and enter the admin user name and password to save modifications or run commands. The default user name and password are both **admin**.

Reboot the card after any changes to these parameters (see the following section, "System Settings" on page 39).

System Settings

Select **System** from the menu bar to customize the information that displays on the UPS Properties page (see "UPS Properties" on page 16). The System Settings page opens (see Figure 31).

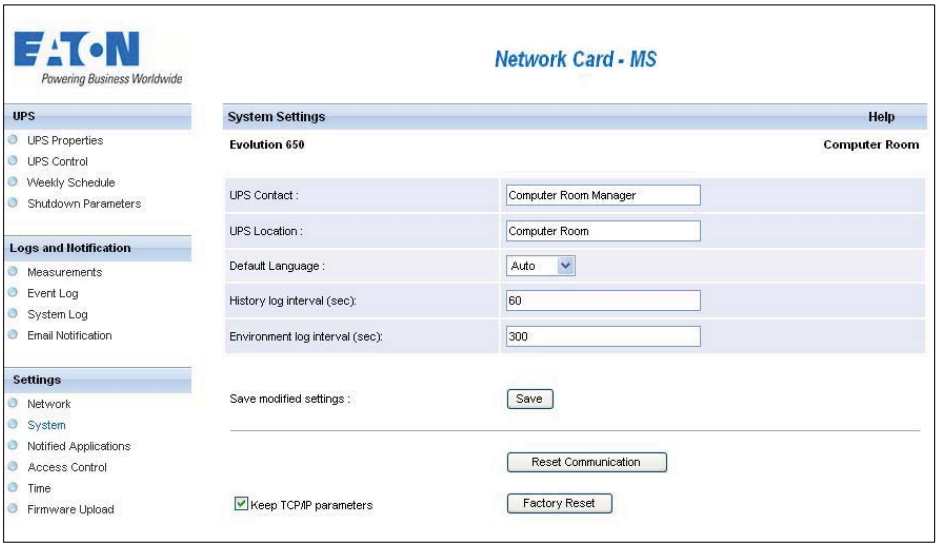


Figure 31. System Settings Page

Configurable system settings are:

- **UPS Contact:** Enables users to enter the name of the person responsible for UPS administration at IT network level and/or electrical maintenance. This text field is limited to 49 characters. This field does not appear on any other Web page. By default, the value is **Computer Room Manager**.
- **UPS Location:** Enables users to enter a description (limited to 31 characters) of the physical location of the UPS in your installation (for example, Computer Room E1-C066). This text displays on the home page. By default, its value is **Computer Room**.
- **Default Language:** Enables initialization of the browser language at card connection. Select one of the available languages (English, French, German, Italian, Spanish, Portuguese, Chinese Simplified, Japanese, Korean, Chinese Traditional, Russian, or Czech). To change the language of the Web interface pages, restart your browser after modification.
- **History log interval (sec):** Enables users to specify a measurement save period. Values are from 5 to 99999 seconds, 60 seconds by default.
- **Environment log interval (sec):** Enables users to specify the temperature and humidity measurement save period. Values are from 60 to 99999 seconds, 300 seconds by default.
- **Save:** Saves any modifications.
- **Reset Communication:** Enables users to perform a remote reboot of the card without modifying the configuration. Specifying this action is required for any changes you made on the Network Settings page. To ensure security, this operation requires admin user name and password.
- **Factory Reset:** Enables users to restore the default configuration of all the card's parameters.

  If the **Keep TCP/IP parameters** checkbox is selected, the IP address, subnet mask, gateway, and BOOTP/DHCP retain their values.

  To ensure security, this operation requires admin user name and password. By default, user name and password are both **admin**.

Notified Applications

Use the Notified Applications page to:

- Display network management system (NMS) applications set to receive notifications from the card. All applications and their main parameters display.
- Add an NMS to notified applications.
- Test the operation of a notified application.

NOTE Network Shutdown Module and NetWatch (on protected server boot) are protection applications that subscribe automatically to the Notified Applications list (see "Protection Applications" on page 74 for more information).

Select **Notified Applications** from the menu bar to open the Notified Applications page (see Figure 32).

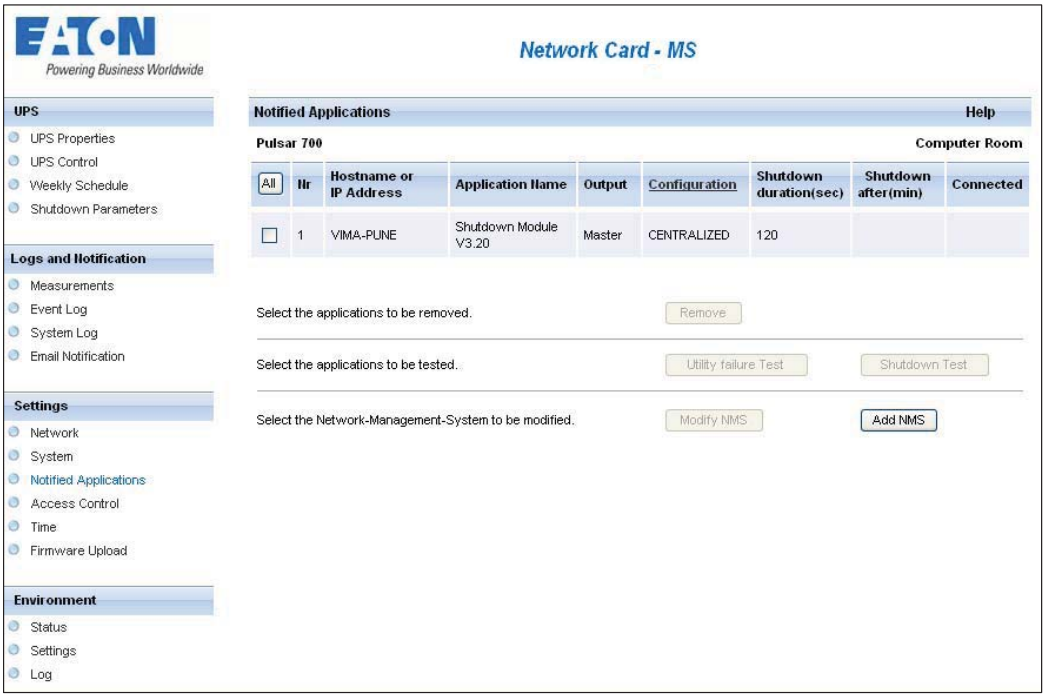


Figure 32. Notified Applications Page

The Notified Applications page displays the following parameters:

- **Check box:** Enables users to select one or more applications. Select **All** to select or clear all check boxes simultaneously.
- **Nr:** Provides the assigned application number.
- **Hostname or Address IP:** By priority, the host name of the computer is displayed when the IP address can be converted into a host name by a Domain Name System (DNS) server, or if the application has been entered as a host name.
- **Application Name:** Provides the user-assigned name.
- **Output:** Provides the name of the UPS output from which the client is powered.

- **Configuration:** Indicates the source of the **Shutdown duration (sec)** and **Shutdown after (min)** values:
  - Local (application).
  - Central (card). See "Central Shutdown Configuration" on page 42.
- **Shutdown Duration:** Indicates the time (in seconds) necessary to properly shutdown the computer.
- **Shutdown after:** Optional. Indicates the time available (in minutes) from the power failure until the launch of the UPS shutoff sequence.
- **Connected**: This value is set to YES if the notified application connects through TCP protocol.
- **Remove:** Enables the user to remove selected applications.

NOTE If you apply **Remove** to a protection application (Network Shutdown Module or NetWatch), the application will disappear and then automatically re-subscribe and reappear on the Notified Applications page.

- **Utility failure Test:** Tests to verify that the selected application can be reached over the network, two alarms are sent (spaced 60 seconds apart):
  - Utility failure
  - Utility restored
- **Shutdown Test:** Tests to simulate a UPS end-of-discharge operation. It enables an easy check to see if the server protection works correctly.
  - No intervention on the UPS is required.
  - The selected applications process the simultaneous alarms and perform an actual shutdown sequence.

WARNING

The **Shutdown Test** generates an actual shutdown sequence of servers on which the Network Shutdown Module application is running.

- **Modify NMS:** Enables users to modify the SNMP trap receiver information.
- **Add NMS:** Enables users to add an SNMP trap receiver to the Notified Application list.

Selecting either **Add NMS** or **Modify NMS** opens a new window with the following configurable parameters:

- Application Name
- Hostname or IP Address
- Protocol: SNMP protocol version: Disabled, V1, V3, or V1&V3
- Trap Community (only used in V1)
- MIB filter (by default, the selected MIB filter corresponds to UPS brand: Pulsar or Powerware)

Figure 33 shows an example of the Network Management System page.

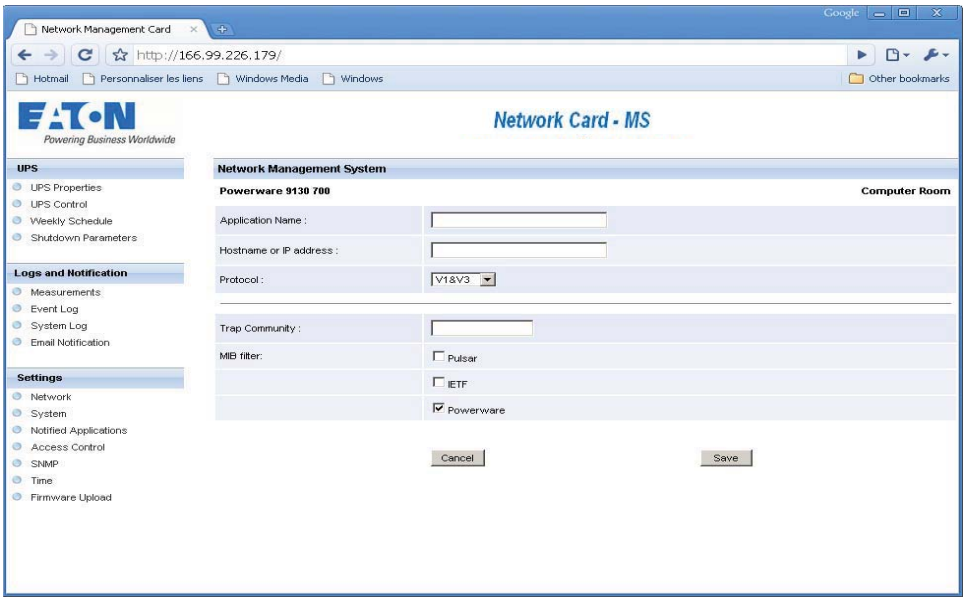


Figure 33. Network Management System Page (Add NMS Shown)

Central Shutdown Configuration

Use the Central Shutdown Configuration page to define the shutdown and notification settings used by the Network Shutdown Modules that connect to the Network Card-MS.

NOTE This feature is not supported by NetWatch.

To view and modify Central Shutdown Configuration parameters:

1. Select **Notified Applications** from the menu bar. The Notified Applications page opens.
2. Select the **Configuration** column head in the Notified Applications table to open the Central Shutdown Configuration page (see Figure 34).

