

PowerNet[®] SNMP SmartSlot 3.0 Adapter

User's Guide



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About This Guide

This introduction provides information which can help you use this user's guide to manage your Adapter, its UPS and Measure-UPS (or SmartSlot Measure-UPS II). This includes descriptions of:

- HOW TO REGISTER YOUR ADAPTER
- THIS GUIDE'S PURPOSE
- THIS GUIDE'S STRUCTURE
- ASSOCIATED DOCUMENTS
- THIS GUIDE'S CONVENTIONS

How to Register Your Adapter

Please fill out and return the enclosed warranty card. This card not only provides us with valuable, welcomed feedback about how we can refine our products to better serve your needs, but it also enables us to notify you about important product updates and changes.

This Guide's Purpose

This guide describes how to use an AP9605 PowerNet Simple Network Management Protocol (SNMP) SmartSlot 3.0 Adapter to manage (monitor, control and configure) a UPS and a Measure-UPS (or a SmartSlot Measure-UPS II).

Note: The Adapter can connect a UPS without a Measure-UPS, a UPS which has a Measure-UPS, or a Measure-UPS without a UPS to the network for management.

This Guide's Structure

In addition to this introduction, this guide uses eight chapters and an appendix to describe how to use the PowerNet SNMP SmartSlot Adapter:

- **Chapter 1: What You Can Use to Manage an Adapter**
Provides an introduction to the applications you can use to manage an Adapter, its UPS and a Measure-UPS.
- **Chapter 2: User-Interface Components**
Identifies the Adapter's light-emitting diodes (LEDs), and describes what these LEDs can tell you about the Adapter.
- **Chapter 3: How to Use an Adapter with PowerChute *plus***
Provides an overview of how you can use APC's PowerChute *plus* with your Adapter, including a brief description of using PowerChute *plus* for full, local management of a UPS and a Measure-UPS.

Note: You cannot use PowerChute *plus* to manage the Adapter's operation.

- **Chapter 4: How to Use PowerNet SNMP Manager**
Provides an overview of how you can use APC's PowerNet SNMP Manager for full, remote (over the network) management of the Adapter, its UPS and a Measure-UPS.
- **Chapter 5: How to Define an Adapter's Basic Configuration Requirements**
Provides an overview of how you can use a BOOTP server, or a terminal, to define the network values an Adapter needs before it can run on the network.
- **Chapter 6: How to Use SNMP**
Describes how you can use an SNMP browser's **GET** (read) and **SET** (write) commands for full, remote (over the network) management of the Adapter, its UPS and a Measure-UPS.
- **Chapter 7: How to Use the Control Console**
Describes how you can manage an Adapter, its UPS and a Measure-UPS using either Telnet, for remote (over the network) management, or a terminal, for local management.
- **Chapter 8: How to Correct Adapter Problems**
Describes how to correct problems which can occur with your Adapter. It also provides information on how you can contact APC technical support anywhere in the world.
- **Appendix A: Acronyms and Abbreviations**
Identifies the full terminology for acronyms and abbreviations used in this guide.

Associated Documents

Five other documents come with the Adapter, either in printer form, or as Portable Document Format (*.pdf) files on the same disk which contains this user's guide:

- *PowerNet™ SNMP SmartSlot™ Adapters - Installation Guide* (printed, 990-0161 Rev. 1.0)
Describes how to physically install a SmartSlot™ Adapter, and connect it to your network.
- *PowerNet™ SNMP 3.0 MIB - Reference Guide* (**mibguide.pdf**, on disk)
Describes the management information base (MIB) which a network management station (NMS) can use remotely manage and control the PowerNet Adapter, UPS and Measure-UPS.
- *Network Management Station (NMS) Reference Guide* (**nms.pdf**, on disk)
Briefly describes how to load and compile the PowerNet™ SNMP MIB at different NMS platforms.
- *PowerNet™ SNMP SmartSlot™ Adapters - Release Notes* (**readme.txt**, on disk)
Identifies issues which apply directly to this 3.0 version of the Ethernet PowerNet Adapter, and which are not covered in any other document.
- *How to Download New Code* (**download.txt**, on disk)
Provides instructions on how to download new code to a PowerNet SNMP 3.0 Adapter.

Refer to your UPS-specific user's or owner's manual for information about your UPS; refer to your NMS-specific documentation for information about your NMS.

This Guide's Conventions

This guide uses informal references to the PowerNet SNMP Adapter, and various devices you can use with the Adapter and its UPS:

This Guide Uses	To Refer to
PowerNet Adapter or Adapter	The AP9605 PowerNet SNMP SmartSlot Adapter
AP9600	The AP9600 SmartSlot Expansion Chassis
Measure-UPS	The standalone Measure-UPS or the SmartSlot Measure-UPS II
Server	Any server, workstation or other component which you can connect directly to your UPS
Network management station (NMS) or just NMS	Any network component you can use to manage the Adapter.

Note: See APPENDIX A to identify the full terminology for any acronyms or abbreviation used in this guide.

Also, this guide uses the following conventions when referring to specific items within the text:

When the Following Appear in Text	This Guide Uses
A document name (<i>PowerNet SNMP Agent - MIB Reference Guide</i>)	<i>Italics</i>
<ul style="list-style-type: none"> - Menu names (Console Control menu) - File names (powernet.mib) - Management information base (MIB) object identifications (upsAdvControl) - Button names (Connect) - Dialog box names (Connect menu) 	Boldface Arial font
<ul style="list-style-type: none"> - Menu options (1 - Device Manager) - Display field names or values (UPS Output:) - Keyboard input (press <Enter>) 	The Courier New font

Chapter 1:

What You Can Use to Manage an Adapter

This chapter provides an introduction to the applications you can use to manage an Adapter, its UPS and a Measure-UPS.

Overview

The PowerNet Adapter provides the hardware and firmware needed to connect your APC UPS to an Ethernet network and use that network for remote (over the network) management of the Adapter, its UPS, and a Measure-UPS. The Adapter also allows you to use a terminal for local management.

Note: If the UPS server uses APC's PowerChute *plus*, you can use this application to locally manage the UPS and a Measure-UPS. However, you cannot use PowerChute *plus* to manage the Adapter, or the Adapter's network operation. This user's guide mentions PowerChute *plus*, where appropriate, but does not describe how to use this application. For that information, see your *PowerChute plus User's Guide*.

Remote Management

When an Adapter is running its SNMP Agent on the network, you can use several different methods to manage the Adapter, its UPS and a Measure-UPS:

You can use	To
An SNMP browser's GET and SET commands to PowerNet SNMP management information base (MIB) object identifications (OIDs)	Use SNMP to manage an Adapter, its UPS and Measure-UPS (see CHAPTER 5).
APC's PowerNet SNMP Manager	Manage an Adapter, its UPS and Measure-UPS, without using an SNMP browser or the PowerNet SNMP MIB (see CHAPTER 6).
A Telnet console	Use an Adapter's Control Console to manage that Adapter, its UPS and Measure-UPS (see CHAPTER 7).
A bootstrap protocol (BOOTP) server	Provide the basic network values an Adapter needs to run on the network (see CHAPTER 3).
trivial file transfer protocol (TFTP) or xmodem	Download new Adapter code (see CHAPTER 7).

Local Management

You can connect a terminal (or terminal-emulator) to the Adapter, and use the Adapter's Control Console to manage the Adapter, its UPS and Measure-UPS. See CHAPTER 7 for information about HOW TO USE THE CONTROL CONSOLE.

Note: If the UPS connects to a server which uses APC's PowerChute *plus* UPS management application, you can use PowerChute *plus* to manage the UPS and a Measure-UPS; you cannot use PowerChute *plus* to manage the Adapter in any way (see CHAPTER 3).

Chapter 2:

User-Interface Components

The Adapter has a reset button which allows you to manually reset the Adapter and two light-emitting diodes (LEDs): A Status LED and a Link-RX/TX LED.

Status LED

This LED reports on the Adapter, the Adapter-to-UPS communication link, or the Adapter-to-SNMP network link, as follows:

- Off - The Adapter has no power.
- Solid green - The Adapter has valid network settings.
- Flashing green - The Adapter does not have valid network settings (see **HOW TO DEFINE THE ADAPTER'S BASIC NETWORK VALUES** in **CHAPTER 7**).
- Flashing red slowly- The adapter is making a BOOTP request.
- Solid red - The Adapter has detected a hardware failure.

Link-RX/TX LED

The Link-RX/TX LED reports on the following conditions:

- Off - The device(s) which connects the Adapter to the network, whether a router, hub or concentrator, is off or not operating correctly.
- Constant green - Adapter is connected to a functioning network.
- Flashing green - Adapter is receiving data packets from the network.

Chapter 3:

How to Use an Adapter with PowerChute® *plus*

This chapter provides an overview of how you can use APC's PowerChute *plus* with your Adapter, including a brief description of using PowerChute *plus* for full, local management of a UPS and a Measure-UPS.

