Network Power Management Card

NPMCARD

User's Manual

The Network Power Management Card allows a UPS/iPCS system and environmental sensor to be managed, monitored, and configured.

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Introduction

Overview

The Smart Power Systems Network Power Management Card allows for remote monitoring and management of a UPS/iPCS attached to a network. After installing the hardware and configuring an IP address, the user can access, monitor, and control the UPS/iPCS from anywhere in the world! Simply use a web browser, NMS to access your UPS/iPCS. Servers and workstations can be protected by the UPS/iPCS utilizing Smart PowerMaster Enterprise Clients to gracefully shutdown when signaled by the Network Power Management Card.

Features

- Real time UPS/iPCS monitoring
- Remote management and configuration of the UPS/iPCS via Web Browser, NMS
- Local management and configuration of the UPS/iPCS via serial connection
- Trigger servers/workstations to shutdown during a power event to prevent data loss or corruption
- Schedule shutdown/start-up/reboot of the UPS/iPCS remotely
- Event logging to trace UPS/iPCS operational history
- Graphic data logging to analyze power conditions
- Save and restore configuration settings including current UPS/iPCS and ATS parameter configuration.
- Event notifications via Email, SNMP traps
- Support IPv4/v6, SNMPv1/v3, HTTP/HTTPs, DHCP, NTP, DNS, SMTP, SSH, Telnet, FTP protocol.
- Support Email Secure Authentication Protocols: SSL, TLS
- Support External Authentication Protocols: RADIUS
- SNMP MIB available for free download
- User upgradeable firmware via FTP
- Quick installation
- Hot-swappable
- Support Environmental Sensor

System Requirements

- A 10/100Mbps Ethernet connection to an existing network
- Web Browser or SSH client
- *(Optional)* NMS (Network Management System) compliant with SNMP

Application with Smart PowerMaster Enterprise

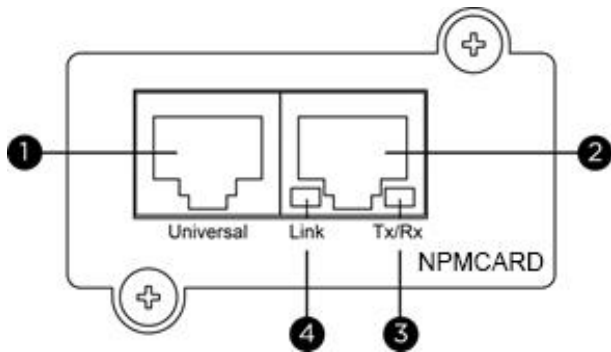Power Master structure
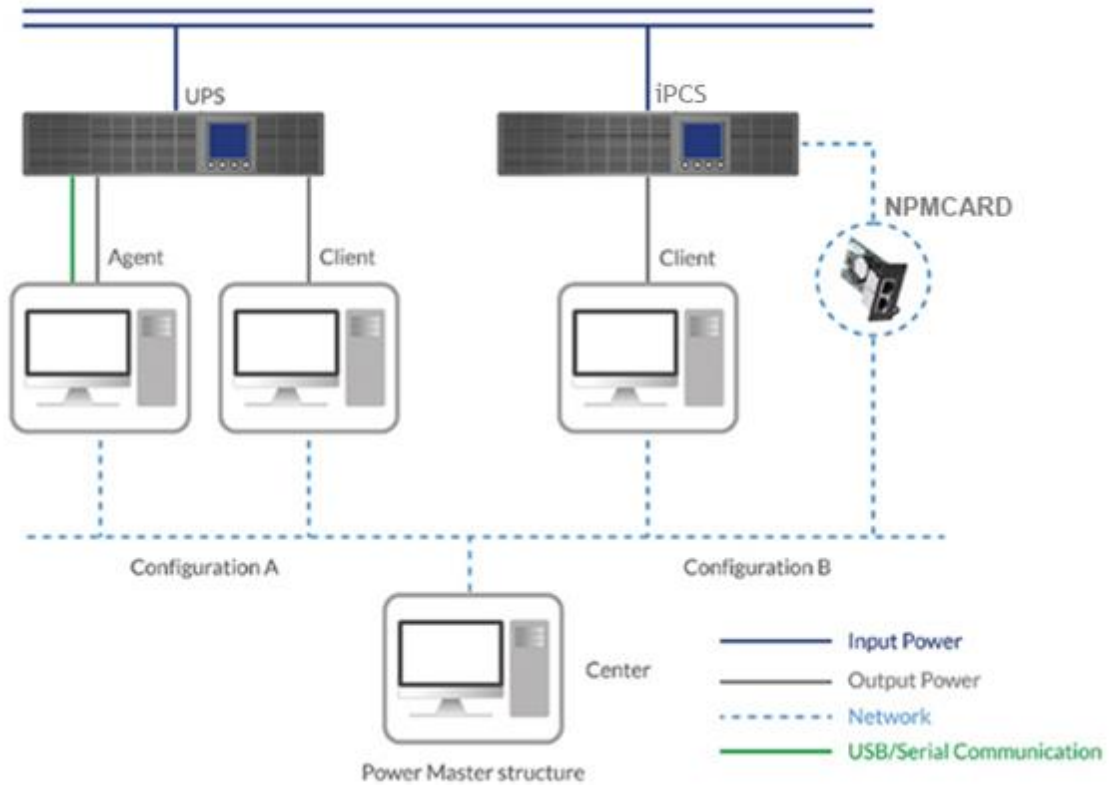
Unpacking

Inspect the Network Power Management Card upon receipt.

The package should contain the following:

- Smart Power Systems Network Power Management Card
- Quick Start Guide
- Spare Jumper

Front Panel

NPMCARD

1. Universal Port

2. Ethernet Port

3. Tx/Rx Indicator

4. Link Indicator

LED Status Indicators

Link LED	Condition
Off	The Network Power Management Card is not connected to the Network/ or the Network Power Management Card power is off
On (Yellow)	The Network Power Management Card is connected to the Network
Tx/Rx LED	
Off	The Network Power Management Card power is off
On (Green)	The Network Power Management Card power is on
Flashing (Green)	- Receiving/transmitting data packet - Reset finished

Installation Guide

Step 1. Hardware Installation

Note: The Smart Power Systems Network Power Management Card is hot-swappable, so you do not need to turn off the UPS/iPCS to install it.