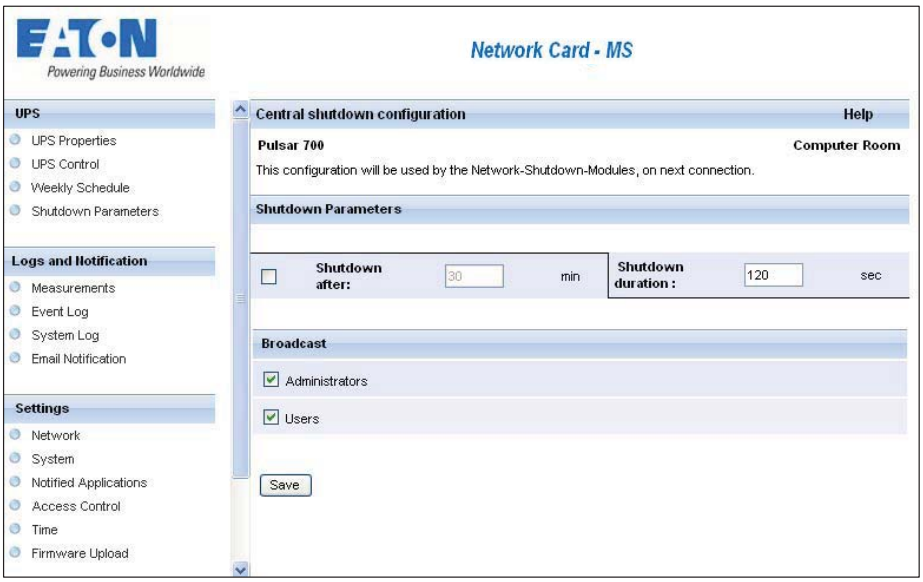


Figure 34. Central Shutdown Configuration Page

3. Change parameters as needed:
   - **Shutdown after:** Optional. The time period from the time of the power failure until the launch of the UPS shutdown sequence.
   - **Shutdown duration:** The shutdown duration necessary to properly shut down the computer.
   - **Broadcast:** Network notifications to the Administrators and Users groups on events.
4. Click **Save** and then **OK** to confirm changes.

Access Control

Select **Access Control** from the menu bar to configure the parameters to allow secure access to the card using a browser (see Figure 35).

NOTE 1 If you are not already logged on, you will be prompted to enter your user name and password before accessing this page.

NOTE 2 Restart the card to activate any Access Control configuration changes.

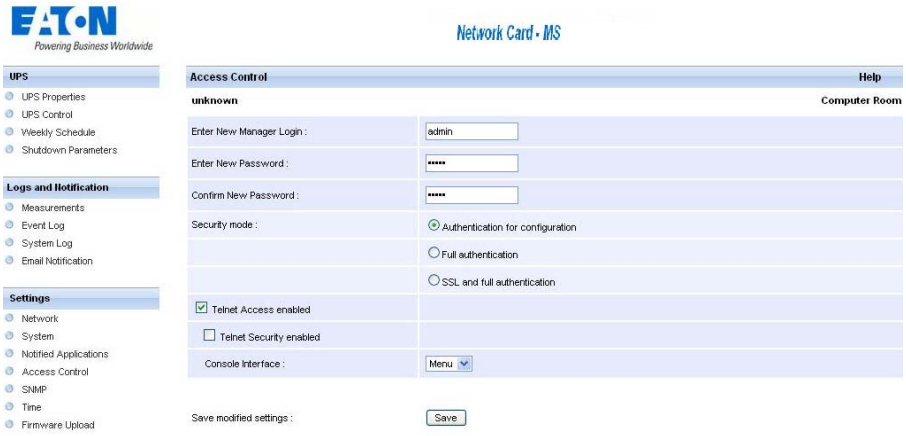


Figure 35. Access Control Page

Configurable access control settings are:

- **Enter New Manager Login:** The login user name. This text field (limited to ten characters) enables secure access and modification of pages. Default value is **admin**.
- **Enter New Password:** This text field (limited to ten characters) enables secure access to Configuration menu pages. Default value is **admin**.
- **Confirm New Password:** Re-enter the new password.
- **Security mode:** Manages the various authentication methods for page access:
  - **Authentication for configuration:** Only the configuration pages are protected by user name and password.
  - **Full authentication:** All pages are protected by a user name and password.
  - **SSL and full authentication:** All pages are protected by user name and password and are accessible only in SSL.

When **SSL and full authentication** is selected, access to the Web interface is made in secure mode (https). Connections with Network Shutdown Modules stay in standard mode (secure TCP).

SSL Security Implementation:

- SSL Version 3.0
- Transport Layer Security (TLS) Version 1.0
- Method: TLS_RSA_WITH_512_MD5
- Auth: RSA
- Key Exchange: RSA
- Encryption: RCA_512
- Digest: MD5

NOTE Changes take effect after a card reboot.

- **Telnet access:** This parameter enables or disables access to the setting parameters interface using a Telnet/SSH/CLI connection.
- **Telnet security:** This parameter defines the protocol for access to the setting parameters interface. These two values are exclusive.
- **TELNET:** The data are read or written using an unsecure access.
- **SSH:** The data are read or written using a secure access.
- **Console interface:** This parameter defines the method for accessing the setting parameters. The two values are exclusive. The selected HMI is available for the TCP/IP connection (RS232 not concerned) and for the two protocols (Telnet, SSH). The new value will be taken into account after a manual reset of the NMC.
  - **MENU:** The human machine interface (HMI) is a menu interface. The parameters are accessible using pre-defined menus.
  - **CLI:** The CLI provided access to the parameters. The parameters are exclusive to each other.
- **Save:** Saves any modifications.

SNMP Settings

Select SNMP from the menu bar. To access this page, the login and password are systematically requested if they have not already been entered. This menu enables configuration of the SNMP security parameters (see Figure 36).

Figure 36. SNMP Settings Page

- **SNMP Version:** This field allows the user to select the SNMP protocol version: {Disabled, V1, V3 are supported by the card}.
- **SNMP Community Read-Only:** Provides the SNMPv1 Read community name that identifies a sub-group attached to a network manager or a logical entity. The card and the clients must share the same community name to communicate.
- **SNMP Write Enabled:** Enables the SNMP write function.
- **SNMP Community Write:** Displays only if SNMP Write is enabled. The SNMPv1 Write community name that identifies a sub-group attached to a network manager or a logical entity. The card and the clients must share the same community name to communicate.
- **Read-Only User:** Identifies the login of the user in the SNMPv3 version, which is authorized to read only SNMP variables.
- **The Read-Only Security Level:** Selects the security level:
  - No Auth No Priv: the user must not use authentication and privacy to access to SNMP variables.
  - Auth No Priv: the user must use authentication and NOT privacy to access to SNMP variables.
  - Auth Priv: the user must use authentication and privacy to access to SNMP variables.
- **The Read-Only Password:** Allows administrators to specify a new password for the Read-Only User. Its length must range between 8 and 24 characters and use only letters, numbers, and <>&@#%_=:;,./?|$*() symbols.
- **Read-Write User:** Identifies the login of the user in the SNMPv3 version, which is authorized to read and write SNMP variables.
- **The Read-Write Security Level:** Selects the security level:
  - No Auth No Priv: the user must not use authentication and privacy to access to SNMP variables.
  - Auth No Priv: the user must use authentication and NOT privacy to access to SNMP variables.
  - Auth Priv: the user must use authentication and privacy to access to SNMP variables.
- **The Read-Write Password:** Allows administrators to specify a new password for the Read-Write User. Its length must range between 8 and 24 characters and use only letters, numbers, and <>&@#%_=:;,./?|$*() symbols.
- **The Notification username:** Allows administrators to specify the "username" field for SNMPv3 notifications. IThis field has to be defined in the applications that recieved those notifications.
- **Save:** Saves any modifications.

Date and Time

You can set the card's date and time manually or set it to synchronize with the NTP server from the Setting Time page (see Figure 37).

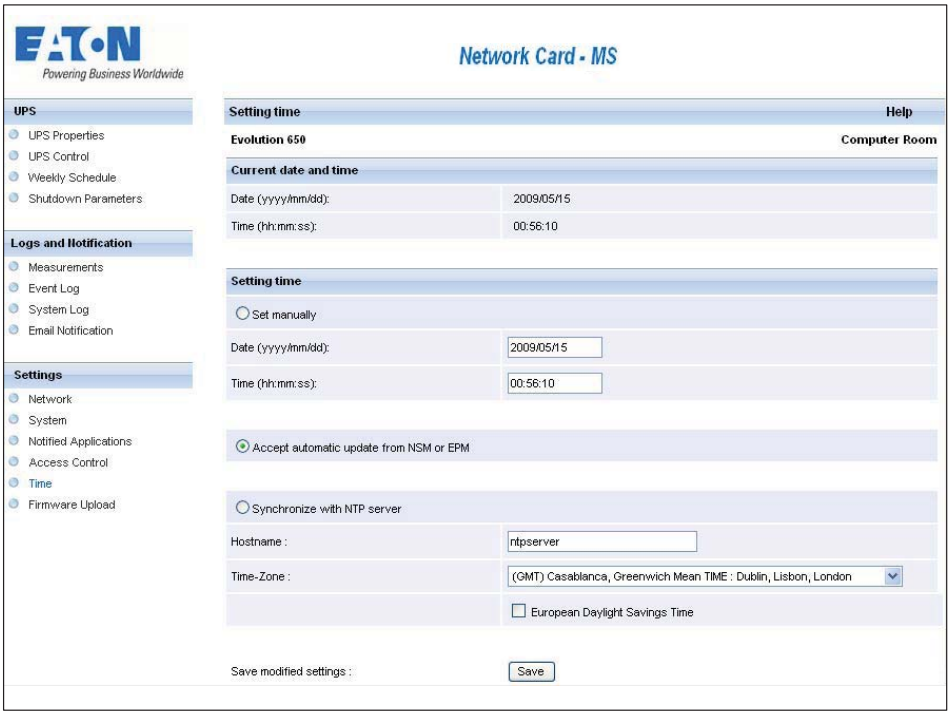


Figure 37. Setting Time Page

To set the date and time:

1. Click **Time** from the menu bar to open the Setting Time page.
2. To manually set the date and time, select **Set manually** and enter values in the **Date** and **Time** fields, and click **Save**. Maximum drift is ±2 min/month.
3. To have the time automatically set by the Network Shutdown Module (NSM) or the Enterprise Power Manager (EPM) , select **Accept automatic update from NSM or EPM**.
4. To synchronize the time with the NTP server, select **Synchronize with NTP server**. Selecting this option enables a connection with a time server, available on either the company's internal network or the Web. This server communicates GMT time.
   - Enter the IP address or host name of the time server.
   - Select the time zone for your geographic area from the list.
   - **European Economic Community (EEC) countries only.** Select **European Daylight Savings Time**. The time automatically adjusts to summer and winter time changes.

The time is updated every five hours to minimize any time drift. After two attempts, if the NTP server is not accessible, the card shifts to manual mode. The card uses the NTP protocol (UDP 123 port). The firewall must be set to transmit queries outside the intranet. If the timer server fails, an error message displays at the top of the page.

5. Click **Save** to connect with the server and set the date and time.

NOTE 1 After startup, if the card is in manual mode, or if no NTP server was reached, the card initializes at 00:00 01/01/1970.

NOTE 2 If the card is installed in a UPS that supports time-stamping, the card's time is automatically synchronized with that of the UPS.

Environmental Monitoring Probe

The EMP is an optional accessory that measures temperature and humidity through two external contacts. The EMP is connected with a standard network cable to the Network Card-MS Sensors port. The card automatically detects the EMP presence. The Network Card-MS Web page displays an Environment section on the menu bar with the following items:

- Status
- Settings
- Log

EMP characteristics:

- Temperature measurement from 0 to 70°C with ± 1°C accuracy
- Humidity measurement from 0 to 100% with ± 6% accuracy
- Time-stamped minimum and maximum readings for temperature and humidity
- Choice of temperature readings in Celsius or Fahrenheit
- High and low thresholds, hysteresis, and offset that are adjustable through the Web interface
- Option of including notification of status changes by e-mail, SMS, or SNMP trap
- Position detection of two dry contacts (maximum sensor/contact distance: 20m)
- Name and status of each configurable contact
- Recording of events and measurements in the card log
- Possibility of shutting down the installation safely if one of the thresholds is exceeded or dry contact status changes
- Connection to the Network Card-MS by Category 5 straight RJ-45 network cables (maximum card/EMP distance: 20m)

Environment Status

The Environment Status page displays the status of the optional EMP (see Figure 38).

