PowerMon® II

User Manual

for:

VMS™
Operating Systems

- DEC VAX/VMS
- DEC OpenVMS VAX
- DEC OpenVMS AXP

by:

SYSTEMS ENHANCEMENT CORPORATION

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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, screen 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.

`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: **`show term`** *`{port}`*

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: <*ctrl+a*>

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 VMS 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. 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 normal monitoring. 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.

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 command procedures 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 modifying command procedure 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 Tripp Lite,
please contact us at (312) 755-5401

System Requirements

PowerMon II VMS Packages support systems running:

- DEC VMS (Ver. 5.4+)
- DEC OpenVMS VAX (Ver. 6.0+)
- DEC OpenVMS AXP (Ver. 6.1+)

If your version of VMS or Open VMS is earlier than the versions listed above, PowerMon II program may need to be relinked. This is described in the installation section.

This software may not be upward compatible with some operating systems.

PowerMon II requires one dedicated RS-232 serial port on your computer, or a terminal server port on the LAT.

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.

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.

Note: Because of differences in terminal emulators, <↓> does not work on all terminals. In free-form fields, use <*enter*> to move to the next field; and in limited options fields, use the <↑> to loop through the options.

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

<*HELP*> or <*F15*> or <*ctrl*+*a*> will display help text describing the current field.

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

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

<*F11*> or <*ctrl*+*n*> will exit the configuration program without saving any changes, and PowerMon II will not start.

A working knowledge of VMS 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 command procedure
- Configuring PowerMon II during installation

Setting-Up the Serial Port

You can set-up PowerMon II to communicate through a port directly on the computer, or through a terminal server. If you are using a port directly on your computer, skip down to **Terminal Characteristics**.

Terminal Servers

The following steps must be done to set up the terminal server port. This is only an example, your system may vary. The following commands are for a DECserver 200. Your commands may differ.

Note: **If you are using a DEC terminal server with an MMJ connector, Digital Part Number *H8571-D* is required. This adapter will convert a DB25 to an MMJ connection.**

- In LATCP (Local Area Transport Control Protocol), create and set up a port. The port name must start with LTA (We have used **LTA999**, **port_1**, and **server_1** in the following example).

```
$ mcr latcp
latcp> create port lta999
latcp> set port lta999/application/port=port_1/node=server_1
latcp> exit
```

For some terminal servers, it may be necessary to do a **`define`** as well as the **`set`** in order to store the changes in the permanent database.

- Login to the terminal server either on another terminal on the same server, through TSM (Terminal Server Manager), or through NCP (Network Control Program). Set the **`access`** on the port to **`remote`**.

```
LOCAL> set priv  {give password}
LOCAL> define port 1 access remote
LOCAL> logout port 1
```

Next, set-up the terminal characteristics for the port.

Terminal Characteristics

PowerMon II requires that the RS-232 connector be plugged into a terminal port it can allocate. To view the current terminal characteristics for the port, type:

`show terminal` *{port}* <*enter*>

Note: The following port set-up is **only** an example. The number of terminal characteristics listed for your system may vary.

```
$ sho term opa1
Terminal: _OPA1:      Device_Type: Unknown       Owner: No Owner

   Input:    2400     LFfill:  0      Width:  80      Parity: None
   Output:   2400     CRfill:  0      Page:   24

Terminal Characteristics:
   Interactive         Echo                No Typeahead        No Escape
   No Hostsync         TTsync              Lowercase           No Tab
   Wrap                Scope               No Remote           No Eightbit
   No Broadcast        No Readsync         No Form             Fulldup
   No Modem            No Local_echo       No Autobaud         Hangup
   No Brdcstmbx        No DMA              No Altypeahd        Set_speed
   No Commsync         Line Editing        Overstrike editing  No Fallback
   No Dialup           No Secure server    No Disconnect       Pasthru
   No Syspassword      No SIXEL Graphics   No Soft Characters  No Printer Port
   Numeric Keypad      No ANSI_CRT         No Regis            No Block_mode
   No Advanced_video   No Edit_mode        No DEC_CRT          No DEC_CRT2
   No DEC_CRT3         No DEC_CRT4         No DEC_CRT5         No Ansi_Color
   VMS Style Input
$
```

To prevent the **<loginout>** process from allocating the port, that port should have the terminal characteristic **`No Typeahead`**.

If you are setting-up a port on a terminal server, the terminal characteristic **`No Wrap`** should be set, instead of **`Wrap`**.

You need to set the terminal characteristics of the port you choose, to the characteristics listed in the example. To change the terminal characteristics, type the following command. Include terminal characteristics you need to change.

`set terminal/permanent/notype_ahead/noautobaud-`
`/nobroadcast/pasthru/speed=2400/wrap` *{port}* <*enter*>

Note: The *set terminal* command line should be entered into the command procedure **`sys$manager:systartup_v5.com, systartup_vms.com`**, or the appropriate command procedure, so that the appropriate port characteristics get set at system reboot.