Note: For more information about APC's PowerChute® *plus*, see your *PowerChute® plus User's Guide*.

Overview

You use PowerChute® *plus*, a graphical-user interface-based (GUI-based) UPS monitoring software application, with computer systems which require safe shutdown of applications during a power failure. Usually PowerChute *plus* communicates with the UPS through a cable connection between the computer system and the UPS serial port. However, when the UPS is using an Adapter mounted in an AP9600, the AP9600 connects to the UPS serial port, and the computer system connects to the AP9600. In this case, the Adapter passes PowerChute *plus* communication through to the UPS without this communication having any affect on the Adapter. This passing of PowerChute *plus* communication through to the UPS is known as passthrough mode.

What PowerChute *plus* Can Do

PowerChute *plus* does not use the Adapter, nor does the Adapter use PowerChute *plus*. However, PowerChute *plus* does provide a graphical user interface (GUI) you can use to locally manage (monitor, control and configure) a UPS and a Measure-UPS (but not an Adapter).

PowerChute *plus* provides for the same level of UPS and Measure-UPS management that you can achieve when using SNMP (see CHAPTER 6) or APC's PowerNet SNMP Manager application (see CHAPTER 4); it provides a higher level of UPS management than you can achieve when using the Adapter's Control Console (see CHAPTER 7).

What PowerChute *plus* Cannot Do

PowerChute *plus* cannot manage the Adapter, or the Adapter's network connection: You can only manage an Adapter using SNMP (see CHAPTER 6), APC's PowerNet SNMP Manager application (see CHAPTER 5) or the Adapter's Control Console (see CHAPTER 7); you can only manage the Adapter's network connection using the Adapter's Control Console (see CHAPTER 7).

Note: You can manage the Adapter's trap receiver values using SNMP, PowerNet Manager or the Control Console. You can also use BOOTP to provide network communication values (see CHAPTER 4), and TFTP or xmodem, to download new code (see THE SEPARATE DOWNLOAD.TXT FILE).

How to Connect with PowerChute *plus*

To install an Adapter with a UPS which connects with a computer system which is using PowerChute *plus*:

- 1) If PowerChute *plus* is not installed, see the PowerChute *plus* documentation to install this application. During this installation:
 - a) If the Adapter is already mounted in an AP9600 chassis, ensure that the AP9600 cable is disconnected from the UPS serial port.
 - b) Use the black, smart-signalling cable (940-0024C) which came with the Adapter to connect the computer system to the UPS.
- 2) Once PowerChute *plus* is installed:
 - a) Disconnect the PowerChute *plus* computer system-to-UPS cable from the UPS serial port (do not disconnect this cable from the computer system). PowerChute *plus* should record the following message in its event log:

Unable to Communicate with UPS

- b) Install the Adapter in the UPS SmartSlot, or, if the Adapter is going to use an AP9600:
 - 1) Install the Adapter in the AP9600.
 - 2) Connect the AP9600 cable to the UPS serial port.
 - c) See CHAPTER 5 to configure the Adapter to run on the network.
 - d) When you finish configuring the Adapter, connect the PowerChute *plus* cable to the UPS serial port (if the Adapter is installed in the UPS) or to the AP9600 serial port (if the Adapter is installed in this external chassis).
- 3) The installation is complete, and PowerChute® *plus* should record this message in its event log:

Communications established

Note: If this message does not appear, or if excessive Unable to Communicate with UPS conditions are reported, see CORRECTING COMMUNICATION LOST PROBLEMS in CHAPTER 8.

Chapter 4:

How to Use a PowerNet SNMP Manager

This chapter provides an overview of how you can use APC's PowerNet SNMP Manager for remote (over the network) management of an Adapter, its UPS and a Measure-UPS.

Note: For more information about APC's PowerNet SNMP Manager, see your *PowerNet SNMP Manager User's Guide*.

Overview

PowerNet SNMP Manager provides graphs, display windows, dialog boxes and menus you can use to manage an Adapter, its UPS and a Measure-UPS through the Adapter's connection with the network.

Note: Currently, APC has PowerNet SNMP Manager applications which can operate with HP OpenView for Windows, SunNet Manager for Solaris, Novell ManageWise, and HP OpenView for UNIX (and other UNIX systems).

What PowerNet SNMP Manager Can Do

PowerNet Manager provides for virtually the same level of management that you can achieve when using SNMP (see CHAPTER 6) or APC's PowerChute *plus* application (see CHAPTER 4); it provides a higher level of UPS management than you can achieve when using the Adapter's Control Console (see CHAPTER 7).

What PowerNet SNMP Manager Cannot Do

Although PowerNet Manager can manage some aspects of an Adapter's operation, it cannot manage the Adapter's network connection: You can only manage the Adapter's network connection using the Adapter's Control Console (see CHAPTER 7).

Note: You can also use BOOTP to provide network communication values (see CHAPTER 4), and TFTP or xmodem, to download new code (see THE SEPARATE DOWNLOAD.TXT FILE).

Chapter 5:

How to Define Basic Configuration Requirements

This chapter provides an overview of how you can use a BOOTP server, or a terminal, to define the network values an Adapter needs before it can run on the network.

Overview

A PowerNet Adapter must have three network values defined before that Adapter can function (run its SNMP Agent) on an Ethernet network:

- The Adapter's IP address
- The IP address of the router or gateway for the Adapter's network segment
- The subnet mask for the Adapter's network segment

These values can be defined by using a BOOTP server, when BOOTP is enabled (the default condition), or by using a terminal (or terminal-emulator), when BOOTP is disabled.

Note: Until the Adapter has these values, you can only use a terminal (to manage the Adapter, UPS and Measure-UPS) or PowerChute *plus* (to manage the UPS and Measure-UPS) locally. Once the Adapter has these values, you can use SNMP, Telnet or PowerNet Manager for remote management over the network.

How to Use a BOOTP Server

The Adapter comes with BOOTP enabled. This allows a BOOTP server to provide the Adapter with the basic network values.

Note: See your BOOTP documentation for more information about using BOOTP.

How to Use a Terminal

If a BOOTP server is unavailable, you will need to use a terminal (or terminal-emulator) to access the Adapter's Control Console to disable BOOTP, and then define the basic network values that allow the Adapter to run on the network. See CHAPTER 7 for information about how to use the Control Console to define the Adapter's basic network values.

Chapter 6:

How to Use SNMP

This chapter describes how you can use an SNMP browser's **GET** (read) and **SET** (write) commands for full, remote (over the network) management of the Adapter, its UPS and a Measure-UPS.

Overview

The simple network management protocol (SNMP) provides a method of using a network to transfer data between two devices:

- Both devices use a management information base (MIB), and that MIB's object identifications (OIDs) as the shared language needed for the communication between the two devices. Two MIBs can be used with the PowerNet Adapter:
 - MIB-II system OIDs
 - APC's PowerNet SNMP MIB.

Note: In addition to OIDs, the PowerNet MIB has a set of messages (called traps) it can send to up to four defined NMSs when certain events occur at the Adapter, its UPS or Measure-UPS.

- One device, usually a network management station (NMS), uses the MIB's OIDs, through an SNMP browser's **GET** (read) and **SET** (write) commands, to manage (monitor and control) the other device.

How much management an NMS can actually perform at a PowerNet Adapter not only depends on the MIB used by its SNMP browser, but also on the level of SNMP access the Adapter allows for that NMS.

How to Affect SNMP Access

An Adapter has four SNMP access channels an NMS can use to manage that Adapter. By default, an Adapter allows any NMS to use SNMP **GETs** and **SETs** to any one of the four channels, if:

- The Adapter's IP address (along with any alias desired) has been added to the appropriate network configuration files, or to the domain-name server, and a manageable object (icon) for the Adapter's UPS has been added to the appropriate network management map.

Note: See your operating system's documentation for more information about performing these functions.

- The NMS uses one of the Adapter's default community strings (passwords) for its **GET** (**public** and **public2**) and **SET** (**private** and **private2**) commands.

This default condition allows you to use SNMP to manage the Adapter as soon as it is up and running on the network, but provides no network security: Any NMS can use the PowerNet MIB OIDs to make changes to the Adapter's configuration, or to affect the operation of the Adapter's UPS.

You can modify access to the Adapter's SNMP access channels using the Adapter's Control Console.

Note: If you know the password, you can use a Telnet console (to connect with the Adapter over the network), or a terminal (to connect directly to the Adapter) to make changes in the Adapter's Control Console. You cannot use SNMP, BOOTP, PowerNet Manager or PowerChute *plus* to change SNMP access values: That would defeat the purpose of changing the access values.

