

Power Management Card PMCARD

User's Manual

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

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Introduction

Overview

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

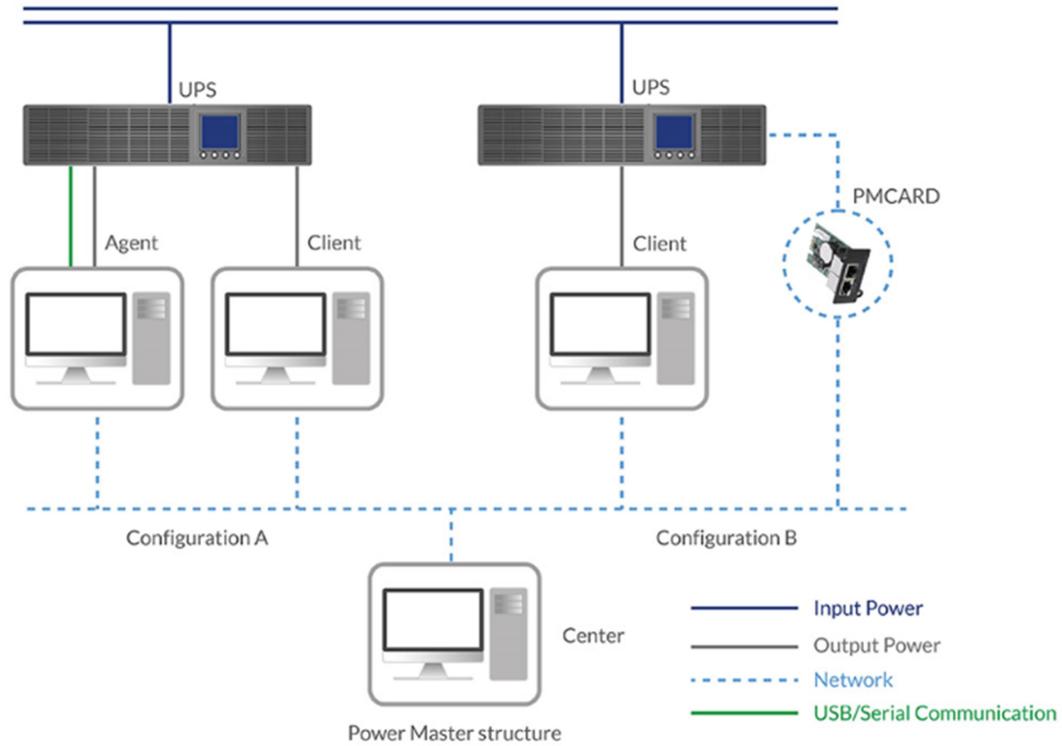
Features

- Real time UPS monitoring
- Remote management and configuration of the UPS via Web Browser, NMS
- Local management and configuration of the UPS 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 remotely
- Event logging to trace UPS operational history
- Graphic data logging to analyze power conditions
- Save and restore configuration settings including current UPS and ATS parameter configuration.
- Event notifications via Email, SNMP traps
- Support IPv4/v6, SNMPv1/v3, HTTP/HTTPS, DHCP, NTP, DNS, SMTP, Telnet, FTP protocol.
- Support Email Secure Authentication Protocols: SSL, TLS
- 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
- *(Optional)* NMS (Network Management System) compliant with SNMP

Application with PowerMaster Business



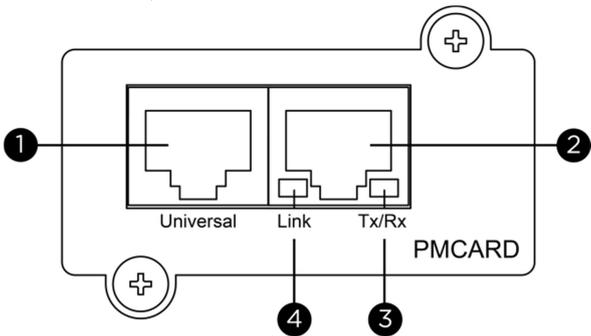
Unpacking

Inspect the Cyber Energy Power Management Card upon receipt. The package should contain the following:

