PowerMon® II

User Manual

for:

UNIX®
Operating Systems

- AIX for IBM RISC SYSTEM/6000
- Red-Hat Linux
- SCO UNIX
- Solaris (SPARC & Intel processors)
- SunOS Sun 4
- System V Release 4
- UnixWare

From:

Systems Enhancement Corporation

http://www.sechq.com

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Conventions Used In This Guide

This guide uses these type style conventions:

Italic print, as shown in this example, indicates chapter or section names in this guide, window or dialog box names, or is used for emphasis.

Bold italic print, as shown in this example, indicates field names or menu items in the software, or is used for emphasis. Words separated by a **|** vertical bar indicate a series of menu items that must be selected. For example: ***File|Exit***

`Bold print`, as shown in this example, indicates filenames, directories, or items to be typed exactly as they appear.

`Italic print words or letters in braces { }` indicate values that must be supplied by the user. For example: *`{path}`***`/upsmenu`**

Italic print words or letters in brackets < > indicate keys to press. If two keys are separated by a + plus symbol, then the first key should be pressed and held down while pressing the second key. For example: *<alt+enter>*

Note:	**Notes contain important information set off from the text.**

Warning:	**Warning messages alert you to a specific procedure or practice which, if not followed correctly, could cause serious personal injury.**

Table of Contents

Introduction

PowerMon II is a power monitoring software package that allows UPS monitoring in UNIX environments. There are two parts to this package; the power monitor, and the control center. The power monitor is a background process which monitors the UPS, logs power history data, and alerts users of power events. The control center allows the user to configure the monitor, and view the power history of the UPS.

Power Monitor

The power monitor communicates through a cable attached to a serial port on the computer, and the interface on the UPS. Through this cable, the monitor checks the power status of the UPS (such as battery warning, power fail, power restored, and low battery).

If the monitor detects a utility power failure, it activates a user-specified timer that enables users to continue working. The monitor notifies all users logged on, that the system is functioning on battery back-up. (Users can recognize the possibility of a system shutdown then save their work and log off of the system.)

During a utility power failure, the monitor is able to detect power restoration and revert back to a normal monitoring state. The monitor will notify users that utility power has been restored.

If the user-specified timer expires and power is still not restored, or if the UPS batteries reach a low state, users are notified of the shutdown, then shutdown of the system begins. A list of all processes running at shutdown time is logged to the power event log file.

PowerMon II will also report a battery warning, when the UPS reports low battery when utility power is present. This feature allows a system administrator to be informed of a potential problem with the UPS.

Control Center

The control center allows the user to configure the monitor, view the power history graph, view/print the event log, and activate, terminate, or remove PowerMon II.

A Power History Graph allows you to view power activity. You enter the starting date, and PowerMon II graphs the activity for the following 31 days. A demonstration graph is available, if no power events are recorded.

All power events are recorded in a power event log file. You can view this log file from within PowerMon II, or with any text file editor/viewer. You can also print the power event log file.

PowerMon II includes user modifiable scripts for dialing out upon utility power failure, low battery, and shutdown timer expiration. You must provide the method for dialing out.

Broadcast messages are user modifiable. In addition, you can customize how PowerMon II broadcasts messages by modifying script files.

PowerMon II also allows you to perform custom routines in the event of power failure, power restoration, & shutdown timer expiration or low battery.

If you have any questions and or recommendations regarding this installation guide, please bring them to the attention of our Technical Support Department.

REMEMBER

Don't forget to mail your PowerMon II registration card, it is your proof-of-purchase.

NOTE

If you have any questions about PowerMon II or other products from Systems Enhancement Corporation, please contact us at:

World Headquarters
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Chesterfield, MO 63005 USA
Telephone: (636) 532-2855
Fax: (636) 532-2037
E-mail: sales@sechq.com

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Systems Enhancement Corporation Limited
Singleton Court, Wonastow Industrial Estate
Monmouth, Gwent. NP3 3AH U.K.
Telephone: +44 1600 716400
Fax: +44 1600 772026

For Technical Support, see the section titled, **Placing a Technical Support Call**.

System Requirements

This PowerMon II UNIX package supports systems running:

- AIX (Ver. 3.2+) IBM RISC System/6000
- Red-Hat Linux (Ver. 5.2+)
- SCO UNIX 386 (Ver. 3.2+)
- Solaris (Ver. 2.1+) x86 Intel processor
- Solaris (Ver. 2.2+) SPARC processor
- SunOS Sun-4 (Ver. 4.1.2+)
- UNIX System V Release 4
- UnixWare (Ver. 1.1+)

This software may not be upward compatible with some operating systems. If you have any questions on the ability of the software to run on other systems, please contact our technical support staff.

PowerMon II requires one dedicated RS-232 serial port on your computer.

Using the Control Center

Follow key sequences listed on each screen to perform specific operations.

There are two different types of fields: free-form fields, where the user types in the desired value, and limited option fields, where a pop-up window is displayed and the user chooses the desired option.

Note:	**Because of differences in terminal emulators, not all keys work on all terminals. Alternate keys are provided for each function.**

The following keys perform the following functions in free-form fields:

<*enter*> or <↓> will move the cursor to the next field or to the first field, if the cursor is on the last field. (When the cursor is moved down a field, the input will be validated. If incorrect entries are made, error messages will be displayed in the lower left portion of the screen.)

<↑> or <*ctrl*+*u*> will move the cursor the previous field or to the last field, if the cursor is on the first field.

The following keys perform the following functions in limited option fields:

<↓> or <*ctrl*+*d*> will move the cursor to the next option in the pop-up window or to the first option if the cursor is currently on the last option.

<↑> or <*ctrl*+*b*> will move the cursor to the previous option in the pop-up window or to the last option if the cursor is currently on the first option.

<*enter*> will select the option the cursor resides on and move to the next configuration field.

<*ctrl*+*u*> will exit the pop-up window and move the cursor to the previous configuration field.

During configuration, the following keys have the following functions for any fields:

<*F1*> or <*ctrl*+*a*> will display help text describing the current field.

<*F5*> or <*ctrl*+*w*> will repaint the screen.

<*F8*> or <*ctrl*+*e*> will validate all inputs, save the parameters and start monitoring the UPS.

<*Esc*> or <*ctrl*+*c*> will exit the configuration program without saving any changes and PowerMon II will not start.

A working knowledge of UNIX is necessary for completing the installation procedures.