You Can	By Using
Disable SNMP access completely.	Network->Access Control->SNMP option
Change the community string (password) used by an SNMP channel.	Network->SNMP->Access Control 1 through Access Control 4 options
Allow only a defined NMS access to an SNMP channel.	Network->SNMP->Access Control 1 through Access Control 4 options
Allow read and write access, or read-only access, to an SNMP channel.	Network->SNMP->Access Control 1 through Access Control 4 options

Note: See CHAPTER 7 for information on how to use the Adapter's Control Console.

How to Use MIB-II System OIDs

An NMS does not need to use (or even have) the PowerNet MIB to use the MIB-II system OIDs: If an NMS is allowed access to an Adapter (see the previous NMS SNMP ACCESS section), it can use its SNMP browser with MIB-II system name (**sysName**), system location (**sysLocation**) and system contact (**sysContact**) OIDs.

In fact, you cannot use the PowerNet MIB to access the MIB-II system OIDs. You can use the Adapter's Control Console (or a PowerNet SNMP Manager application) to modify the MIB-II system OIDs.

Note: See CHAPTER 7 for information on how to use the Adapter's Control Console; see your *PowerNet SNMP Manager User's Guide* for information about how to use that UPS management application.

How to Use The PowerNet SNMP MIB

If you want an NMS to use SNMP to access more than MIB-II system OIDs, then the PowerNet MIB must be installed and compiled at that NMS, even if that NMS uses a PowerNet SNMP Manager application: The PowerNet Manager does need the PowerNet MIB, but an SNMP browser does.

The PowerNet MIB and Network Communication

The PowerNet MIB provides for two different types of communications with an NMS:

- If an NMS is allowed access to an Adapter (see the previous NMS SNMP ACCESS section), that NMS can use **GETs** and **SETs** to PowerNet MIB OIDs to manage an Adapter and its UPS.
- If an NMS is defined as a trap receiver, the PowerNet MIB allows that NMS to interpret traps (alert, alarm or informational messages) sent to that NMS by an Adapter.

Note: See the *Network Management Station (NMS) Reference Guide (nms.pdf)*, and your NMS documentation, for information about how to load and compile the PowerNet MIB at your NMS.

The PowerNet MIB OIDs

The PowerNet MIB OIDs allow an NMS to use SNMP to monitor, control and configure most settings for an Adapter, its UPS and Measure-UPS. In comparison, the Adapter's Control Console, which you can use with a terminal or Telnet, has a subset of UPS configuration and UPS control capabilities when compared to the PowerNet MIB (the Control Console does have the same amount of configuration and monitoring capabilities as the PowerNet MIB when it comes to the Adapter and the Measure-UPS).

Note: See Chapter 7 for information on the Control Console.

The rest of this discussion briefly describes what you can and cannot do when using SNMP and the PowerNet MIB OIDs.

Note: For more information about the PowerNet MIB, its OIDs and traps, see the on-line version of the *PowerNet SNMP Agents - MIB Reference Guide (mibguide.pdf)* which came on a disk with your adapter.

What PowerNet MIB OIDs Can Do

When you use an SNMP browser with the PowerNet MIB:

You Can	By Using
View and use APC management values: - See if BOOTP is enabled or not. - See how many trap receivers are defined - Modify trap receiver values. - Restart, continue or load a news SNMP Agent. - Define a tftp server's IP address	apcmgmt configuration (mconfig) and control (mcontrol) OIDs.
Monitor an attached Measure-UPS, including: - Viewing temperature and humidity values. - Modifying contact closure values.	measureUPS OIDs.

You Can Also	By Using
View UPS identification values: <ul style="list-style-type: none"> - UPS model - UPS name - Firmware revision - Date of manufacture - UPS serial number 	upsIdent (read-only) basic (upsBasicIdent) and advanced (upsAdvIdent) OIDs.
View UPS battery values: <ul style="list-style-type: none"> - Battery status, temperature and capacity - Time on battery power and runtime remaining - Last replacement date - Number of battery packs and how many are bad 	upsBattery (read-only) basic (upsBasicBattery) and advanced (upsAdvBattery) OIDs.
View input power (utility voltage) values: <ul style="list-style-type: none"> - Voltage phase, level and frequency - Maximum and minimum voltage sensed - Last cause for a transfer to battery 	upsInput (read-only) basic (upsBasicInput) and advanced (upsAdvInput) OIDs.
View the current status of the UPS, and its output power values: <ul style="list-style-type: none"> - Voltage phase, level, current and frequency - UPS load 	upsOutput (read-only) basic (upsBasicOutput) and advanced (upsAdvOutput) OIDs.
Use UPS configuration values to: <ul style="list-style-type: none"> - Select high and low transfer values. - Identify Volts/Amps values for the load equipment. - Select how the UPS alarm will work. - Select how long the UPS will run when a low-battery condition occurs. - Select power return capacity and return delay values. - Select how long the UPS remains on line after being told to shut down (shutdown delay). - Define the duration of a timed sleep by the UPS. - Reset the UPS EEPROM to its factory-default values. - Define a front-panel password. - Select how long before the UPS battery reaches exhaustion will the UPS wait before shutting down (low-battery duration). - Select the UPS output voltage. - Select the UPS sensitivity to input power noise. 	upsConfig basic (upsBasicConfig) and advanced (upsAdvConfig) OIDs.

You Can Also	By Using
Use UPS control values to: <ul style="list-style-type: none"> - Turn the UPS on or off. - Put a UPS into sleep mode. - Reboot the UPS. - Put a UPS into bypass mode. - Simulate a power failure. - Test the UPS alarm. 	upsControl basic (upsBasicBattery) and advanced (upsAdvBattery) OIDs.
Use UPS test values to: <ul style="list-style-type: none"> - Schedule UPS self-tests. - Cause the UPS to perform a self-test. - View the results of the last UPS self-test and runtime calibration. - Start and stop a runtime calibration. 	upsTest basic (upsBasicTest) and advanced (upsAdvTest) OIDs.
Check on the current status of the Adapter's communication with the UPS.	upsCommStatus , a read-only OID.

What PowerNet MIB OIDs Cannot Do

You can use the PowerNet MIB OIDs to do almost everything you can use the Adapter's Control Console to do, and more. However, you cannot use SNMP to:

You cannot use the PowerNet MIB to	You can only use
Define the network values an Adapter needs before it can run on the network: <ul style="list-style-type: none"> - The Adapter's IP address - The IP address of the network segment's router or gateway. - The network segment's subnet mask value 	A BOOTP server (when BOOTP is enabled), or the Adapter's Control Console (when BOOTP is disabled). See CHAPTER 4 for information about how to use a BOOTP server; See CHAPTER 6 for information on how to use the Control Console.
Define any values for the Adapter's SNMP access channels: <ul style="list-style-type: none"> - Community strings (channel passwords) - Type of access (read or write) - NMS IP addresses 	The Adapter's Control Console (see CHAPTER 6).
Enable or disable access to the Adapter by: <ul style="list-style-type: none"> - SNMP - Telnet - BOOTP 	The Adapter's Control Console (see Chapter 6).

PowerNet MIB Traps

An Adapter can send Adapter, UPS or Measure-UPS alert, alarm or informational messages (known as traps) to specifically defined NMSs. Most NMSs need to use the PowerNet MIB to interpret those traps.

Note: HP OpenView systems can use a Trap Definition File, instead of the PowerNet MIB. This file, which allows the HP OpenView trap window to display intuitive messages based on the Adapter's traps, comes on the same disk as the PowerNet MIB.

The Adapter allows you to define up to four trap receivers. Each definition includes:

- The community string (password) used for traps (default is **public**).
- The IP address for each NMS defined as a trap receiver.
- Whether or not the Adapter is currently enabled or disabled to send traps to a defined NMS.

You can use SNMP, a PowerNet SNMP manager or the Adapter's Control Console to define trap receivers.

To Change Trap Receiver Definitions	Use
Using The Adapter's Terminal Console	The Trap Receiver 1 through Trap Receiver 4 options in the Control Console's SNMP menu (see CHAPTER 7).
Using PowerNet MIB OIDs	The APC management mconfigTrapReceiverTable OIDs (see CHAPTER 5).
PowerNet SNMP Manager	The options in the SNMP Agent Parameters dialog box (see your <i>PowerNet SNMP Manager User's Guide</i>).

Chapter 7:

The Control Console

This chapter describes how you can manage an Adapter, its UPS and a Measure-UPS using either Telnet, for remote (over the network) management, or a terminal, for local management.

Overview

The Adapter's internal Control Console provides for comprehensive remote and local management of the Adapter, UPS, and Measure-UPS:

- You can use a Telnet console for remote management (access through the network).

Note: The PowerNet 3.0 Adapter allows you to use Telnet to initiate an unattended download of a new agent, or an unattended download of a new loader.

- You can use a terminal (or emulator) for local management (access through the Adapter's serial port).