- Cyber Energy Power Management Card
- Quick Start Guide
- Spare Jumper

Front Panel

PMCARD



- 1. Universal Port
- 2. Ethernet Port
- 3. Tx/Rx Indicator
- 4. Link Indicator

LED Status Indicators

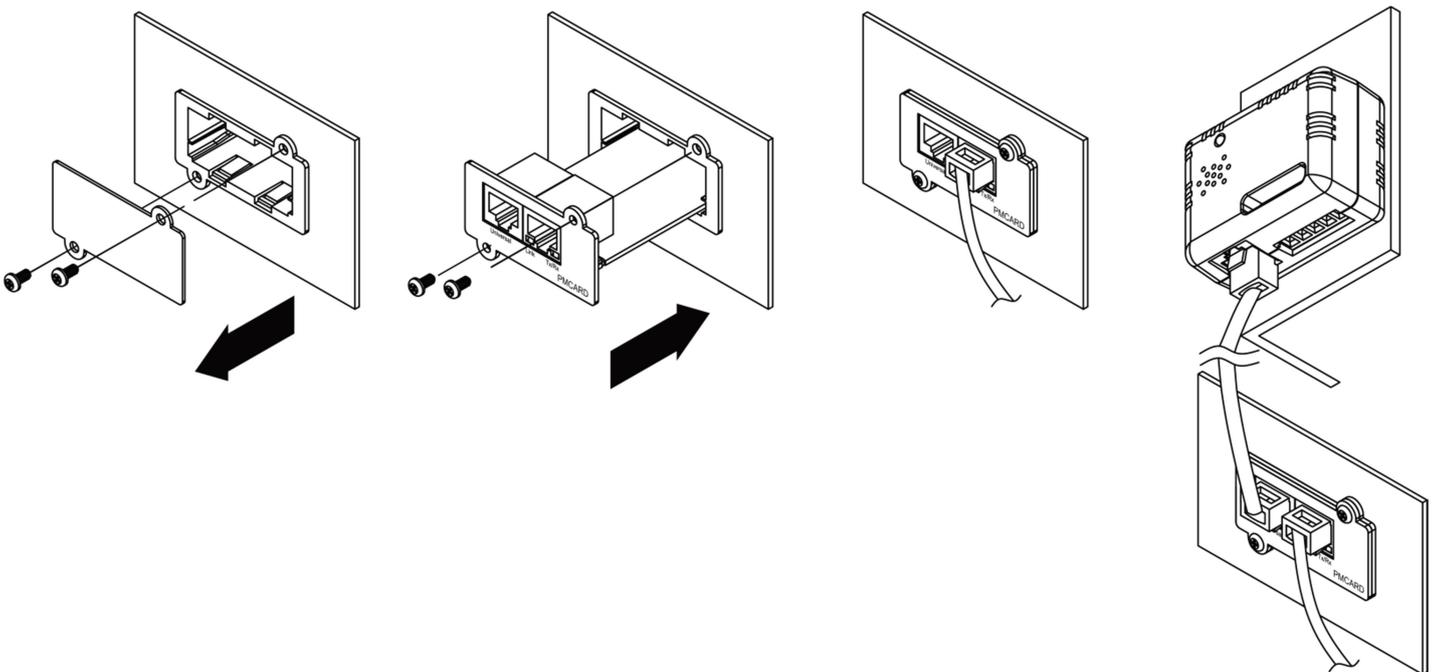
Link LED	Condition
Off	The Power Management Card is not connected to the Network/ or the Power Management Card power is off
On (Yellow)	The Power Management Card is connected to the Network
Tx/Rx LED	
Off	The Power Management Card power is off
On (Green)	The Power Management Card power is on
Flashing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

Installation Guide

Step 1. Hardware Installation

Note: The Cyber Energy Power Management Card is hot-swappable, so you do not need to turn off the UPS to install it.

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



PMCARD

Step 2. Configure the IP address for the Cyber Energy Power Management Card

Method 1: Using the Power Device Network Utility

1. Install the Power Device Network Utility available for download at <http://www.powermonitor.software/#PowerDeviceSoftware>.
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 Cyber Energy Power Management Card devices present on the local network subnet. The "Refresh" button is used to search the local network subnet again.