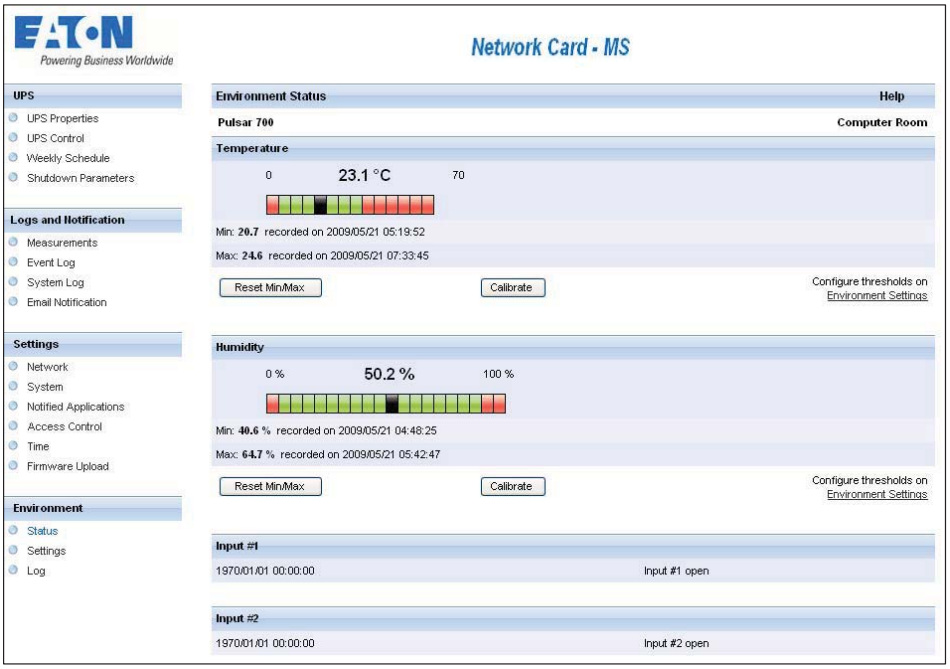


Figure 38. Environment Status Page

Temperature and humidity measurements are displayed in a graduated bar (see Figure 39).

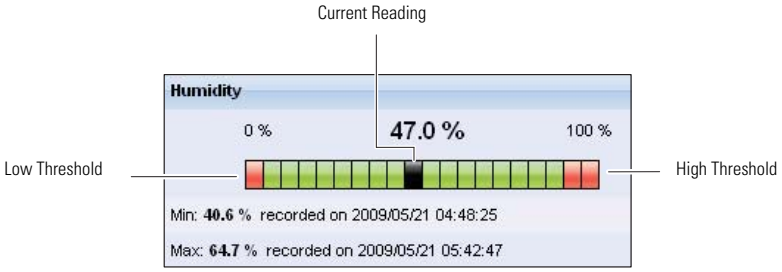


Figure 39. Graduated Bar (Humidity Bar Shown)

Status parameters:

- **Cursor:** Indicates the current reading.
- **Red zones**: The red zones to the left and right represent the low and high thresholds that can be set on the Environment Settings page.

  If notification is turned on, an alarm is generated when the measured value enters one of these zones.
- **Reset Min/Max:** For temperature or humidity, displays the time-stamped minimum and maximum since the previous reset.
- **Calibrate:** The EMP is factory-calibrated, but you can apply an offset to adjust the measurement.
- **Input #1** and **Input #2:** The position of the two contacts acquired by the EMP.

  The last status change of each contact is time-stamped.

The Internet browser updates this page every 10 seconds.

Environment Settings

On the Environment Settings page, you can set the temperature and humidity thresholds that trigger a notification and a graceful shutdown of the protected systems (see Figure 40).

NOTE If you are not already logged on, you will be prompted to enter your user name and password before accessing this page.

The EMP measures temperature and humidity, and gives the status of the two contacts (used for door, alarms, or generator unit).

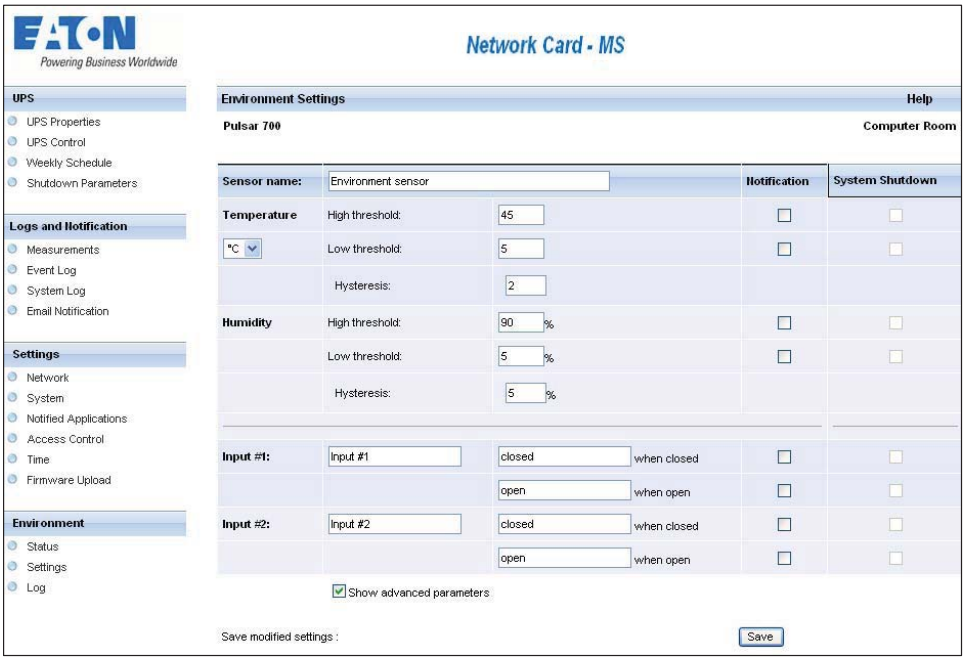


Figure 40. Environment Settings Page (Advanced Parameters Shown)

Configurable environment settings are:

- **Sensor name:** The name given to the EMP. Eaton recommends using a name that identifies the location of the EMP.
- **Temperature:** Choice of the temperature unit (°C or °F) from the selection box.
- **High threshold (temperature):** If the temperature exceeds the set threshold, a notification is triggered if enabled. The default value is 40°C / 104°F.
- **Low threshold (temperature):** If the temperature falls below the set threshold, a notification is triggered if enabled. The default value is 5°C / 41°F.
- **Hysteresis (temperature):** Hysteresis must be set to prevent multiple notifications if temperature fluctuates around a threshold. The default value is 2°C / -3.6°F.

  The high alarm disappears when the value drops below the high threshold minus hysteresis value.

  The low alarm disappears when the value returns above the low threshold plus the hysteresis value.

- **High threshold (humidity):** If the humidity exceeds the set threshold, a notification is triggered if enabled. The default value is 90%.
- **Low threshold (humidity):** If the humidity falls below the set threshold, a notification is triggered if enabled. The default value is 5%.
- **Hysteresis (humidity):** Hysteresis must be set to prevent multiple notifications if humidity fluctuates around a threshold. The default value is 5%.

  The high alarm disappears when the value drops below the high threshold minus the hysteresis value.

  The low alarm disappears when the value returns above the low threshold plus the hysteresis value.
- **Input #1** and **Input #2:** An identifier corresponding to the acquired contact (for example: rack door, air conditioning, or generator unit). The maximum length is 28 characters.
- **when closed** and **when open:** The names associated with the two contact positions (for example "open" and "closed" for a door, "on" and "off" for a generator).

Chapter 4 Using the Telnet/SSH/CLI Interface

This chapter describes how to use the Telnet/Secure Shell (SSH)/Command Line Interface (CLI) (Telnet/SSH/CLI) interface to access the Network Card-MS.

Overview

Telnet is a terminal emulation protocol you can use to access and configure the parameters for the Network Card-MS. Telnet is not a secure protocol, but when used with SSH, the connection is secure.

- A MENU interface that groups the configuration parameters in pre-defined menus for easy navigation
- A CLI that allows direct access to the individual configuration parameters

Telnet access to the Network Card-MS is enabled by default, with SSH security enabled and the MENU interface selected.

Session Constraints

Up to five sessions with the Network Card-MS may be open at one time. Each open session must have the same protocol configuration. You cannot open sessions with different protocols.

Table 11 lists possible session protocol configurations.

Table 11. Session Protocol Configurations

Security	Interface
TELNET	MENU
TELNET	CLI
SSH	MENU*
SSH	CLI

NOTE *Default setting

Available Settings

Most of the configuration parameters available through the Web interface are also available through the Telnet/SSH/CLI interface. For a detailed explanation of each parameter, default, and possible values, see "Using the Network Card-MS Web Interface" on page 19. For a quick reference of default parameters, see Table 3 on page 8.

NOTE You cannot configure e-mail recipients through the Telnet/SSH/CLI interface.

Depending on the current configuration of the Network Card-MS, some parameters may not be available. Table 12 lists the type of each parameter or message coded by color:

Table 12. Color Indicator for Parameter or Message Type

Security	Interface
Read-write or write-only parameter	Light green
Read-only parameter	Yellow
Warning message	Green
Error message	Light red

Starting and Ending a Session

To start a session:

1. Open a terminal emulator or other session manager such as PuTTY.
2. At the prompt, type **telnet [*IPaddress*]**, where [*IPaddress*] is the IP address of the Network Card-MS.
3. If the connection is successful, the server responds with "**Connected to [*IPaddress*],**" and a welcome message.
4. At the Login and Password prompts, enter your user name and password.

   If the login is successful, the configured interface displays: either MENU (the Main Menu) or CLI (the **#>** prompt).
5. If you are using the MENU interface, continue to "Using the MENU Interface". If you are using the CLI interface, continue to "Using the CLI Interface" on page 54.

To end a session in either interface, enter **quit** at any time.

Using the MENU Interface

The MENU interface is available with the Telnet and SSH protocols and is in English only.

Menu Structure

The MENU interface groups the configuration parameters into the same menus and submenus available through the Web interface (for details about the parameters, see "Available Settings" on page 52. Table 13 on page 54 shows the parameters arranged in the MENU interface selection hierarchy.

Using the Menus

To use the menus, type the number of the menu item you want to execute and then press Enter. Using Figure 41 as an example, type **2** and press Enter to access the Trap Receiver parameters.

To return to the previous menu from any screen, type **0** and press Enter to exit the current menu.

```
------------------------------------------------------------
Eaton Network Card-MS
Main menu
------------------------------------------------------------

  1 : Reset
  2 : Network settings
  3 : Trap receivers
  4 : System settings
  5 : Shutdown settings
  6 : Access control
  7 : Date and Time
  8 : Environment settings
  9 : Set login password to default
  10 : Default configuration

  0 : Exit
------------------------------------------------------------
```

Figure 41. MENU Interface Main Menu

To close the session from any menu screen, enter **quit**.

Table 13 provides an overview of the menu tree for the MENU interface selection hierarchy.

Table 13. MENU Selection Hierarchy

Main Menu Item	Submenu	Secondary Submenu	Description
Reset	—	—	Resets the card.
Network settings	MAC address, IP address, and other parameters	—	Configures the network parameters and authorizes remote upgrades
	SMTP menu	Host name and other parameters	Configures the SMTP server.
	SNMP menu	Version and other parameters	Configures the SNMP versions v1 and v3.
Trap receivers	Receiver 1 Receiver 2 Receiver 3	Host name, Protocol, and other parameters for each receiver	Lists the stations receiving traps and configures the traps. Maximum of three.
System settings	UPS contact, UPS location, and other parameters	—	Customizes information on the UPS Properties pages.
Shutdown settings	Outlet 1 (main or master) Outlet 2 Outlet 3	Name and other parameters for each outlet	Defines the UPS behavior during a shutdown.
Access control	Login, Password, and other parameters	—	Configures secure access to the card.
Date and Time	Date, Hour, and other parameters	—	Sets the date and time.
Environment settings	Temperature Humidity Input#1 Input#2	High threshold settings for temperature and humidity, as well as identifiers for inputs	Defines the settings for environmental sensors.
Set login password to default	—	—	Resets the login and password to the defaults
Default configuration	—	—	Resets all parameters to their defaults and restarts the card.

Using the CLI Interface

The Command Line Interface (CLI) allows direct access to the individual configuration parameters.

Usage Guidelines

Type a command at the **#>** prompt and press Enter. A recognized command is processed; otherwise a warning message is returned.