1. Remove the two retaining screws from the expansion slot and remove the cover.
2. Install the Smart Power Systems Network Power Management Card into the expansion slot.
3. Insert and tighten the retaining screws.
4. Connect an Ethernet cable to the Ethernet port of the Smart Power Systems Network Power Management Card.
5. (*Optional)* To connect an environmental sensor, use a RJ45 Ethernet cable. Connect one end to the Universal port on the NPMCARD and the other end into the sensor. For more information, please see the environmental sensor user's manual.
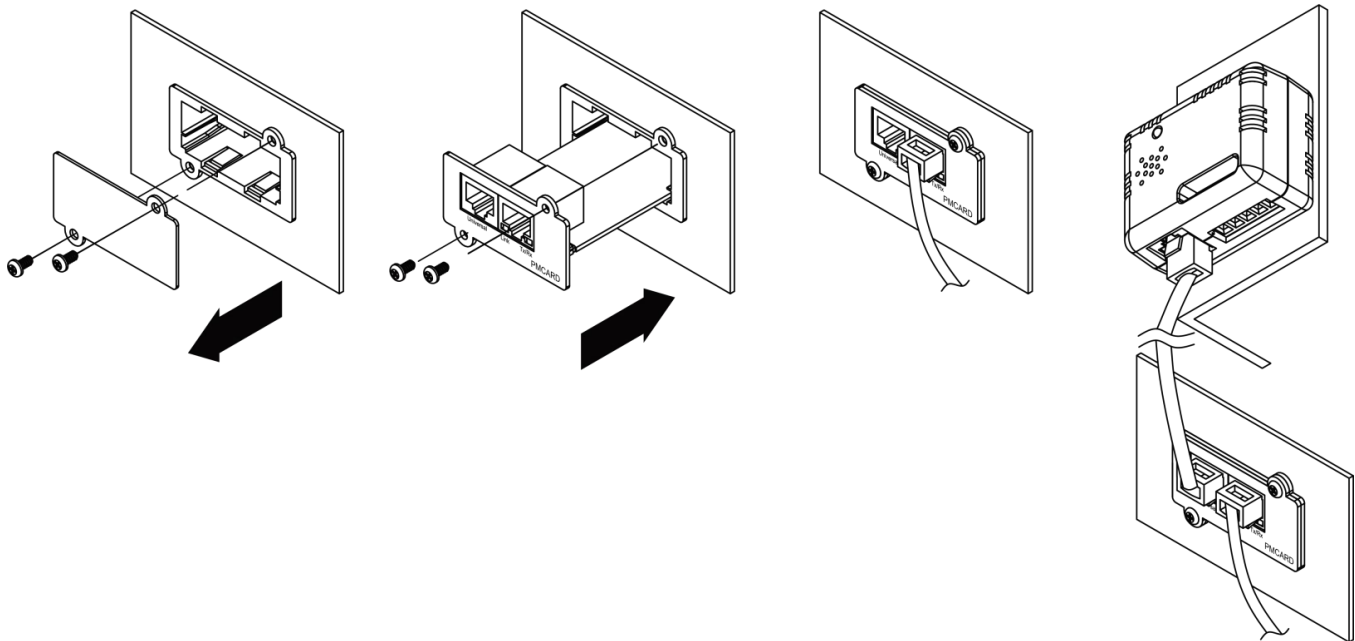
NPMCARD

Step 2. Configure the IP address for the Smart Power Systems Network Power Management Card

Method 1: Using the Power Device Network Utility

1. Install the Power Device Network Utility available for download at:
   https://www.smartpowersystems.com/downloads/Power-Device-Network-Utility/universal-pdnu151-setup.exe
2. After installation completes, run the "Power Device Network Utility".
3. The main window of the Power Device Network Utility program is shown in Figure 1. The configuration tool will display all Smart Power Systems Network Power Management Card devices present on the local network subnet. The "Refresh" button is used to search the local network subnet again.
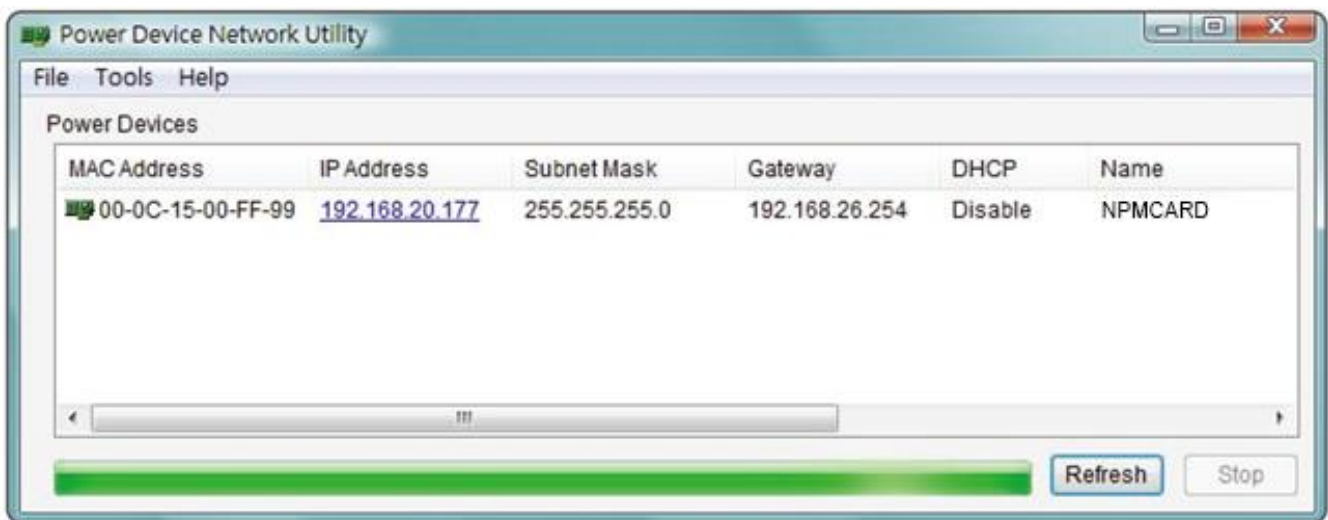
Figure 1. The main window of the "Power Device Network Utility" program.

4. Select the Network Power Management Card you are setting up. Click on the Tools menu and select "Device Setup" or double click the device you want to configure.
5. You can modify the IP Address, Subnet Mask, and Gateway address for the Device MAC Address listed in the Device Network Settings window, as shown in Figure 2. The factory default IP Address is 192.168.20.177 and the default Subnet Mask is 255.255.255.0.
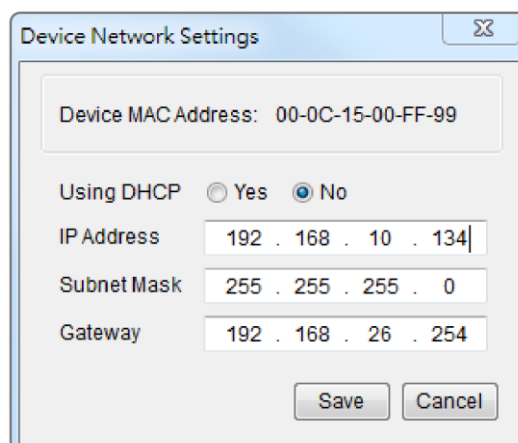
Figure 2. The Device Network setting window.

6. Modify the IP, subnet mask or gateway address. Enter the new addresses into the corresponding fields and then click "Save".

7. You will need to enter a User Name and Password for the Network Power Management Card in the authentication window, as shown in Figure 3.
   - Default user name: **admin**
   - Default password: **password**
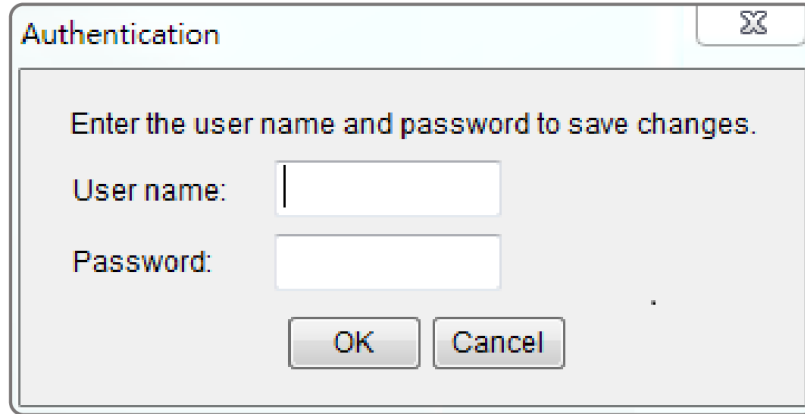
Figure 3. Authentication window.