Verify that no process has the port allocated by typing:

`show terminal` *{port}* <*enter*>

If the **`Owner`** is not **`No Owner`**, that process must release the port before installation may continue.

Once PowerMon II starts, the **`Owner`** will become **`PowerMon_II`** the **`Username`** will become **`SYSTEM`**. Also, the terminal characteristic **`type_ahead`** will be turned on.

Installing the UPS Interface Cable

Follow the directions in your UPS manual for installing your UPS, and charging the batteries.

- Connect the end of the cable marked "CPU" to the serial port on your computer.
- Connect the other end of the cable to the interface port of your UPS.

Note: The cable supplied in this package **must** be used. It is designed for your specific UPS and should connect to your UPS's interface port exactly. The computer end of the supplied cable may be adapted to your serial port by way of an RS-232 serial adapter. Guidelines on adapters are listed near the end of this manual.

Extracting PowerMon II

Login to the system as the system manager.

Set the logical variable **`ups$dir`** to the directory that PowerMon II will be installed in. You can install it in any directory you wish. For example, to install it in the **`sys$manager`** directory, type:

`assign/system sys$manager: ups$dir` <*enter*>

Note: This line should also be added to the appropriate startup command procedure after the terminal characteristics have been set as discussed previously.

For Tapes

- Set the default directory to the directory you specified in the above assign command:
  `set default ups$dir` <*enter*>
- Place the tape in the appropriate drive on your system, and mount the media, using the appropriate device name.
  `mount/foreign mua0:` <*enter*>
  (**`mua0:`** is used only as an example. Your device name may be different.)
- Files are stored on the tape in a backup saveset. If the system being installed on is an ALPHA/AXP running OpenVMS, enter the command:
  `backup/log mua0:ups_axp.bck/save ups$dir:` <*enter*>
  If your system is a VAX running VMS or OpenVMS, enter the command:
  `backup/log mua0:ups_vax.bck/save ups$dir:` <*enter*>

- **For VAX/VMS versions earlier than 5.4 and/or Open VMS AXP earlier than 6.1:** You may need to relink the executables. The object files and command procedure needed to relink the executables are on a separate saveset on the tape.

If your system is an ALPHA/AXP running OpenVMS, enter the commands:

backup/log mua0:bld_axp.bck/save ups$dir: <*enter*>
@ups_link_axp <*enter*>

If your system is a VAX running OpenVMS or VMS, enter the commands:

backup/log mua0:bld_vax.bck/save ups$dir: <*enter*>
@ups_link_vax <*enter*>

This will link a new version of the executables to run on your version of the system. It will also remove the object files that were used to relink. Once this is finished, you may delete the **ups_link*.com** files from the **ups$dir** directory.

- Dismount the tape device:
  dismount mua0: <*enter*>

For 3½ Diskette

The diskette contains the PowerMon II software for OpenVMS Alpha/AXP systems.

- Place the diskette in the appropriate drive on your system, and mount the media using the appropriate device. For example:
  mount dva0: UPS <*enter*>
- Set the default directory to the diskette drive:
  set default dva0:[000000] <*enter*>
- Copy the **ups_axp.bck** file to the directory you previously assigned to the logical variable **ups$dir**. Enter the command:
  copy ups_axp.bck ups$dir: <*enter*>

- Set the default directory to the directory to which you copied the file:
  `set default ups$dir:` <*enter*>
- The files are saved in a backup saveset. Enter the following command to extract the files from this saveset:
  `backup/log ups_axp.bck/save ups$dir:` <*enter*>
- Dismount the diskette drive:
  `dismount dva0:` <*enter*>

For CD-ROM

The CD-ROM contains the PowerMon II software for OpenVMS and VMS systems.

- Place the CD-ROM in the appropriate drive on your system, and mount the media, using the appropriate device. For example:
  `mount dka400: UPS` <*enter*>
- Set the default directory to CD-ROM drive:
  `set default dka400:[000000]` <*enter*>
- Copy the appropriate file to the directory you previously assigned to the logical variable **`ups$dir:`**

  If your system is an ALPHA/AXP running OpenVMS, enter the command:
  `copy ups_axp.bck ups$dir:` <*enter*>

  If your system is a VAX running OpenVMS or VMS, enter the following command:
  `copy ups_vax.bck ups$dir:` <*enter*>
- Set the default directory to the directory that you copied the file to:
  `set default ups$dir:` <*enter*>
- Files are stored in a backup saveset specific to your type of system.

If your system is an ALPHA/AXP running OpenVMS, enter the following command to extract the files from this saveset:
`backup/log ups_axp.bck/save ups$dir:` <*enter*>

If your system is a VAX running OpenVMS or VMS, enter the following command to extract the files from this saveset:
`backup/log ups_vax.bck/save ups$dir:` <*enter*>

- **For VAX/VMS versions earlier than 5.4 and/or Open VMS AXP earlier than 6.1:** You may need to relink the executables. The object files and command procedure needed to relink the executables are on a separate saveset on the CD-ROM.