Blank characters are not allowed in commands, except inside strings.

Enclose strings in double quotes (“). For example, name a server “My Server” by sending the string **My Server** as part of the command.

General Commands

Use general commands to open, close, and control sessions (see Table 14).

Table 14. General CLI Interface Commands

help or ?	**Display help about a specific command.**
Syntax	help [command] or [command] ?
Example	#> help getNetwork or #> getNetwork ?
setEcho	**Hide, or not, all characters. If hidden, each character entered is replaced by an asterisk (*).**
Syntax	setEcho [option]
Options	ON | OFF
Example	#> setEcho ON
quit	**Close a current CLI session.**
Syntax	quit
Example	#> quit
reset	**Reset the software.**
Syntax	reset
Example	#>
version	**Get information about the sotware version.**
Syntax	version
Example	#> version
defaultPass	**Return to the default login and password.**
Syntax	defaultPass
Example	#> defaultPass
defaultConf	**Return to the default configuration.**
Syntax	defaultConf
Example	#> defaultConf

Network Commands

Use network commands to administer network parameters and authorizations (see Table 15).

Table 15. Network Commands

getNetwork	**Read a network setting.**
Syntax	getNetwork [option1] [option2] . . .
Options	DHCP | IPAddress | IPMask | IPGateway | HostName | DomainName | IPv6Enable | IPv6AutoConf | IPv6Address1 | PrefixLength | IPv6DefaultGateway | IPv6LocalAddress | IPv6Address2 | PrimaryDNS | SecondaryDNS | FirmwareUpgrade
Example	#> getNetwork IPAddress

Table 15. Network Commands (Continued)

setNetwork	**Modify a network setting.**
Syntax	setNetwork [option1=xxxx] [option2=yyyy] . . .
Options	DHCP = 0 | 1(0=No, 1=Yes) IPAddress = "xxx.xxx.xxx.xxx " (See Note 1) IPMask = "xxx.xxx.xxx.xxx" (See Note 1) IPGateway = "xxx.xxx.xxx.xxx" (See Note 1) HostName = "xx..xx" DomainName = "xx..xx" IPv6Enable = 0 | 1(0=No, 1=Yes) IPv6AutoConf = 0 | 1(0=No, 1=Yes)(See Note 2) IPv6Address1 = ""(See Note 3) PrefixLength = "xx"(See Note 3) IPv6DefaultGateway [=] (See Note 3) PrimaryDNS = "xx..xx" SecondaryDNS = "xx..xx" FirmwareUpgrade = 0 | 1(0=No, 1=Yes)
Example	#> setNetwork IPAddress="166.99.18.129" IPMask="255.255.248.0"
Comments	Note 1: Setting is write-enabled depending on "DHCP" status. Note 2: Setting is write-enabled depending on "IPv6Enable" status. Note 3: Setting is write-enabled depending on "IPv6AutoConf" status.
getSMTP	**Read an SMTP setting.**
Syntax	getSMTP [option1] [option2] . . .
Options	HostName | Authentication | Login | Password
Example	#> getSMTP HostName
Comments	For Password, each character is replaced with an asterisk (*).
setSMTP	**Modify an SMTP setting.**
Syntax	setSMTP [option1=xxxx] [option2=yyyy] . . .
Options	HostName = "xx..xx" Authentication = 0 | 1(0=No, 1=Yes) Login = "xx..xx"(See Note 1) Password = "**..**"(See Notes 1, 2)
Example	#> setSMTP HostName = "Smtp Server"
Comments	Note 1: Setting is write-enabled depending on "Authentication" status. Note 2: Remember to set echo off.
getSNMP	**Read an SNMP setting.**
Syntax	getSNMP [option1] [option2] . . .
Options	snmpVersion | ReadCommunityName | WriteCommunitySecurityLevel | WriteCommunityName | User | UserSecurityLevel | UserPassword | Admin | AdminSecurityLevel | AdminPassword | NotificationUserName | FirmwareUpgrade
Example	#> getSNMP User
Comments	For UserPassword and AdminPassword, each character is replaced with an asterisk (*).

Table 15. Network Commands (Continued)

setSNMP	Modify an SNMP setting.
Syntax	getSNMP [option1] [option2] . . .
Options	snmpVersion = Disabled | V1 | V3 | V1V3 ReadCommunityName = "xx..xx"(See Note 1) WriteCommunitySecurityLevel = 0 | 2(0=No, 2=Yes) WriteCommunityName = "xx..xx"(See Notes 1, 2) User = "xx..xx"(See Note 1) UserSecurityLevel = 1 | 2 | 3(1=No Auth, 2=Auth NoPriv, 3=Auth Priv)(See Note 1) UserPassword = "xx..xx"(See Notes 1, 3, 5, 6) Admin = "xx..xx"(See Note 1) AdminSecurityLevel = 1 | 2 | 3(1=No Auth, 2=Auth NoPriv, 3=Auth Priv)(See Note 1) AdminPassword = "xx..xx"(See Notes 1, 4, 5, 6) NotificationUserName = "xx..xx" FirmwareUpgrade = 0 | 1(0=No, 1=Yes)
Example	#> setSNMP User = "readuser"
Comments	Note 1: Setting is write-enabled depending on "snmpVersion" status. Note 2: Setting is write-enabled depending on "WriteCommunitySecurityLevel" status. Note 3: Setting is write-enabled depending on "UserSecurityLevel" status. Note 4: Setting is write-enabled depending on "AdminSecurityLevel" status. Note 5: Remember to set echo off. Note 6: Minimum length is 8 characters.

Trap Receiver Commands

Use trap receiver commands to configure the stations receiving traps (see Table 16). The maximum number of trap receivers is three.

Table 16. Trap Receiver Commands

getTrap	
Syntax	getTrap N [option1] [option2] . . .
Options for N = 0 | 1| 2	HostName | Name | TrapCommunity | TrapSnmpVersion | TrapSelectedMibs
Example	#> getTrap 1 HostName Name
setTrap	
Syntax	setTrap N [option1] [option2] . . .
Options for N = 0 | 1| 2	HostName = "xx..xx" Name = "xx..xx" TrapCommunity = "xx..xx" TrapSnmpVersion = Disabled | V1 | V3 | V1V3 TrapSelectedMibs = 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7(See Note 1)
Example	#> setTrap 0 Name="My application"
Comment	Note 1:bit0 = 1: MIB Pulsar enabled bit1 = 1: Power MIB enabled bit2 = 1: MIB IETF enabled

System Commands

Use system commands to customize the information about the UPS (see Table 17).

Table 17. System Commands

getSystem	
Syntax	getSystem [option1] [option2] . . .
Options	Contact | Location | upsCustomName | Language
Example	#> getSystem Location
setSystem	
Syntax	setSystem [option1] [option2] . . .
Options	Contact = "xx..xx" Location = "xx..xx" upsCustomName = "xx..xx" Language = AUTO | FRE | ENG | SPA | GER | ITA | CHI | JPN | KOR | CZI | RUS
Example	#> setSystem Location="my office"
getHistSyst	
Syntax	getHistSyst [option]
Options	Interval
Example	#> getHistSyst Interval
setHistSys	
Syntax	setHistSyst [option]
Options	Interval = xx(10 to 2147483647 in seconds)
Example	#> setHistSyst Interval=12

Shutdown Commands

Use shutdown commands to define UPS behavior during a shutdown (see Table 18).

Table 18. Shutdown Commands

getShutdown	
Syntax	getShutdown N [option1] [option2] . . .
Options for N = 0 | 1| 2	Options for N=1: iName | RunTimeToEmptyLimit | RemainingCapacityLimit | ShutdownTimerSelected | ShutdownTimer | ShutdownDuration | RestartLevel Options for N=2 or 3: iName | ShutdownTimer | RemainingCapacityLimit | ShutdownDuration | StartupTimer
Example	#> getShutdown 1 ShutdownDuration
setShutdown	
Syntax	setShutdown N [option1] [option2] . . .
Options for N = 0 | 1| 2	Options for N=1: iName = "xx..xx" RunTimeToEmptyLimit = xx(0 to 99999 in seconds) RemainingCapacityLimit = xx(0 to100 in seconds) ShutdownTimerSelected = 0 | 1(0=No, 1=Yes) ShutdownTimer = xx(0 to 5999940/60 in minutes) ShutdownDuration = xx(120 to 9999 in seconds) RestartLevel = xx(0 to 100%) Options for N=2 or 3: iName = "xx..xx" ShutdownTimer = xx(99 to 99999 in seconds) RemainingCapacityLimit = xx(0 to 100 in seconds) ShutdownDuration = xx(120 to 9999 in seconds) StartupTimer = xx(0 to 65535 in seconds)
Example	#> setShutdown 1 ShutdownDuration=120

Access Control Commands

Use access control commands to configure secure access to the card (see Table 19).

Table 19. Access Control Commands

getAccess	
Syntax	getAccess [option1] [option2] . . .
Options	Login | Password | Security
Example	#> getAcess Login
Comments	For Password, each character is replaced with an asterisk (*).
setAccess	
Syntax	setAccess [option1] [option2] . . .
Options	Login = “xx..xx“ Password = “**..**“(See Note 1) Security = 1 | 2 | 3(1=configuration pages, 2=full authorization, 3=full authorization and SSL)
Example	#> setAccess Security=3
Comments	Note 1: Remember to set echo off.
getTelnet	
Syntax	getTelnet [option1] [option2] . . .
Options	Access | Security | Console
Example	#> getTelnet Security
setTelnet	
Syntax	setTelnet [option1] [option2] . . .
Options	Access = 0 | 1(0=Disabled, 1=Enabled) Security = 0 | 1(0=No, 1=Yes with SSH) Console = CLI | Menu
Example	#> setTelnet Security=0

Date and Time Commands

Use date and time commands to set the date and time parameters for the card (see Table 20).

Table 20. Date and Time Commands

getDate	
Syntax	getDate [option1] [option2] . . .
Options	Date | Time | TimeSync | TimeNtp | TimeZone | TimeDaylight
Example	#> getDate timeSync
setDate	
Syntax	setDate [option1] [option2] . . .
Options	Date = yyyy/mm/dd(See Note 1) Time = hh:mm:ss(See Note 1) TimeSync = MANUAL | AUTO | NTP TimeNtp = “xx..xx“ TimeZone = +/-hh:mm(See Note 2) TimeDaylight = 0 | 1(0=No, 1=Yes)
Example	#> getDate timeSync=MANUAL
Comments	Note 1: Setting is write-enabled depending on “TimeSync“ status. Note 2: Setting resolves to the nearest half hour. For example, sending +02:36 results in +02:30, and sending +02:46 results in +03:00.

Enviroment Commands

Use environment commands to define settings for environmental sensors (see Table 21).