8. If the IP address change is successful, you will see a message confirming the IP set up is OK, as shown in Figure 4.
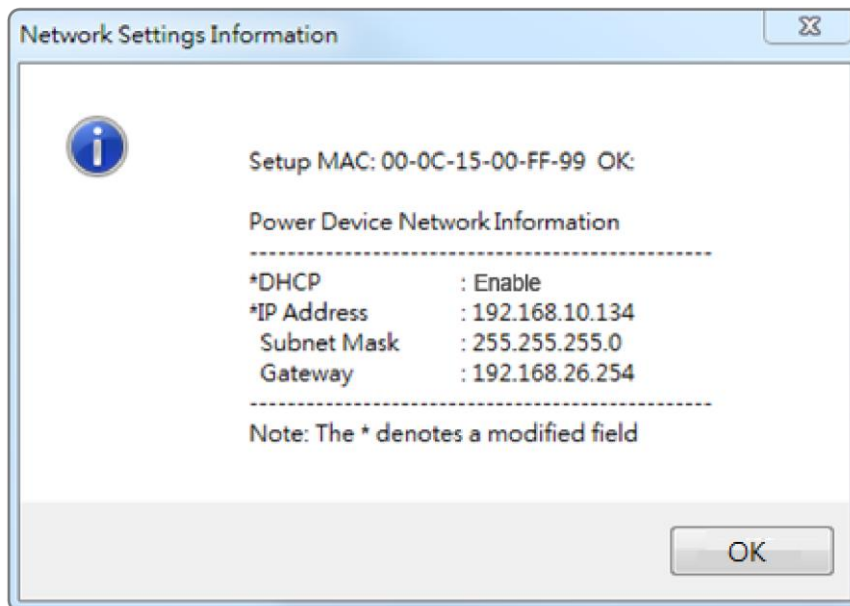
Figure 4. Setup IP Address successfully message.

9. In case the change is not successful, for example, if the IP address change is unsuccessful you will see a warning message. Attempt to make the desired changes again. If the problem persists please see the Troubleshooting section for help.

Method 2: Using a command prompt

1. Obtain the MAC address from the label on the Network Power Management Card. Each Management Card has a unique MAC address.

   Note: The MAC address is labelled on the card.

2. Use the ARP command to set the IP address.

   Example:

   To assign the IP Address 192.168.10.134 for the Network Power Management Card, which has a MAC address of 00-0C-15-00-FF-99 you will type in the following in the command prompt from a PC connected to the same network as the Network Power Management Card.

   (1) Type in "arp -s 192.168.10.134 00-0C-15-00-FF-99" for Windows OS; type in "arp –s 192.168.10.134 00:0c:15:00:ff:99" for Mac OS, then press Enter.

3. Use the Ping command to assign a size of 123 bytes to the IP.

   (1) Type in "ping 192.168.10.134 -l 123" then press Enter.

   (2) If the replies are received, your computer can communicate with the IP address.

To select an available IP address for the Network Power Management Card, please refer to Appendix 1.

Web Interface

Login User Account

You will need to enter a User Name and Password to login to the interface, and can select a preferred language after login. There are two user account types.

1. Administrator
    - Default user name: **admin**
    - Default password: **password**
2. View only
    - Default username: **device**
    - Default password: **device**

The administrator can access all functions, including enable/disable the view only account. The viewer can access read only features but cannot change any settings.

Note: 1. The Administrator account is also used for the FTP login and Power Device Network Utility.

2. Only one user can log in and access the device at a time.

Web Content

Note: English is the default language and you can change to a preferred language.

[Summary] Provide an overview of the system operation and the items that are auto refreshed; however, different UPS system models may have different items displayed.

Item	Definition
Current Condition	Display the current operating condition of the UPS and environmental sensor.
UPS Status	
Battery Capacity	Graph of the percentage of the current UPS battery capacity.
Load	Graph of the load of UPS as a percentage of available Watts.
Remaining Runtime	Length of time the UPS can support its load on battery power.
System Data	
Name	The name given to the UPS.
Location	Location description given to the UPS.
Contact	The person to contact about this UPS.
Uptime.	Length of time the system has been working continuously
Envir Status	
Temperature	Graph of the current temperature reading of the environmental sensor.
Humidity	Graph of the current humidity reading of the environmental sensor.

Item	Definition
Envir Data	
Name	The name of the environmental sensor.
Location	The location of the environmental sensor.
Recent Device Events	A list of device events that recently occurred. The maximum number of events is 5.

[**UPS**] The following items can be displayed/configured through the UPS/iPCS page; however, different UPS/iPCS models may have different items displayed/configured.

[**UPS->Status**] Display the basic information about the current UPS/iPCS status. Items displayed are auto refreshed.

Item	Definition
Input	
Status	The current status of the utility power supplied to the UPS/iPCS.
Voltage	The current input voltage of the utility power supplied to the UPS/iPCS.
Frequency	The current frequency of the utility power supplied to the UPS/iPCS.
Output	
Status	The current status of the output power the UPS/iPCS is supplying to connected equipment.
Voltage	The output voltage the UPS/iPCS is supplying to the connected equipment.
Frequency	The output frequency the UPS/iPCS is supplying to the connected equipment.
Load	The power draw of the connected equipment expressed as a percentage of the total UPS/iPCS load capacity. This is displayed as watts on some UPS/iPCS models.
Current	The output current the UPS/iPCS is supplying to the connected equipment.
Battery	
Status	The present status of the UPS battery.
Remaining Capacity	The present capacity of the batteries, expressed as a percentage of full charge.
Remaining Runtime	The amount of estimated time that the UPS/iPCS can supply power to its load.
System	
Status	The present operating status of the UPS/iPCS.
Temperature	The operating temperature of the UPS/iPCS.

[UPS->Information] Display the technical specifications of the UPS/iPCS.

Item	Description
Model	The model name of the UPS/iPCS.
Serial Number	The serial number of the UPS/iPCS.
Voltage Rating	The nominal output voltage rating (Volts) of the UPS/iPCS.
Working Frequency	The operating frequency of the UPS/iPCS output power.
Power Rating	The Volt-Amp rating of the UPS/iPCS.
Current Rating	The output current rating (Amps) of the UPS/iPCS.
Load Power	The power rating (Watts) of the UPS/iPCS.
Battery Voltage Rating	The operating DC voltage rating of the battery power.
Firmware Version	The revision number of the UPS/iPCS firmware.

[UPS->Configuration] Configure the parameters of the UPS/iPCS.

Item	Definition
Utility Power Failure Condition	
High/Low Input (or Output) Voltage Threshold	When the utility power voltage or output voltage (depending on UPS model) is higher/lower than the threshold, the UPS/iPCS will supply battery power to the connected equipment.

Item	Definition
Battery	
Low Battery Threshold	When the UPS supplies battery power and the remaining capacity is lower than this threshold, the UPS/iPCS will sound an alarm.
Periodical Battery Test	The UPS/iPCS will cyclically perform the battery test automatically to ensure the batteries have full functional.
System	
Audible Alarm	If this option is enabled, the UPS/iPCS will issue an audible alarm when supplying battery power, when output is overloaded or other conditions are present (varies by UPS/iPCS model).

Item	Definition
Over Discharge Protection	When the UPS/iPCS is in Battery Mode with 0% for the time configured, the NPMCARD will switch the UPS to Sleep Mode and the output will be turned off.
Enter Sleep Mode After All Clients Shutdown	If this option is enabled, the UPS/iPCS will enter sleep mode after utility power fails and remaining MSDT+2 minutes. For more information about MSDT please reference the help page in UPS/iPCS -> Smart PowerMaster List.

Note: Not all models provide the same configurations. These configurations will vary by model.

[UPS->Master Switch] Switch the output power of the UPS/iPCS to be on or off.