Installation & Configuration

Installation and configuration consists of the following:

- Setting up the serial port
- Installing the communications cable
- Extracting PowerMon II
- Running the install script
- Configuring PowerMon II during installation

Setting-Up the Serial Port

Setting up your port requires some basic knowledge of your system. Since port set-up varies from system to system, you will have to check your system documentation for more information specific to your system.

- Are ***getty/ttymon*** processes monitoring the port?

  The standard location for port setup information is in **`/etc/inittab`**. Some systems vary:

  SunOS users: **`/etc/ttytab`**.

  The software only works when the *getty/ttymon* process is disabled for the specified port. Again, disabling the *getty* varies from system to system. Also note, you must invoke any changes with the *init* process.

Note: **The following port set-ups are** only examples. **Your system** may **vary.**

AIX:
Go into ***SMIT*** and *disable Login* on the port. For more information, see your *System Management Guide*, *Devices* chapter, *TTY* section.

SCO UNIX: File: **`/etc/inittab`**

```
1A:2:off:/usr/lib/uucp/uugetty  -t60  tty1A  1200
```

The key field is the third field "***off***". This indicates that the *getty* is disabled. If the *getty* was enabled, this would be "***respawn***". You should be able to disable the *getty*, and make *init* invoke the changes, by typing:

`disable tty1A` *<enter>*

Solaris, UnixWare & System V Release 4:

Use the **`pmadm`** utility to disable *ttymon* from monitoring the port. In order to disable *ttymon*, you must type in the following commands:

`pmadm -l` *<enter>*

This command lists the PMTAG and SVCTAG for each port. You will substitute the values of these tags in the following command:

`pmadm -d -p` *{PMTAG}* **`-s`** *{SVCTAG}* *<enter>*

SunOS: File: **`/etc/ttytab`**

```
ttya "/usr/etc/getty std.1200" dialup off local
```

The key field is the fourth field "***off***". This indicates that the *getty* is disabled. If the *getty* was enabled, this would be "***on***". If you edit the file and make changes, you must invoke those changes by typing the following at the prompt:

`kill -1 1` *<enter>*

Installing the PowerMon II Cable

To install the PowerMon II cable:

1. Locate the communications cable that was shipped with the PowerMon II software.
2. Plug the connector at the end of the cable with the identification label into any dedicated modem control serial communications port on your computer. If this end of the cable does not match your serial port connector, use an adapter. See the section titled *Serial Adapter Guidelines*.
3. Plug the connector at the other end of the cable into the communications port on the back of the UPS. (Refer to your UPS operator's manual for help in locating the UPS communications port.) If this end of the cable does not match the connector on the UPS, contact your reseller or Systems Enhancement Corporation. Do ***not*** use an adapter.

Extracting PowerMon II

Turn on the UPS and start your system. Login to the system as the superuser (***root***).

- At the prompt, change the working directory to **`/tmp`** by typing:
  `cd /tmp` *<enter>*
  Changing to the **`/tmp`** directory before you *tar* the files from the disk or tape is critical. If you are not in **`/tmp`**, the installation will **not** be successful.
- Place the diskette or tape in the appropriate drive on your system.

Note: **If two diskettes were included in your package, use one of the following diskettes:**

Diskette #1: **SCO UNIX, Solaris (Intel), UnixWare, & System V Rel. 4 (SVR4).**
Diskette #2: **IBM AIX (RISC System/6000), Solaris (SPARC), & SunOS.**

Type:
`tar xvf` *{device name}* *<enter>*

Note: **Your system may require a "-" before the arguments to the tar command.**

Arguments

x Extract the files from the archive.

v Verbose - causes it to display the names of each file.

f This argument is not required if you are using the system's default device. If you omit this argument, also omit the device name.

{device name}

Consult your system documentation for the proper device name for the drive. One physical device can have multiple device names for reading and writing different formats.

The following is an example. To extract the software for Solaris 2.x (SPARC), type the following commands:

`volcheck` *<enter>*

`tar xvf /vol/dev/aliases/floppy0` *<enter>*

Your device name may differ.

Running the Install Utility

After the files have been extracted from the disk or tape, you will return to the prompt. By default, the software will be installed in the **`/etc/UPS.d`** directory. If you wish to install the software somewhere else, you can either define the environment variable **`UPS_PATH`**, or enter the absolute path during installation. If, for example, you want to install the software in the **`/etc/PowerMonII.d`** directory, set the **`UPS_PATH`** variable by entering the following commands:

- The Bourne shell command would be:

  `UPS_PATH=/etc/PowerMonII.d` *<enter>*

  `export UPS_PATH` *<enter>*

  Verify that the environment variable has been set:

  `printenv` *<enter>*

- The C shell command would be:

  `setenv UPS_PATH /etc/PowerMonII.d` *<enter>*

  Verify that the environment variable has been set by typing:

  `setenv` *<enter>*

The installation procedure will create the directory if it does not exist. For simplicity, this manual will always refer to **`/etc/UPS.d`** as the path name where the software is loaded. If you install the software in another directory, make the appropriate substitution in any commands listed.

To begin installation, type:

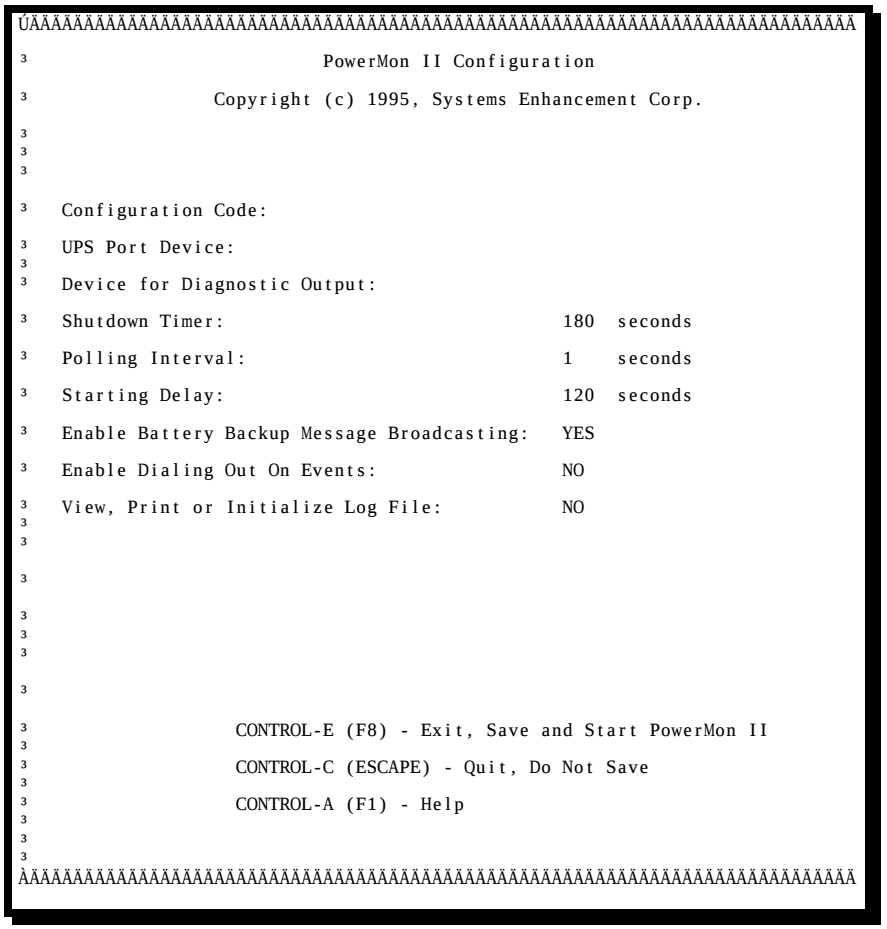
`./install.ups` *<enter>*

A message will be displayed stating where the software will be installed. You may change the directory at this time (by default, this directory is **`/etc/UPS.d`**). The install utility will then copy the appropriate files from **`/tmp`** to the install directory, and begin configuration.

Several messages will be displayed indicating the operating system and which system start up files are being added or modified. The configuration screen will then be displayed.

Configuring During Installation

After the install utility has moved the files to their proper location, the following configuration screen will appear:



The values displayed on the screen are the default values or the values from the existing **`configure.ups`** file.

Configuration Code

The ***Configuration Code*** gives the PowerMon II software information concerning the UPS interface and supplied cabling. Your ***Configuration Code*** is stamped on the inside front cover of this manual.

UPS Port Device

This is the serial port device that you set-up earlier and connected the communications cable to. Do not include the **`/dev`** component of the path.

Default setting: NONE

Device for Diagnostic Output

This output device is where you want the software to display regular diagnostic messages. Users logged into the system will receive separate warning messages.

Do not include the **`/dev`** component of the path. If you wish to send the diagnostic messages to **`/dev/console`**, type:

`console` <*enter*>

Default setting: NONE

Shutdown Timer

This setting specifies how long the software will wait after detecting a power failure, before starting the shutdown sequence. Enter the desired time in seconds. It is important to choose a time period that will give the users enough time to close their current application(s) and log out of the system without exhausting the UPS battery supply. See your UPS manual for guidelines on battery life. If the UPS battery runs low before this timer expires, shutdown will begin immediately, disregarding the timer.

Default setting: 180 seconds
Valid range: 1-7200 seconds

Polling Interval

This selection will indicate to the software how often to poll the UPS for status.

Default setting: 1 second
Valid range: 1-60 seconds

Starting Delay

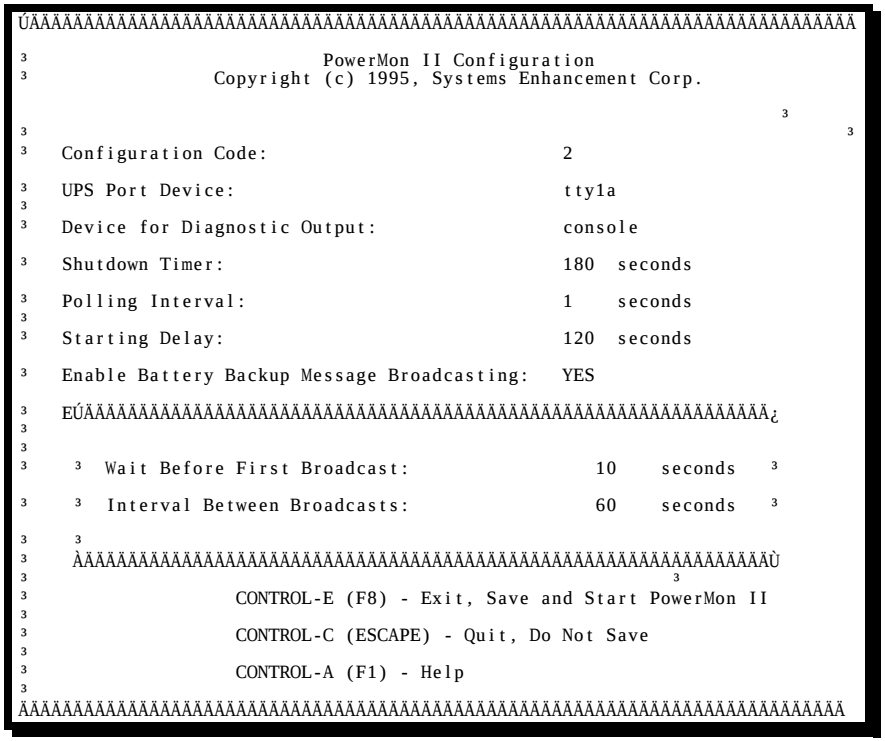
Enter the number of seconds to wait after the computer is booted before automatically activating the monitor.

Default setting: 120 seconds
Valid range: 1-7200 seconds

Enable Battery Backup Message Broadcasting

Choose ***YES*** or ***NO*** to indicate whether to inform all users when the UPS goes on battery backup and when power is restored. Users will receive a final shutdown warning message, even if ***NO*** is selected. When <*enter*> is pressed with broadcasting enabled, a window prompting for the broadcasting parameters will be displayed.

Default setting: YES



Wait Before First Broadcast

The number of seconds, after a power failure, before the first warning message is broadcast to users.