Note: You can use the Control Console in the same way, for the same basic functions, whether you use a Telnet console or a terminal to enter the Control Console, with one exception: You can use a terminal to download new agent code, or to download a new loader and new agent code; you can only use a Telnet console to initiate the unattended download of new agent code. See the separate `download.txt` file for information about downloading new agent code to an Adapter.

Control Console Structure

The Control Console uses a set of menus to manage the Adapter, its UPS and Measure-UPS:

- All menus list options by number and name. To use an option:
 - 1) Type the option's number.
 - 2) Press <Enter>.
 - 3) Follow any on-screen directions.
- Menus which allow you to configure (modify) any Adapter, UPS or Measure-UPS value will have an `Accept Changes` menu option. You must use the `Accept Changes` option, before you exit a menu, if you want to save the changes you made while in that menu.
- While in a menu, you can also:
 - Press <Enter> to redisplay (refresh) that menu.
 - Press <Esc> to go back to the menu from where you accessed the current menu.
 - Type ?<Enter> to access brief menu option descriptions (if the menu has help available).
 - Use `Ctrl-D` to toggle between UPS and Measure-UPS menus.
 - Use `Ctrl-C` to return to the main (Control Console) menu.

What the Control Console Can Do

The Control Console has menus which allow you to manage the Adapter, its UPS and a Measure-UPS (or SmartSlot Measure-UPS II), if the UPS uses that environmental monitoring device. When you log into the Control Console using Telnet or a terminal:

You Can	By Selecting
View UPS and battery status: <ul style="list-style-type: none"> - Current UPS status - Utility line voltage - Line frequency - UPS output voltage - UPS load - UPS temperature - Runtime available - Last reason for a transfer to battery - Battery voltage, capacity and replacement date 	Control Console-> Device Manager->UPS
View UPS operational parameter values: <ul style="list-style-type: none"> - High voltage transfer - Low voltage transfer - Line sensitivity - Power return delay - Power return capacity - Low-battery duration - Shutdown delay - Nominal output voltage - Audible alarm 	Control Console-> Device Manager-> UPS->About UPS
View UPS identification parameter values: <ul style="list-style-type: none"> - Serial number - Date of manufacture - Firmware revision 	Control Console-> Device Manager-> UPS->About UPS
View battery pack information: <ul style="list-style-type: none"> - How many packs - How many bad packs 	Control Console-> Device Manager-> UPS->About UPS
View the UPS self-test schedule.	Control Console-> Device Manager-> UPS->About UPS

You Can Also	By Selecting
View detailed UPS status.	Control Console-> Device Manager-> UPS->Detailed Status
View details about UPS alarm conditions.	Control Console-> Device Manager-> UPS->Alarm Details
Control UPS operations by: - Turning a UPS off and on. - Rebooting the UPS. - Performing a graceful reboot or shutdown. - Causing the UPS to perform a self-test. - Testing the UPS alarm. - Starting a runtime calibration. - Simulating a power failure.	Control Console-> Device Manager-> UPS->Control
Configure UPS operational parameters: - Power return delay - Shutdown delay - Low-battery duration	Control Console-> Device Manager-> UPS->Configuration
Manage Measure-UPS or SmartSlot Measure-UPS II parameters: - View temperature and humidity values. - Configure contact closure parameters.	Control Console-> Device Manager->Measure-UPS
Enable or disable BOOTP, and view the basic network values needed for the Adapter to run on the network (and configure these values when BOOTP is disabled): - Adapter's IP address - Subnet mask value - Default gateway address - Adapter's MAC address (not configurable)	Control Console-> Network->TCP/IP
Use the Ping utility to test the Adapter's network connection.	Control Console-> Network->Ping Utility
Define the tftp server's IP address.	Control Console-> Network->TFTP Server

You Can Also	By Selecting
Configure SNMP access control parameters for four access channels: <ul style="list-style-type: none"> - Community string values - Access type - NMS IP addresses 	Control Console-> Network-> SNMP-> Access Control 1-4
Configure up to four trap receivers: <ul style="list-style-type: none"> - Trap community name values - Trap generation - Authentication traps - Trap receiver IP address 	Control Console-> Network-> SNMP-> Trap Receiver 1-4
Enable or disable access to the Adapter using: <ul style="list-style-type: none"> - Telnet - SNMP 	Control Console-> Network-> Access Control
Define system (MIB-II) values: <ul style="list-style-type: none"> - System name (sysName) - System contact (sysContact) - System location (sysLocation) 	Control Console-> Network-> SNMP-> System
View all the current SNMP values: <ul style="list-style-type: none"> - System (MIB-II) values - SNMP access control values for all four channels - Trap receiver values for all four trap receivers 	Control Console-> Network-> SNMP-> Summary
View information about the Adapter: <ul style="list-style-type: none"> - Model number - Firmware revision - Date of manufacture - Serial number - Hardware revision - MAC address 	Control Console-> System-> About Adapter
Define access to the Control Console: <ul style="list-style-type: none"> - User name - Password - Auto logout delay 	Control Console-> System-> Passwords
Perform the following advanced operations: <ul style="list-style-type: none"> - Resetting the Adapter to its default values. - Restarting the Adapter. - Download a new agent to the Adapter. - Download a new loader and a new agent to the Adapter. 	Control Console-> System-> Tools

What the Control Console Cannot Do

The Control Console does have some limitations:

You cannot use the Control Console to	You can use
Configure any UPS operational parameters <i>except</i> : <ul style="list-style-type: none"> - Power return delay - Low-battery duration - Shutdown delay 	SNMP (see CHAPTER 6), PowerNet Manager (see CHAPTER 4) or PowerChute plus (see CHAPTER 3).
Put the UPS into: <ul style="list-style-type: none"> - Sleep mode - Bypass mode 	SNMP (see CHAPTER 6), PowerNet Manager (see CHAPTER 4) or PowerChute plus (see CHAPTER 3).
View the following UPS status: <ul style="list-style-type: none"> - Input power phase - Time on battery - Output voltage phase, current or frequency - Maximum and minimum voltages sensed 	SNMP (see CHAPTER 6), PowerNet Manager (see CHAPTER 4) or PowerChute plus (see CHAPTER 3).
View or define information about the load equipment: <ul style="list-style-type: none"> - Equipment identification - Voltage/amps (va) values 	SNMP (see CHAPTER 6), PowerNet Manager (see CHAPTER 4) or PowerChute plus (see CHAPTER 3).
Define the front-panel password for a Matrix-UPS.	SNMP (see CHAPTER 6), PowerNet Manager (see CHAPTER 4) or PowerChute plus (see CHAPTER 3).
View or define the following UPS operating parameters: <ul style="list-style-type: none"> - Line voltage sensitivity - Battery exhaustion threshold 	SNMP (see CHAPTER 6), PowerNet Manager (see CHAPTER 4) or PowerChute plus (see CHAPTER 3).
Schedule UPS self-tests.	SNMP (see CHAPTER 6), PowerNet Manager (see CHAPTER 4) or PowerChute plus (see CHAPTER 3).

How to Access the Control Console

You can use Telnet or a terminal with the Control Console. However, when someone logs into the Control Console using Telnet or a terminal, no one else can log in until that user logs out (or the Control Console's timeout value expires).

How to Log In

Whether you use Telnet or a terminal, you log into the Control Console in the same way. When prompted:

- 1) Type your user name and press <Enter>.
- 2) Type your password and press <Enter> to access the Control Console's main screen (see THE CONTROL CONSOLE'S MAIN SCREEN).

Note: Both use `apc`, all lowercase, for their default values. Use the Control Console's Passwords menu to change the Control Console's name, password or timeout values.

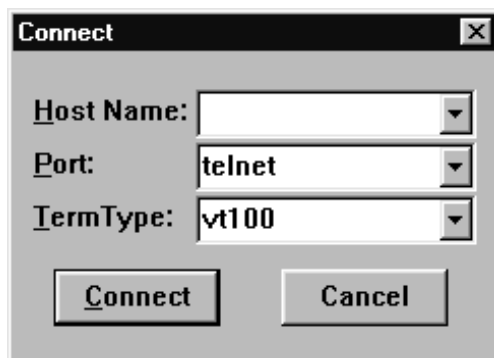
How to Use Telnet with the Control Console

When Telecommunications Network (Telnet) access is enabled (the default condition), you can use Telnet to access the Control Console:

- 1) Start the Telnet session. For example, on a Windows-based system, open the Telnet console by typing `telnet` at the DOS-prompt.
- 2) Select the **Connect** menu's **Remote System...** option.

Note: If you previously used your Telnet console to connect with an Adapter, the **Connect** menu lists the Adapter's IP address. Select the IP address, instead of **Remote System...**, to skip step 3.

- 3) When the **Connect** dialog box appears:
 - a) Ensure that **Port** defines `telnet` and **Term Type** defines `vt100`, as shown below.
 - b) Use the Adapter's IP address for the **Host Name**.
 - c) Click **Connect** and log into the Control Console (see How to Log In).