If your system is an ALPHA/AXP running OpenVMS, enter the commands:
`copy dka400:[000000]bld_axp.bck ups$dir:` <*enter*>
`backup/log bld_axp.bck ups$dir:` <*enter*>
`@ups_link_axp` <*enter*>

If your system is a VAX running OpenVMS or VMS, enter the commands:
`copy dka400:[000000]bld_vax.bck ups$dir:` <*enter*>
`backup/log bld_vax.bck ups$dir:` <*enter*>
`@ups_link_vax` <*enter*>

This will link a new version of the executables to run on your version of the system. It will also remove the object files that were used to relink. Once this is finished, you may delete the **`ups_link*.com`** files from the **`ups$dir`** directory.

- Dismount the CD-ROM device:
`dismount dka400:` <*enter*>

The Install Command Procedure

When PowerMon II is run, it creates a detached process and runs in that process. When initially created, **sys$manager:sylogin.com** and the user's login (if run from any user account) will be executed. To avoid execution of the commands in either of these files, add the following line to the top of any relevant command procedures:

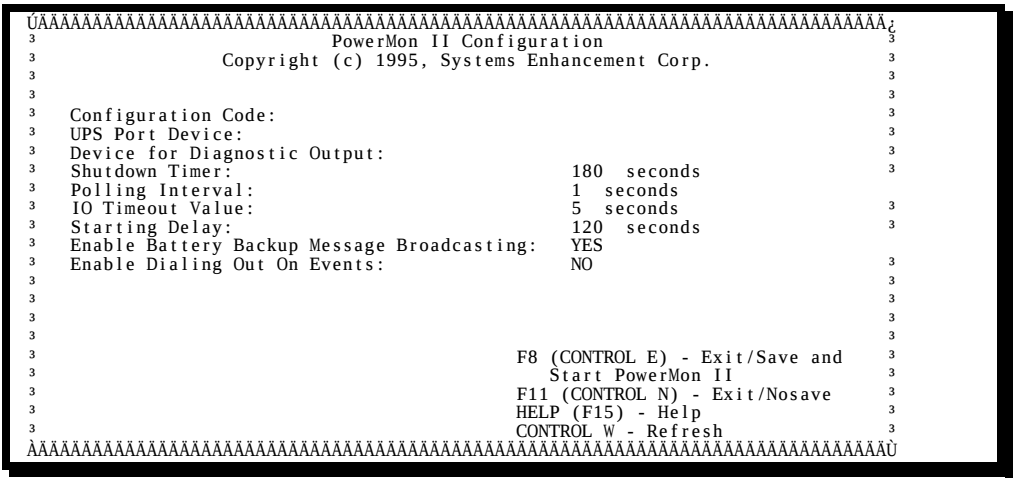
```
$ If f$mode() .eqs. "OTHER" then exit
```

To initially install the program and to enter configuration information as described in the following pages, verify that the current directory is the one specified in **ups$dir**, and type:

@**ups_install** <*enter*>

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.

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.

UPS Port Device

This is the serial port device that you set-up earlier and connected the communications cable to.

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. If you wish to send the diagnostic messages to the system console, type:

`opa0` <*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 minutes. It is important to choose a time-out 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 data.

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

IO Timeout Value

The length of time, in seconds, to wait for a response from the UPS, before PowerMon II assumes that there is a communication failure. The default setting should eliminate problems on most systems. Do not change this parameter unless you are experiencing communication failures. This parameter is generally used when the serial port is located on a terminal server.

Default setting: 5 seconds
Valid range: 2-60 seconds

Starting Delay

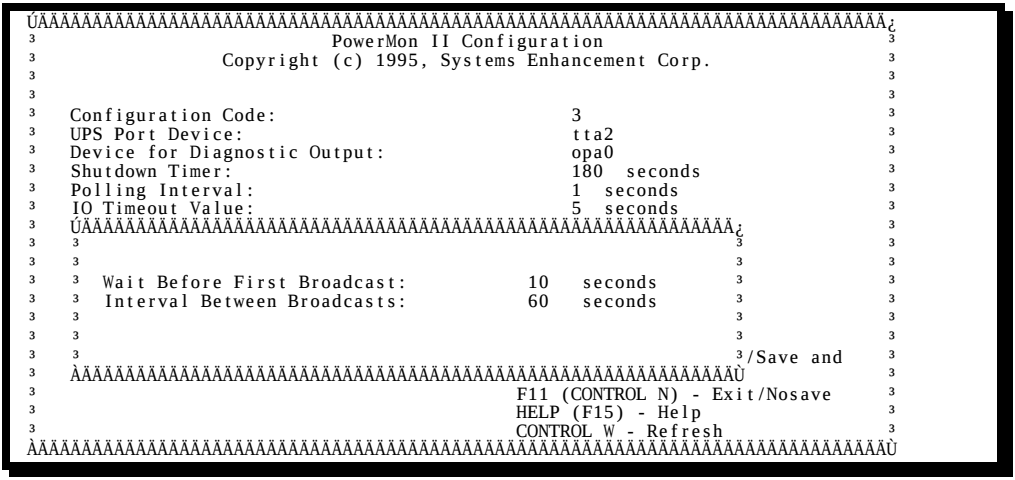
Enter the number of seconds to wait after the computer is booted before automatically activating the monitor.

