REFERENCE GUIDE

Management Information Base

IBM®

Contents

About This Guide 1

Purpose and Structure of the Guide 1
Related Documents 3

PowerNet MIB Structure 4

Traps 4
OIDs 5

Manage Agents and Management Cards 8

Locate the OIDs 8
Monitor a PowerNet Agent 9
Manage an SNMP Agent of a Hardware Device 10

Manage an Uninterruptible Power Supply 14

Locate the OIDs 14
View and Set Uninterruptible Power Supply Identification Parameters 16
View Battery Status 17
View Data on Uninterruptible Power Supply Input/Output Voltage . 19
Configure an Uninterruptible Power Supply 22
Control the Operation of the Uninterruptible Power Supply 26
Test an Uninterruptible Power Supply 28
View Communication Status 29
Manage a 3-phase Uninterruptible Power Supply 30
Synchronize the Actions of Uninterruptible Power Supplies 35
View the State of an Uninterruptible Power Supply 37
Manage Outlet Groups of an Uninterruptible Power Supply 39
Perform Diagnostics on a Symmetra Uninterruptible Power Supply . 41

Manage an Environmental Monitor 50

Locate the OIDs 50

REFERENCE GUIDE
Management Information Base

Manage an External Environmental Monitor 51
Manage an Integrated Environmental Monitor 54

Manage an Environmental Management System 57

Locate the OIDs 57
View Identification Parameters 58
Control an Environmental Management System 59
Configure an Environmental Management System 61
View Status of the Environmental Management System 64

Manage a Rack Air Removal Unit 68

Locate the OIDs 68
View Identification Parameters 69
Configure a Rack Air Removal Unit 70
View the Status of a Rack Air Removal Unit 71

Manage MasterSwitch 73

Locate the OIDs 73
View Identification Parameters 74
Control and Configure the MasterSwitch Unit 75
Control and Configure Individual Outlets 76

Manage MasterSwitch VM 77

Locate the OIDs 77
View Identification Parameters 78
Control and Configure MasterSwitch VM Units 79
View the Status of a MasterSwitch VM Unit 81
Control and Configure MasterSwitch VM Outlets 82
View Status of Outlets of a MasterSwitch VM Unit 84

Manage MasterSwitch Plus 85

Locate the OIDs 85
View Identification Parameters 86
Control and Configure MasterSwitch Plus Units 87

REFERENCE GUIDE
Management Information Base

View Status about a MasterSwitch Plus Unit 89
Control and Configure Outlets of a Unit 90
View the Status of MasterSwitch Plus Outlets 98

Manage a Rack PDU 99

Locate the OIDs 99
Name the PDU and View Identification Parameters 100
View Rated Power and Number of Phases 101
View and Configure Load Thresholds by Phase. 102
View the Load Status of Each Phase 103
Control Outlets of a Rack PDU 104
Configure Outlets. 106
View Status of an Outlet and Power Supply 107

Manage an Automatic Transfer Switch 108

Locate the OIDs 108
View Identification Parameters of the ATS 109
View I/O Data, Power Supply Voltages, and Calibration Factors . . 110
Reset the ATS and Clear Its Alarms 111
Configure the ATS 112
View the Status of the ATS. 113
Name and View the Status of Input Feeds 114
Name and View the Status of Output Feeds. 115

Manage a NetworkAIR® FM System 117

Locate the OIDs 117
View Identification Parameters. 118
View Status of the System and Modules. 119

Manage a NetworkAIR® Portable Air Conditioner 121

Locate the OIDs 121
View Identification Parameters. 122
View Status 123

PowerNet MIB Traps 124

Overview 124
PowerNet MIB Trap Definitions. 127
Symmetra Uninterruptible Power Supply Subtraps. 165

Index 168

About This Guide

Purpose and Structure of the Guide

Purpose

This guide documents version 3.6.4 of the APC PowerNet® Management Information Base (MIB). Use this guide to assist you in managing products that can be monitored and configured with the Simple Network Management Protocol (SNMP).