How to Use a Terminal with the Control Console

To use a dumb terminal (or a terminal-emulation application) to access the Control Console:

- 1) Use APC's smart-signalling cable (940-0024C) to connect the terminal port to the serial port at the UPS (if the Adapter mounts in the UPS) or at the AP9600 (if the Adapter mounts in this chassis).
- 2) Ensure the terminal's port uses the following communication settings:

Data Bits: 8	Stop Bits: 1	Parity: None	Handshaking: None
Local Echo: Off	Baud Rate: 2400	Terminal Type: ANSI (VT100)	

When using HyperTerminal, if you need to make any changes to the communications settings:

- a. Make the needed changes.
- b. Select **Disconnect** in the **Call** menu.
- c. Select **Connect** in the **Call** menu.

You can now connect to the Adapter with the proper communication settings in effect.

- 3) Press <Enter> and log into the Control Console (see HOW TO LOG IN).

The Control Console's Main Screen

The main screen contains information about the Adapter, its UPS and Measure-UPS, and a **Control Console** menu.

```

American Power Conversion                Ethernet SNMP Adapter v3.0.0
www.apcc.com                            (c) Copyright 1997 All Rights Reserved
-----
Name      : Writers                      Contact   : Writing Manager
Location  : Software Development

Adapter Up Time : 7 Days 6 Hours 46 Minutes 49 Seconds
Measure-UPS II : Threshold Violation Present, Contact Alarms OK
SMART-UPS 700 named WRITEUPS : On, No Alarms Present

----- Control Console -----

  1- Device Manager
  2- Network
  3- Adapter
  4- Logout

  ?- Help
<ENTER> Redisplay Menu
<ESC> Refresh Main Menu
>

```

Adapter Information

The top two lines need no explanation. The next three lines provide identification values you can modify:

You can modify	Using
The Adapter's name (Name :), location (Location:) and contact (Contact:) fields. <i>Note: All use Unknown for their default value.</i>	- MIB II system OIDs (see CHAPTER 6) - PowerNet SNMP Manager (see CHAPTER 4) - PowerChute <i>plus</i> (see CHAPTER 3) - Control Console's System menu
The UPS name (Smart-UPS 700 named WriteUPS: in the above example). <i>Note: The default UPS name is UPS_Ident (instead of WriteUPS in the above example).</i>	- PowerNet MIB (upsBasicIdentName) OID (see CHAPTER 6). - PowerNet SNMP Manager (see CHAPTER 4) - PowerChute <i>plus</i> (see CHAPTER 3)

The UPS name field also provides basic status information about the UPS (**Smart-UPS 700 named WriteUPS: On, No Alarms Present** in this example):

- The current status of the UPS (ON)
- Whether or not any alarms currently exist (No Alarms Present)

Note: If an alarm exists, use the UPS menu's Alarm Details option to get information about the alarm.

How to use the Control Console Menu

This menu has an option you can use to log out of the Control Console (4- Logout). It also has options which access additional console screens.

You Can Use	To Access Menus which Manage
The Device Manager option , by typing: 1 <Enter>	The Adapter's UPS and Measure-UPS.
The Network option , by typing: 2 <Enter>	How the Adapter operates on the Network.
The Adapter option , by typing: 3 <Enter>	Passwords, and allow downloading of new agents.

Device Manager Menu

Selecting the **Control Console** menu's **Device Manager** option accesses a menu which allows you to select the device you want to manage.

Note: The **UPS** option uses the **UPS model name**.

```
----- Device Manager -----
      1- Measure-UPS II
      2- SMART-UPS 700
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
> _
```

For information on the **Device Manager** menu options, see:

- HOW TO MANAGE A UPS
- HOW TO MANAGE A MEASURE-UPS

Network Menu

Selecting the **Control Console** menu's **Network** option accesses a menu which allows you to select other menus you can use to manage the Adapter's network operation.

```
----- Network -----
      1- TCP/IP
      2- Ping Utility
      3- TFTP Server
      4- Access Control
      5- SNMP
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
> _
```

For information about the **Network** menu, see **HOW TO MANAGE THE ADAPTER'S NETWORK CONNECTION**.

Adapter Menu

Selecting the **Control Console** menu's **Adapter** option accesses a menu with options you can use to manage the Adapter's system (internal) operation.

```

----- Adapter -----
1- Passwords
2- Tools
3- About Adapter

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
>

```

For information about the **Adapter** menu, see **HOW TO MANAGE THE ADAPTER'S SYSTEM (INTERNAL) OPERATION**.

How to Manage A UPS

When you select the **Device Manager** menu's **UPS** option, you access the **UPS** menu screen. You can use this screen to:

- View information about UPS operational parameters, identification parameters and alarm conditions (monitor UPS operation).
- Define how you want the UPS to operate, in general (configure UPS operational parameters).
- Tell the UPS what you want it to do, now (control UPS operation).

```

----- SMART-UPS 700 -----
Status of UPS      : On
-----
Utility Line      : 115.7 VAC   Battery Information
UPS Output        : 115.7 VAC   Voltage           : 28.01 VDC
UPS Load          : 050.4 %     Capacity          : 100.0 %
Runtime          : 0023 min     Battery Date      : 09/17/97
UPS Temperature   : 039.1 C     Last Self-Test   : Passed
Line Frequency    : 60.00 Hz    Last Calibration  : Passed

Last Transfer     : Due to software command or UPS's test control.

1- Control
2- Configuration
3- Detailed Status & Alarms
4- About UPS

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
>

```

How to Monitor a UPS

The **UPS** menu screen provides information about the UPS. It also provides three menu options you can use to view information about the UPS, its alarm conditions, and its operational and identification parameters.

UPS Menu Screen's Status Information

The **UPS** menu screen reports UPS operational status, UPS input and output voltages, and UPS battery status.

This Status Field	Identifies
Status of UPS:	The current status of the UPS (in this example, On, for on-line). Other values include: <ul style="list-style-type: none"> - Unknown - On Battery - On SmartBoost - On SmartTrim - Off - Timed Sleep - On Software Bypass - On Hardware Bypass - Sleeping Until Power Returns - Rebooting
Utility Line:	The input line (utility) voltage level.
UPS Output:	The UPS output voltage level.
UPS Load:	The load placed on the UPS by the equipment attached to the UPS, expressed as a percentage of the total UPS load capacity.
Runtime:	How long the UPS can use battery power to support its load equipment before the UPS must shut down.
UPS Temperature:	The internal temperature of the UPS.
Line Frequency:	The input line (utility) voltage's frequency, in Hertz (Hz, for cycles per second).
Last Transfer:	A brief description of what happened to cause the UPS to go on-battery the last time it went on-battery.
Voltage:	The UPS battery voltage level.
Capacity:	How much of the battery capacity, as a percentage of full-capacity, does the UPS have available for running on-battery.
Battery Date:	When the UPS battery was last replaced.
Last Self-Test:	The result of the last self-test.
Last Calibration:	The result of the last runtime calibration.

UPS Menu Status Options

The **UPS** menu provides two menu options you can use to view additional information about the UPS:

3- Detailed Status and Alarms

This option accesses information which expands on the UPS status (`Status of UPS` field), reports on the status of the Adapter-to-UPS serial communication, and identifies whether any alarm conditions exist. For this example, the UPS is on-line, and no communications problem or alarm condition exists:

```

-----
Detailed Status & Alarms of SMART-UPS 700 named WRITEUPS

Serial communication has been established.
UPS is on.
No alarms to report.

Press <ENTER> to continue...

```

4- About UPS

This option accesses UPS identification and operational parameter values. For this Smart-UPS 700 example:

```

-----
About SMART-UPS 700 named WRITEUPS

Serial Number      : ws9737172428      Firmware Revision  : 50.9.D GWD
Manufacture Date   : 09/17/97          Battery Date       : 09/17/97
-----
Output             : 115 V              Shutdown Delay     : 020 sec
High Transfer      : 132 V              Return Delay      : 000 sec
Low Transfer       : 103 V              Return Bat. Capacity : 00 %
Sensitivity        : High               Low-Battery Duration : 02 min
-----
Self-Test          : Every 14 Days      External Bat. Packs : 000

You can configure Shutdown Delay, Return Delay, and Low
Battery Duration in the Configuration menu.

Press <ENTER> to continue..._

```

This Detailed Status Display Field	Identifies
Serial Number:	The serial number of the UPS.
Firmware Revision:	The version number for firmware used by the UPS.
Manufacture Date:	The date the UPS completed the manufacturing process.
Battery Date:	The date on which the UPS battery was last replaced.