Item	Definition
Reboot UPS	Turns the UPS/iPCS off and back on
Turn UPS Off	Turns the UPS/iPCS off.
UPS Sleep	This command is available in Utility Power Failure Mode. It puts the UPS in sleep mode until power is restored. Note: Some UPS/iPCS models may not support this command.
Reset	Cancels the pending action to turn the UPS/iPCS off.
Signal Smart PowerMaster Clients to Shutdown	Select this option to warn Smart PowerMaster Enterprise Edition Clients before turning the UPS/iPCS off. The Shutdown Delay (MST, Max Clients Shutdown Time) for the UPS/iPCS can be changed to insure a graceful shutdown.

[UPS->Outlet Action->Outlet Management] The **Outlet Management** pages provides outlets various setting configuration.

Item	Definition
Outlet Name	The name used to identify each outlet.
Action Configuration	
Power On Delay	Delay time before turning on the outlet after a Turn On delayed command. Allowed values are within the range of 1 to 7200 seconds (2 hours) or Never (never turn on).
Power Off Delay	Delay time before turning off the outlet after a Turn Off delayed command. Allowed values are within the range of 1 to 7200 seconds (2 hours) or Never (never turn off).
Reboot Duration	Duration time the outlet will remain off during a Reboot action. Allowed values are within the range of 5 to 60 seconds.

[UPS->Outlet Action->Outlet Control] The **Outlet Control** page shows the state of all outlets and allows users to do outlet on/off control. The outlet in a pending command state will be notated as *.

Item	Definition
Control Action	
Turn On	Selected outlet(s) will be turned on immediately.
Turn On + Delay	Selected outlet(s) will be turned on after each outlet's Power On Delay.
Turn Off	Selected outlet(s) will be turned off immediately.
Turn Off + Delay	Selected outlet(s) will be turned off after each outlet's Power Off Delay. This action could signal PC to shutdown, if the software Smart PowerMaster Enterprise Edition Client is installed on PC.
Reboot	Selected outlet(s) will be turned off immediately, and then be turned back on after each outlet's Reboot Duration.
Reboot + Delay	Selected outlet(s) will be sequenced off after each outlet's Power Off Delay. Then they will be synchronized after the largest Power Off Delay and the largest Reboot Duration of the selected outlets and be sequenced on after each outlet's Power On Delay.
Cancel Pending Command	Selected outlet(s) will be turned off immediately.

[UPS->Outlet Action->Outlet Schedule] Sets the outlet to automatically turn off and restart according to the scheduled times (one time/per day/per week). The **Outlet Schedule** page lists all configured schedules and the related information. Each schedule row displays detailed information of each schedule such as when the schedule will take effect and when to perform it. Users can manage each schedule through this page. (Only available for switch models)

Item	Definition
AutoPing	
Status	The scheduled event status. (Enabled/Disabled)
Name	The name to call the specific scheduled event.
Action	The action which will be performed when the scheduled event takes place.
Action Time	The time when the scheduled event takes place.
Frequency	The frequency which the scheduled event takes place. • Once - Scheduled event takes place on the configured date and time once. • Daily - Scheduled event takes place at the configured time every day. • Weekly - Scheduled event takes place on the configured date and time every week.
Outlet	Outlet(s) that is/are selected for the scheduled event.

[UPS->Outlet Action->Outlet AutoPing] The **AutoPing** feature allows the NPMCARD to detect if a target device becomes unresponsive to IP pings and automatically reboot the device. If the device gets back to normal operation after reboot, network connection could be restored at the same time.

First add an IP address of the target device and correlate the IP address to specific outlet, which powers the device. The NPMCARD begins to verify its connection to the internet by periodically sending IP pings to the device. If the NPMCARD continuously receives no response from the device, the setting action will be triggered on the outlet. To utilize the function, **AutoPing** configuration is based on different applications.

Item	Definition
AutoPing	
Status	Present AutoPing status of the outlet.
Name	The name to call the specific scheduled event.
Active	Enable/Disable the AutoPing function.
Priority IP Address	When "Yes" is selected, sets the IP address of the priority to utilize the function. Pings will only be sent to the target device when receiving a successful ping response from the priority. For example, the target device is connected to a router, which is set to be the priority. The PMCARD sends IP pings to the target device only if the router is responsive to IP pings. In this way, the NPMCARD can verify network connection by sending IP pings to the priority first and determine if target IP ping test is performed accordingly.
Target IP Address	The IP address of the target device.
Period	The time interval between successive pings to the target device, in second.
Retries	The number of failed ping tests that must be consecutively detected before the action is triggered.
Action	The action on specific outlet if the NPMCARD continuously receives no response from the target device. When "Reboot" is selected, sets the maximum number of times to be triggered.
Restart Delay	Length of time after an action is triggered before beginning to restart ping tests. This allows a proper time for the device to get back to normal operation. During this time interval, no pings are sent to the target device.
Outlet	Outlet(s) that is/are selected for the AutoPing failed event.

[UPS->Diagnostics] The **UPS/Diagnostics** page provides the ability to verify UPS batteries are in adequate working conditions. You can also complete a runtime estimation to insure an accurate estimation for the connected load.

Item	Definition
Battery Test	The **Battery Test** will force the UPS/iPCS to switch to battery power for 10 seconds. This allows the user to verify the battery conditions and provides information about the battery, including the results and date of the last battery test. Click the "**Start**" button to begin a battery test. The information will be reported after a battery test completes. Note: "N/A" means the UPS/iPCS model does not have this function.

Last Test Result	The results of the most recent battery test.
	      Passed: The battery performed normally during the test.
	      Failed: The battery test did not pass.
	Follow the steps below if the battery test fails:
	Repeat the battery test and replace the batteries if the test fails again.
	Contact **Smart Power Systems** for assistance if the battery test fails after the batteries have been replaced.

Last Test Date	The date of the most recent battery test.
Runtime Estimation	The Runtime Estimation function discharges the UPS/iPCS batteries from the battery capacity, at the time the estimate is requested, to near zero capacity with the current load. The results of the runtime estimation show the runtime, status of estimation, and the date of the last estimation. When the runtime estimation is initiated, the connected equipment will be run on battery power until the batteries are discharged to near zero capacity. Once the batteries are discharged to this point, the connected equipment will run on utility power. The batteries will then be recharged automatically after the estimation is done. Note: This estimated runtime may vary based on the load and the level of charge on the batteries when the runtime estimation is initiated. The batteries will be recharged then automatically after the estimation is done. Users can click the "Start" button to initiate the runtime estimation. Click the "Abort" button to interrupt the runtime estimation. The result will be reported after the runtime estimation is finished or canceled.
Estimated Runtime	The estimated runtime of the batteries with the current load.

Last Estimation Result	The results of the last Runtime Estimation.
	  Passed: The runtime estimation was completed and the batteries are good.
	  Canceled: The runtime estimation was interrupted.

Last Estimation Date	The date the last runtime estimation was performed.

[UPS->Wake on Lan] This function is used to wake a computer through the network. Enter the IP address of that computer when it is on and the system will search its MAC address accordingly. The maximum number of IP addresses that can be set is 50.

Item	Definition
Smart PowerMaster Enterprise Client	
Load/Sync with Smart PowerMaster Enterprise Client List	Load and Sync with Smart PowerMaster Enterprise Client List. Wake on the Smart PowerMaster Enterprise Client network device on power event.
Wake Conditions	
UPS/iPCS Turn On	When selected, this option will enable the NPMCARD to send the WoL signal to the connected Smart PowerMaster Enterprise Clients computers when the UPS turns on.
Utility Power Restore and Output is Supplied	When selected, this option will enable the NPMCARD to send the WoL signal to the connected Smart PowerMaster Enterprise Clients computers when utility power is restored and UPS output is on.
WoL Lists	
WoL Manual List	Wake on Lan manual list.

Note: The Smart PowerMaster Enterprise Client computer's BIOS settings need to support WoL and be configured accordingly.