The Management Information Base (MIB) has been updated a number of times since this guide has been revised. Therefore, if your product requires a MIB version later than 3.6.4, some Object Identifiers (OIDs) and traps related to your product might not be documented in this guide. For OIDs added in MIB versions later than 3.6.4, use your MIB browser to see their descriptions. Trap definitions for traps in MIB versions later than 3.6.4 are at the end of the MIB file itself (powernet*version_number*.mib).

Structure

This guide contains the following sections:

- This initial section, **"About This Guide" on page 1**.
- Sections on individual products, the tasks you can perform with SNMP to manage those products, and the OIDs (Object Identifiers) you use for those tasks.

Not all products documented in this reference guide are available to IBM customers.

- A section on SNMP Traps, **"PowerNet MIB Traps" on page 124**.

See the section on the product you want to manage, find the OIDs listed under the task you need to perform, and then use your MIB browser to identify the values you can get or set with those OIDs.

Terminology

This guide uses the terms Network Management Card and Management Card to apply to the Embedded Network Module that is built into some models of IBM uninterruptible power supplies as well as to the Network Management Card that is installed in a card slot of an uninterruptible power supply.

Related Documents

This guide describes how to use the PowerNet MIB only.

See the *User's Guide* and any other documentation shipped with your product for information about the product and the other interfaces you can use to manage it.

See the documentation provided with your Network Management Station (NMS) for information about your NMS.

For assistance with any IBM uninterruptible power supply, contact IBM Customer Support.

PowerNet MIB Structure

Traps

Network Management Cards, devices, and agents can send traps to a Network Management Station (NMS) when specific events occur. The trap receiver definitions that a particular Network Management Card, device, or agent uses determines which NMSs can receive traps, and the MIB interprets the traps.

See **"PowerNet MIB Traps" on page 124**.

OIDs

APC products that can use OIDs

The PowerNet MIB OIDs allow an NMS to use its SNMP browser to manage the following:

- Any product that relies on an external, pre-installed, or embedded (built-in) Network Management Card for its network interface and that has its SNMP access controls set to allow an NMS to have SNMP access.
- A PowerNet Agent and the devices it controls. A PowerNet Agent has limited control over an uninterruptible power supply and does not use SNMP access controls.

SNMP access controls

The Network Management Card or the device with an embedded Network Management Card has a console program to define specific SNMP access values for up to four SNMP channels. You can use the program to set any of these access controls:

- Disable SNMP access completely to prevent SNMP access by any NMS.
- Use an NMS IP Address as a SNMP channel value to limit channel access to only the defined NMS.
- Define a non-default password for an SNMP channel so that only an NMS that knows the password can access the channel.
- Configure the access or an NMS to an SNMP channel as write access, read access, or no access.

For more information on SNMP access controls, see the *User's Guide* for your Network Management Card or for your device that has an embedded Network Management Card.

Structure of the OID hierarchy in the SNMP browser

The PowerNet MIB fits into a hierarchical structure within the categories of your SNMP browser. For example, for an HP OpenView for Windows SNMP browser, the OID categories from the top of the structure down to the top category of PowerNet MIB OIDs are as follows:

- **[iso]** (for International Standards Organization)
- **[org]** (for organization)
- **[dod]** (for Department of Defense)
- **[internet]**
- **[private]**
- **[enterprises]**
- **[apc]** (for American Power Conversion)

Structure of the OID hierarchy in the PowerNet MIB

In the hierarchical structure of the PowerNet MIB, the **[apc]** category of OIDs is at the top, and individual OIDs are in specific OID categories or within specific *OID tables*.

See **"Tabled OIDs" on page 7**.

There are two categories under **[apc]**:

- **[products]** for OIDs to manage specific products.
- **[apcmgmt]** for OIDs that affect the operation of hardware-based SNMP agents (for example, Network Management Cards and MasterSwitch units).

See **"Manage Agents and Management Cards" on page 8**.

There are three categories under **[products]**:

- **[hardware]** contains sub-categories for each type of hardware product that you can manage using PowerNet MIB OIDs. The remaining major sections of this manual (except for the last major section, on traps) provide lists and descriptions of these OIDs.
- **[software]** contains one sub-category **[powerNetSubAgent]**. The sub-category consists of read-only OIDs to monitor a software PowerNet agent only.