Default setting: 120 seconds
Valid range: 0-7200 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

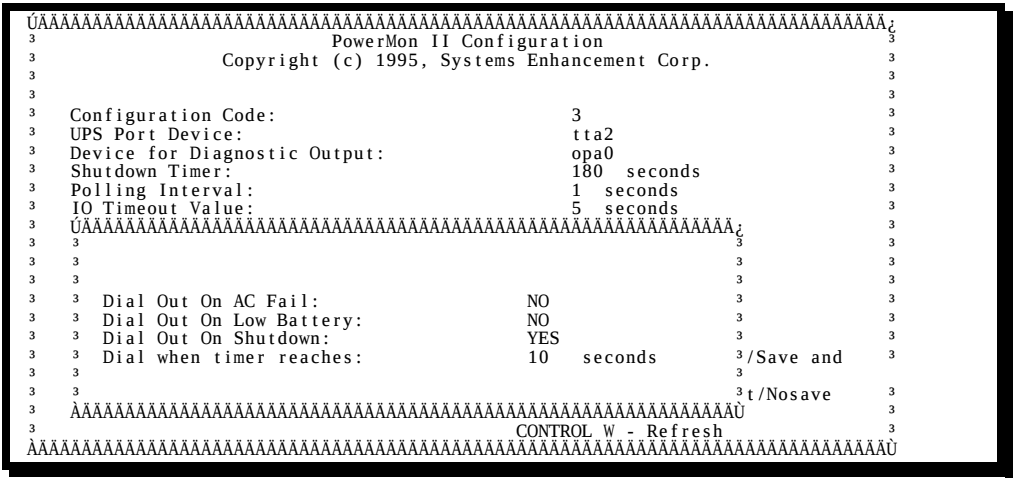
Enter the time interval between broadcast power failure messages.

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, 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 **`ups_dial.com`** in ***PowerMon II Files & Procedures***.

Default setting: NO



✦ Dial Out On AC Fail

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

Default setting: NO

✦ Dial Out On Low Battery

Indicates to PowerMon II whether or not to execute the dial out command procedure on Low Battery.

Default setting: NO

- **Dial Out On Shutdown**
  Indicates to PowerMon II whether or not to execute the dial out command procedure on system shutdown.

  Default setting: NO

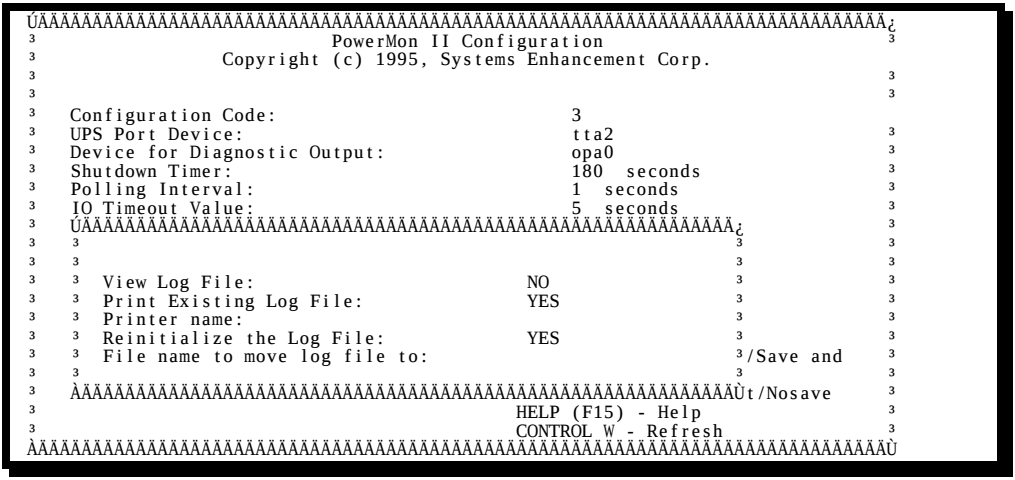
- **Dial When Timer Reaches**
  Indicates how long before shutdown to wait before executing the dial out command procedure. This option is only available when *Dial Out On Shutdown* is set to YES.