[UPS-> Smart PowerMaster Enterprise List] Display the Information of the connected Smart PowerMaster Enterprise Edition Clients. The connection is established by Smart PowerMaster Enterprise Edition Clients. The listed clients will be removed if disconnected for 1 hour.

Item	Definition
Configuration	
Max Clients Shutdown Time (MST)	The max time that all the connected clients require to shutdown.
Max Clients Shutdown Delay Time (MSDT)	The max value required from the moment utility power fails until all the clients gracefully shutdown.

[Envir] Following items can be displayed/configured through the Envir page. Note that Envir Tab only appears when an environmental sensor is connected to the NPMCARD.

[Envir->Status] Display the basic information of the environmental sensor and contact closure inputs.

Item	Definition
Information	
Name	The name of the environmental sensor.
Location	The location of the environmental sensor.
Temperature	
Current Value	The current environmental temperature.
Maximum	The highest temperature and time detected by the environmental sensor.
Minimum	The lowest temperature and time detected by the environmental sensor.
Humidity	
Current Value	The current environmental humidity.
Maximum	The highest humidity and time detected by the environmental sensor.
Minimum	The lowest humidity and time detected by the environmental sensor.
Contact	Display the name and status (Normal/Abnormal) of each input dry contact.

[Envir->Configuration] Configure the parameters of the environmental sensor.

Item	Definition
Information	
Name	The name used to identify the environmental sensor.
Location	The place where the environmental sensor is located.
Temperature	
High Threshold	Upper limit for normal temperature.
Low Threshold	Lower limit for normal temperature.
Hysteresis	The point at which the difference between the High and Low temperature threshold changes from abnormal to normal.
Rate of Change	The rate used to define an abnormal change in temperature.
Unit	The unit of temperature measurement.
Humidity	
High Threshold	Upper limit for normal humidity.
Low Threshold	Lower limit for normal humidity.
Hysteresis	The point at which the difference between the High and Low humidity threshold changes from abnormal to normal.
Rate of Change	The rate used to define an abnormal change in humidity.
Contact	Enter the name of each input dry contact relay and use the dropdown menu to define the normal status of each one.

[Logs->Event Logs] Display the list of events and a brief description of each event along with the date and time stamp.

Note: 1. The recordable events are listed under "System->Notifications->Event Action."

　　　2. The recorded time is using the 24-hour clock format.

[Logs->Status Records] The status records display a list of records along with a date and time stamp. All items have the same definition as they are in the UPS/iPCS status.

- Input min (V): The minimum input voltage of the utility power from the previous record.
- Input max (V): The maximum input voltage of the utility power from the previous record.
- Input (Hz): The current frequency of the utility power supplied to the UPS/iPCS.
- Output (V): The output voltage of the UPS/iPCS supplying to the connected equipment.
- Output (Hz): The output frequency of the UPS/iPCS supplying to the connected equipment.
- Load (%): The percentage of the total UPS/iPCS power being supplied to the connected equipment.
- Capacity (%): The percentage of the current UPS/iPCS battery capacity.
- Remaining Runtime: The estimated duration of time that the UPS/iPCS can support the connected load in battery mode.
- UPS Temp. (°C) / (°F) - The internal temperature of the UPS.
- Temperature (°C or °F): The current temperature of the environmental sensor.
- Humidity (%RH): The current humidity of the environmental sensor.

[Logs->Graphing] This page is used to display the data of the Status Record. The graphing function makes the status records easier to view.

Item	Definition
Graph Period	The period used to draw the graph. Longer periods will require more time to be displayed.
Graph Data	The data used to draw the graph. The more data selected, the more graphing time is needed.
Graph Node	Selecting "Display All Nodes in Detail" will display all the points along the line; moving the cursor on the data point will show the information of that point.
Launch Graph in New Window	Checking this box will open the graph in detail in a new page.

[Logs->Maintenance] This page is used to select "Event Logs" and "Status Records" settings. The application provides information on how many events are recorded before it is full.

Item	Definition
Event Logs	
Clear All Logs	Clear the existing event logs.
The Number of Events	The number of the existing event logs and the maximum number of the event logs that can be recorded. Once the maximum number is reached, new events overwrite oldest events in memory.
Save Event Logs	Save the existing event logs as a text file.
Status Records	
Recording Interval	Set the frequency status data is recorded. A smaller interval will provide more frequent recordings but exhaust available memory quicker. A larger interval will provide less frequent recordings, but save data for a longer period of time.
Clear All Records	Clear the existing status records.
Remaining Time	The time that records have been kept. A smaller recording interval leads to less remaining time while a larger recording interval leads to more remaining time. Once the maximum number is reached, new status records overwrite oldest status records in memory.
Save Status Records	Save the status records as a text file.
Energy Records	
Recording Interval	The frequency for recording the energy data.
Clear Entire Records	Clear the existing energy records.
Electricity Rate	The ratio of energy cost to energy.
CO2 Emissions	The ratio of CO2 emissions to energy.
Save Energy Records	Save the existing energy records as a text file.

Note: Event Logs and Status Records use a First In First Out memory. Oldest data will be rewritten once memory is full.

[System->General->Time] Display the system date and time and allow users to set it manually or by using the NTP (Network Time Protocol) server.

Item	Definition
Current Settings	Displays the current date and time on the card status and time until the next Network Time Protocol (NTP) update. To set the date and time, users can choose to set it manually or by using the NTP (Network Time Protocol) server.
System Time Configuration	
Time Zone	Choose the PMCARD time zone in GMT (Greenwich Mean Time).
Using NTP server	Enter the IP address/domain name of NTP servers, and set the frequency to update the date and time from NTP server. Click "Update right now" to update immediately.
Manual Setup	Enter the date and time in the designated format.

[System->General->Identification] Assign the system's name, contact, and location.

Item	Definition
Name	The name of the equipment.
Location	Where the power equipment is located.
Contact	The person to contact about this equipment.

System->General->Daylight Saving Time] Adjust the clock daylight saving time.

Item	Definition
DST Configuration	
Disable	Disable DST.
Tradition US DST	Set traditional US DST settings Start: 2:00, second Sunday in March. End: 2:00, first Sunday in November.
Manual DST	Manual DST date time rules.

[System->Security->Authentication] Set for software authentication.

Item	Definition
Login Authentication	
Local Account	Use local account Administrator or Viewer settings to log in.
RADIUS , Local Account	Use RADIUS configuration settings to log in. If RADIUS authentication fails then Local Account settings will be used to log in.
RADIUS Only	Use RADIUS configuration settings to log in.
Software Authentication	
Secret Phrase	The Authentication Phrase used to communicate with Smart PowerMaster Enterprise Edition Client.

[System->Security->Local Account] This page is used to configure the login account.

Information	Description
Administrator	Administrator has full access to read/write configuration settings. **Note:** The maximum length of both User Name and Password of Administrator is 15 characters.
Viewer	Viewer has restricted access to read only. **Note:** The maximum length of both User Name and Password of Viewer is 15 characters.
Admin/Viewer Manager IP	This setting determines what IP address is allowed to access the device using either Admin or Viewer accounts. If you want to access PMCARD from any IP address, you can set one of them as 0.0.0.0 or 255.255.255.255. Note: A range of IP addresses can be allowed by entering the subnet mask. For example 192.168.20.0/16 means the IP which has subnet of 192.168.0.0 can be allowed to access.

Change Administrator account:

1. Enter User Name
2. Enter Current Password
3. Set the Manager IP *(optional)*
4. Enter New Password
5. Enter Confirm Password
6. Click "Apply"

Note: The maximum length of both User Name and Password is 15 characters.