Default setting: 10 seconds
Valid range: 10+ seconds

Interval Between Broadcasts

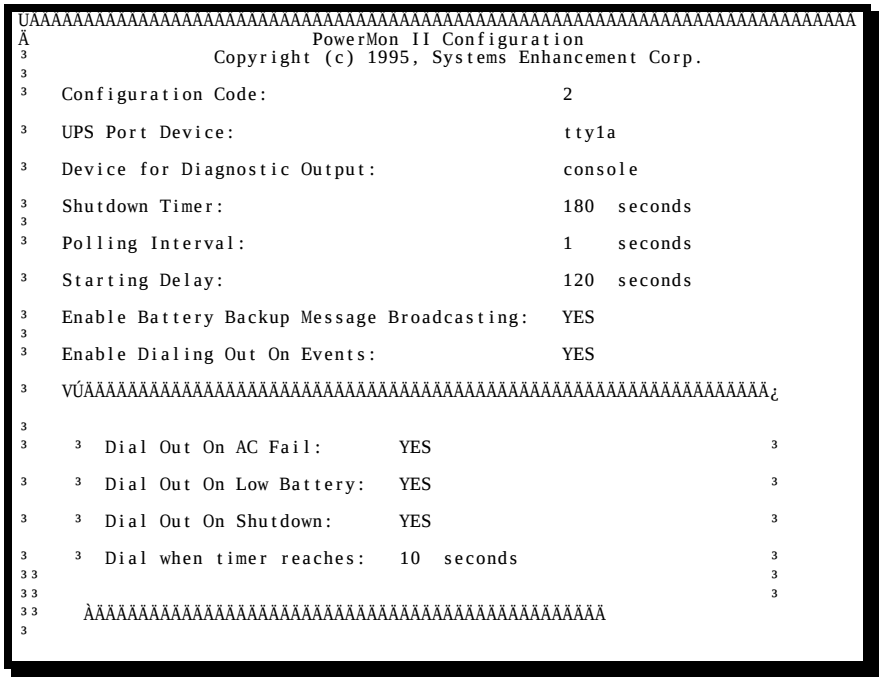
Enter the time interval between broadcast power failure messages.

Default setting: 60 seconds
Valid range: 1+ seconds

Enable Dial Out On Events

Choose ***YES*** or ***NO*** to indicate whether to enable dial out on utility power failure, UPS low battery, and/or shutdown timer expiration. You must provide the method for dial out. When <*enter*> is pressed with dial out enabled, a window prompting for specific events will be displayed. See *PowerMon II Files & Procedures*.

Default setting: NO



Dial Out On AC Fail

Indicates to PowerMon II whether or not to execute the dial out script on AC Fail.

Default setting: NO

Dial Out On Low Battery

Indicates to PowerMon II whether or not to execute the dial out script on UPS low battery.

Default setting: NO

Dial Out On Shutdown

Indicates to PowerMon II whether or not to execute the dial out script on system shutdown.

Default setting: NO

Dial When Timer Reaches

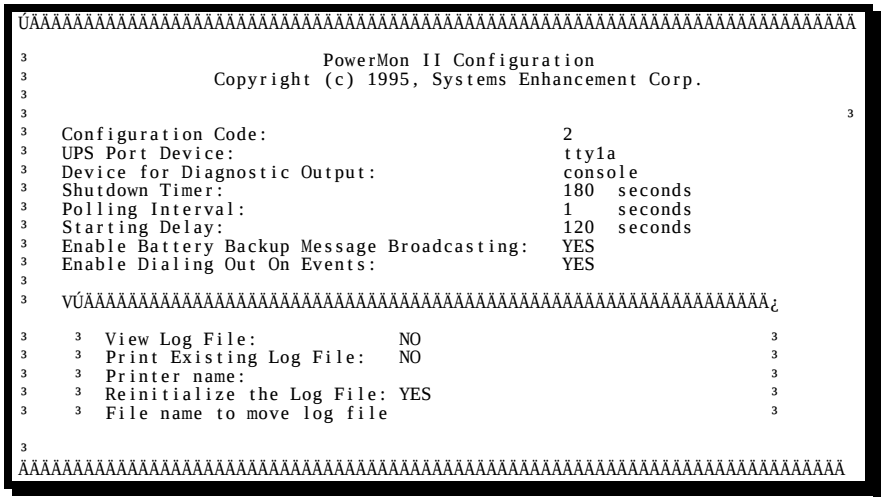
Indicates how long before shutdown to wait before executing the dial out script. This option is only available when ***Dial Out On Shutdown*** is set to ***YES***.

Default setting: 10 seconds
Valid range: 10+ seconds

View, Print or Initialize Existing Log File

This field will show up ***only*** after a log file has been created. Choose ***YES*** or ***NO*** to indicate whether to perform operations on the existing log file. When *<enter>* is pressed with ***YES*** chosen, a window prompting for specific actions will be displayed.

Default setting: NO



View Log File

Choose this option to view the power event log on screen.

Default setting: NO

Print Existing Log File

Choose this option to print the current power event log file on the printer of your choice.

Default setting: NO

Printer Name

This field identifies the log file printer. This option is only available when ***Print Existing Log File*** is set to ***YES***.

Default setting: NONE

Reinitialize the Log File

Choose this option to backup the existing log file, and create a new one.

Default setting: NO

File name to move log file to

This field identifies name that the existing log file will be renamed to. This option is only available when ***Reinitialize the Log File*** is set to ***YES***.

Default setting: NONE

Once you are finished making changes to the configuration parameters, save the changes. See *Testing PowerMon II Operation***.**

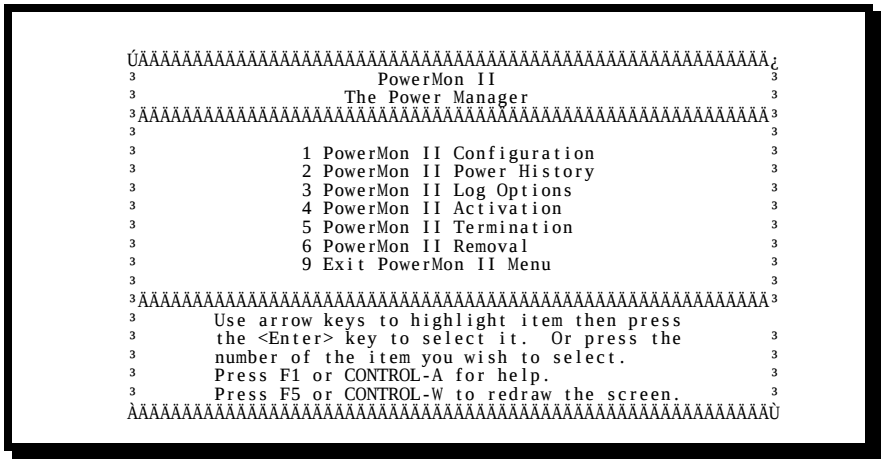
Note: If you don't have the ups interface cable connected to the computer and UPS, your system could immediately shutdown when the software starts.