See **"Manage Agents and Management Cards" on page 8**.

- **[system]** contains read-only OIDs that identify models of uninterruptible power supplies and other devices by unique numbers that other OIDs can reference. For example, the system OIDs in other OID categories of the PowerNet MIB use a PowerNet MIB **[system]** OID number for the MIB-II **[sysObjectID]** value.

Tabled OIDs

For any PowerNet MIB OID category listed in the SNMP browser, you can access a list of the current values for all OIDs in that category and in all sub-categories below it in the hierarchy. However, OIDs grouped in a table do not appear in the list. To access the current values of OIDs in an OID table, select the OID table (always enclosed in braces {}) in the SNMP browser. For example, to access the OIDs that define all four trap receivers for a device, select **{mconfigTrapReceiverTable}** in the SNMP browser.

Manage Agents and Management Cards

Locate the OIDs

To find the OIDs to perform the tasks described in **"Monitor a PowerNet Agent" on page 9**, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[software]**
- **[powerNetSubAgent]**
- **[powerNetSoftwareSystem]** or **[powerNetSoftwareConfig]**

To find the OIDs to perform the tasks described in **"Manage an SNMP Agent of a Hardware Device" on page 10**, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[apcmgmt]**
- Any of the following:
  - **[mcontrol]**
  - **[mconfig]**
  - **[mtrapargs]**
  - **[mfiletransfer]**

Monitor a PowerNet Agent

Use the **[powerNetSubAgent]** OIDs to view information about a PowerNet agent. These OIDs are in two sub-categories, **[powerNetSoftwareSystem]** and **[powerNetSoftwareConfig]**.

View information about an agent

Use the **[powerNetSoftwareSystem]** OIDs to view information about the agent, including its version number, the technology that it uses to implement the PowerNet MIB, and the length of time it has been running continuously on the network.

```
powerNetSoftwareSystemDescription
powerNetSoftwareOid
powerNetSoftwareSystemUpTime
```

View information about the software modules of an agent

Use the **[powerNetSoftwareConfig]** tabled OIDs to view the version number, name, and installation date (in the format *mm-dd-yy*) of any of the software modules of the agent.

```
powerNetSoftwareTableSize
{powerNetSoftwareTable}
  [powerNetSoftwareEntry]
     moduleNumber
     moduleName
     moduleVersion
     moduleDate
```

Manage an SNMP Agent of a Hardware Device

Use the **[apcmgmt]** OIDs to manage the SNMP agent of an APC hardware device, such as the following:

- The Network Management Card (installed, pre-installed, or embedded) of an uninterruptible power supply or other device.
- The PowerNet adapter for an uninterruptible power supply and Environmental Monitor.

The **[apcmgmt]** OIDs are in four subcategories: **[mconfig]**, **[mcontrol]**, **[mtrapargs]**, and **[mfiletransfer]**.

View BOOTP value; set trap receivers, date, and time

Use the **[mconfig]** OIDs to perform the following tasks:

- Identify whether BOOTP is enabled (so that BOOTP provides the IP configuration for the device) or disabled (so that the device uses its stored IP configuration).
- Configure up to four NMSs as trap receivers.

See **"How to define trap receivers" on page 125**.

- Configure the date and time on a Network Management Card or other device.

```
mconfigBOOTPEnabled
mconfigNumTrapReceivers
{mconfigTrapReceiverTable}
  [mconfigTrapReceiverEntry]
     trapIndex
     receiverAddr
     communityString
     severity
     acceptThisReceiver
     receiveTrapType
mconfigClock
mconfigClockDate
mconfigClockTime
```

Control the restarting behavior of the agent

Use the one **[mcontrol]** OID to control whether the agent restarts now, continues without restarting, or restarts the next time the system starts. (Value 3 is obsolete.)

```
mcontrolRestartAgent
```

Enable traps to use a specific argument type

Use the **[mtrapargs]** OIDs to enable traps to use an argument of a specific type (integer, IP address, octet string, Gauge, or TimeTicks), which might not be defined as part of the MIB.

```
mtrapsapargsInteger
mtrapsapargsIpAddress
mtrapsapargsString
mtrapsapargsGauge
mtrapsapargsTimeTicks.
```

Enable transfer of any file that an adapter recognizes

Use the **[mfiletransfer]** OIDs, which are supported only for a PowerNet adapter, to allow the transfer of any type of file that the adapter can recognize. The **[mfiletransfer]** OIDs are in three sub-categories: **[mfiletransferStatus]**, **[mfiletransferConfig]**, and **[mfiletransferControl]**.