Change Viewer account:

1. Select "Allow Access" to enable the Viewer account
2. Enter the User Name
3. Set the Manager IP *(optional)*
4. Enter New Password
5. Enter Confirm Password
6. Click "Apply"

Note: The maximum length of both User Name and Password is 15 characters.

[System->Security->RADIUS Configuration] After setting the proper RADIUS server, the Power Management Card can use user name and password set on the RADIUS server to login.

Item	Definition
Server IP	The IP address/domain of RADIUS server.
Shared Secret	The shared secret of RADIUS server.
Server Port	The UDP port used by the RADIUS server.
Authentication Type	The authentication protocol type for RADIUS Server. • Password authentication protocol (PAP) • Challenge-Handshake Authentication Protocol (CHAP)
Test Setting	Test RADIUS server using user name and password settings. If authentication is successful the settings will be saved.
Skip Test	Save RADIUS server settings without testing.

Note: Please refer to Appendix 2 for the account configuration in RADIUS servers.

[System->Security->Session Control] Set for timeout setting for open sessions to automatically log off.

Item	Definition
Timeout	The period (in minutes) that the system waits before automatically logging off.

[System->Network Service->TCP/IPv4] Display the current TCP/IPv4 settings. Set DHCP and DNS server settings.

Item	Definition
Current Configuration	Displays the current TCP/IP settings: IP address, subnet mask, gateway, and DNS server.
DHCP	Select the option and click Apply to get TCP/IP settings by DHCP. • DHCP Enable - Select the Enable DHCP option and click Apply to get IP address, Subnet Mask, and Gateway from DHCP server. • Obtain DNS Address from DHCP - Select the Obtain DNS Address from DHCP and click Apply to get the IP of DNS from the DHCP server.
Manual	Enter the TCP/IP settings directly and click "Apply".

[System->Network Service->TCP/IPv6] Display and configure the current IPv6 settings.

Item	Definition
IPv6 Interface	Displays the current IPv6 address.
IPv6 Gateway	Displays the current IPv6 gateway.
IPv6 Configuration	
Access	Set the IPv6 service to either Enable or Disable.
Address Mode	
Router Control	The IPv6 address is assigned through one of the following methods as configured in the router settings: Stateless Address Auto-configuration, Stateless DHCPv6 or Stateful DHCPv6.
Manual	The IPv6 address is assigned manually.
Manual IPv6 Address	Enter the IPv6 address directly when the Manual setting is selected.

[System->Network Service->SNMPv1 Service] Allow users to use a NMS and configure the appropriate SNMPv1 settings.

Item	Definition
SNMPv1 Service	
Allow Access	Set the SNMPv1 service to either Enable or Disable.
SNMPv1 Access Control	
Community	The name used to access this community from a Network Management System (NMS). The field must be 1 to 15 characters in length.
IP Address	NMS access can be restricted by entering a specific IP address or an IP network subnet mask. The following subnet mask rules apply: • 192.168.20.255: Access only by an NMS on the 192.168.20 segment. • 192.255.255.255: Access only by an NMS on the 192 segment. • 0.0.0.0 (the default setting) or 255.255.255.255: Access by any NMS on any segment.
Access Type	The allowable action for the NMS through the community and IP address. • Read Only: GET command allowed any time; SET command restricted. • Write/Read: GET command allowed any time; SET command allowed anytime unless a user session is active. • Forbidden: GET and SET commands are restricted.

[System->Network Service->SNMPv3 Service] Allow users to use a NMS and configure the appropriate SNMPv3 settings.

Item	Definition
SNMPv3 Service	
Allow Access	Set the SNMPv3 service to either Enable or Disable.
SNMPv3 Access Control	
User Name	The name to identify SNMPv3 user. The field must be 1 to 31 characters in length.
Authentication Type	The hash type for authentication.
Authentication Password	The password used to generate the key used for authentication. The field must be 16 to 31 characters in length.
Privacy Key	The type of data encryption/decryption. **Note:** The privacy protocol cannot be selected if no authentication protocol is selected.
Privacy Password	The password used to generate the key used for encryption. The field must be 16 to 31 characters in length.
IP Address	NMS access can be restricted by entering a specific IP address or an IP network subnet mask. The following subnet mask rules apply: • 192.168.20.255: Access only by an NMS on the 192.168.20 segment. • 192.255.255.255: Access only by an NMS on the 192 segment. • 0.0.0.0 (the default setting) or 255.255.255.255: Access by any NMS on any segment.
Authentication Type	The hash type for authentication.
Privacy Type	The type of data encryption/decryption.

Note: The privacy protocol cannot be selected if no authentication protocol is selected.

[System->Network Service->Web Service] Select Enable to allow access to the HTTP or HTTPS Service and configures the TCP/IP port for them.

Item	Definition
Access	
Allow Access	Enable the access to HTTP or HTTPS service. The HTTPS supports encryption algorithm list as follow: • AES (256/128 bits) • Camellia (256/128 bits) • 3DES (168 bits) • DES (168 bits)
Http Settings	
Http Port	The TCP/IP port of the Hypertext Transfer Protocol (HTTP) (80 by default)
Https Settings	
Https Port	The TCP/IP port of the Hypertext Transfer Protocol Secure (HTTPS) (443 by default)
Certificate Status	• Valid Certificate (or Invalid Certificate): Click to view Certificate detailed information. • Upload Certificate: Click to upload a certificate and replace the current one. Note: The format of uploading certificate must in a standard PEM (Privacy Enhanced Mail).

[System->Network Service->Console Service] Select Enable to allow access to the Telnet or SSH Service and configures the TCP/IP port that Telnet or SSH uses to communicate.

Item	Definition
Access	
Allow Access	Enable the access to Telnet or SSH version 2, which transmits user names, passwords and data in encrypted.
Telnet Settings	
Telnet Port	The TCP/IP port (23 by default) that Telnet uses to communicate.
SSH Settings	
SSH Port	The TCP/IP port (22 by default) that SSH uses to communicate.
Hostkey Status	• Display the status of hostkey fingerprint to show whether it is valid or invalid. • Upload Hostkey: Click to upload a Hostkey and replace the current one. • Export Hostkey: Click to export a current Hostkey.

Note: To enhance security, users can change port setting to any unused port from 5000 to 65535. Users must then specify the non-default port to obtain access.

[System->Network Service->FTP Service] Allow users to Enable/Disable the FTP server service and configure the TCP/IP port of the FTP server (21 by default).

Item	Definition
Allow Access	Enable the access to FTP server.
Service Port	The TCP/IP port of the FTP server (21 by default). Users can change port setting to any unused port from 5000 to 65535 to enhance security.

Note: The FTP server is used for upgrading Firmware. For more details about the upgrade process, please refer to "Firmware Upgrade" section.

[System->Notifications->Event Action] Configure notification settings for every Device Event. Events are categorized for ease of management.

• Log: Record the event in the "Event Logs".
• E-mail: Send an email to a specific user (An available SMTP server is necessary).
• Trap: A SNMP trap sent to a specific IP address.
• Delay: The event will be sent if the condition persists for at least x seconds.
   Note: Delay configuration currently for UPS utility power event only.

[System->Notifications->SMTP Server] After setting the proper SMTP server, event notification email can be sent to recipients when specific events occur.

Item	Definition
Service Provider	The service provider of e-mail account. There are two options: General and Gmail.
General	Select General as service provider. Complete all field settings and click Apply to save.
Gmail	Select Gmail as the service provider. Click Authorize for an authorization to send a mail notification. Then complete the sender name and click Apply to save the settings.
SMTP server address	The IP address or Host Name of the SMTP server used to send email notifications.
Sender's E-mail Address	Email address used to send the email notification.
Sender name	Configure the sender information for the E-mail.
Authentication	Select this option if the SMTP server requires to authenticate the user.
Account	Account used for Authentication with a maximum length of 47 characters.
Password	Password used for Authentication with a maximum length of 15 characters.
Secure connection	Enable TLS or SSL security.
Service port	The port number used to communicate with the SMTP server.