Using the Control Center

The Control Center application allows you to interface with the power monitor. To run the Control Center:

- Login to the system as the superuser (***root***).
- At the prompt, change the working directory to **`/etc/UPS.d`** (the directory you installed the software to, **`/etc/UPS.d`** by default) by typing:
  `cd /etc/UPS.d` *<enter>*
- Start the Control Center by typing:
  `./upsmenu` *<enter>*

The following Control Center screen will appear:

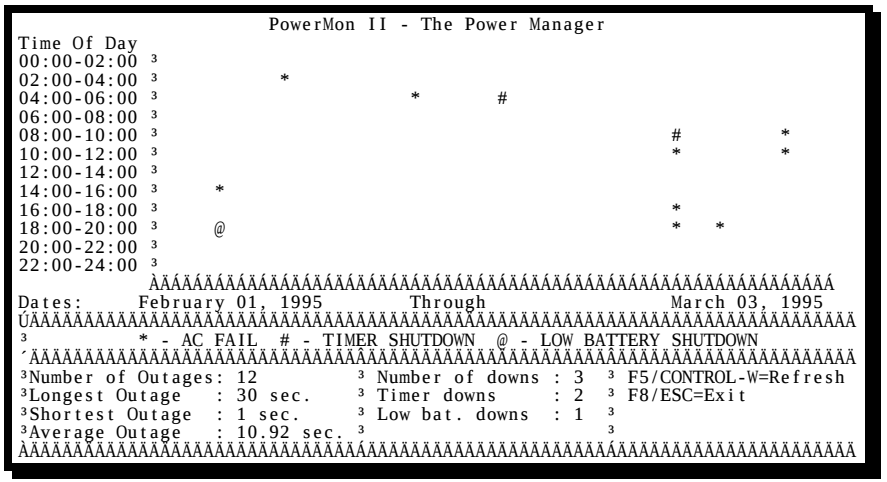


PowerMon II Configuration

Choose this option to reconfigure PowerMon II. A description of each item in the configuration screen is listed in the *Installation & Configuration* section, under *Configuring During Installation*.

PowerMon II Power History

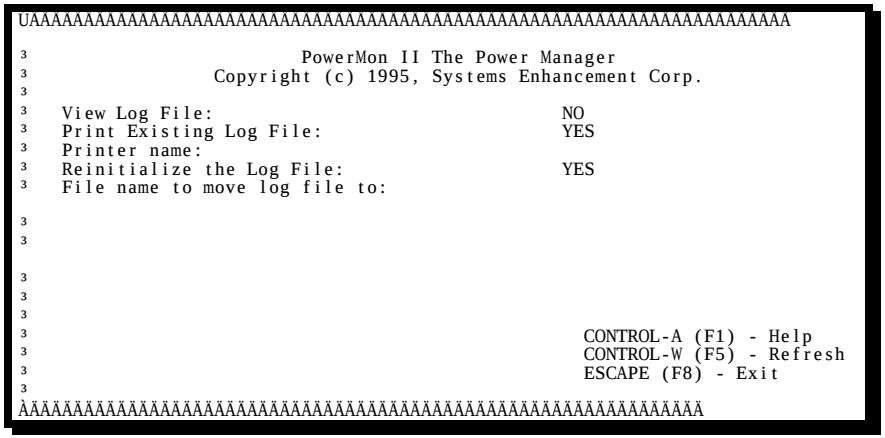
You will be prompted to enter the starting date to graph from. If no events are recorded, you will be given the option to display the demonstration graph.



The PowerMon II power history graph provides a 31 day snapshot of the power state. In addition to the graph, PowerMon II lists statistics on the number of power outages, outage lengths, and system shutdowns during this 31 day period. Only the most recent power event symbol is displayed for each 2 hour time period.

PowerMon II Log Options

Choose this option to view, print, or reinitialize the log file. The following screen will appear.



View Log File

Choose this option to view the power event log on screen.

Default setting: NO

Print Existing Log File

Choose this option to print the current power event log file on the printer of your choice.

Default setting: NO

Printer Name

This field identifies the log file printer. This option is only available when ***Print Existing Log File*** is set to ***YES***.

Reinitialize the Log File

Choose this option to backup the existing log file, and create a new one.

Default setting: NO

File name to move log file to

This field identifies name that the existing log file will be renamed to. This option is only available when ***Reinitialize the Log File*** is set to ***YES***.

PowerMon II Activation

Choose this option to start up the PowerMon II background monitor.

PowerMon II Termination

Choose this option to stop/disable the currently running PowerMon II background monitor.

PowerMon II Removal

Choose this option to COMPLETELY remove all of the PowerMon II files from your system. If you want to execute PowerMon II again, you will need to reinstall the software. To stop the current PowerMon II background process, choose ***PowerMon II Termination***.

Exit PowerMon II Menu

Choose this option to exit to the prompt. The background monitor, if running, will not be effected.

PowerMon II Files

Once PowerMon II is installed, most of the following files will be found in the directory specified during installation (default **`/etc/UPS.d`**). The arrow (⇨) indicates a script file invokes another script file.

`/etc/path.ups`
: This file contains the path to the PowerMon II install directory.

`addlog.ups` ⇨ **`addlog.ups2`**
: These script files are only present for certain operating systems, and are used to add a power history record to the graphing function.

`brdcast.ups` ⇨ **`brdcast.ups2`**
: These script files are called to broadcast PowerMon II messages to users. These scripts can be modified to change the method used to broadcast. By default, the UNIX **`wall`** command is used.

`check.ups` ⇨ **`check.ups2`**
: These scripts can be used to check the current status of the UPS, the current shutdown timer, and the PowerMon II software.

`configure.ups`
: This text file contains the answers to the PowerMon II configuration questions.

`demo_log.ups`
: This file is the demonstration log used for the PowerMon II power history graph, if no actual history file was located.

`dial.ups ⇨ dial.ups2`

These script files are called to dial out upon events. They allow you to invoke a user defined dial out routine. You *must* provide the method for dialing.

`error_log.ups`

PowerMon II keeps a raw account of system/error messages in this text file. If PowerMon II should fail to startup, review this file.