View the results of the most recent file transfer attempt. Use the one OID in the **[mfiletransferStatus]** category to find out whether the most recent attempt to transfer a file succeeded or failed, and if it failed, the reason for the failure.

Provide the required parameters to transfer the file. Use the OIDs in the three subcategories under the **[mfiletransferConfig]** to provide the following parameters needed to transfer the file:

- The file name and path.
- The IP address for the remote TFTP server (if you are using TFTP for the transfer).
- The IP address, user name, and password for the remote FTP server (if you are using FTP for the file transfer).

The **[mfiletransferConfigSettings]** subcategory has one OID:

```
mfiletransferConfigSettingsFileName
```

The **[mfiletransferConfigTFTP]** subcategory has one OID:

```
mfiletransferConfigTFTPServerAddress
```

The **[mfiletransferConfigFTP]** subcategory has these OIDS:

```
mfiletransferConfigFTPServerAddress
mfiletransferConfigFTPServerUser
mfiletransferConfigFTPServerPassword
```

Perform the file transfer. Use the OID in the **[mfiletransferControl]** category to download the file from the TFTP server or from the FTP server.

```
mfiletransferControlInitiateFileTransfer
```

Manage an Uninterruptible Power Supply

Locate the OIDs

In a MIB browser, select, in order, these OID categories to locate the OIDs to manage an uninterruptible power supply through its Network Management Card or its PowerNet agent:

- **[apc]**
- **[products]**
- **[hardware]**
- **[ups]**
- Any of the following subcategories:
  - **[upsIdent]**
  - **[upsBattery]**
  - **[upsInput]**
  - **[upsOutput]**
  - **[upsConfig]**
  - **[upsControl]**
  - **[upsTest]**
  - **[upsComm]**
  - **[upsPhase]**
  - **[upsSyncCtrlGroup]**
  - **[upsState]**
  - **[upsOutletGroups]**
  - **[upsDiagnostics]**

In the subcategories of the **[ups]** category, the Network Management Card of an uninterruptible power supply can use all OIDs, but a PowerNet agent can use only OIDs supported for such agents in the MIB version 2.2. If the agent-to-uninterruptible power supply communication uses simple (basic) signaling, a PowerNet agent cannot use smart (advanced) signaling OIDs.

View and Set Uninterruptible Power Supply Identification Parameters

Use the **[upsIdent]** OIDs to view uninterruptible power supply identification parameters that were set at the factory and to configure a name for the uninterruptible power supply. The **[upsIdent]** OIDs are in two sub-categories, **[upsBasicIdent]** and **[upsAdvIdent]**.

View the model name and set the device name for an uninterruptible power supply

Use the **[upsBasicIdent]** OIDs to view the model name of the uninterruptible power supply and to configure a unique name for the uninterruptible power supply.

All Network Management Cards and PowerNet agents can use these OIDs.

```
upsBasicIdentModel
upsBasicIdentName
```

Identify firmware revision, age, and serial number

Use the **[upsAdvIdent]** OIDs to identify the firmware version, date of manufacture, and serial number of the uninterruptible power supply.

All Network Management Cards can use these OIDs. A PowerNet agent can use these OIDs only if it communicates with the uninterruptible power supply by using smart signaling (advanced signaling).

```
upsAdvIdentFirmwareRevision
upsAdvIdentDateOfManufacture
upsAdvIdentSerialNumber
```

View Battery Status

Use the **[upsBattery]** OIDs to view the status of uninterruptible power supply batteries. The **[upsBattery]** OIDs are in two sub-categories, **[upsBasicBattery]** and **[upsAdvBattery]**.