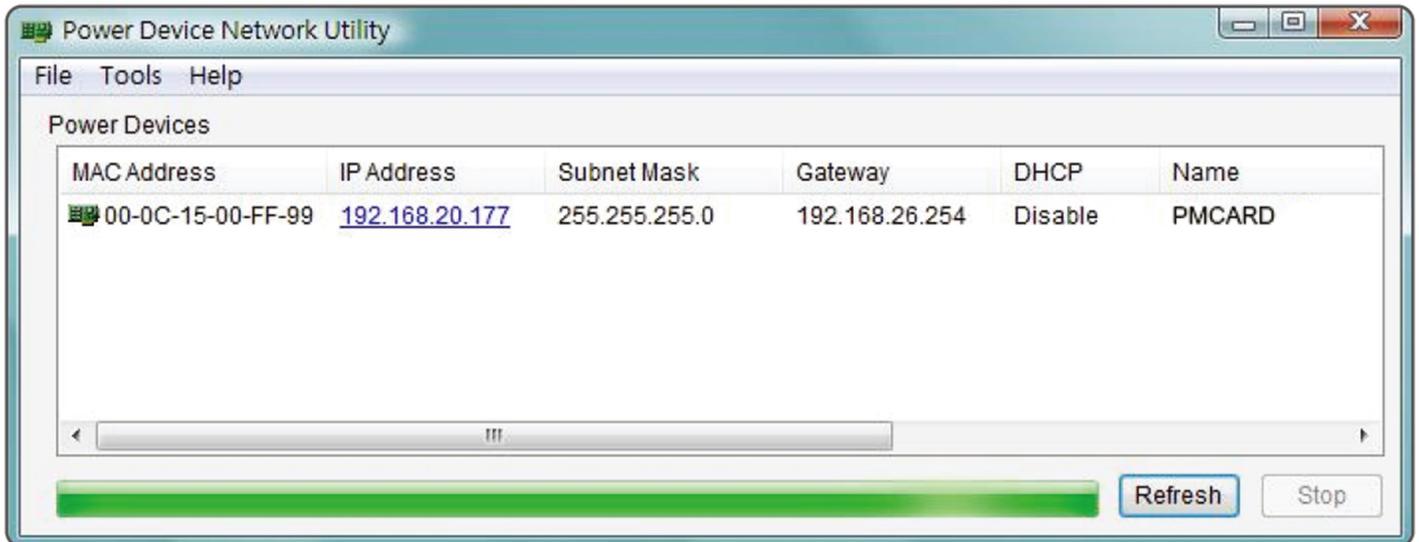


Figure 1. The main window of the “Power Device Network Utility” program.

4. Select the 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.

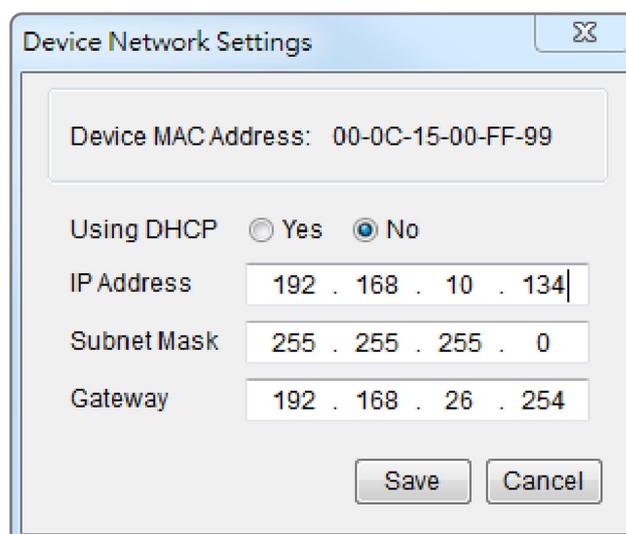


Figure 2. The Device Network setting window.