  Default setting: 10 seconds

Print or Reinitialize 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

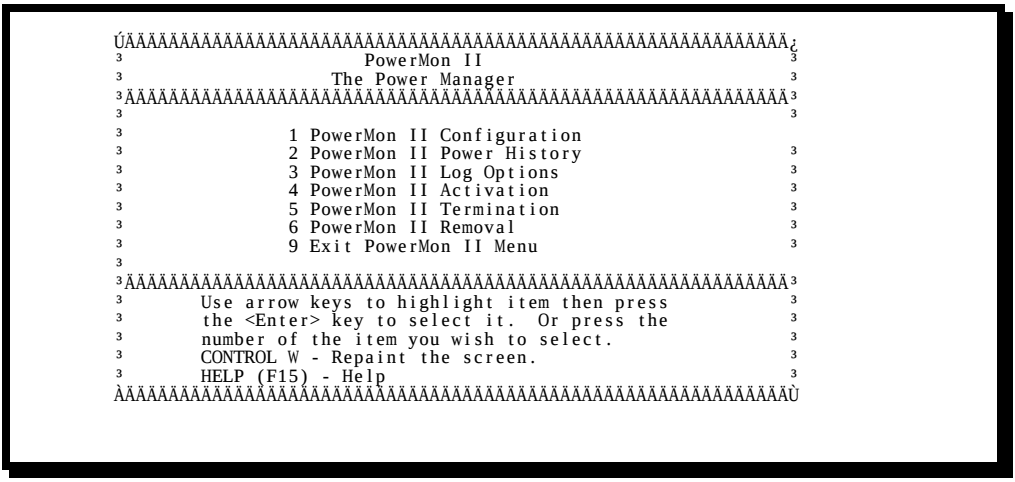
Once you are finished making changes to the configuration parameters, save the changes. See *Testing PowerMon II Operation*.

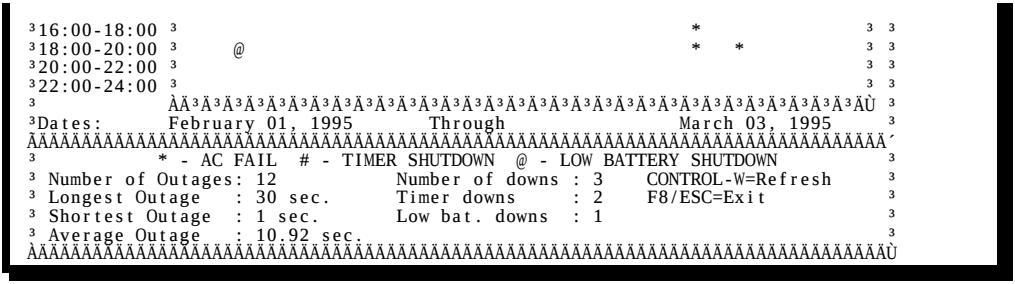
Using the Control Center

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

- Login to the system as the system manager
- Set the default directory to the directory you originally specified in the **ups$dir** logical variable. You may need to re-assign the value to **ups$dir**.
  set default ups$dir <*enter*>
- Start the Control Center by typing:
  run upsmenu <*enter*>

The following Control Center screen will appear:

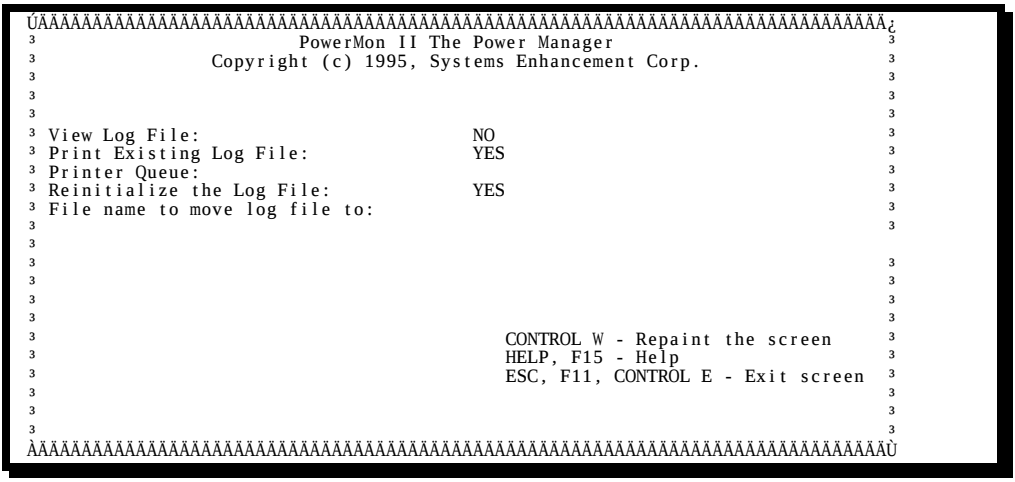




The PowerMon II power history graph provides a 31 day snapshot of the power state. In addition to the graph, PowerMon II lists statistics on the number of power outages, outage lengths, and system shutdowns during this 31 day period. Only the most recent power event symbol is displayed for each 2 hour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

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.

Activation

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

Termination

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

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 ***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, the following files will be found in the **ups$dir** directory. Each file name is followed by a short description of the file.