Table 21. Environment Commands

getEnv	**To read an environment setting**
Syntax	getEnv [option1]
Options	Name
Example	#> getEnv Name
setEnv	**To modify an environment setting**
Syntax	setEnv [option1]
Options	Name = "xx..xx"
Example	#> setEnv Name="sensor"
getTemp	**To read a temperature setting**
Syntax	getTemp [option1] [option2] ...
Options	Unit HighThreshold LowThreshold Hysteresis Offset HighNotify LowNotify HighShutdown LowShutdown
Example	#> getTemp Unit
setTemp	**To modify a temperature setting**
Syntax	setTemp [option1] [option2] ...
Options	Unit = C|K HighThreshold = xx LowThreshold = xx Hysteresis = xx (0..5) Offset = xx (-5..5) HighNotify = 0|1 (0=No, 1=Yes) LowNotify = 0|1 (0=No, 1=Yes) HighShutdown = 0|1 (0=No, 1=Yes)(NOTE 1) LowShutdown = 0|1 (0=No, 1=Yes) (NOTE 1)
Example	#> setTemp Unit=C
Comments	(NOTE 1) : Writing enabled only if the notification is enabled
getHum	**To read a humidity setting**
Syntax	getHum [option1] [option2] ...
Options	HighThreshold LowThreshold Hysteresis Offset HighNotify LowNotify HighShutdown LowShutdown

Table 21. Environment Commands (Continued)

Example	#> getHum Offset
setHum	**To modify a humidity setting**
Syntax	setHum [option1] [option2] ...
Options	HighThreshold = xx LowThreshold =xx Hysteresis = xx (0..5) Offset = xx (-5..5) HighNotify = 0|1 (0=No, 1=Yes) LowNotify = 0|1 (0=No, 1=Yes) HighShutdown = 0|1 (0=No, 1=Yes) (NOTE 1) LowShutdown = 0|1 (0=No, 1=Yes) (NOTE 1)
Example	#> setHum HighNotify=0
Comments	(NOTE 1) : Writing enabled only if the notification is enabled
getInput1 or getInput2	**To read input setting**
Syntax	getInput1 [option1] [option2] ...
Options	iName State[0].Description State[0].Notify State[0].Shutdown State[1].Description State[1].Notify State[1].Shutdown
Example	#> getInput1 iName
getInput1 or serInput2	**To modify input setting**
Syntax	setInput1 [option1] [option2] ...
Options	iName = "xx..xx" State[0].Description = "xx..xx" State[0].Notify = 0|1 (0=No, 1=Yes) State[0].Shutdown = 0|1 (0=No, 1=Yes) State[1].Description = "xx..xx" State[1].Notify = 0|1 (0=No, 1=Yes) (NOTE 1) State[1].Shutdown = 0|1 (0=No, 1=Yes) (NOTE 1)
Example	#> setInput1 State[0].Label = "Door open" State[0].Notify = 1
Comments	(NOTE 1) : Writing enabled only if the notification is enabled

Default Login/Password

If the login or password is lost, select the "Set login password to default" menu option to enable the default Login/Password.

Default Configuration

Use the "Default configuration" menu option to enable the default configuration. The Network Card-MS automatically restarts after the default configuration is enabled.

Chapter 5 MIB Objects

This chapter describes the Management Information Base (MIB) files available with the card. A MIB is an information repository residing on a device in a communication network. Network management software uses a device's MIB to manage the device. Every manageable device on a network has a MIB consisting of one or more files that list information about the device.

Use the facilities provided by your Simple Network Management Protocol (SNMP) management software to access the individual MIB objects. The objects define the information available about your UPS.

You can configure a device so that it generates a trap if a certain condition occurs, such as an alarm clearing. The trap is sent to the management station to inform it of the occurrence.

UPS MIB

The Network Card-MS implements the full IETF standard UPS MIB (RFC 1628), including the IETF alarm table. The IETF traps are implemented. Visit www.eaton.com/powerquality or http://tools.ietf.org for a description of the MIB. The UPS MIB access path is 1.3.6.1.2.1.33.

Eaton MIB

The Network Card-MS implements the full Eaton MIB (PowerMIB), including alarm tables. The Eaton traps are sent. The Eaton MIB access path is 1.3.6.1.4.1.534.

Table 22 is an abbreviated list of objects from the PowerMIB. The UPS output/load segment controls objects and the entire MIB description is available at http://powerquality.eaton.com/Support/SoftwareDrivers.

Table 22. PowerMIB Objects

MIB Object	SNMP Format	Add.path
xupsIdentManufacturer	String	{1.1.0}
xupsIdentModel	String	{1.2.0}
xupsIdentSoftwareVersion	String	{1.3.0}
xupsIdentOemCode	Integer	{1.4.0}
xupsBatTimeRemaining	Seconds	{2.1.0}
xupsBatVoltage	Volts DC	{2.2.0}
xupsBatCurrent	Amps DC	{2.3.0}
xupsBatCapacity	Percent	{2.4.0}
xupsBatteryAbmStatus	Integer	{2.5.0}
xupsBatteryLastReplacedDate	String	{2.6.0}
xupsInputFrequency	0.1 Hertz	{3.1.0}
xupsInputLineBads	Integer	{3.2.0}
xupsInputNumPhases	Integer	{3.3.0}
xupsInputTable	—	{3.4.0}
xupsInputPhase	Integer	{3.4.1.1.x}
xupsInputVoltage	RMS Volts	{3.4.1.2.x}
xupsInputCurrent	RMS Amps	{3.4.1.3.x}
xupsInputWatts	Watts	{3.4.1.4.x}
xupsInputSource	Integer	{3.5.0}
xupsDualInputStatus	Integer	{3.6.0}
xupsSecondaryInputWatch	Integer	{3.7.0}

Table 22. PowerMIB Objects (Continued)

MIB Object	SNMP Format	Add.path
xupsOutputLoad	Percent	{4.1.0}
xupsOutputFrequency	0.1 Hertz	{4.2.0}
xupsOutputNumPhases	Integer	{4.3.0}
xupsOutputTable	—	{4.4.0}
xupsOutputPhase	Integer	{4.4.1.1.x}
xupsOutputVoltage	RMS Volts	{4.4.1.2.x}
xupsOutputCurrent	RMS Amps	{4.4.1.3.x}
xupsOutputWatts	Watts	{4.4.1.4.x}
xupsOutputSource	Integer	{4.5.0}
xupsBypassFrequency	0.1 Hertz	{5.1.0}
xupsBypassNumPhases	Integer	{5.2.0}
xupsBypassTable	—	{5.3.0}
xupsBypassPhase	Integer	{5.3.1.1.x}
xupsBypassVoltage	RMS Volts	{5.3.1.2.x}
xupsEnvAmbientTemp	Degrees C	{6.1.0}
xupsEnvAmbientLowerLimit	Degrees C	{6.2.0}
xupsEnvAmbientUpperLimit	Degrees C	{6.3.0}
xupsEnvAmbientHumidity	Percent	{6.4.0}
xupsEnvRemoteTemp	Degrees C	{6.5.0}
xupsEnvRemoteHumidity	Percent	{6.6.0}
xupsEnvNumContacts	Integer	{6.7.0}
xupsContactSenseTable	table	{6.8.0}
xupsContactIndex	Integer	{6.8.1.1.x}
xupsContactType	Integer	{6.8.1.2.x}
xupsContactState	Integer	{6.8.1.3.x}
xupsContactDescr	String	{6.8.1.4.x}
xupsEnvRemoteTempLowerLimit	Degrees C	{6.9.0}
xupsEnvRemoteTempUpperLimit	Degrees C	{6.10.0}
xupsEnvRemoteHumidityLowerLimit	Percent	{6.11.0}
xupsEnvRemoteHumidityUpperLimit	Percent	{6.12.0}
xupsAlarmTable	table	{7.2.0}
xupsAlarmID	—	{7.2.1.1.x}
xupsAlarmDescr	—	{7.2.1.2.x}
xupsAlarmTime	—	{7.2.1.3.x}
xupsOnBattery	—	{7.3.0}
xupsLowBattery	—	{7.4.0}
xupsUtilityPowerRestored	—	{7.5.0}
xupsReturnFromLowBattery	—	{7.6.0}
upsOutputOverload	—	{7.7.0}
xupsInternalFailure	—	{7.8.0}
xupsBatteryDischarged	—	{7.9.0}
xupsInverterFailure	—	{7.10.0}

Table 22. PowerMIB Objects (Continued)

MIB Object	SNMP Format	Add.path
xupsOnBypass	—	{7.11.0}
xupsBypassNotAvailable	—	{7.12.0}
xupsOutputOff	—	{7.13.0}
xupsInputFailure	—	{7.14.0}
xupsBuildingAlarm	—	{7.15.0}
xupsShutdownImminent	—	{7.16.0}
xupsOnInverter	—	{7.17.0}
xupsBreakerOpen	—	{7.20.0}
xupsAlarmBatteryBad	—	{7.23.0}
xupsOutputOffAsRequested	—	{7.24.0}
xupsDiagnosticTestFailed	—	{7.25.0}
xupsCommunicationsLost	—	{7.26.0]
xupsUpsShutdownPending	—	{7.27.0}
xupsAlarmTestInProgress	—	{7.28.0}
xupsAmbientTempBad	—	{7.29.0}
xupsLossOfRedundancy	—	{7.30.0}
xupsAlarmTempBad	—	{7.31.0}
xupsAlarmChargerFailed	—	{7.32.0}
xupsAlarmFanFailure	—	{7.33.0}
xupsAlarmFuseFailure	—	{7.34.0}
xupsPowerSwitchBad	—	{7.35.0}
xupsModuleFailure	—	{7.36.0}
xupsOnAlternatePowerSource	—	{7.37.0}
xupsAltPowerNotAvailable	—	{7.38.0}
xupsNoticeCondition	—	{7.39.0}
xupsRemoteTempBad	—	{7.40.0}
xupsRemoteHumidityBad	—	{7.41.0}
xupsAlarmOutputBad	—	{7.42.0}
xupsAlarmAwaitingPower	—	{7.43.0}
xupsOnMaintenanceBypass	—	{7.44.0}
xupsTestBatteryStatus	Integer	{8.2.0}
xupsLastGeneralTest	Integer	{8.3.0}
xupsLastGeneralTestResult	Integer	{8.4.0}
xupsConfigOutputVoltage	RMS Volts	{10.1.0}
xupsConfigInputVoltage	RMS Volts	{10.2.0}
xupsConfigOutputWatts	Watts	{10.3.0}
xupsConfigOutputFreq	0.1 Hertz	{10.4.0}
xupsConfigDateAndTime	String	{10.5.0}
xupsConfigLowOutputVoltageLimit	RMS Volts	{10.6.0}
xupsConfigHighOutputVoltageLimit	RMS Volts	{10.7.0}
xupsConfigInstallDate	String	{10.8.0}
xupsTopologyType	Integer	{13.1.0}

Table 22. PowerMIB Objects (Continued)

MIB Object	SNMP Format	Add.path
xupsTopoMachineCode	Integer	{13.2.0}
xupsTopoUnitNumber	Integer	{13.3.0}
xupsTopoPowerStrategy	Integer	{13.4.0}

Eaton Pulsar MIB

This section contains an overview of MIB definitions for the following MIB files:

- Eaton Pulsar MIB (MGE MIB)
- Eaton Pulsar MIB (MGE MIB) for an Environmental Monitoring Probe (EMP)

The Network Card-MS implements the reduced Eaton Pulsar MIB (MGE MIB); only the objects listed in Table 23 and Table 24are managed. The entire MIB description is available at www.eaton.com/powerquality.

Table 24 lists objects that are managed if there is an optional EMP installed. The Eaton Pulsar MIB trap access path is 1.3.6.1.4.1.705.1.