Check adequacy of batteries, and set replacement date

Use the **[upsBasicBattery]** OIDs for these tasks:

- View whether batteries can support their load.
- View when the transfer to battery power occurred.
- Set or view the date of the last battery replacement in *mm*/*dd*/*yy* or *mm*/*dd*/*yyyy* format.

All Network Management Cards and PowerNet agents can use these OIDs.

```
upsBasicBatteryStatus
upsBasicTimeOnBattery
upsBasicBatteryLastReplaceDate
```

View number, capacity, and failure data of batteries

Use the **[upsAdvBattery]** OIDs to view remaining battery capacity, internal uninterruptible power supply temperature, estimated time batteries can provide output power, and (for Matrix-UPS and Smart-UPS XL uninterruptible power supplies), the total number of batteries and the number that need replacement.

All Network Management Cards can use these OIDs. A PowerNet agent can use these OIDs only if it communicates with the uninterruptible power supply by using smart signaling (advanced signaling).

```
upsAdvBatteryCapacity
upsAdvBatteryTemperature
upsAdvBatteryRunTimeRemaining
upsAdvBatteryReplaceIndicator
upsAdvBatteryNumOfBattPacks
upsAdvBatteryNumOfBadBattPacks
```

View Data on Uninterruptible Power Supply Input/Output Voltage

View information on uninterruptible power supply input voltage

Use the **[upsInput]** OIDs to view information about the uninterruptible power supply input (utility line) voltage. These OIDs are grouped in two sub-categories, **[upsBasicInput]** and **[upsAdvInput]**.

View the current AC input voltage phase of the uninterruptible power supply. Use the one OID in the **[upsBasicInput]** category to view the current AC input voltage phase of the uninterruptible power supply.

All Network Management Cards and PowerNet agents can use this OID.

```
upsBasicInputPhase
```

View data on input voltage, frequency, and battery operation. Use the **[upsAdvInput]** OIDS to view the following:

- The current input voltage and frequency.
- The maximum and minimum input voltage during the last minute.
- The reason for the most recent transfer to battery operation. (A PowerNet agent can report all causes except a self-test and can report the rate of voltage change; a Network Management Card can report all data.)

All Network Management Cards can use these OIDs. A PowerNet agent can use these OIDs only if it communicates with the uninterruptible power supply by using smart signaling (advanced signaling).

```
upsAdvInputLineVoltage
upsAdvInputMaxLineVoltage
upsAdvInputMinLineVoltage
upsAdvInputFrequency
upsAdvLineFailCause
```

View information on uninterruptible power supply output voltage

Use the **[upsOutput]** OIDs to view information about the uninterruptible power supply output voltage. The **[upsOutput]** OIDs are in two sub-categories, **[upsBasicOutput]** and **[upsAdvOutput]**.

View the uninterruptible power supply operational status and mode of operation. Use the one OID in the **[upsBasicOutput]** category to view the current operational status of the uninterruptible power supply:

- Whether it is actively providing output power.
- Whether the power is from input voltage or from its batteries.
- Whether it is compensating for input voltage that is too high or two low.
- Whether it is in any type of bypass mode and how it entered that mode.
- Whether it is restarting.
- Whether it is in sleep mode, with outlets turned off waiting for input power to return, or in timed sleep mode.

All Network Management Cards and PowerNet agents can use this OID.

```
upsBasicOutputStatus
```

View output voltage, frequency, load, and current of the uninterruptible power supply. Use the **[upsAdvOutput]** OIDs to view the output voltage, the output voltage frequency, and the equipment load (as a percentage of rated load capacity) of the uninterruptible power supply.

All Network Management Cards can use these OIDs. A PowerNet agent can use these OIDs only if it communicates with the uninterruptible power supply by using smart signaling (advanced signaling).

```
upsAdvOutputVoltage
upsAdvOutputFrequency
upsAdvOutputLoad
upsAdvOutputCurrent
```

Configure an Uninterruptible Power Supply

Use SETs (SNMP write commands) to the **[upsConfig]** OIDs to define how the uninterruptible power supply responds to specific operating conditions. The **[upsConfig]** OIDs are in two sub-categories, **[upsBasicConfig]** for basic-signaling uninterruptible power supplies, and **[upsAdvConfig]** for smart-signaling uninterruptible power supplies. All uninterruptible power supplies except Back-UPS models support smart signaling.