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 Power Management Card in the authentication window, as shown in Figure 3.
 - Default user name: **admin**
 - Default password: **admin**

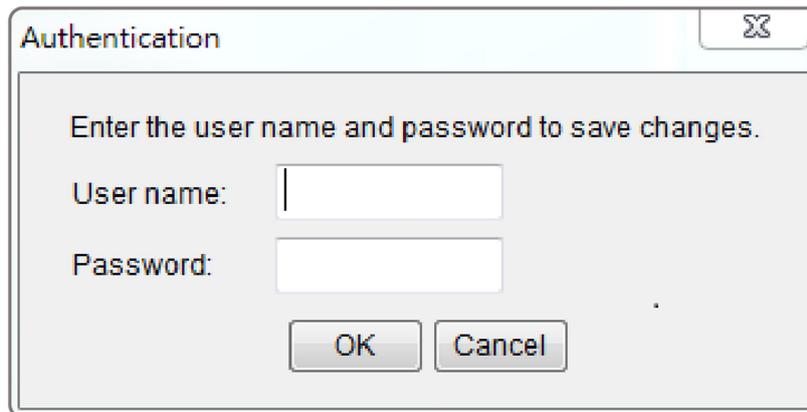


Figure 3. Authentication window.

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 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 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 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 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: admin
2. View only
 - Default username: **device**
 - Default password: **device**

You will be asked to reset a username and password upon the first login. 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 page; however, different UPS models may have different items displayed/configured.

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

Item	Definition
Input	
Status	The current status of the utility power supplied to the UPS.
Voltage	The current input voltage of the utility power supplied to the UPS.
Frequency	The current frequency of the utility power supplied to the UPS.
Output	
Status	The current status of the output power the UPS is supplying to connected equipment.
Voltage	The output voltage the UPS is supplying to the connected equipment.
Frequency	The output frequency the UPS is supplying to the connected equipment.
Load	The power draw of the connected equipment expressed as a percentage of the total UPS load capacity. This is displayed as watts on some UPS models.
Current	The output current the UPS is supplying to the connected equipment.
Non-Critical Load (NCL)	The present status of NCL outlets.
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 can supply power to its load.
System	
Status	The present operating status of the UPS.
Temperature	The operating temperature of the UPS.

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

Item	Description
Model	The model name of the UPS.
Serial Number	The serial number of the UPS.
Voltage Rating	The nominal output voltage rating (Volts) of the UPS.
Working Frequency	The operating frequency of the UPS output power.
Power Rating	The Volt-Amp rating of the UPS.
Current Rating	The output current rating (Amps) of the UPS.
Load Power	The power rating (Watts) of the UPS.
Battery Voltage Rating	The operating DC voltage rating of the battery power.
Firmware Version	The revision number of the UPS firmware.
USB Firmware Version	The revision number of the UPS USB firmware
LCD Firmware Version	The revision number of the UPS LCD firmware
Battery Replacement Date	The date that the batteries were last replaced and it can only be set at the time of battery replacement. This date should be set after the battery replacement. If this date is not set, it is recommended that this date should be set immediately.
NCL Bank	The amount of Non-Critical Load banks.
Extended Battery Modules	The amount of the external battery modules connected to the UPS. The number of modules is configured manually, and the configurations will vary by model.
Installation Place	When clicking the "Find it" button, either the alarm will beep or the indicators will flash on the UPS to alert users of the specific location. This helps users to identify a specific UPS in a multiple UPS installation.

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

Item	Definition
Supplied Power	
Voltage	Set the UPS output voltage that is supplied to the connected equipment. Note: On some models belong to Paragon Tower series, this setting becomes configurable in Bypass Mode and the changes require a restart to activate.
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 will supply battery power to the connected equipment.

Item	Definition
Utility Sensitivity	When the UPS detects the utility voltage is out of range, the UPS will switch to battery mode to protect the equipment plugged into the UPS. Low sensitivity has a looser voltage range and the supplied power may vary more widely. The power from fuel generator may cause the UPS to switch to battery mode more frequently, and the low sensitivity is recommended. The UPS switches to battery mode rarely and also saves more battery power. High sensitivity allows the UPS to supply more stable power to equipment and switches to battery mode frequently.
Frequency Tolerance	Sets the acceptable range of the input frequency. The UPS will supply battery power to the connected equipment if it is out of tolerance.
Operation	
Normal	Normal operating mode of the UPS.
Generator Mode	If the UPS uses generator as its input power, this option should enable the UPS to function normally. If this option is selected, the UPS will be forbidden to enter Bypass Mode or ECO Mode to protect the connected equipment.
ECO Mode	Economy mode. The UPS will enter Bypass Mode when the input voltage/frequency is within the configured threshold. Once the utility voltage/frequency exceeds thresholds, the UPS will switch to Normal operation. This mode will significantly increase UPS system efficiency.
Manual Bypass	Determines whether to allow the UPS to enter Manual Bypass Mode. If this option is enabled, the UPS will be forced to enter Bypass Mode.
Bypass	Note: The UPS may automatically enter Bypass Mode per these configured settings.
Bypass Condition	<p>No Bypass: If this option is selected, the UPS will not enter Bypass Mode and will stop supplying output power.</p> <p>Check Volt/Freq: If the utility voltage is in the range of the voltage thresholds and the utility frequency is in range of the frequency tolerance, the UPS will enter Bypass Mode. Otherwise the UPS will stop supplying output power.</p> <p>Check Volt Only: Only if the utility voltage is in the range of the voltage thresholds, the UPS will enter Bypass Mode. Otherwise the UPS will stop supplying output power.</p>
Bypass When UPS Off	When the UPS turn off, the UPS switch to Bypass Mode.