Table 23. Eaton Pulsar MIB (MGE MIB) Objects

MIB Object	SNMP Format	Add.path
upsmgIdentFamilyName	String	{1,1,0}
upsmgIdentModelName	String	{1,2,0}
upsmgIdentFirmwareVersion	String	{1,4,0}
upsmgIdentSerialNumber	String	{1,7,0}
upsmgConfigLowBatteryTime	seconds	{4,7,0}
upsmgConfigLowBatteryLevel	%	{4,8,0}
upsmgConfigAutoRestart	1 (yes), 2 (no)	{4,9,0}
upsmgConfigVARating	VA	{4,12,0}
upsmgBatteryRemainingTime	seconds	{5,1,0}
upsmgBatteryLevel	%	{5,2,0}
upsmgBatteryVoltage	deciVolts	{5,5,0}
upsmgBatteryCurrent	deciAmps	{5,6,0}
upsmgBatteryFaultBattery	1 (yes), 2 (no)	{5,9,0}
upsmgBatteryReplacement	1 (yes), 2 (no)	{5,11,0}
upsmgBatteryLowBattery	1 (yes), 2 (no)	{5,14,0}
upsmgBatteryChargerFault	1 (yes), 2 (no)	{5,15,0}
upsmgBatteryLowCondition	1 (yes), 2 (no)	{5,16,0}
upsmgInputPhaseNum	—	{6,1,0}
mginputVoltage_1	DeciVolts	{6,2,1,2,1,0}
mginputVoltage_2	DeciVolts	{6,2,1,2,2,0}
mginputVoltage_3	DeciVolts	{6,2,1,2,3,0}
mginputFrequency_1	DeciHz	{6,2,1,3,1,0}
mginputFrequency_2	DeciHz	{6,2,1,3,2,0}
mginputFrequency_3	DeciHz	{6,2,1,3,3,0}
mginputMinimumVoltage	—	{6,2,1,4,0}
mginputMaximumVoltage	—	{6,2,1,5,0}

Table 23. Eaton Pulsar MIB (MGE MIB) Objects (Continued)

MIB Object	SNMP Format	Add.path
mginputCurrent_1	DeciAmps	{6,2,1,6,1,0}
mginputCurrent_2	DeciAmps	{6,2,1,6,2,0}
mginputCurrent_3	DeciAmps	{6,2,1,6,3,0}
upsmgInputBadStatus	—	{6,3,0}
upsmgInputLineFailCause	—	{6,4,0}
upsmgOutputPhaseNum	—	{7,1,0}
mgoutputPhaseIndex_1	—	{7,2,1,1,1,0}
mgoutputPhaseIndex_2	—	{7,2,1,1,2,0}
mgoutputPhaseIndex_3	—	{7,2,1,1,3,0}
mgoutputVoltage_1	deciVolts	{7,2,1,2,1,0}
mgoutputVoltage_2	deciVolts	{7,2,1,2,2,0}
mgoutputVoltage_3	deciVolts	{7,2,1,2,3,0}
mgoutputFrequency_1	deciHz	{7,2,1,3,1,0}
mgoutputFrequency_2	deciHz	{7,2,1,3,2,0}
mgoutputFrequency_3	deciHz	{7,2,1,3,3,0}
mgoutputLoadPerPhase_1	%	{7,2,1,4,1,0}
mgoutputLoadPerPhase_2	%	{7,2,1,4,2,0}
mgoutputLoadPerPhase_3	%	{7,2,1,4,3,0}
mgoutputCurrent_1	deciAmps	{7,2,1,5,1,0}
mgoutputCurrent_2	deciAmps	{7,2,1,5,2,0}
mgoutputCurrent_3	deciAmps	{7,2,1,5,3,0}
upsmgOutputOnBattery	1 (yes), 2 (no)	{7,3,0}
upsmgOutputOnByPass	1 (yes), 2 (no)	{7,4,0}
upsmgOutputUtilityOff	1 (yes), 2 (no)	{7,7,0}
upsmgOutputInverterOff	1 (yes), 2 (no)	{7,9,0}
upsmgOutputOverLoad	1 (yes), 2 (no)	{7,10,0}
upsmgOutputOverTemp	1 (yes), 2 (no)	{7,11,0}
upsmgAgentIpAddress	—	{12,1,0}
upsmgAgentSubnetMask	—	{12,2,0}
upsmgAgentDefGateway	—	{12,3,0}
upsmgAgentType	—	{12,6,0}
upsmgAgentMibVersion	—	{12,11,0}
upsmgAgentFirmwareVersion	—	{12,12,0}
upsmgAgentCommUPS	1 (yes), 2 (no)	{12,13,0}

Table 24. Pulsar MIB (MGE MIB) Objects (EMPs)

MIB Object	SNMP Format	Add.path
upsmgEnvironAmbientTemp	0.1° C	{8,1,0}
upsmgEnvironAmbientHumidity	0.1%	{8,2,0}
upsmgEnvironmentNum	—	{8,6,0}
upsmgEnvironmentIndex	—	{8,7,1,1,1 }
upsmgEnvironmentComFailure	1 (yes), 2 (no)	{8,7,1,2,1}

Table 24. Pulsar MIB (MGE MIB) Objects (EMPs) (Continued)

MIB Object	SNMP Format	Add.path
upsmgEnvironmentTemperature	0.1° C	{8,7,1,3,1}
upsmgEnvironmentTemperatureLow	1 (yes), 2 (no)	{8,7,1,4,1}
upsmgEnvironmentTemperatureHigh	1 (yes), 2 (no)	{8,7,1,5,1}
upsmgEnvironmentHumidity	0.1%	{8,7,1,6,1}
upsmgEnvironmentHumidityLow	1 (yes), 2 (no)	{8,7,1,7,1}
upsmgEnvironmentHumidityHigh	1 (yes), 2 (no)	{8,7,1,8,1}
upsmgEnvironmentInput1State	closed (1), open (2)	{8,7,1,9,1}
upsmgEnvironmentInput2State	closed (1), open (2)	{8,7,1,10,1}

Traps

Traps are sent on status transition (when an alarm appears or disappears). Traps are composed of three levels and can be filtered for severity:

- **Level 1:** Warning
- **Level 2:** Severe
- **Level 3:** Critical

NOTE See "Notified Applications" on page 40 to set the trap severity.

See Table 25 for a list of the main managed traps and Table 15 for a list of additional traps that are managed if there is an optional EMP installed.

The trap access path is 1.3.6.1.4.1.705.1.11.

Table 25. MIB Traps

MIB Trap	Trap	Trap Severity Level
upsmgBatteryFault	1	3
upsmgBatteryOK	2	1
upsmgAtLowBattery	5	3
upsmgFromLowBattery	6	1
upsmgChargerFault	7	3
upsmgChargerOK	8	1
upsmgOnBattery	11	2
upsmgReturnFromBattery	12	1
upsmgOnByPass	13	2
upsmgReturnFromByPass	14	1
upsmgUtilityFailure	17	2
upsmgUtilityRestored	18	1
upsmgOverLoad	21	3
upsmgLoadOK	22	1
upsmgOverTemperature	23	3
upsmgTemperatureOK	24	1

Table 25. MIB Traps (Continued)

MIB Trap	Trap	Trap Severity Level
upsmgOffToStart	29	2
upsmgOffInProgress	31	3
upsmgCommunicationFailure	37	3
upsmgCommunicationRestored	38	1
upsmgRedundancyLost	65	2
upsmgRedundancyOK	66	2
upsmgProtectionLost	67	2
upsmgProtectionOK	68	2

Table 26. MIB Traps (EMPs)

MIB Trap	Trap	Trap Severity Level
upsEnvironmentComFailure	53	2
upsEnvironmentComOK	54	2
upsEnvironmentTemperatureLow	55	2
upsEnvironmentTemperatureHigh	56	2
upsEnvironmentTemperatureOK	57	2
upsEnvironmentHumidityLow	58	2
upsEnvironmentHumidityHigh	59	2
upsEnvironmentHumidityOK	60	2
upsEnvironmentInput1Closed	61	2
upsEnvironmentInput1Open	62	2
upsEnvironmentInput2Open	64	2
upsEnvironmentInput2Closed	63	2

Chapter 6 Operation and Maintenance

This chapter explains:

- Serial cable pinout
- Detailed serial configuration menus
- Firmware upgrade instructions

Serial Cable Pinout

Figure 42 shows the serial cable and pinout.

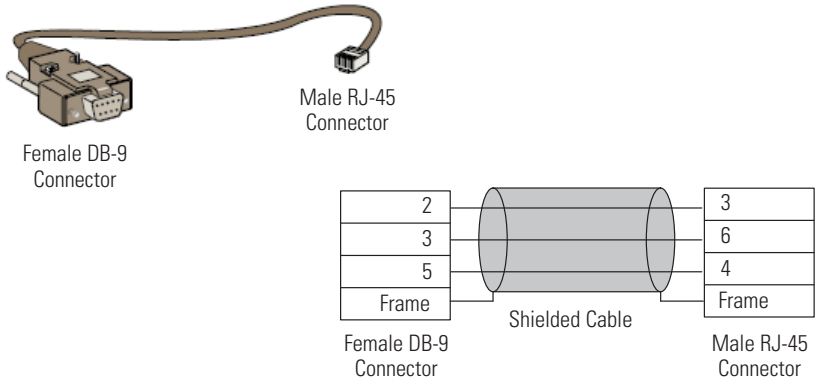


Figure 42. DB-9-to-RJ-45 Serial Cable and Pinout

Serial Configuration Menus

Use the supplied cable to connect the card to a computer.

1. Connect the card to a computer equipped with an emulator such as HyperTerminal. Set the serial link at **9600 baud**, **8 bits**, **no parity**, **1 stop bit**, and **no flow control**.
2. Verify that the UPS power is on.
3. Enter the **admin** password (not modifiable). The Network Card-MS main menu displays (see Figure 43).

```
------------------------------------------------------------
Eaton Network Card-MS
------------------------------------------------------------
  1 : Reset
  2 : Network configuration
  3 : Set Login Password to Default
  4 : Return to Default Configuration
  0 : Exit
------------------------------------------------------------
```

Figure 43. Network Card-MS Main Menu

Option 1: Reset

Two options are available for resetting the card (see Figure 44):

- **Hardware Reset:** Equivalent to a restart of the electrical power supply.
- **Restart application:** Restarts only the application.

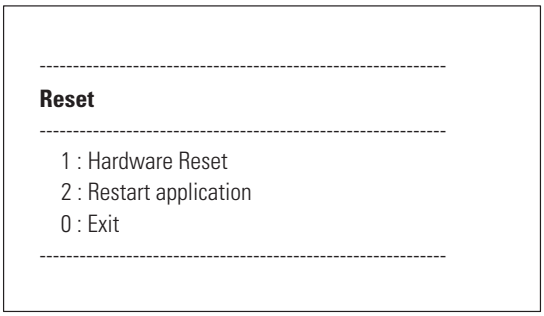


Figure 44. Reset Menu

Option 2: Network Configuration

The Network Configuration option displays additional options for network settings (see Figure 45):

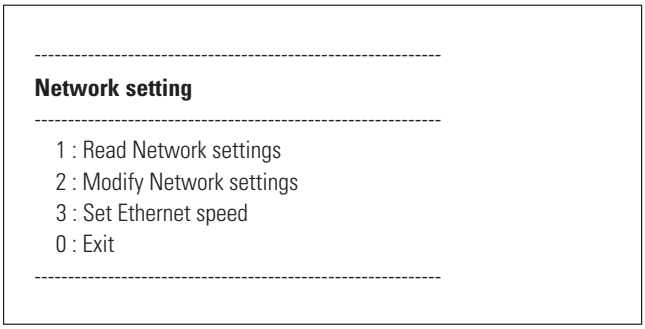


Figure 45. Network Settings Menu

Three options are available for the network settings:

- **Read Network settings:** To view the network settings (see Figure 46).

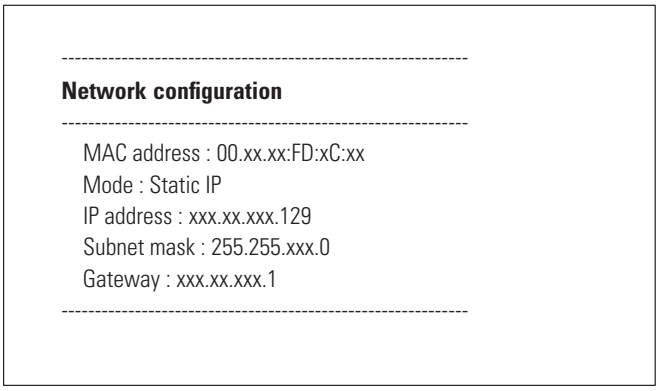


Figure 46. Read Network Settings Option

- **Modify Network settings:** To modify existing network parameters (see Figure 47). Restart the card to activate the new parameters. In DHCP mode, the card can receive the following parameters according to the DHCP server settings:
  - IP address
  - Subnet mask
  - Gateway address
  - Primary DNS server
  - Secondary DNS server

```
For each of the following questions, you can press <Return> to select the
value shown in braces, or you can enter a new value.
Should this target obtain IP settings from the network?[N]
Static IP address [xxx.xx.xxx.129]?
Subnet Mask IP address [255.255.xxx.0]?
Gateway address IP address [xxx.xx.xxx.1]?
Wait while your new configuration is saved ...
Reset the card to enable the new configuration.
```

Figure 47. Modify Network Settings

- **Set Ethernet speed:** To change the network speed (see Figure 48). Restart the card to activate the new parameters.

```
Set the Ethernet speed : [1 : Automatic, 2 : 10 MBit]
1
New Ethernet speed : Automatic
Wait while the new setting is saved...
Reset the card to enable the new configuration.
```

Figure 48. Ethernet Speed Settings

Option 3: Set Login Password to Default

Select menu item **3** to return the password to the default (**admin**). Wait for the confirmation message (see Figure 49). The card is now accessible using the Web with the default password admin, but you must restart the card to save the new password.

```
Login Password has successfully been set
```

Figure 49. Default Password Confirmation Message

Option 4: Return to Default Configuration

Select menu item **4** to restore the parameters to the factory-default configuration (see "Card Defaults" on page 5). Wait for the confirmation message (see Figure 50). Restart the card to save the default parameters.