- **ups_kill.com**
  A command procedure used to find and terminate active PowerMon II processes.
- **ups_logprt.com**
  A command procedure called to print the PowerMon II status log file. It can be modified to change the method used to print.
- **upsmenu.exe**
  The executable PowerMon II control center program.
- **ups_brdcast.com**
  A command procedure used to broadcast PowerMon II messages to users. The actual broadcast "reply" command is in this file, and can be modified.
- **ups_check.com**
  A command procedure that can be used to check the current status of the UPS, the current shutdown timer, and the PowerMon II software.
- **upsconf.exe**
  The executable PowerMon II configuration program.
- **ups_config.com**
  A command procedure used to invoke the executable PowerMon II configuration program.
- **ups_dial.com**
  A command procedure used to dial out upon events. It allows you to invoke a user defined dial out routine. You must provide the method for dialing.

- **ups_fail.com**
  A command procedure invoked by PowerMon II when it detects a utility power failure.
- **upsgraph.exe**
  The executable PowerMon II history graph program.
- **ups_halt.com**
  A command procedure invoked by PowerMon II when it detects a low battery, or when the time-out period expires. It contains the actual shutdown command, which can be modified for your particular system.
- **ups_install.com**
  A command procedure used to install PowerMon II.
- **upslogfl.exe**
  The executable PowerMon II log file options program.
- **ups_remove.com**
  A command procedure used to remove all PowerMon II files from the system.
- **ups_rest.com**
  A command procedure invoked by PowerMon II when it detects utility power restoration.
- **ups_run.com**
  A command procedure used to invoke PowerMon II.
- **status.ups**
  This text file contains a value which indicates the last reported state of the UPS, and the current shutdown timer. Running **ups_check.com** will list the contents of this file. The value could be:
  1 - Normal Power
  2 - Battery Backup
  3 - Normal Power/Battery Weak
  4 - Low Battery/Shutdown
- **down_log.ups**
  The log of processes that were active when PowerMon II shutdown the system.

- **demo_log.ups**
  The demonstration log file used for the PowerMon II power history graph, if no actual history log file was located.
- **configure.ups**
  This text file contains the answers to the PowerMon II configuration questions.
- **error_log.ups**
  PowerMon II keeps a raw account of system/error messages in a separate **error_log.ups** file. If PowerMon II should fail to startup, review this file. Each power event is recorded in **event_log.ups** file, which continuously keeps track of all power events.
- **powermon_ii.exe**
  The executable power monitor program that runs as a background process to monitor the UPS status and conditions.
- **event_log.ups**
  PowerMon II continuously logs all event messages into this text file. You can view this file from the control center or any other text file viewing utility. If you wish to clear the log file, you can use the log options selection in the PowerMon II application, or erase it, and PowerMon II will generate a new file.
- **fail_msg.ups**
  The text file that contains the message that is broadcast to users when a utility power failure event occurs.
- **rest_msg.ups**
  The text file that contains the message that is broadcast to users when a utility power restoration event occurs.
- **shut_msg.ups**
  The text file that contains the message that is broadcast to users to notify them of imminent system shutdown.
- **graph_log.ups**
  The PowerMon II power history graph log file.

Customizing Messages & Procedures

The PowerMon II package includes user-modifiable message text files and event command procedures. These text files and command procedures 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 command procedure that can be invoked on specified events, called **`ups_dial.com`**. Modify **`ups_dial.com`** to include the dial out commands for your modem.

Power Fail

The power failure command procedure is invoked when PowerMon II detects a power failure. Place any special commands that you want executed in **`ups_fail.com`**.

`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 command procedure is invoked when PowerMon II detects power restoration. Place any special commands in **`ups_rest.com`**.

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

Shutdown

The shutdown command procedure is invoked after PowerMon II detects a low battery warning, or the shutdown timer expires. Place any special commands in **`ups_halt.com`**.

`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 command procedure files, be careful not to introduce delays, in the actual sequence, without ensuring that your UPS system will provide power, long enough to complete the command procedure. 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 that xx/xx/xx xx:xx:xx indicates the current date 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, **`ups_halt.com`**.

- 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, **`ups_halt.com`**, please remove the comment.

If you get messages, PowerMon II detects utility power failure. If no messages appear, refer to the section titled, **Trouble Shooting**.

Note: Once satisfied that PowerMon II is operating properly, add the following line to **`sys$startup:systartup_v5.com`**, **`systartup_vms.com`**, or the appropriate startup command procedure to automatically activate PowerMon II when the system is rebooted. This line should be added after the terminal characteristics have been modified and the **`ups$dir`** logical has been assigned as discussed in the ***Installation & Configuration*** section:

```
@ups$dir:ups_run
```

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

Positively identify the name of the serial port that the PowerMon II communications cable is connected to.
(Consult computer/operating system documentation)

Verify that the serial port terminal characteristics match those given.