Item	Definition
Power Restore	After utility power is restored, the UPS turns on automatically and supplies power to the connected equipment. The following settings are used to configure the UPS restore behavior:
Automatic Restore	When this option is enabled, the UPS will restore output immediately when the utility power restores. When this option is disabled, the UPS will not restore output until it is turned on manually at a later time.
Recharged Delay	When utility power restores, the UPS will start to recharge until the specified time has elapsed before restoring output power.
Recharged Capacity	When utility power restores, the UPS will start to recharge until the specified battery capacity is met before restoring output power.
Returned Delay	The Returned Delay will take effect every time when the UPS is turned on.
Line Stable Delay	When the UPS is in Battery Mode and utility power is restored, the UPS will wait for the specific delay time to change Battery Mode to Line Mode. When the UPS battery is lower than the Low Battery Threshold and utility power is restored, the UPS will return to Line Mode immediately.
Battery	
External Battery Set	Number of parallel sets and the battery capacity.
Low Battery Threshold	When the UPS supplies battery power and the remaining capacity is lower than this threshold, the UPS will sound an alarm.
External Battery Modules	Set the amount of external battery modules. This allows for an accurate runtime estimation based upon the total number of batteries connected to the UPS.
Periodical Battery Test	The UPS will cyclically perform the battery test automatically to ensure the batteries have full functional.
System	
Cold Start	Set the ability of the UPS to start in the absence of input power. When this option is enabled, the UPS can be turned on with battery power.
Audible Alarm	If this option is enabled, the UPS will issue an audible alarm when supplying battery power, when output is overloaded or other conditions are present (varies by UPS model).

Item	Definition
Dry Relay Function	<p>This configures the UPS dry relay to function when the selected condition occurs. Refer to the UPS manual for further information about advanced UPS dry relay functions. The Dry Relay Function can be configured to be activated under the following power conditions:</p> <p>(1) Utility Failure: The utility power fails and the UPS is using battery power.</p> <p>(2) Low Battery: The battery capacity is too low to support the connected computers to shut down.</p> <p>(3) Alarm: The UPS is issuing the audible alarm due to the occurrence of warning events, such as Overload.</p> <p>(4) Bypass: The UPS has switched to Bypass Mode.</p> <p>(5) UPS Fault: The UPS could be malfunctioning due to hardware fault.</p>
Screen Save Time	When no UPS button is pressed and no power event occurs during this time, the LCD screen will go to sleep.
Wiring Fault Detecting	If this option is enabled, the UPS will detect if the input wiring is not grounded or is reversed. It is recommended to insure the UPS wiring has a ground connection first. This option should be enabled if the UPS wiring has ground connection.
Over Discharge Protection	When the UPS is in Battery Mode with 0% for the time configured, the PMCARD 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 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 -> PowerMaster List.
Non-Critical Outlet Bank	
Turn Off Threshold	When supplying battery power, the UPS will power off this NCL outlet bank if the remaining battery capacity is lower than this threshold.
Turn off Delay	When supplying battery power, the UPS will power off this NCL outlet bank after this delay time is met.
Turn On Delay	When the utility power is restored, the UPS will restore the output of this NCL outlet bank after the delay time is met. This prevents excessive power consumption caused by all the connected equipment starting at the same time.