This Detailed Status Display Field	Identifies
Output :	The nominal (basic voltage range) value for UPS input and output voltage levels.
Shutdown Delay :	<p>How long the UPS will wait (in seconds) after a power failure occurs, before the UPS shuts down.</p> <p><i>Note: See HOW TO CONFIGURE A UPS if you want to change this value.</i></p>
High Transfer :	<p>The voltage level the UPS uses to determine when it should go on battery power, if the UPS does not have SmartTrim, or use SmartTrim to reduce the input voltage to a level the UPS can use for its output power.</p> <p><i>Note: Only third-generation (3G) Smart-UPS models currently use SmartTrim.</i></p>
Low Transfer :	<p>The voltage level the UPS uses to determine when it should go on battery power, if the UPS does not have SmartBoost, or use SmartBoost to increase the the input voltage to a level the UPS can use for its output power.</p> <p><i>Note: Only Smart-UPS models currently use SmartBoost.</i></p>
Return Delay :	<p>How long the UPS must wait after a power failure ends, before it can return to normal operation (go back on-line). The UPS must also consider the Return Battery Capacity value to determine when it can go back on-line.</p>
Return Bat. Capacity :	<p>What percentage of the UPS battery's full capacity to run on-battery (use battery power for its output voltage) must exist after a power failure ends, before the UPS can go back on-line (return to normal operation). The UPS must also consider the Return Delay value to determine when it can go back on-line.</p> <p><i>Note: See HOW TO CONFIGURE A UPS if you want to change this value.</i></p>

This Detailed Status Display Field	Identifies
Sensitivity:	How sensitive the UPS is to the input (utility) power's line noise.
Low-Battery Duration:	How long (in minutes) the UPS can still run on battery power after a low-battery condition occurs.
Self-Test:	How often the UPS will perform a self-test.
External Bat. Packs:	How many external battery packs the UPS has. <i>Note: If a UPS does use external battery packs, a Bad Battery Packs : field (not shown in this example) will also appear in the About UPS display. The Bad Battery Packs : field will report how many of the external battery backs need replacement.</i>

How to Control a UPS

When you select the **UPS** menu's Control option, you access the **Control** menu screen and its nine control options.

```

----- Control -----
1- Turn UPS On
2- Turn UPS Off
3- Reboot UPS
4- UPS Self-Test
5- Simulate Power Failure
6- Graceful Reboot
7- Graceful Turn Off
8- Start/Stop Runtime Calibration
9- Test UPS Alarm

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
>

```

You Can Use this Option	To
1- Turn UPS On	Cause a UPS which was turned off to turn back on (supply power to its load equipment again).
2- Turn UPS Off	Cause a UPS to immediately turn off (stop supplying power to its load equipment).
3- Reboot UPS	Cause a UPS to turn off (stop supplying power to its load equipment) and then immediately turn power back on.
4- UPS Self Test	Cause a UPS to perform a self-test.
5- Simulate Power Failure	Test the ability to respond to a power failure by simulating (faking) a power failure.
6- Graceful Reboot	Signal all servers communicating with the UPS, and which use PowerChute <i>plus</i> , to shut down their operating systems. The UPS waits the amount of time defined by the Low-Battery Duration configuration value for servers to shut down, then waits for the time defined by the Shutdown Delay value before rebooting the load equipment (see HOW TO CONFIGURE A UPS).
7- Graceful Turn Off	Signal all servers communicating with the UPS, and which use PowerChute <i>plus</i> , to shut down their operating systems. The UPS waits the amount of time defined by the Low-Battery Duration configuration value for servers to shut down, then waits for the time defined by the Shutdown Delay value before turning power off (see HOW TO CONFIGURE A UPS).
8- Start/Stop Runtime Calibration	Start a calibration process which will determine how long the UPS can run on battery power (its runtime) when a power failure occurs, or stop a calibration, when this process is already in progress.
9- Test Lights and Beeper	Test the UPS alarm, to verify it works. <i>Note: You cannot use this option with a Symmetra PowerArray.</i>

How to Configure a UPS

When you select the **UPS** menu's **Configuration** option, you access the **Configuration** menu screen.

```

----- Configuration -----
Serial Number      : ws9737172428      Firmware Revision  : 50.9.D GWD
Manufacture Date  : 09/17/97           Battery Date       : 09/17/97
-----
Output            : 115 V               Shutdown Delay     : 020 sec
High Transfer     : 132 V               Return Delay       : 000 sec
Low Transfer      : 103 V               Return Bat. Capacity : 00 %
Sensitivity       : High                Low-Battery Duration : 02 min
-----
Self-Test         : Every 14 Days       External Bat. Packs : 000

1- Shutdown Delay      (s) : 020
2- Return Delay        (s) : 000
3- Low-Battery Duration (m) : 02
4- Accept Changes      :

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu

> _

```

This screen displays the same status information displayed by using the **UPS** menu's **About UPS** option.

Note: See the descriptions of the **UPS identification and operational parameters status fields** provided in this chapter's **UPS MENU STATUS OPTIONS** section. Also, remember that if you change a configuration value, you must use the **Accept Changes** option (by typing 4<Enter>) to save the change before you exit the **Configuration** menu.

The status information duplication occurs because the **Configuration** menu has three options which affect the operational parameter values displayed in corresponding status fields.

Note: A UPS has many other operational parameters which can be modified using either **SNMP** (see CHAPTER 6), **PowerChute plus** (see CHAPTER 3) or **PowerNet SNMP Manager** (see CHAPTER 4).

You Can Use this Option	To Define
1- Shutdown Delay	Select how long you want the UPS to wait (in seconds), after a power failure occurs, before the UPS shuts down.
2- Return Delay	How long you want the UPS to wait (in seconds), after a power failure ends, before it can return to normal operation (go back on-line). <i>Note: The UPS will not automatically go back on-line once the time you define expires: It must also wait until the battery capacity equals the value specified by the Return Bat . Capacity: value.</i>
3- Low Battery Duration	How long you want (in minutes) to enable the UPS to continue to run on-battery once a low-battery condition occurs. Also, this value defines how long the UPS will wait for servers to shut down in response to Graceful Reboot and Graceful Turn Off commands (see HOW TO CONTROL A UPS).

How to Use the Control Console to Manage a Measure-UPS

When you select the **Device Manager** menu's Measure-UPS option, you access the **Measure-UPS** menu screen. You can use this screen to:

- View information about the humidity, temperature and contact switch conditions (monitor the Measure-UPS).
- Define contact switch settings and probe trap thresholds (configure the Measure-UPS).

```

----- Measure-UPS II -----
      Probe 1 : 22.86 C, 12.2 %RH          Probe 2 : NA    C, NA    %RH
      -----

Current Status :
Thresholds OK, Contact Alarms OK

1- Trap Thresholds Probe 1
2- Trap Thresholds Probe 2
3- Contact Settings
4- Threshold And Contact Details
5- About Measure-UPS

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu

> _

```

How to Monitor a Measure-UPS

The **Measure-UPS** menu screen provides information about the Measure-UPS, and menu options you can use to view more information about the Measure-UPS, temperature and humidity thresholds, and contacts.

Measure-UPS Menu Screen's Status Information

The **Measure-UPS** menu screen directly reports information about the Measure-UPS operational status, and the temperature and humidity values sensed by two Measure-UPS probes.

This Menu Screen Field	Identifies
Probe 1 : and Probe 2 :	The temperature (in Celsius) and relative humidity (as a percentage) sensed by the Measure-UPS probes.
Current Status :	The current status of threshold and contact alarms.

Measure-UPS Menu Status Options

The **Measure-UPS** menu provides two menu options you can use to view additional information about the UPS:

4- About Measure-UPS

This option accesses a single value: The **Firmware Version** of the Measure-UPS.

3- Threshold and Contact Details

This option accesses information about current temperature and humidity threshold violations and contact alarms:

```

-----
Threshold And Alarm Details
-----
- Current Threshold Violations -----
Probe 1 : 22.86 C, 12.2 %RH           Probe 2 : NA    C, NA    %RH
Description      Violation          Description      Violation
-----
Temperature
  High 24 C           No           High 0 C           Disabled
  Low 12 C            No           Low 0 C            Disabled
Humidity
  High 80 %RH        No           High 80 %RH        Disabled
  Low 10 %RH         No           Low 20 %RH         Disabled
-----
- Current Contact Alarms -----
Description      Alarm          Description      Alarm
-----
Contact 1
  Device 1           No           Contact 2
  Device 2           No           Device 2
Contact 3
  Device 3           No           Contact 4
  Device 4           No           Device 4
-----
Press <ENTER> to continue...

```

A Measure-UPS can have four contact switches and two probes. The probes each have the same basic possible fields. Exactly what appears in the probe fields depends on the probe: Temperature only, humidity only, or temperature and humidity.

In the example given, the Measure-UPS has one temperature and humidity probe.