`event_log.ups`

PowerMon II logs all event messages into this text file. You can view this file from the control center, **`cat`** command, **`vi`** editor, or any other text file viewing utility. If you wish to clear the log file, delete it, and PowerMon II will generate a new file.

`fail.ups ⇨ fail.ups2`

These scripts are invoked by PowerMon II when it detects a utility power failure.

`fail_msg.ups`

This text file contains the message that is broadcast to users when a utility power failure event occurs.

`find_pcs.ups`

This script file is called to find and terminate the active PowerMon II processes.

`graph.ups ⇨ graph.ups2`

These script files are called to invoke the executable PowerMon II history graph program.

`graph_log.ups`

This file is the PowerMon II power history graph log file.

`halt.ups ⇨ halt.ups2`

These scripts are invoked by PowerMon II when it detects a low battery, or when the time-out period expires. **`halt.ups2`** invokes the actual system shutdown command.

logprt.ups ⇨ logprt.ups2
These script files are called to print the PowerMon II status log file. These scripts can be modified to change the method used to print. By default, the UNIX **lp** command is used.

PowerMon_II
This file is the executable program that runs as a background process to monitor the UPS status and conditions.

porttest.ups ⇨ porttest.ups2
These script files are used to perform a port test.

powerrep.ups ⇨ powerrep.ups2
These script files are called to invoke the executable PowerMon II log options program.

remove.ups ⇨ remove.ups2
These script files are the PowerMon II removal utility, used to remove all PowerMon II files from the system.

rest_msg.ups
This text file contains the message that is broadcast to users when a utility power restoration event occurs.

restore.ups ⇨ restore.ups2
These scripts are invoked by PowerMon II when it detects utility power restoration.

shut_msg.ups
This text file contains the message that is broadcast to users to notify them of imminent system shut down.

startup.ups ⇨ startup.ups2
These scripts are invoked by PowerMon II when it starts monitoring the UPS.

status.ups
This file contains the last reported state of the UPS and the current shutdown timer. Running **check.ups** will list the contents of this file.

upsconf
This file is the executable PowerMon II configuration program.

`upsgraph`
This file is the executable PowerMon II history graph program.

`upslogfl`
This file is the executable PowerMon II log file options program.

`upsmenu`
This file is the executable program for the PowerMon II control center.

Customizing Messages & Procedures

The PowerMon II package includes user-modifiable message text files and event scripts. These text files and scripts are used when PowerMon II detects changes in the state of the power supply.

Dialing Out on Power Events

In order to dial out on events specified during configuration, PowerMon II requires that you create a method to dial out on your modem. PowerMon II provides a script that can be invoked on specified events, called **`dial.ups`**. **`dial.ups`** invokes another script called **`dial.ups2`**. Modify **`dial.ups2`** to include the dial out commands for your modem.

Power Fail

The power failure scripts are invoked when PowerMon II detects a power failure. PowerMon II invokes **`fail.ups`**, which in turn invokes **`fail.ups2`**. Place any special commands, that you want executed, in **`fail.ups2`**.

`fail_msg.ups` contains the message that is optionally broadcast to users. Edit **`fail_msg.ups`** to create your own warning message.

Power Restore

The power restoration scripts are invoked when PowerMon II detects power restoration. PowerMon II invokes **restore.ups**, which in turn invokes **restore.ups2**. Place any special commands, that you want executed, in **restore.ups2**.

rest_msg.ups contains the message that is optionally broadcast to users. Edit **rest_msg.ups** to create your own notification message.

Shutdown

The shut down scripts are invoked after PowerMon II detects a low battery warning, or the shut down timer expires. PowerMon II invokes **halt.ups**, which in turn invokes **halt.ups2**. Place any special commands, that you want executed, in **halt.ups2**.

shut_msg.ups contains the message that is optionally broadcast to users. Edit **shut_msg.ups** to create your own warning message.

Note: **When modifying PowerMon II script files, be careful not to introduce delays without ensuring that your UPS system will provide power long enough to complete the script. Otherwise, you run the risk of losing power before the computer is shutdown.**

Testing PowerMon II Operation

When PowerMon II detects changes in the state of the UPS, it displays messages to the ***Device For Diagnostic Output***. These messages include:

"xx/xx/xx xx:xx:xx PowerMon II: UPS battery is weak." when the UPS reports that the battery is low, and utility power is present.

"xx/xx/xx xx:xx:xx PowerMon II: UPS battery no longer in weak condition." when UPS reports battery is no longer low.

"xx/xx/xx xx:xx:xx PowerMon II: On Battery Backup." when the UPS reports utility power failure.

"xx/xx/xx xx:xx:xx PowerMon II: Power Restored." and the time on backup, when utility power is restored.

"xx/xx/xx xx:xx:xx PowerMon II: UPS battery low." when the UPS reports that the battery is low, and utility power has failed.

Note **xx/xx/xx xx:xx:xx indicates the current date and time.**

It is important to test PowerMon II to be sure it is monitoring the UPS. If you don't test PowerMon II, your system could be unprotected.

For testing purposes, you can comment out the shutdown command in the file, **`halt.ups2`**.

- Cut utility power to the UPS.
- You should get a message on the ***Device For Diagnostic Output***, "xx/xx/xx xx:xx:xx PowerMon II: On Battery Backup."
- Whether or not you get any messages within 25 seconds, restore power to the UPS.
- You should get a message, "xx/xx/xx xx:xx:xx PowerMon II: Power Restored."

If you commented out the shutdown command in the file **`halt.ups2`**, please remove the comment.

If you get messages, PowerMon II detects utility power failure. You system appears to be working properly.

If no messages appear, refer to the section titled, *Trouble Shooting*.

Trouble Shooting

Every effort has been made to ensure that PowerMon II installation is easy and straightforward. If you should experience problems or unexpected results during the installation or execution of PowerMon II, please verify your system setup and configuration using the following checklist:

Pre-installation Checklist

Make sure the UPS is attached to the computer system using the supplied cable, and that it is securely connected to the computer's serial port.

If you are using an adapter, it must be a standard serial adapter.

Verify that you are using the cable supplied with this package.

Identify the serial port that the UPS is attached to on the computer system.

Verify that no other board/adapter is using the same signal interrupt as the dedicated RS-232 serial port.

Verify that no other applications are using/accessing the same serial port.

Verify that this serial port has no active *getty* processes, or that *ttymon* is not monitoring the port.