[System->Notifications->E-mail Recipients] Set up to five email recipients to receive notifications when configured Events occur.

To add a new recipient, click "New Recipient". To modify or delete an existing Recipient, click the e-mail address of that recipient. To check if SMTP setting and the email recipients are set correctly, click "TEST" button to send a test message.

[System->Notifications->Trap Receivers] Setup up to 10 NMS TRAP receivers by IP address (IPv6 supported). SNMPv1 and v3 is supported. The listed TRAP receivers will be notified when configured Events occur.

To add a new receiver, click "New Receiver". To modify or delete an existing receiver, click the IP address or name of that receiver. To check if the traps can be received correctly, click "TEST" button.

**[System->Reset/Reboot]** Reset or reboot the NPMCARD system.

Item	Definition
Reboot System	Restart the system without turning off and restarting the UPS.
Reset System	Reset the system to factory default setting. The system will restart. This action will not turn off or restart the UPS.
Reset System (TCP/IP Settings Reserved)	Reset the system to factory default setting but reserving TCP/IP. The system will restart This action will not turn off or restart the UPS.

[System->About] Display system information for the Power Management Card.

Item	Definition
Model Name	Model name of the Power Management Card.
Hardware Version	The hardware version of the Network Power Management Card.
Firmware Version	The revision number of the firmware current installed on Product.
Firmware Updated Date	The last date the firmware was updated.
MAC Address	MAC address of the Network Power Management Card.
Save Configuration	Click "Save" to save the NPMCARD configuration file. The text file name will have a default format of YYYY_MM_DD_HHMM.txt.
Restore Configuration	Use this function to restore a configuration that had been previously saved. Click "Browse" to select the location of the saved configuration file and click "Submit". Note: The saved Configuration file includes security information such as user name and password. After you complete the Restore Configuration, it's suggested that you delete the file to keep sensitive information safe and secure.

Reset to Factory Default Setting / Recover from a Lost Password

To reset the Smart Power Systems Network Power Management Card to its factory default setting (including web log-in user name and password), please following these steps:
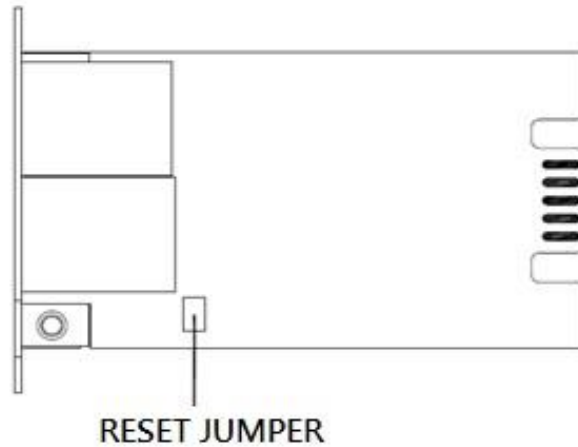
RESET JUMPER

NPMCARD

1. Remove the card from the UPS/iPCS without turning the UPS/ATS PDU off.
2. Remove the jumper from the reset pins as illustrated. Do not dispose of the jumper.
3. Insert the card into the expansion port on the UPS/ATS PDU.
4. Wait until the green Tx/Rx LED is flashing (the frequency of the ON/OFF flashing is once per second).
5. Remove the card again.
6. Place the jumper back onto the Reset pins.
7. Install card into the expansion port again and tighten the retaining screws.
   NOTE: After factory reset, the default username and password will be set to the following:
   USERNAME: admin
   PASSWORD: admin

PMCARD Firmware Upgrade

By upgrading the firmware, you can obtain both the new features and updates/improvements to existing functionality. FTP service needs to be Enabled before attempting to execute a Firmware Upgrade. You can check the "Firmware version" on the **[System->About]** page on the web user interface of the PMCARD. There are two files to update in order to upgrade the firmware version.

- A. ethpmcafw_XXX.bin
- B. ethpmcadata_XXX.bin

Note: To ensure keeping NPMCARD firmware up to date, please visit Smart Power Systems website every 3 months to see if there is any updated firmware version available.
Note: To update the NPMCARD firmware successfully, please check whether the connections to Port 20 and 21 in firewall are not blocked.

Method 1: Using FTP command
Use the following steps to upgrade the firmware:
1. Download the latest firmware
2. Extract the downloaded files to "C:\"
3. Open a command prompt window
4. Login to the Smart Power Systems Network Power Management Card with FTP command, in the command prompt type:
   (1) ftp
   (2) ftp> open
   (3) To [current IP address of NPMCARD] [port]; EX: To 192.168.22.126 21
   (4) Input USER NAME and PASSWORD (same as the administrator account in web user interface, see page 6 for default factory settings)
5. Upload file A, type:
   ftp > bin
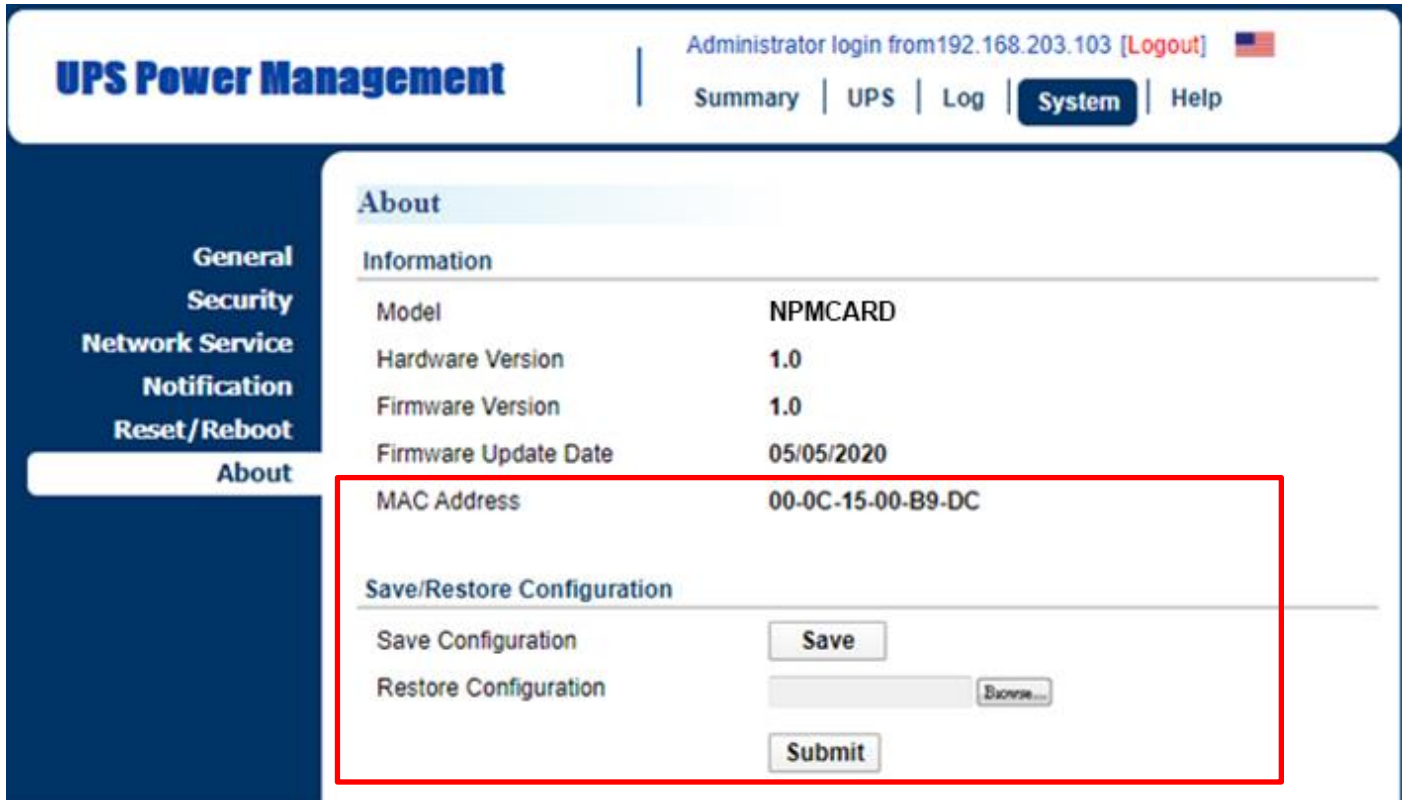   ftp > put ethpmcafw_XXX.bin
6. Upload is now complete, type:
   ftp > quit
7. The system will reboot after you type "quit"
8. Login to the FTP again as step 4
9. Upload file B, type:
   ftp > bin
   ftp > put ethpmcadata_XXX.bin
10. Upload is now complete, type:
   ftp > quit
11. The system will reboot after you type "quit"