Verify that no other applications are using/accessing this serial port. PowerMon II **must** have a dedicated port.

Verify that you are using the cable supplied with the PowerMon II software and that it is securely connected to this serial port. If you are using an adapter, it must be a standard serial adapter. (See **Serial Adapter Diagrams**)

Verify that the other end of the supplied cable is securely attached to the UPS's interface. This end should not require any adapters. (If the UPS end of the cable does not connect exactly, contact Systems Enhancement Corporation.)

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

Installation Checklist

Verify that all of the files are in the **`ups$dir`** directory.

Verify that in the port set-up, the baud rate is set to 2400.

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

Check the section titled **Common Problems and Their Solutions**.

Common Problems & Solutions

Problem: PowerMon II dies immediately or soon after being run.
Solution: Check **`ups$dir:error_log.ups`** for an error message describing the problem.

Problem: Message repeatedly appears on output device stating system is on battery backup followed by a power restored message.
Solution: Verify port configuration parameter **`pasthru`** is set.
Solution: I/O time-out may need to be increased, contact Technical Support for instructions.

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

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 correct Configuration Code.

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.

Problem: The time-out 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 shut down command in the file **`ups$dir:ups_halt.com`** isn't commented out. Also, make sure the supplied shutdown command is the proper one for your system.

Problem: When starting PowerMon II, a message appears on the diagnostic output device stating UPS battery is weak.

Solution: Make sure the cable is securely connected to the UPS, and that the UPS is fully charged.

Solution: Make sure you are using the correct Configuration Code.

Solution: The weak battery/low battery signal is being improperly recognized, even though it stated that the low battery signal would be monitored at configuration time. Cutting power to the UPS at

this point will cause an immediate shutdown. To avoid this, reconfigure the software and use Configuration Code 1 (if you previously used Configuration Code 3 or 5), or 2 (if you previously used Configuration Code 4 or 6). Now, at power failure, the software will shutdown your computer when the shutdown timer expires, and low battery will not be monitored.

Serial Port Testing

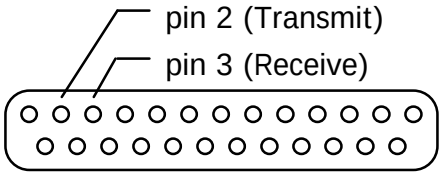
The following procedure is used to determine if PowerMon II is able to communicate properly through the specified serial port on your computer. This procedure will test the serial port independent of the supplied PowerMon II cable and UPS.

Follow the suggestions in Serial Port Test Results to determine where the communications problem occurs.

- Login to the system as the system manager.
- At the *$* prompt, change the working directory to **ups$dir** by typing:
  set default ups$dir: <*enter*>
- Start the Control Center by typing:
  run upsmenu <*enter*>
- Choose ***PowerMon II Termination*** from the Control Center menu. Exit the menu.
- Disconnect the supplied PowerMon II cable from your computer's serial port. The other end may be left connected to your UPS.
- Start PowerMon II in test mode by typing:
  @ups_porttest <*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..."*

- Using a "jumper wire" or a metal paper clip, jumper pins number **2** and **3** on your computer's serial port.
  (See the following diagram for pin numbering on a 25-pin male port.) 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



25-pin Male connector

- Within 5-10 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. Within 5-10 seconds, 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 ...*"

- Stop the **`PowerMon_II`** process by pressing the system interrupt key <*ctrl+y*>.

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 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 working.

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 you need another adapter for your system, contact your computer retailer or Systems Enhancement. 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?_____

Include a listing of Terminal Characteristics.

What are the symptoms?

☎ *Technical Support* ☎

Have the information listed above ready. You can reach us by calling:
(314) 755-5401

Systems Enhancement Products

PowerMon®

- **Apple Macintosh**

PowerMon®II

Standard UNIX Package Includes

- **AT&T UNIX 386**
- **Interactive UNIX**
- **SCO UNIX 386**
- **SCO XENIX 386**
- **Sun Solaris (Intel)**
- **UNIX System V Release 4**
- **IBM AIX for RS/6000**
- **Sun SPARC**
- **SunOS SUN 4**
- **Sun Solaris (SPARC)**

Packages Sold Individually

- **DEC OSF/1**
- **DEC ULTRIX (RISC Architecture)**
- **DEC VMS & OpenVMS (VAX & AXP)**
- **Data General AViiON (DG-UX)**
- **HP-UX**
- **Novell NetWare**
- **IBM OS/2**
  - **OS/2 Workstation**
  - **IBM OS/2 LAN Server**

SensiMon™

For monitoring utility power without a UPS interface. SensiMon incorporates the capabilities of PowerMon or PowerMon II, using a custom SensiCable. The SensiCable replaces the need for an interface on the UPS. The SensiCable plugs into the same electrical outlet as the UPS.

SmartMon™

For monitoring *smart* uninterruptible power supplies. SmartMon is power management and shutdown software that works with RS232 data to graphically display information about power conditions and the status of the UPS.