This Field	Identifies
Probe 1 : 22.86 C, 12.2 %RH	Current temperature (in Celcius) and relative humidity (as a percentage) values.
High 24C No (under Temperature)	Identifies the high temperature threshold (24C in this example) and whether this threshold is Disabled, or (when enabled) if the current temperature exceeds the threshold (Yes) or not (No, for this example).
Low 12C No (under Temperature)	Identifies the low temperature threshold (12C in this example) and whether this threshold is Disabled, or (when enabled) if the current temperature exceeds the threshold (Yes) or not (No, for this example).
High 80 %RH No (under Humidity)	Identifies the high humidity threshold (80% in this example) and whether this threshold is Disabled, or (when enabled) if the current humidity exceeds the threshold (Yes) or not (No, for this example).
Low 20 %RH No (under Humidity)	Identifies the low humidity threshold (20% in this example) and whether this threshold is Disabled, or (when Enabled) if the current humidity exceeds the threshold (Yes) or not (No, for this example).
Contact 1 through Contact 4	Identifies the contacts by number and name (Device 1 through Device 4, the default names, in this example), and whether a contact alarm is Disabled, or (when Enabled) if the contact senses an alarm condition (Yes) or not (No, for all in this example).

How to Configure a Measure-UPS

The **Measure-UPS** menu has three options you can use to configure trap threshold and contact settings.

- 1- Trap Thresholds Probe 1
- 2- Trap Thresholds Probe 2

You use these options to access the **Trap Thresholds Probe 1** or **Trap Thresholds Probe 2** menu screens. These menu screens provides two sets of identical options:

You Use	To
The Threshold options	Define the high and low temperature (in Celsius) and relative humidity (as a percentage) thresholds the Measure-UPS will use to identify a trap condition.
The Send Traps On options	Enable or disable sending traps for each threshold.

```

----- Trap Thresholds Probe 1 -----
-----
---- Thresholds -----
1- High Temperature (0-60 C) : 24
2- Low Temperature (0-60 C) : 12
3- High Humidity (10-90 %RH) : 80
4- Low Humidity (10-90 %RH) : 10
-----
---- Send Traps On -----
5- High Temperature : Enabled
6- Low Temperature : Enabled
7- High Humidity : Enabled
8- Low Humidity : Enabled
9- Accept Changes :

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu

> _

```


2- Contact Settings

You use this option to access the **Contact Settings** menu screen. This menu screen identifies the current alarm condition for each contact, and provides two sets of options:

You Use	To
Contact Name 1 through Contact Name 4	Define a name for each contact, with each name having up to sixteen (16) characters.
Contact Zone 1 through Contact Zone 4	Enable or disable the contacts.

```

----- Contact Settings -----
      Description      Alarm      Description      Alarm
      -----
Contact 1
  DoorA              No
Contact 3
  DoorB              No

1- Contact 1 Name : DoorA
2- Contact 2 Name : WindowA
3- Contact 3 Name : DoorB
4- Contact 4 Name : WindowB
5- Contact Zone 1 : Enabled
6- Contact Zone 2 : Enabled
7- Contact Zone 3 : Enabled
8- Contact Zone 4 : Enabled
9- Accept Changes :

? - Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu

> _

```

How to Manage the Adapter's Network Connection

Selecting the **Control Console** menu's **Network** option accesses a menu which allows you to select other menus you can use to manage the Adapter's network operation.

```

----- Network -----
1- TCP/IP
2- Ping Utility
3- TFTP Server
4- Access Control
5- SNMP

<ENTER> Redisplay Menu
<ESC> Return To Previous Menu

> _

```

You Use this Option	To
1- TCP/IP	Enable or disable a BOOTP server. With BOOTP Disabled, you must use this option to access menu options you use to define basic network values the Adapter needs to run on the network (see HOW TO DEFINE THE ADAPTER'S BASIC NETWORK VALUES).
2- Ping Utility	Use ping to test the Adapter's ability to communicate over the network.
3- TFTP Server	Define the TFTP server's IP address.
4- Access Control	Enable or disable SNMP and Telnet access to the Adapter (both Enabled, by default).
5- SNMP	Use the SNMP menu to define values for the Adapter's SNMP access channels, trap receivers and system identifications (see HOW TO USE THE SNMP MENU).

Note: This guide does not provide information on how to use the self-explanatory Ping Utility, TFTP Server and Access Control options.

How to Define the Adapter's Basic Network Values

When you select the **Network** menu's TCP/IP option, the **TCP/IP** menu's format depends on the BOOTP option setting:

- With **BOOTP: Enabled** (the default), the address values shown in the menu screen come from a BOOTP server, and the menu contains only one option, which you can use to disable BOOTP.

```

----- TCP/IP -----

The Network Service has started with the following settings :
-----

Adapter IP       : 134.15.67.90
Subnet Mask     : 255.255.255.0
Default Gateway : 134.15.67.0
MAC Address     : 00 C0 B7 B2 20 C9

1- BOOTP       : Enabled
2- Accept Changes :

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu

> _

```

- With **BOOTP: Disabled**, you must use the menu's three address options (Adapter IP, Subnet Mask and Default Gateway) to define these needed network values, when you first install the Adapter, or whenever you need to change these values.

```

----- TCP/IP -----

The Network Service has started with the following settings :
-----

Adapter IP       : 134.15.67.90
Subnet Mask     : 255.255.255.0
Default Gateway : 134.15.67.0
MAC Address     : 00 C0 B7 B2 20 C9

1- Adapter IP   : 999.999.99.999
2- Subnet Mask  : 255.255.255.0
3- Default Gateway : 999.999.99.9
4- BOOTP       : Disabled
5- Accept Changes :

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu Without Accepting Changes

>

```

How to Use the SNMP Menu

When you select the **Network** menu's SNMP option, you access the **SNMP** menu screen.

```

----- SNMP -----
1- Access Control 1
2- Access Control 2
3- Access Control 3
4- Access Control 4
5- Trap Receiver 1
6- Trap Receiver 2
7- Trap Receiver 3
8- Trap Receiver 4
9- System
10- Summary

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
> _

```

You Use	To
Access Control 1 through Access Control 4	Control access to each of the four SNMP channels.
Trap Receiver 1 through Trap Receiver 4	Define which of up to four NMSs will be sent traps.
System	Define system name, contact and location values.

Also, a Summary option allows you to view the current settings for all **SNMP** menu values:

```

-----
SNMP Configuration Summary

sysName          : Writers
sysLocation      : Software Development
sysContact       : Writing Manager

Access Control Summary
# Community Access      NMS IP
-----
1 public      Read      0.0.0.0
2 public2     Read      0.0.0.0
3 private     Write     0.0.0.0
4 private2    Write     0.0.0.0

Trap Receiver Summary
# Community Generation Authentication Receiver NMS IP
-----
1 public      Enabled   Enabled   999.999.99.991
2 public      Enabled   Enabled   999.999.99.992
3 public      Enabled   Enabled   999.999.99.993
4 public      Enabled   Enabled   999.999.99.994

Press <ENTER> to continue...

```

How to Control SNMP Channel Access

The **SNMP** menu's Access Control 1 through Access Control 4 options all access identical menu screens. Each screen:

- Identifies the current settings for all four SNMP channels.
- Provides menu options you can use to change the values for the selected channel.

```

----- Access Control 1 -----
Access Control Summary
# Community Access NMS IP
-----
1 public Read 0.0.0.0
2 public2 Read 0.0.0.0
3 private Write 0.0.0.0
4 private2 Write 0.0.0.0

1- Community : public
2- Access Type : Read
3- NMS IP Address : 0.0.0.0
4- Accept Changes :

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu

>

```

You Use	To
1- Community	Define the password (up to 8 characters) the NMS (identified by the NMS IP option) must use for SNMP access to the Adapter (with the allowed access defined by the Access Type option).
2- Access Type	Define whether an NMS (identified by the NMS IP option) can use GETs and SETs (Write) or just GETs (Read).
3- NMS IP	Configure the channel to allow only one NMS (using a specific NMS IP address), or all NMSs (using 0.0.0.0 for the NMS IP value), to have access to the channel.

How to Define Trap Receivers

The **SNMP** menu's Trap Receiver 1 through Trap Receiver 4 options all access identical menu screens. Each screen:

- Identifies the current settings for all four trap receivers.
- Provides menu options you can use to change the values for a selected trap receiver.

```

----- Trap Receiver 1 -----
      Trap Receiver Summary
      # Community  Generation  Authentication  Receiver NMS IP
      -----
      1 public      Enabled    Enabled        999.999.99.991
      2 public      Enabled    Enabled        999.999.99.992
      3 public      Enabled    Enabled        999.999.99.993
      4 public      Enabled    Enabled        999.999.99.994

      1- Trap Community Name : public
      2- Trap Generation      : Enabled
      3- Authentication Traps: Enabled
      4- Receiver NMS IP     : 999.999.99.991
      5- Accept Changes      :

      ?- Help
      <ENTER> Redisplay Menu
      <ESC> Return To Previous Menu

      > _
  
```

You Use	To
1- Trap Community Name	Define the password (up to 8 characters) the Adapter will use when it sends traps to the NMS identified by the Receiver NMS IP option.
2- Trap Generation	Define whether (Enabled) or not (Disabled) the Adapter will send traps to the NMS identified by the Receiver NMS IP option.
3- Authentication Traps	Define whether (Enabled) or not (Disabled) the Adapter will send authentication traps to the NMS identified by the Receiver NMS IP option.
4- Receiver NMS IP	Define the specific NMS (using its IP address) that you want to receive traps sent by the Adapter (0.0.0.0 indicates no traps will be sent to any NMS for this Trap Receiver option).