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

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

Item	Definition
Reboot UPS	Turns the UPS off and back on
Turn UPS Off	Turns the UPS 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 models may not support this command.
Reset	Cancel the pending action to turn the UPS off.
Turn UPS On	Turns the UPS on.
Shutdown/Sleep Delay	Amount of time the UPS waits before it turns off in response to a "Reboot UPS", "Turn UPS off" and "UPS Sleep" command.
Reboot Duration	After the UPS is turned off, Reboot Duration defines how long the UPS waits before it turns back on response to "Reboot UPS" command.
Signal PowerMaster Clients to Shutdown	Select this option to warn PowerMaster Business Edition Clients before turning the UPS off. The Shutdown Delay (MST, Max Clients Shutdown Time) for the UPS can be changed to insure a graceful shutdown.

[UPS->Bank Control] Display the current state of each outlet Bank, and it provides on/off control for the Non-Critical Outlet Bank. Outlet Number and Device Name displays the device name associated with the specific outlet.

Item	Definition
Bank Control Options	
ON	Turns non-critical bank on immediately.
OFF	Turns non-critical bank off immediately.
Device Name Identification	
Outlet #	UPS outlet number as designated by the outlet configuration (varies by UPS model).
Device Name	Device Name assigned to this outlet.

[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 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 model does not have this function.

Last Test Result	<p>The results of the most recent battery test.</p> <p>Passed: The battery performed normally during the test.</p> <p>Failed: The battery test did not pass.</p> <p>Follow the steps below if the battery test fails: Repeat the battery test and replace the batteries if the test fails again. Contact Cyber Energy for assistance if the battery test fails after the batteries have been replaced.</p>
Last Test Date	The date of the most recent battery test.
Runtime Estimation	<p>The Runtime Estimation function discharges the UPS 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.</p> <p>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.</p> <p>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.</p>
Estimated Runtime	The estimated runtime of the batteries with the current load.
Last Estimation Result	<p>The results of the last Runtime Estimation.</p> <p>Passed: The runtime estimation was completed and the batteries are good.</p> <p>Canceled: The runtime estimation was interrupted.</p>
Last Estimation Date	The date the last runtime estimation was performed.

[UPS->Schedule]: Sets the UPS to automatically shutdown and restart at scheduled times (Once/Daily/Weekly). The **Schedule** page manages scheduled shutdowns and lists all configured schedules. Each schedule row displays the details of when the schedule will take effect.

[Once]: The user may set one time event for the UPS to shutdown/restart.

[Daily]: Set a daily re-occurrence for the UPS to shutdown/restart.

[Weekly]: Set a weekly re-occurrence for the UPS to shutdown/restart.

1. Click [Once], [Daily] or [Weekly] option and Click “Next>>”, Enter the date and time to shut down the UPS. Select [Never], [Instant], or the date and time for the UPS to turn back on. Select the

bank to be controlled, and click “Shutdown Clients” to set all clients to perform a graceful shutdown. You can enter a “Name” for this Schedule.

2. Click “Apply” to add the item to the Schedule. Click “Reset” to return to default settings..
3. Saved settings are listed in [Schedule] menu.
4. If you want to delete the scheduled action, simply click the Name of the item listed in [Schedule] menu, and click “Delete”.

Note: The management system allows up to 10 schedule entries.

[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
PowerMaster Client	
Load/Sync with PowerMaster Client List	Load and Sync with PowerMaster Client List. Wake on the PowerMaster Client network device on power event.
Wake Conditions	
UPS Turn On	When selected, this option will enable the PMCARD to send the WoL signal to the connected PowerMaster Clients computers when the UPS turns on.
Utility Power Restore and Output is Supplied	When selected, this option will enable the PMCARD to send the WoL signal to the connected PowerMaster Clients computers when utility power is restored and UPS output is on.
WoL Lists	
WoL Client List	When the option “Load/Sync with PowerMaster Clients List” is enabled, it will list PowerMaster Clients PC IP/MAC here.
WoL Manual List	Wake on Lan manual list.

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

[UPS-> PowerMaster List] Display the Information of the connected PowerMaster Business Edition Clients. The connection is established by PowerMaster Business 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 PMCARD.

[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 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.
- Output (V): The output voltage of the UPS supplying to the connected equipment.
- Output (Hz): The output frequency of the UPS supplying to the connected equipment.
- Load (%): The percentage of the total UPS power being supplied to the connected equipment.
- Capacity (%): The percentage of the current UPS battery capacity.
- Remaining Runtime: The estimated duration of time that the UPS can support the connected load in battery mode.
- 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.