In addition to monitoring a UPS for AC power failure and low battery condition, SmartMon provides a graceful system shutdown.

If a power failure is detected, a network broadcast message is sent to all logged in users and a countdown timer begins showing the amount of time remaining before an orderly shutdown will be initiated. If power is restored before the timer expires and before the UPS reaches low battery, a message is broadcast to all users and the software returns to its original monitoring state while the timer is reset. If power is not restored or the UPS reaches a low battery status, the timer expires and the operating system is gracefully shut down.

By using RS232 data, SmartMon can monitor UPS conditions such as: input and output voltages, power conditions, UPS load, line frequency, temperature, percentage of battery used and battery time remaining. SmartMon provides the capability to dial out on a modem, phone or beeper in the event of an AC power failure, UPS low battery condition or when system shutdown time has arrived.

Multi-Interface Units

The multi-interface unit (MIU) for multiple computer systems powered by a single UPS.

MultiMon Plus

MultiMon Plus allows multiple computer systems to monitor a single Uninterruptible Power Supply (UPS). One MultiMon Plus can allow up to nine computers to monitor the state of a UPS for shutdown purposes. For a UPS with a smart RS232 serial interface, MultiMon Plus has a ninth port to provide RS232 transmit and receive signals. This allows one computer to monitor the UPS while also managing the unit and its data.

When a power failure occurs, users will be notified by way of a network broadcast message and the user-configured timer will begin to monitor time available before shutdown. Upon expiration of the timer or a low battery signal from the UPS, MultiMon Plus via the PowerMon II and SmartMon software, will initiate an orderly shutdown of each system connected.

MultiMon AS/400

The four-port MultiMon, also known as the MultiMon AS/400, is designed to accomodate the power management needs of the IBM AS/400 series.

One MultiMon AS/400 can allow up to four independent computers to simultaneously monitor for power conditions of the UPS. Each computer's operating system can be completely different from the others and can perform a graceful shutdown when unfavorable power events occur.

Each computer runs its own copy of the PowerMon II or the AS/400 monitoring software to detect utility failure and/or low battery status of the UPS. The MultiMon AS/400 is capable of monitoring all UPS devices that provide communication interfaces. (Examples include 9, 15 and 25 pin UPS interfaces.)

MicroMon

MicroMon provides monitoring capabilities for up to three computers powered by a single UPS. Two ports are designed to work with dry contact UPSs while a third port will work with smart UPS devices.

Each computer connected to the MicroMon runs its own copy of Systems Enhancement's PowerMon II or SmartMon software and can individually monitor the AC power and low battery status of the UPS, while also providing power management capabilities. When a power failure occurs, users are notified through network-broadcast messages and a timer begins to countdown the time available before a graceful shutdown occurs. Upon expiration of the timer, the PowerMon II or SmartMon software will shut down each system connected to the MicroMon.

SNMP

NetMon allows a network manager to manage uninterruptible power supplies that are attached to network devices, such as routers, bridges, terminal servers, and gateways, utilizing the Simple Network Management Protocol (SNMP).

NetMon SP

NetMon SP (Single Port) allows network administrators to manage UPSs using the Simple Network Management Protocol (SNMP). The hardware adapter's streamlined design can monitor and manage a single UPS via SNMP.

The NetMon SP hardware allows users of contact closure or RS232 UPSs to monitor and manage the UPS using SNMP protocol over TCP/IP and Token Ring networks. NetMon SP is compatible with a variety of Network Management Systems, including Novell NMS, HP Open View, Sun NetManager and IBM NetView.

NetMon SP receives power event signals from the UPS, translates them into SNMP-compliant messages and sends these messages to the Network Management Station (NMS). Used in conjunction with PowerMon II software, administrators are assured a graceful shutdown in the event of a power outage or possible low battery status on any server attached to the UPS.

NetMon MP

NetMon MP (Multi Port) manages Uninterruptible Power Supplies (UPS) attached to all types of networks and multi-user systems. NetMon MP allows a network administrator to manage up to four UPSs simultaneously using the Simple Network Management Protocol (SNMP). These UPS systems can be of heterogeneous configuration. In addition, NetMon MP

also provides two external dry contact ports for monitoring and controlling devices such as smoke alarms and security alarms or to turn on an air conditioner.

NetMon MP acts as an interface between systems, known as a “proxy agent”, to provide SNMP management capability for the UPS. NetMon MP receives signals from the UPS, translates them into SNMP-compliant messages and sends these messages to the appropriate Network Management Station (NMS).

NetMon MP is a complete network solution consisting of the hardware, adapter, software, cables and UPS MIB (Management Information Base). Working with Systems Enhancement’s PowerMon II software, NetMon MP receives “traps” identifying the nature of the power event. The network administrator can receive information about the UPS such as battery status, unit temperature and percent load as well as all system alert notifications. NetMon MP then uses the PowerMon II software to provide both UPS monitoring and graceful system shutdown.