Configuration has been set to default one.
You must Reset the card.

Figure 50. Default Configuration Confirmation Message

Upgrading the Firmware

You can update the card's firmware by downloading the appropriate file. During the upgrade process, the Network Card-MS does not monitor the UPS status.

To upgrade the firmware:

1. Download the new firmware version to your computer from the Web and note the location.

NOTE Go to www.eaton.com/powerquality for more information about downloading firmware.

2. Click **Firmware Upload** from the menu bar to open the Firmware Upload page (see Figure 51).

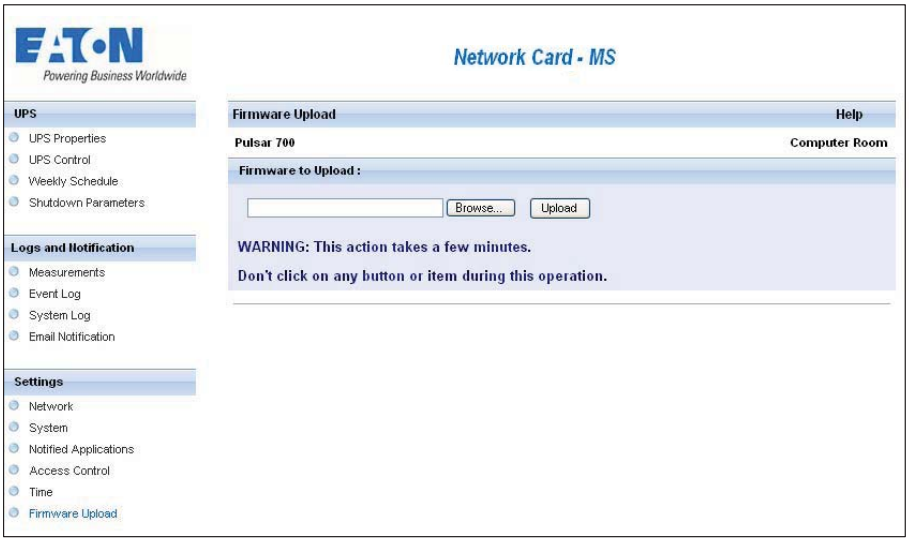


Figure 51. Firmware Upload Page

3. Click **Browse** to go to the firmware location and select the file to be loaded.
4. Click **Upload**.

NOTE The upload can take up to five minutes. Do not interrupt the operation before the card displays confirmation that the firmware upload was successful.

Chapter 7 Shutdown

This chapter explains:

- Protection applications
- Shutdown criteria managed by the card
- Load Segments
- Shutdown sequences

Protection Applications

NetWatch and NSM protection applications send the following essential data to the card:

- IP Address or hostname of the server on which it is installed so that the card can inform the application of power events.
- Time required to shut down the server (Shutdown Duration, configurable in the "Set-up" menu of each NetWatch and NSM application).

  The card takes into account the longest shutdown time of all the Network Shutdown Modules subscribed (Shutdown duration of the Shutdown parameters) page to manage UPS shutdowns without affecting any connected Shutdown Modules.

During normal operation, the protection application periodically checks its connection with the card. In case of a major power event, the card sends information to the protection application, which responds according to the situation:

- Shutdown order
- Programmed actions
- Messages to the administrator and to users through the network

When the server shuts down, the protection application unsubscribes itself from the Notified Applications list. See "Notified Applications" on page 40 for more information.

Shutdown Criteria Managed by the Network Card-MS

During an extended power failure, three criteria can cause the server shutdown procedure to be initiated. If multiple criteria are selected, the first criterion encountered launches the shutdown procedure. See Table 27 for criteria descriptions.

At the end of the shutdown procedure, when all servers have been shut down, the UPS may shut down to avoid unnecessary discharge of its batteries, depending on its configuration.

NOTE See "Shutdown Parameters" on page 29 to configure the shutdown parameters.

Table 27. Shutdown Criteria

Criteria	Description
Backup Time before Initiating the Shutdown Procedure (Shutdown After – Shutdown Timer)	When the UPS switches to battery power, the card starts the Shutdown Timer countdown and launches the system shutdown procedure at the end of the countdown. Select this value carefully so that users have time to complete their tasks and disconnect without exceeding battery backup time. NOTE If this criterion is selected to initiate system shutdown, automatic system reboot is not guaranteed when power is restored (for example, power restoration if only this system was shut down).
Initiating the Shutdown Procedure when the Battery Level is Lower Than (If Capacity Under)	When the card detects that the remaining backup time percentage is less than the configured level, the shutdown sequence starts. By default, this value is set at 20%. NOTE The UPS already manages an equivalent parameter for the end of backup pre-alarm. The card does not accept values less than that programmed in the UPS. Check the UPS documentation.
Shutdown When Backup Time is Less Than	When the card detects that the percentage of backup time remaining is less than the set value, the shutdown sequence starts.
Shutdown Duration	Duration (in seconds) required for the system protected by the protection application to shut down. The protection application transmits its own shutdown duration to the Network Card-MS. Based on these values (maximum shutdown duration of all subscribed customer systems), the card sends the delayed shutdown order to the UPS.

Figure 52 shows the shutdown sequence.

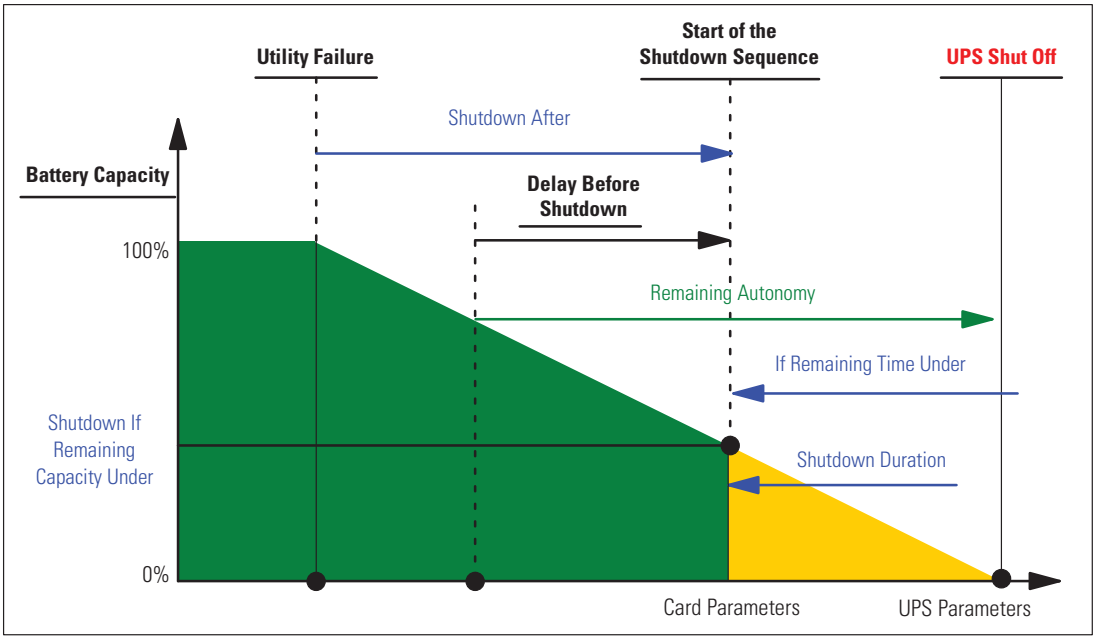


Figure 52. Shutdown Sequence

Load Segments

Some UPSs are equipped with load segments, which are always dependent on the UPS's master. Shutdown of the master initiates a shutdown of the load segments (usually two load segments). Refer to the UPS user's guide for the location of the load segments. Figure 53 shows a graph of the shutdown sequence for the load segments. The following notations are used to identify these receptacles:

Main Output	Main
Load Segment 1	1
Load Segment 2	2

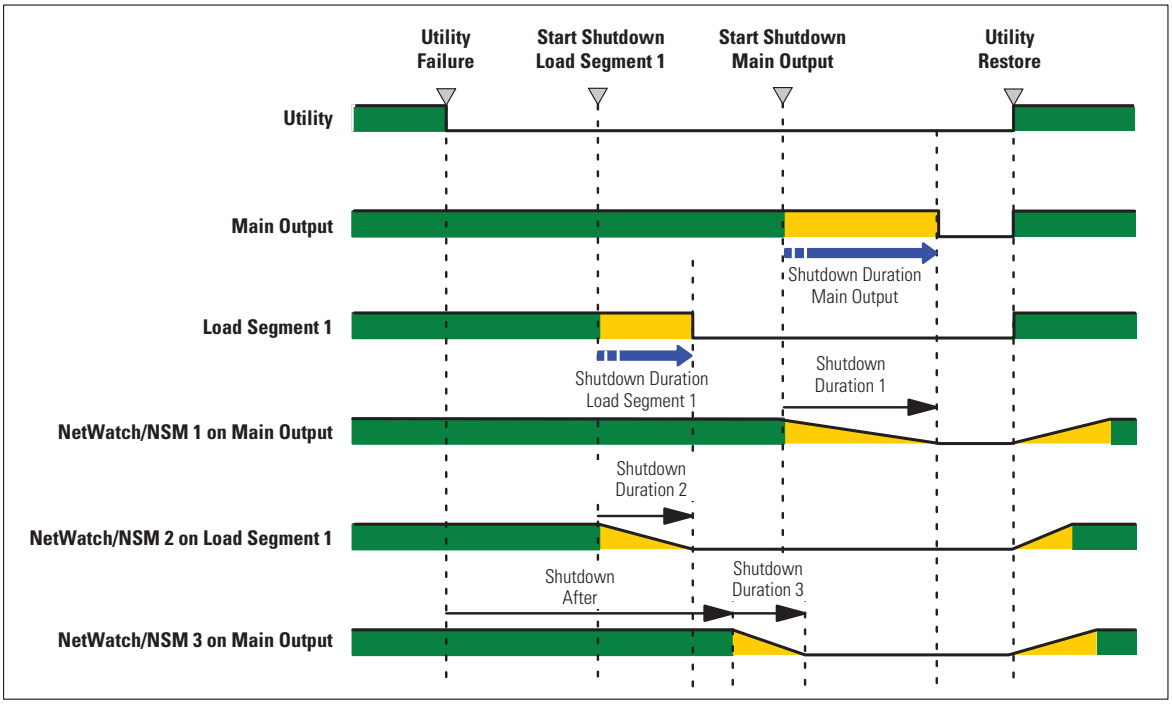


Figure 53. Shutdown of Load Segments

Protection of a Server Connected to a Load Segment

NetWatch and NSMs are compatible with load segments. After connecting the server electrically to one of the load segments, NetWatch and NSM must be informed of the load segment number to which it is connected.

Refer to NetWatch/NSM documentation. Go to www.eaton.com/powerquality to download the software.

Load Shedding or Sequential Shutdown

You can optimize backup time by shutting down non-priority equipment or sequencing the shutdown of several devices.

Two shutdown criteria are possible:

- Shutdown of receptacles after a set battery back-up time (After)
- Shutdown of receptacles at a given battery discharge level (if battery capacity under)

If you specify values for both criteria, the first criterion reached initiates server shutdown.

Sequential Startup

You can delay receptacle power-on to reduce inrush currents on startup or to sequence the startup of several devices.

Load segment startup after a given time is based on startup of the main receptacle.