Name, add, delete, or set VA ratings for devices of an uninterruptible power supply

Use the OIDs in the **[upsBasicConfig]** category to do the following:

- View the number of devices connected to the uninterruptible power supply, and identify the outlet to which each device is connected.
- Configure a device name and VA rating for any of the devices.
- Add or delete a device.

The **[upsBasicConfig]** OIDs are for simple-signaling connections, which provide basic power management and protection but offer few additional configuration and monitoring options. (Back-UPS models support only simple signaling.)

```
upsBasicConfigNumDevices
{upsBasicConfigDeviceTable}
   [upsBasicConfigDeviceEntry]
     deviceIndex
     deviceName
     vaRating
     acceptThisDevice
```

Configure uninterruptible power supply operating and shutdown parameters

Use the OIDs in the **[upsAdvConfig]** category to configure or view operating and shutdown parameters for an uninterruptible power supply connected in smart-signaling mode.

A Management Card or PowerNet agent can use OIDs in the **[upsAdvConfig]** category to perform the following tasks:

- Define nominal output voltage of the uninterruptible power supply.
- Define the high and low thresholds for input voltage. When one of these thresholds is violated, the uninterruptible power supply uses its Boost or Trim feature to compensate for the out-of-range voltage, or, if the uninterruptible power supply does not support the feature, it switches to battery operation.
- Define whether the uninterruptible power supply generates an audible alarm in response to an input power failure, and set a delay for a timed alarm.
- Define the battery capacity required before the uninterruptible power supply returns from a low-battery shutdown.
- Define, for uninterruptible poser supplies that have no voltage regulator, how sensitive the uninterruptible power supply is to input line abnormalities (“noise” on the line).
- Define the battery runtime at or below which a low-battery condition occurs.
- Define the delay time that occurs after power returns before the uninterruptible power supply returns from sleep mode.
- Obtain the allowed values for all OIDs that you can set in the **[upsAdvConfig]** group.

Only a Network Management Card can use OIDs in the **[upsAdvConfig]** category to perform these tasks:

- Define delay times for low-battery shutdown, graceful turn-off, restart, and sleep mode.
- Define how long an uninterruptible power supply remains in timed sleep mode.
- Reset all configurable EEPROM values to factory-set defaults.
- Set the front-panel password for Matrix-UPS and Symmetra uninterruptible power supply models.
- View the number of dip switch settings of the uninterruptible power supply and the status of each (on or off).
- Define how long before battery exhaustion the uninterruptible power supply will turn off power to its load.
- View the OID for any configurable uninterruptible power supply value and the set of values allowed.
- Configure the uninterruptible power supply Battery Cabinet amp-hour settings, the position of the mounted uninterruptible power supply (rack or tower), and the output frequency tolerance range of the uninterruptible power supply.
- Configure whether the uninterruptible power supply will switch to bypass mode or turn off power to its load when input frequency or voltage is out of range.
- Configure the alarm settings for inadequate redundancy, output overload, and insufficient runtime remaining.
- Configure how the uninterruptible power supply scales its output voltage readings.

```
upsAdvConfigRatedOutputVoltage
upsAdvConfigHighTransferVolt
upsAdvConfigLowTransferVolt
upsAdvConfigAlarm
upsAdvConfigAlarmTimer
upsAdvConfigMinReturnCapacity
upsAdvConfigSensitivity
upsAdvConfigLowBatteryRunTime
upsAdvConfigReturnDelay
upsAdvConfigShutoffDelay
upsAdvConfigUpsSleepTime
upsAdvConfigSetEEPROMDefaults
{upsAdvConfigDipSwitchSetting}
  [upsAdvConfigDipSwitchEntry]
     dipSwitchIndex
     dipSwitchStatus
upsAdvConfigBattExhaustThresh
upsAdvConfigPassword
{upsAdvConfigAllowedSetTable}
  [apcUpsConfigEntry]
     apcUpsConfigFieldIndex
     apcUpsConfigFieldOID
     apcUpsConfigFieldValueRange
upsAdvConfigBattCabAmpHour
upsAdvConfigPositionSelector
upsAdvConfigOutputFreqRange
upsAdvConfigUPSFail
upsAdvConfigAlarmRedundancy
upsAdvConfigAlarmLoadOver
upsAdvConfigAlarmRuntimeUnder
upsAdvConfigVoutReporting
```