Method 2: Download the Power Master Network Manager software

Save and Restore Configuration Settings

Figure 5. Save/Restore Configuration in the main window.

You can easily save and restore the device configuration to your local PC on the **[System->About]**, as shown in Figure 5.

To save the configuration file, click "Save" to save the configuration to your local PC. The text file will have a default format of YYYY_MM_DD_HHMM.txt. To restore a configuration, click "Browse" to the location of the saved configuration file and click "Submit" to restore a configuration that has been saved earlier.

Troubleshooting

Problem	Solution
Unable to configure the Network Power Management Card using method 1 or method 2	1. Check the LED status, it is normal when the yellow and green LEDs are both on. If green LED is off : ► Check if the Power Management Card is properly seated in the device and the device has power. If yellow LED is off : ► Ensure the network connection is good. 2. Ensure the PC being used is on the same local network subnet as the Smart Power Systems device you are trying to communicate with. 3. Ensure the Jumper on the Reset Pin is correctly installed.
Unable to ping the Network Power Management Card	1. Use method 1 and/or method 2 to get/set a correct IP address for the Network Power Management Card. 2. If the PC being used is on a different network subnet from the Network Power Management Card, verify the setting of subnet mask and the IP address of gateway.
Lost the user name and password	Please refer to the "Reset to Factory Default Setting / Recover from a Lost Password" section.
Default Network Setting	IP: 192.168.20.177 Subnet mask: 255.255.255.0 DHCP: On
Unable to access the Web Interface	1. Ensure you can ping the NPMCARD. 2. Ensure you are specifying the correct URL.
Unable to operate a SNMP get/set	SNMPv1: Verify the community name. SNMPv3: Verify the user profile configuration.
Unable to receive traps	1. Ensure the trap types (SNMPv1/SNMPv3) and trap receiver are configured correctly. 2. Ensure the IP address of gateway is configured correctly if the NPMCARD and NMS are on a different network.

Conformance Approvals

FCC Warning

This equipment has been tested and found to comply with the limits for a Class A Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any special accessories needed for compliance must be specified in the instruction.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.
Cet appareil numerique de la class A respecte toutes les exigencies du Reglement sur le materiel brouilleur du Canada.

European Union

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

⚠ WARNING: This product can expose you to chemicals including Styrene, which is known to the State of California to cause cancer, and Bisphenol-A, which is known to the State of California to cause birth defects or other reproductive harm.
For more information go to www.P65Warnings.ca.gov.

Appendix 1: IP Address Identification for Smart Power Systems Network Power Management Card

Overview

All devices on a computer network need to have an IP address. Each device's IP address is unique. The same address cannot be used twice. In order to assign an IP address to the Smart Power Systems Network Power Management Card, you must determine the range of the available IP addresses, and then choose an unused IP address to assign to the Network Power Management Card.

Note: You may need to contact your network administrator to obtain an available IP address.

Procedures to find an IP address:

1. Locate the subnet of the Smart Power Systems Network Power Management Card.

One way to determine the range of possible IP addresses is to view the network configuration on a workstation. Click on [Start] and select [Run]. Type "command" into the open box and click [OK]. At the command prompt type "**ipconfig /all**" and press [Enter]. The computer will display network information as listed below:

Ethernet adapter

Connection-specific DNS Suffix………: xxxx.com

Description……………………...: D-Link DE220 ISA PnP LAN adapter

Physical Address………………: 00-80-C8-DA-7A-C0

DHCP Enabled……………….…: Yes

Autoconfiguration Enabled…: Yes

IP Address…………………..……: 192.168.20.102

Subnet Mask………………...…: 255.255.255.0

Default Gateway………….…: 192.168.20.1

DHCP Server……………….....…: 192.168.20.1

DNS Servers………………...…: 211.20.71.202

168.95.1.1

2. Select an IP Address for the Smart Power Systems Network Power Management Card

Verify the IP Addresses for the computer and the Network Power Management Card belong to the same subnet. Refer to the above network information, the possible IP Address for the Network Power Management Card could be 192.168.20.* (* hereafter represents any number between 1 and 255). Similarly, if the Subnet Mask is 255.255.0.0, the IP Address for Network Power Management Card could be set up as 192.168.*.* to reach the same subnet with the computer.

To verify there is no other equipment connected to the network using the same IP Address, run "Ping 192.168.20.240" at the DOS Mode prompt when the IP Address you would like to set is 192.168.20.240. If the response is presented as below, the IP address is most likely not used and may be available for the Smart Power Systems Network Power Management Card.

> Pinging 192.168.20.240 with 32 bytes of data:
>
> Request timed out.
> Request timed out.
> Request timed out.
> Request timed out.

If the response is shown as below, the IP address is in use. Try another IP address until an available address is found.

> Pinging 192.168.20.240 with 32 bytes of data:
>
> Reply from 192.168.20.240: bytes=32 time<10ms TTL=64
> Reply from 192.168.20.240: bytes=32 time<10ms TTL=64
> Reply from 192.168.20.240: bytes=32 time<10ms TTL=64
> Reply from 192.168.20.240: bytes=32 time<10ms TTL=64

Appendix 2: How to Configure a PMCARD User Account in Authentication Servers

RADIUS

1. Add a new attribute to RADIUS Dictionary as the PM vendor:
   3808 – Vendor

2. Add two new specific attributes to RADIUS server interface under the vendor:
   (1) **PM-Service-Type** (integer variable)

PM-Service-Type can accept three integer parameter values:
   1 – Administrator
   2 – Viewer
   3 – Outlet User

(2) **PM-Outlets** (string variable)

PM-Outlets can accept a string describing outlet numbers. This attribute will let the outlet user access and control the designated outlets. For example, PM-Outlets = "1, 2, 5" allows the user to control outlets 1, 2, and 5.

The example of the Dictionary File:
```
VENDOR          PM              3808
BEGIN-VENDOR    PM
ATTRIBUTE       PM-Service-Type     1       integer
ATTRIBUTE       PM-Outlets          2       string
VALUE           PM-Service-Type     Admin   1
VALUE           PM-Service-Type     Viewer  2
VALUE           PM-Service-Type     Outlet  3
END-VENDOR      PM
```

3. The attribute PM-Outlets must be entered before the attribute PM-Service-Type when adding them to a user in the RADIUS Users database.

Example of RADIUS User: UserName Cleartext- Password := "YourPassword"
                               PM-Outlets = "1, 2, 5",
                               PM-Service-Type = 1

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