Verify that the other end of the supplied cable is securely attached to the UPSs interface. This end will not require any adapters.

Verify that your UPS is properly connected, turned on, and has been charged as specified in the UPS manual.

Make sure the PowerMon II Power Monitoring Software diskette is appropriate for your computer system and operating system.

Installation Checklist

Verify that you are using the correct device driver for the disk or tape drive containing the PowerMon II media.

Verify that you are in the **`/tmp`** directory when you **`tar`** the disk or tape.

When changing default configuration options, be certain to press <*enter*> after typing in the new value.

Verify that you are using the proper ***Configuration Code***.

Common Problems & Solutions

The following items are common problems and proposed solutions.

Problem: When trying to *tar* files from the disk or tape, you receive a message: "device not found," "unable to open device," or "read failure."
Solution: Check your system documentation for the correct device identification. For physical devices that are able to store information in different formats, note that PowerMon II may be stored in a different format than you normally use.

Problem: You receive the message: "cannot find install.ups"
Solution: You were not in the **`/tmp`** directory when you attempted to *tar* the files, and/or the current working directory isn't **`/tmp`**.

Problem: You receive a message during install that certain files cannot be found.
Solution: *tar* the disk or tape again, and re-run install.

Problem: You receive an error, such as "missing J" when you type **`./install.ups`**
Solution: Make sure you are using the Bourne shell. If your default shell is different, you should type:
`sh ./install.ups` <*enter*>

Problem: When starting PowerMon II, the following message is immediately displayed.
"PowerMon II Reports: Communications failure - Check Data Cable!" Possibly followed by "PowerMon II Reports: Communications failure with UPS - Exiting"

Solution: Verify that the cable is connected to the correct serial port. (See the section titled, *Serial Port Testing*)

Solution: The *getty/ttymon* process may be interfering with PowerMon II communications, check to see if it is disabled.

Solution: Check to see if PowerMon II is starting twice.

Solution: Another process may be interfering with PowerMon II communications. Verify that no other processes are accessing the serial port.

Solution: Make sure root has read/write privileges on the serial port.

Problem: When starting PowerMon II, a message indicating a utility power failure or low battery is immediately displayed.

Solution: Make sure that the cable is securely connected to the UPS. If the UPS is charged and seems to be operating properly, this message indicates that PowerMon II is having trouble identifying the status of the UPS. Make sure you are using the configuration code indicated during installation.

Problem: Power is removed from the UPS, but no messages are broadcast.

Solution: Make sure the cable is securely connected to the UPS interface. Make sure the PowerMon II process, **`PowerMon_II`**, is running, by typing **`ps -ef`** or **`ps -ax`**.

Problem: The shutdown time period expired, you received messages indicating that PowerMon II detected utility power failure, power was not restored, and your system is still up.

Solution: Make sure that the shutdown command in **`halt.ups2`** is not commented out.

Solution: Make sure that the shutdown command in **`halt.ups2`** is the proper shutdown command for your system. Modify if necessary.

Serial Port Testing

The following procedure is used to determine if PowerMon II is able to communicate properly through the specified serial port on your computer. This procedure will test the serial port independent of the supplied PowerMon II cable and UPS.

- Login to the system as the superuser (***root***).

- Check for active PowerMon II processes, by typing:
  `ps -ef` <*enter*> or **`ps -ax`** <*enter*>
  If a process named **`PowerMon_II`** exists, write down the process ID number (PID).

- Kill the active PowerMon II process by typing:
  `kill -9` *`{pid#}`* <*enter*>
  (where `pid#` is the PowerMon II process ID)

- Check to ensure that the PowerMon II process has been killed by typing:
  `ps -ef` <*enter*> or **`ps -ax`** <*enter*>
  If processes remain, write down the PID and repeat the **`kill`** command.

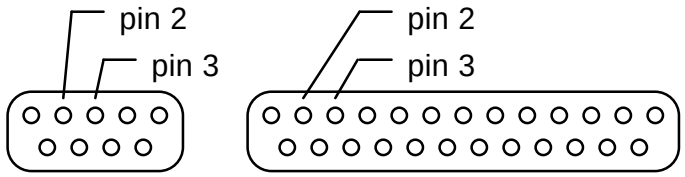
- Disconnect the supplied PowerMon II cable from your computer's serial port. The other end may be left connected to your UPS.

- At the prompt, change the working directory to the PowerMon II directory (**`/etc/UPS.d`** by default) by typing:
  `cd /etc/UPS.d` <*enter*>

- Start PowerMon II in test mode by typing:
  `./porttest.ups` <*enter*>
  Information about the current configuration will be scrolled across the screen, then test monitoring begins. A message will tell you that PowerMon II is opening the port that the software is currently configured for, followed by writing and reading a character sent to the port. The last message will give you the status of the operation, such as "*No characters returned from device /dev/ttya*."

- Using a jumper wire or a paper clip, touch pins number **2** and **3** on your computer's 25-pin serial port (use the same pins on a 9-pin serial port), together. (See the following diagrams for pin numbering.) Continue to hold the two pins jumpered together.

As viewed looking straight into the connector.
For standard serial ports, you should see **pins** and not holes



9-pin Male connector 25-pin Male connector

- Within about 5 seconds of jumpering pins **2** and **3** together, the status message should change to, "*Detected closure of TXD and RXD pins*." Then the status message will change to, "*TXD and RXD pins still closed*."

- Whether or not the status changes, remove the jumper from the pins. The status message should change to, "*Detected opening of TXD and RXD pins contact*." Then the status message will change to "*No characters returned from device ...*"

- Exit PowerMon II test mode by pressing the system interrupt (<*del*>) key.

Serial Port Test Results

If you receive the messages as stated above, PowerMon II is able to communicate through your computer's serial port properly. If your system passes this test, reconnect the PowerMon II cabling and activate PowerMon II. Then, if you continue to have problems, you will need to place a technical support call.

If you do **not** receive the messages, there is a problem with your serial port. You should:

- Ensure that your serial port is properly installed and configured to your system.
- Are you testing the right port? Ports can be mislabeled.
- Check that no other adapter setups are conflicting with the port.
- Check that no other applications are accessing the port.
- Perform another test on the serial port using another method such as getting an external modem or terminal to work.

PowerMon II will **not** function properly until the serial port passes the test described.