How to Define System Identification Values

You use the **SNMP** menu's **System** option to define the Adapter's system identification values. Each option identifies its current value:

```

----- System -----
1- sysName      : Writers
2- sysContact   : Writing Manager
3- sysLocation  : Software Development
4- Accept Changes :

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
>

```

You Use	To Define This Adapter's
1- sysName	System name
2- sysContact	Contact person
3- sysLocation	Physical location

How to Manage the Adapter's System (Internal) Operation

Selecting the **Control Console** menu's **Adapter** option accesses a menu which allows you to select other menus you can use to manage the Adapter.

```

----- Adapter -----
1- Passwords
2- Tools
3- About Adapter

?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
>

```

You Use	To
1- Passwords	Control access to the Control Console.
2- Tools	Affect the Adapter's SNMP Agent.
3- About Adapter	View Adapter identification values.

How to Control Access to the Control Console

You use the **Adapter** menu's **Passwords** option to define the Control Console's user name, password and timeout values:

```

----- Passwords -----
      1- Auto Logout      : 10 Minutes
      2- New User Name   : apc
      3- New Password    :
      4- Current Password:
      5- Accept Changes  :

      ?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
> _

```

You Use	To Define
1- Auto Logout	How long the Control Console will wait, with no activity occuring, before it logs a user out.
2- New User Name	The name (up to 10-characters long) used to log in.
3- New Password 4- Current Password	The password (up to 10-characters long) used to log in (define the New Password first, then the Current Password).

How to Affect the Adapter's SNMP Agent

You use the **Adapter** menu's **Tools** option to affect the Adapter's SNMP Agent (and the Adapter, in general):

```

----- Tools -----
      1- Restart The Adapter
      2- Reset Adapter To Defaults
      3- Download A New Agent
      4- Download A New Loader & Agent

      ?- Help
<ENTER> Redisplay Menu
<ESC> Return To Previous Menu
> _

```


You Use	To
1- Restart The Adapter	Reinitialize the Adapter's operation.
2- Reset Adapter to Defaults	Change Control Console values back to the values currently stored in the Adapter's EEPROM.
3- Download A New Agent	<p>Use tftp or xmodem to download newagent code to the Adapter (see the Download.txt file for information on how to download new code to an Adapter).</p> <p><i>Note: If you use Telnet to access the Control Console, this command will result in an Unattended Download via TFTP as the only choice.</i></p>
4- Download A NewLoader and Agent	Use tftp or xmodem to download a new loader and new agent code to the Adapter(see the Download.txt file for information about how to download new code to an Adapter).

How to View the Adapter's Identification Values

You use the **Adapter** menu's About Adapter option to view the Adapter's self-explanatory identification values:

```

-----
About Adapter

Model Number      : AP9605      Serial Number     : WA9723897325
Firmware Revision : v3.0.0      Hardware Revision : B2
Manufacture Date  : 06/09/1997  MAC Address       : 00 C0 B7 B2 20 C9

Press <ENTER> to continue...

```

Chapter 8:

How to Correct Adapter Problems

This chapter describes how to correct problems which can occur with your Adapter. If you cannot isolate and correct a problem using this chapter, see this chapter's TECHNICAL SUPPORT section.

PowerNet™ SNMP Adapter-Related Common Problems and Solutions

Problem	Solution
Unable to ping the Adapter	<p>Is the Adapter's Status LED green, indicating it is up and running its SNMP agent on the network? If yes, try to ping another node on the same network segment as the Adapter. If that fails, it is not an Adapter problem. If the Status LED is not green, or if the ping test succeeds, perform the rest of steps suggested below:</p> <ul style="list-style-type: none"> - Verify that the Adapter is properly seated in the UPS or X-chassis. - Verify all network connections. - Verify IP addresses of the Adapter and the NMS, and make sure both are on the same network or subnetwork. - Verify the default gateway (or router) IP address if the NMS is on a different physical network (or subnet) than the Adapter. - Verify the number of subnet bits for the Adapter's subnet mask.
Unable to perform a GET	<ul style="list-style-type: none"> - Verify the read (GET) community name. - Use the Adapter's Control Console to ensure that the NMS has access to the Adapter (see CHAPTER 7).
Unable to perform a SET	<ul style="list-style-type: none"> - Verify the read/write (SET) community name. - Use the Adapter's Control Console to ensure that the NMS has write (SET) access to the Adapter (see CHAPTER 7).
Unable to receive traps at the management station	<ul style="list-style-type: none"> - Query the PowerNet™ MIB mconfigTrapReceiverTable OID to see if NMS IP address is listed correctly, and the community name defined for the NMS matches the community name in the table. If not, use SETs to the mconfigTrapReceiverTable OIDs, or the Adapter's Control Console to correct the trap receiver definition problem (see CHAPTER 7).
Traps received at NMS are not identified	<ul style="list-style-type: none"> - See your NMS-specific documentation to verify the traps are properly integrated in the NMS's alarm/trap database.
Frequent Comm Lost messages from PowerChute® <i>plus</i> when using the passthrough feature	<ul style="list-style-type: none"> - See this chapter's separate section on CORRECTING COMMUNICATION LOST PROBLEMS.
Terminal program reports that it cannot allocate the comm port when you try to configure the Adapter.	<ul style="list-style-type: none"> - You must shutdown PowerChute® <i>plus</i> before you can use a terminal to configure the Adapter.

How to Correct Communication Lost Problems

Unable to Communicate with UPS conditions can be reported by PowerChute *plus*. If this problem occurs after PowerChute *plus* and the Adapter have been installed together on a UPS:

- 1) If PowerChute *plus* cannot communicate with the UPS at all:
 - a) Ensure that the cable between the computer and the UPS (or the AP9600) is securely connected at both ends.
 - b) Ensure that the UPS (or AP9600) serial port is connected to the same computer port used to connect the computer to the UPS when PowerChute *plus* was installed.
 - c) Ensure that the black, smart-signalling cable (940-0024C) which came with the Adapter is being used for the connection between the computer and the UPS (or AP9600).
 - d) If steps a through c do not find the problem, reset the Adapter.
 - e) If the problem persists, disconnect (or remove) the Adapter from the UPS and restart PowerChute *plus*.
 - f) If the problem persists, see your PowerChute *plus* documentation to remove and then reinstall PowerChute *plus* (if the problem still persists, contact Technical Support).
 - g) If step e cleared the problem, reinstall the Adapter (if the problem returns, contact Technical Support).
 - 2) If **Unable to Communicate with UPS** is an intermittent problem, an interrupt request (IRQ) conflict could be the problem. To eliminate the IRQ conflict, disconnect (or remove) the Adapter from the UPS and restart PowerChute *plus*:
 - a) If the problem persists, see your PowerChute *plus* documentation to remove, and then reinstall, PowerChute *plus* (if the problem persists, contact Technical Support).
 - b) If PowerChute *plus* works without the Adapter:
 1. Stop PowerChute *plus*.
 2. Use an ASCII text editor to edit the **[ups]** section of the PowerChute *plus* initialization file (**pwrchute.ini** or **powerchute.ini**, depending on the PowerChute *plus* operating system):
 - Add **TimeoutFactor=40** parameter to the file.
 - Add **UpsPollInterval=6** to the file (default value is **4**).
-
- Note:** See your *PowerChute® plus User's Guide* for information on how to edit the **pwrchute.ini** file.
-
3. Restart PowerChute *plus*.
 4. If the problem still persists, contact Technical Support.

Technical Support

If you have any questions concerning the AP9603 PowerNet Adapter, or any other APC product, contact the technical support center nearest you for no-cost help.

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Appendix A

Acronyms & Abbreviations

APC	American Power Conversion
BOOTP	bootstrap protocol
Comm	communication
EEPROM	electrically erasable programmable read-only memory
HP	Hewlett Packard Corporation
IP	Internet Protocol
LED	light emitting diode
MAC	management access control
MIB	management information base
NMS	network management system
OID	object identification
RMA	returned material authorization
SNMP	simple network management protocol
TCP/IP	Transport Control Protocol/Internet Protocol
TFTP	trivial file transfer protocol
UPS	uninterruptible power supply

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