Extended Power Outage, Shutdown Initiated by the Shutdown Timer (Shutdown After)

During battery backup time, the Shutdown Timer of the Network Card-MS is reached. After a user-defined backup time period (see "Shutdown Parameters" on page 29), the shutdown of all servers is initiated, followed by the UPS shutdown (depending on its configuration). The UPS restarts when utility power is restored (depending on its configuration).

Shutdown duration: Maximum value of shutdown times of the protection application subscribed to the card. This value is updated each time a client subscribes or unsubscribes. Figure 54 shows a graph of a shutdown initiated by the Shutdown Timer.

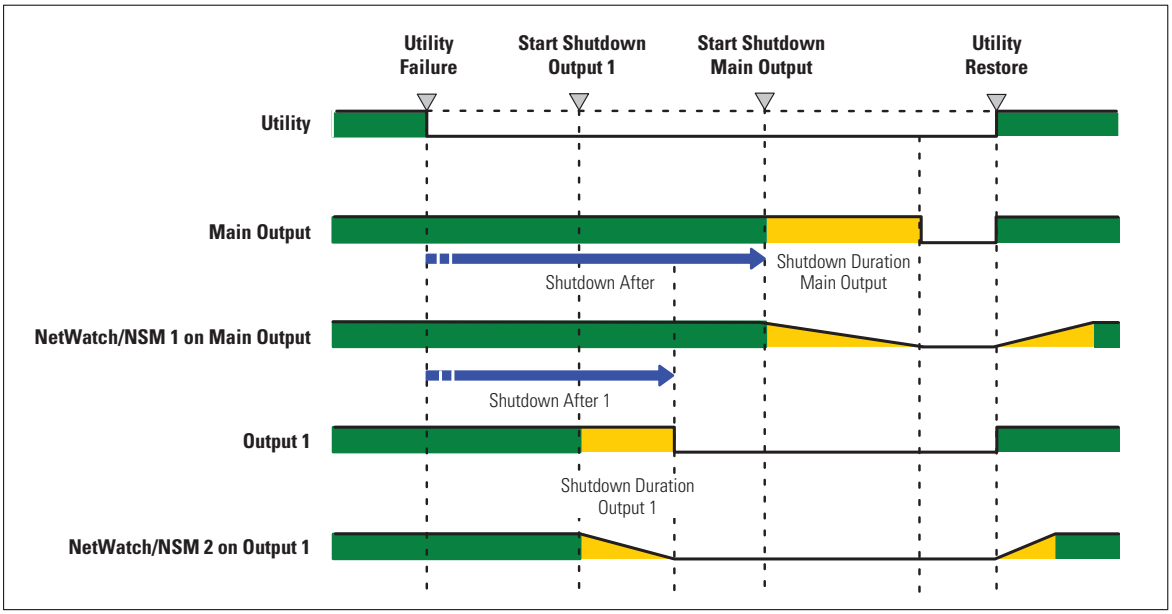


Figure 54. Shutdown Initiated by Shutdown Timer

Extended Power Outage, Shutdown Initiated by the "Low Battery Power" Message

When the "Low battery power" criterion is displayed, the UPS is shut off after taking into account the shutdown duration of the servers.

The "Low battery power" message displays if either of the two following criteria is reached:

- Low Battery Level
- Low Battery Delay

Figure 55 shows a graph of a shutdown initiated by the "Low battery power" message.

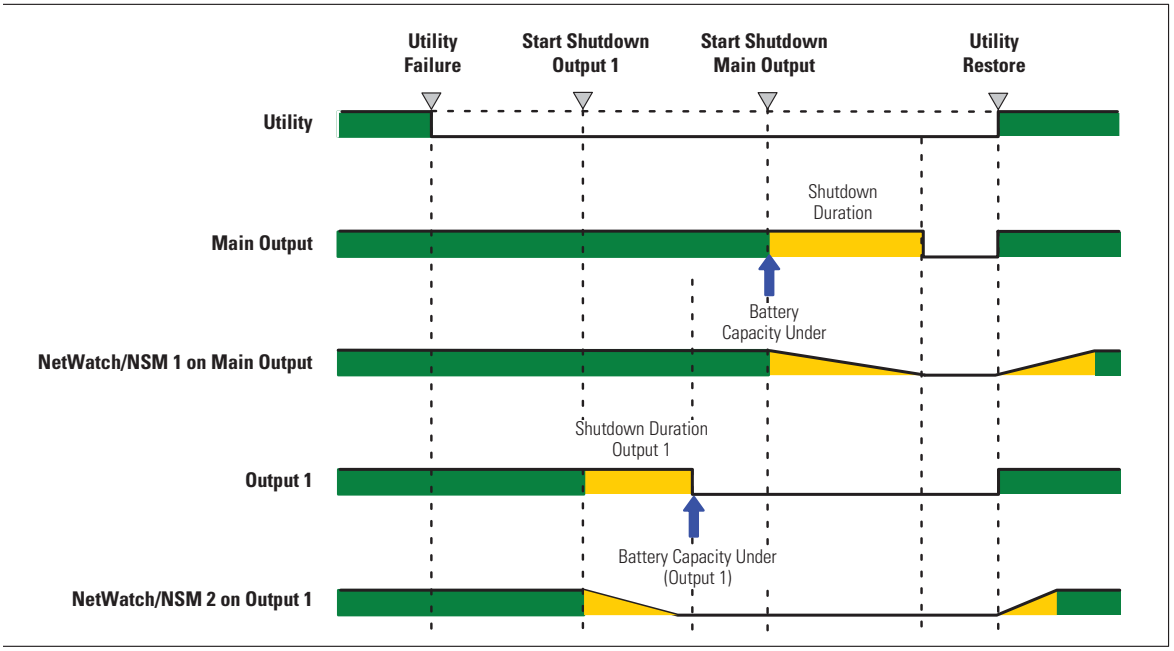


Figure 55. Shutdown Initiated by Low Battery Power

Power Restoration Before End of Shutdown Duration

If power is restored before the end of the Shutdown Duration, the UPS is shut off after the Shutdown Duration for a time equal to the forced reboot delay (10 seconds). Figure 56 shows a graph of a power restoration before the end of the Shutdown Duration.

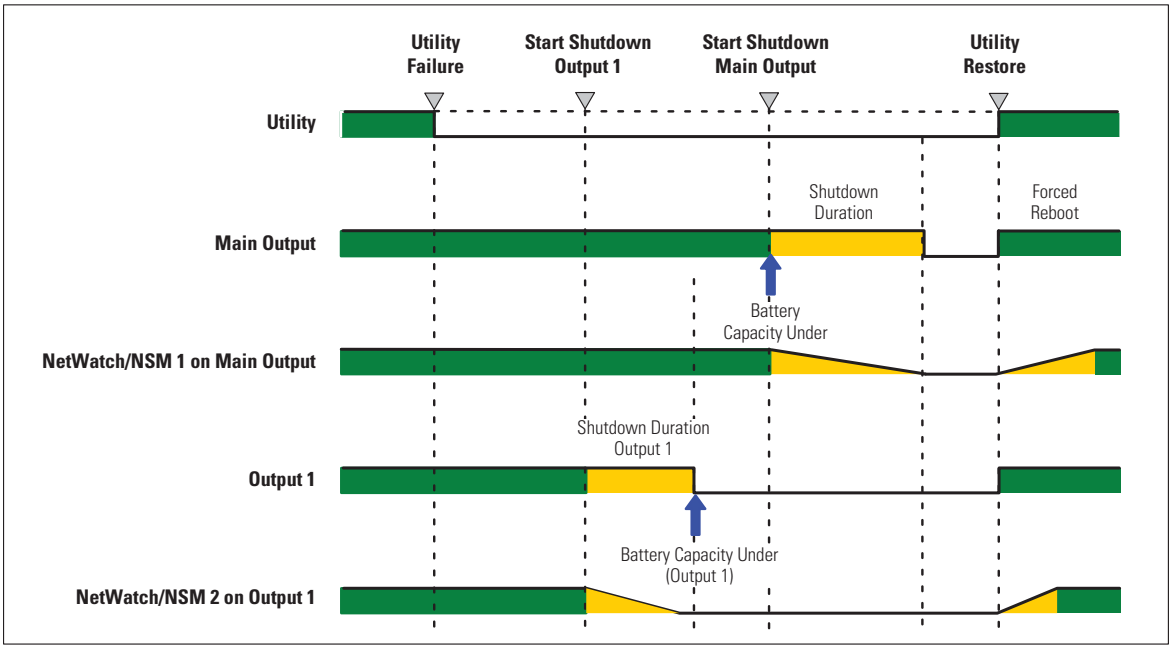


Figure 56. Power Restoration Before End of Shutdown Duration

Shutdown Management With Two Network Card-MS Cards

Some UPSs can have two Network Card-MS cards to:

- Increase the number of protected servers
- Protect two groups of servers connected to separate networks

Shutdown Duration

The protection application transmits its own shutdown duration to the Network Card-MS (as described in Table 27). Based on these values (maximum shutdown duration of all subscribed customer systems), the card sends the delayed shutdown order to the UPS. If the UPS has two Network Card-MS cards, the maximum shutdown duration of the two groups of protected systems is used for the delayed shutdown order.

For example, if the subscribed customers of the first Network Card-MS have a maximum shutdown duration of 60 seconds and the customers of the second Network Card-MS have a maximum shutdown duration of 120 seconds, the server's shutdown will be launched 120 seconds before the UPS powers down.

Settings

Eaton recommends setting the shutdown parameters to the same values on both cards (for the main output and the load segments).

If the settings are not the same, when the first criterion is reached on one card, both cards will launch the secure shutdown of all servers.

NOTE Whether the shutdown parameter values on both cards are the same or different, the shutdown of the protected servers will be executed safely.

Chapter 8 Specifications

This chapter lists the technical specifications in Table 28.

Table 28. Network Card-MS Specifications

Network Connection	10/100BaseT RJ-45 network connector
UPS Protocol	Eaton UPS proprietary protocol
Network Protocols*	DHCP DNS HTTP/HTTPS NTP SMTP SNMP v1 SNMP v3 TCP/IP
Supported SNMP MIBs	MIB II, IETF UPS MIB, Eaton Pulsar MIB (MGE MIB), Eaton MIB (PowerMIB)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Storage Temperature	-10°C to 70°C (14°F to 158°F)
Ambient Humidity	90% RH maximum without condensation
Power Consumption	1.5 watts maximum
Size (L x W x H)	132 mm 66 mm 42 mm (5.2”x 2.6”x 1.6”)
Weight	70g (2.5 oz)
EMC Statements	Safety for ATI: IEC/EN 60950-1 2002 EMC: EN 61000-6-2 (2002), EN 61000-6-3 (2002), IEC/EN 62040-2 (2002) For European directives: Low voltage: 2006/95/EEC EMC: 89/336/EEC and 93/68/EEC
RoHS	100% compatible
NOTE * Not limited to the listed network protocols	

Chapter 9 Service and Support

If you have any questions or problems with the Network Card-MS, call your **Local Distributor** or the **Help Desk** at one of the following telephone numbers and ask for a Network Card-MS technical representative.

United States:	**1-800-356-5737** or **1-919-870-3149**
Canada:	**1-800-461-9166 ext 260**
All other countries:	**Call your local service representative**

Please have the following information ready when you call the Help Desk:

- Model number
- Serial number
- Version number (if available)
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information

If repair is required, you will be given a Returned Material Authorization (RMA) Number. This number must appear on the outside of the package and on the Bill Of Lading (if applicable). Use the original packaging or request packaging from the Help Desk or distributor. Units damaged in shipment as a result of improper packaging are not covered under warranty. A replacement or repair unit will be shipped, freight prepaid for all warrantied units.

NOTE For critical applications, immediate replacement may be available. Call the **Help Desk** for the dealer or distributor nearest you.

Two-Year Limited Warranty (US and Canada)

Network Card-MS

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

LIMITED WARRANTY: This limited warranty (this "Warranty") applies only to the original End-User (the "End-User") of the Network Card-MS (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: The Warranted Item will be repaired or replaced 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 NON-CONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE COMPANY'S SOLE LIABILITY AND END-USER'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.