Serial Adapter Guidelines

PowerMon II packages come standard with a 25 pin female connector on the computer (CPU) end of the cable. If your serial port isn't a 25 pin male connector, you will need to attach an adapter to this end (CPU) of the cable. **You must use the supplied cable.** Use the following pin assignments to make an adapter between your computer's serial port and the PowerMon II cable.

Signal To Signal Adapter

Signal Description		Cable Side 25 Pin Male
TXD	Transmit Data	2
RXD	Receive Data	3
RTS	Request To Send	4
CTS	Clear To Send	5
DSR	Data Set Ready	6
GND	Signal Ground	7
DCD	Data Carrier Detect	8
DTR	Data Terminal Ready	20

If the serial port on your IBM compatible PC has a 9-pin male connector, use the following adapter between your computer's serial port and the communication cable.

IBM AT Serial Adapter

Serial Port 9 pin Female	Signal Description		Cable Side 25 Pin Male
1	DCD	Data Carrier Detect	8
2	RXD	Receive Data	3
3	TXD	Transmit Data	2
4	DTR	Data Terminal Ready	20
5	GND	Signal Ground	7
6	DSR	Data Set Ready	6
7	RTS	Request To Send	4
8	CTS	Clear To Send	5

If you need another adapter for your system, contact your computer retailer or Systems Enhancement Corporation. You must get an adapter that terminates in a true RS-232 DTE footprint.

Extender cables and other custom cables are available from Systems Enhancement Corporation. If you are making your own extender cable, make sure it is signal to signal.

Do **not** use a null modem adapter.

Placing a Technical Support Call

In order to diagnose the problem you are having, our technicians will need the following information from you:

Installation Site:

Company Name:_____

Address:_____

City:_____

State:_____ ZIP code:_____

Installation Site Contact:

Full Name:_____

Phone Number:_____

Fax Number:_____

If you are a consultant,

Consultant Name:_____

Phone Number:_____

Fax Number:_____

Computer System:

Operating System type and version:_____

System Manufacturer:_____

System Model Number:_____

Type of Serial Port Connector (How many pins, male or female, etc.):_____

Address of the Port:_____

UPS:

Manufacturer:_____

Model Name/Number:_____

Type of Port Connector (How many pins, male or female, etc.):_____

PowerMon II Configuration:

Configuration Code:_____

Cable's Part Number (From tag on end of cable):_____

Are any adapters connected to the cable?_____

If yes, what type?_____

Are there any *getty/ttymon* processes monitoring the port?__

What are the symptoms?

☎ *Technical Support* ☎

Have the information listed above ready. You can reach us by calling:

US & World: (636) 532-2855

by fax at (636) 532-2037

or by E-mail at: support@sechq.com

Europe: +44 1600 716400

or by fax at +44 1600 772026

Systems Enhancement Products

Multi-Interface Units (MIU)

Multi-Interface Units (MIU) are designed to allow more than one computer to monitor a single UPS for a utility power failure or a low battery condition. Multi-Interface Units are necessary since a typical UPS has only one communication interface, making it impossible for multiple computers to simultaneously monitor a single UPS.

One cable is provided to attach the MIU to the UPS interface. A cable is provided for each computer system to attach to the MIU. Each computer will individually monitor the status of the UPS, and all power events that occur, by using PowerMon II, SmartMon (for MIUs that support serial UPSs), or built-in UPS monitoring software. When the MIU detects a change in UPS status, it passes the same status signals to all the attached servers, informing them of the power event.

The following provides more information on Systems Enhancement's family of Multi-Interface Units:

MultiMon™

- Provides 8 ports for basic monitoring and system shutdown.
- Expandable for UPS systems that support more than 8 computer systems.
- Allows each computer system to monitor for utility power failure and UPS low battery.*
- Provides support for UPS inverter shutoff.**

MultiMon Pro™

- Provides 8 ports—7 basic and 1 smart/serial port, for power management and system shutdown.
- Supports additional contacts for on by-pass and general alarm for AS/400 systems.
- Rack Mountable.
- Infinitely daisy-chainable.
- Configurable dip switch for system shutdown testing.
- Interface with SEC's PowerMon II and SmartMon software.

MicroMon™

- Provides 3 ports—2 basic and 1 smart/serial port, for power management and system shutdown. Designed to work with smaller UPS systems.
- Allows two computer systems connected to the basic monitoring ports to monitor for utility power failure and UPS low battery. Allows one computer system connected to the smart monitoring port to monitor smart UPS data.*
- Provides support for UPS inverter shutoff.**
- Cost-effective solution that is less than half the price of other MIUs.

* Basic monitoring requires PowerMon II or other UPS (contact closure) monitoring software. Smart/serial monitoring requires SmartMon or other smart/serial UPS monitoring software.

** UPS inverter shutoff is currently supported for basic monitoring in PowerMon II systems only. UPS inverter shutoff for smart/serial monitoring is normally handled through serial communications.

NetMon SNMP Adapters

Systems Enhancement's NetMon products give you a cost-effective solution for monitoring your uninterruptible power supplies using Simple Network Management Protocol (SNMP). The NetMon adapters receive status data from the UPS, translate this information into SNMP–compliant messages, and send these messages to the Network Management Station (NMS). The NetMon family is compatible with a variety of NMSs—Novell, HP OpenView, SunNet Manager, and IBM NetView.

The following NetMon features provide your solution for UPS monitoring.

NetMon—SP™ (Single Port)

- Allows network administrators to manage a single UPS using SNMP.
- Works with contact closure and serial data UPSs.
- Designed for Ethernet networks.

Small, compact design.

SmartMon™

SmartMon is UPS power management and shutdown software that works with smart/serial data to provide critical information about power conditions and the status of the UPS. SmartMon is designed to monitor a smart UPS for events such as power failure and low battery conditions and provide a graceful system shutdown.

Key features of SmartMon include:

- Multiple brand UPS support
- Configurable user interface—display UPS values, such as:

- Input Voltage
- Output Voltage
- Output Frequency
- Percent Load
- Battery Charge
- Battery Temperature

more...

- Configurable real-time graphing
- User-defined events based on UPS value thresholds
- User-configurable actions based on UPS events and data, including:

- Shutdown the Operating System
- Shutdown the UPS
- Log the event
- Broadcast a warning
- Page the Administrator

- Scheduled system shutdown
- Scheduled UPS self-test

Contact Systems Enhancement Corporation for more information.