Control the Operation of the Uninterruptible Power Supply

You can use SETs (SNMP write commands) to the **[upsControl]** OIDs to directly affect the current operation of the uninterruptible power supply. The **[upsControl]** OIDs are in two sub-categories, **[upsBasicOutput]** and **[upsAdvOutput]**.

Initiate sleep mode

Use the one OID in the **[upsBasicControl]** category to put an uninterruptible power supply that is running on battery power into sleep mode. Sleep mode turns off the outlets of an uninterruptible power supply until acceptable input power returns.

All Network Management Cards and PowerNet agents can use this OID.

```
upsBasicControlConserveBattery
```

Set uninterruptible power supplies to stop, start, test alarms, or go into bypass

Synchronized Control Groups are supported for most uninterruptible power supply models of the Smart-UPS and Symmetra uninterruptible power supply product lines and for IBM uninterruptible power supplies.

Use the **[upsAdvControl]** OIDs to set an uninterruptible power supply or a synchronized control group of uninterruptible power supplies to do any of the following actions immediately, gracefully, gracefully after a delay, or (for a synchronized control group) in a synchronized manner:

- Turn off.
- Enter sleep mode.
- Turn on.
- Restart.
- Test front panel lights and audible alarm (Smart-UPS only).

Note

Only a Network Management Card can perform synchronized control group actions; synchronized actions are not supported by PowerNet agents. PowerNet agents also do not support graceful turn-off, graceful sleep mode initiation, or graceful restart for individual uninterruptible power supplies. If a PowerNet agent turns an uninterruptible power supply off with **upsAdvControlUpsOff**, you must restart the uninterruptible power supply by using its manual switch.

Use the **[upsAdvControl]** OIDs to perform the following actions for an individual uninterruptible power supply only:

- Simulate a power failure.
- Go into bypass mode (Matrix-UPS and Symmetra uninterruptible power supply only).

```
upsAdvControlUpsOff
upsAdvControlRebootUps
upsAdvControlUpsSleep
upsAdvControlSimulatePowerFail
upsAdvControlFlashAndBeep
upsAdvControlTurnOnUPS
upsAdvControlBypassSwitch
```

Test an Uninterruptible Power Supply

The **[upsTest]** category has a single subcategory, **[upsAdvTest]**, for use by Network Management Cards or smart-signaling PowerNet agents. You cannot perform self-tests and calibrations for uninterruptible power supplies connected in simple-signaling mode.

Use the **[upsAdvTest]** OIDs to do the following:

- Schedule or initiate uninterruptible power supply self-tests.
- Schedule, initiate, or cancel uninterruptible power supply runtime calibrations.
- View the results of uninterruptible power supply self-tests.
- View the date of the last self-test, in *dd*/*mm*/*yy* format.

Network Management Cards cannot use the **upsAdvTestLastDiagnosticsDate** OID.

PowerNet agents cannot use the **upsAdvTestRuntimeCalibration** OID.

```
upsAdvTestDiagnosticSchedule
upsAdvTestDiagnostics
upsAdvTestDiagnosticsResults
upsAdvTestLastDiagnosticDate
upsAdvTestRuntimeCalibration
upsAdvTestCalibrationResults
upsAdvTestCalibrationDate
```

View Communication Status

Use the **[upsComm]** OID to view the status of the SNMP agent-to-uninterruptible power supply communication link of the Network Management Card. You cannot access this OID through a PowerNet agent.

```
upsCommStatus
```

Manage a 3-phase Uninterruptible Power Supply

In the **[upsPhase]** category, use the OID in the three subcategories, **[upsPhaseResetValues]**, **[upsPhaseInput]**, and **[upsPhaseOutput]**, to manage a 3-phase uninterruptible power supply.