Item	Definition
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
Software Authentication	
Secret Phrase	The Authentication Phrase used to communicate with PowerMaster Business 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->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. <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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 can not 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.

Item	Definition
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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Valid Certificate (or Invalid Certificate): Click to view Certificate detailed information. Upload Certificate: Click to upload a certificate and replace the current one. <p>Note: The format of uploading certificate must in a standard PEM (Privacy Enhanced Mail).</p>

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

Item	Definition
Access	
Allow Access	Enable the access to Telnet.
Telnet Settings	
Telnet Port	The TCP/IP port (23 by default) that Telnet uses to communicate.

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 PMCARD system.

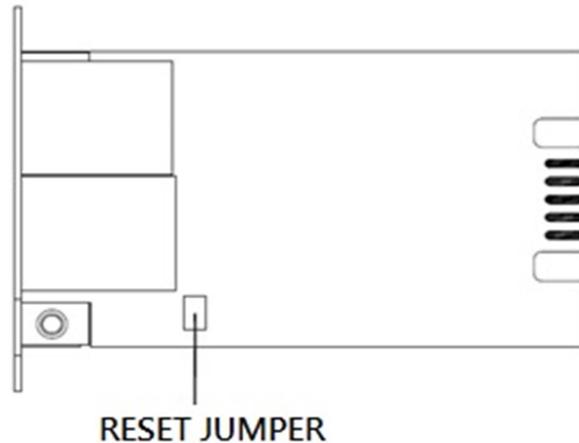
Item	Definition
Reboot System	Restart the system without turning off and restarting the UPS.
Reset System	Reset the system to factory default setting. The system will restart. This action will not turn off or restart the UPS.
Reset System (TCP/IP Settings Reserved)	Reset the system to factory default 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 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 Power Management Card.
Save Configuration	Click “Save” to save the PMCARD 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, its 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 Cyber Energy Power Management Card to its factory default setting (including web log-in user name and password), please following these steps:



PMCARD

1. Remove the card from the UPS 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.

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 PMCARD firmware up to date, please visit Cyber Energy website every 3 months to see if there is any updated firmware version available.

Note: To update the PMCARD 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 Cyber Energy Power Management Card with FTP command, in the command prompt type:
 - (1) ftp
 - (2) ftp> open
 - (3) To [current IP address of PMCARD] [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”

Save and Restore Configuration Settings

The screenshot shows the 'UPS Power Management' web interface. The top navigation bar includes 'Administrator login from 192.168.203.103 [Logout]' and a US flag. The main menu on the left lists 'General', 'Security', 'Network Service', 'Notification', 'Reset/Reboot', and 'About'. The 'About' page displays system information:

Information	
Model	PMCARD
Hardware Version	1.0
Firmware Version	1.0
Firmware Update Date	05/05/2020
MAC Address	00-0C-15-00-B9-DC

Below the information is the 'Save/Restore Configuration' section, which is highlighted with a red box. It contains the following controls:

- 'Save Configuration' with a 'Save' button.
- 'Restore Configuration' with a text input field, a 'Browse...' button, and a 'Submit' button.

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 Power Management Card using method 1 or method 2	<ol style="list-style-type: none"> 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 Cyber Energy device you are trying to communicate with. 3. Ensure the Jumper on the Reset Pin is correctly installed.
Unable to ping the Power Management Card	<ol style="list-style-type: none"> 1. Use method 1 and/or method 2 to get/set a correct IP address for the Power Management Card. 2. If the PC being used is on a different network subnet from the 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	<ol style="list-style-type: none"> 1. Ensure you can ping the PMCARD. 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	<ol style="list-style-type: none"> 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 PMCARD 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 numérique de la class A respecte toutes les exigences 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 Cyber Energy 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 Cyber Energy Power Management Card, you must determine the range of the available IP addresses, and then choose an unused IP address to assign to the 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 Cyber Energy 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 Cyber Energy Power Management Card

Verify the IP Addresses for the computer and the Power Management Card belong to the same subnet. Refer to the above network information, the possible IP Address for the 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 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 Cyber Energy 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
```