Reset the phase input and output counters

Use an **[upsPhaseResetValues]** OID to reset the counter for the corresponding OID in the **[upsPhaseInput]** or **[upsPhaseOutput]** subcategory. For example, to reset the counter for the **upsPhaseInputMaxCurrent** OID (which reports the maximum input current) in the **[upsPhaseInput]** subcategory, issue a SET command to the OID with the same name, **upsPhaseInputMaxCurrent**, in this **[upsPhaseResetValues]** subcategory.

```
upsPhaseInputMaxVoltage
upsPhaseInputMinVoltage
upsPhaseInputMaxCurrent
upsPhaseInputMinCurrent
upsPhaseInputMaxPower
upsPhaseInputMinPower
upsPhaseOutputMaxCurrent
upsPhaseOutputMinCurrent
upsPhaseOutputMaxLoad
upsPhaseOutputMinLoad
upsPhaseOutputMaxPercentLoad
upsPhaseOutputMinPercentLoad
upsPhaseOutputMaxPower
upsPhaseOutputMinPower
upsPhaseOutputMaxPercentPower
upsPhaseOutputMinPercentPower
```

Obtain the number of input feeds to the uninterruptible power supply

In the **[upsPhase]** category, use the **upsPhaseNumInputs** OID to obtain the number of input feeds to the uninterruptible power supply.

```
upsPhaseNumInputs
```

Name and view status of input feeds (phases) of the uninterruptible power supply

In the **[upsPhase]** category, use the tabled OIDs under **{upsPhaseInputTable}** to name the input feeds to the uninterruptible power supply and obtain the following information about each feed:

- Its voltage orientation, for example, single-phase, split-phase, or 3-phase (phase-to-neutral, or phase-to-phase).
- Its frequency.
- Its type (main or bypass).

```
{upsPhaseInputTable}
 [upsPhaseInputEntry]
     upsPhaseInputTableIndex
     upsPhaseNumInputPhases
     upsPhaseInputVoltageOrientation
     upsPhaseInputFrequency
     upsPhaseInputType
     upsPhaseInputName
```

View data on voltage, current, and power of an input phase

In the **[upsPhase]** category, use the tabled OIDs under **{upsPhaseInputPhaseTable}** to obtain the following information for each input phase of the uninterruptible power supply:

- The input voltage, input current, and input power now.
- The minimum and maximum value recorded for the input voltage, input current, and input power since the corresponding counters were reset by the OIDs in the **[upsPhaseResetValues]** category.

See the **upsPhaseNumInputPhases** OID in **"Name and view status of input feeds (phases) of the uninterruptible power supply" on page 31** for the number of input phases.

```
{upsPhaseInputPhaseTable}
 [upsPhaseInputPhaseEntry]
     upsPhaseInputPhaseTableIndex
     upsPhaseInputPhaseIndex
     upsPhaseInputVoltage
     upsPhaseInputMaxVoltage
     upsPhaseInputMinVoltage
     upsPhaseInputCurrent
     upsPhaseInputMaxCurrent
     upsPhaseInputMinCurrent
     upsPhaseInputPower
     upsPhaseInputMaxPower
     upsPhaseInputMinPower
```

Obtain the number of output feeds to the uninterruptible power supply

In the **[upsPhase]** category, use the **upsPhaseNumOutputs** OID to obtain the number of output feeds to the uninterruptible power supply.

```
upsPhaseNumOutputs
```

View status of each output feed (phase) of the uninterruptible power supply

In the **[upsPhase]** category, use the tabled OIDs under **{upsPhaseOutputTable}** to obtain the following information about each output feed to the uninterruptible power supply:

- Its voltage orientation, for example, single-phase, split-phase, 3-phase (phase-to-neutral, or phase-to-phase).
- Its frequency.

```
{upsPhaseOutputTable}
 [upsPhaseOutputEntry]
     upsPhaseOutputTableIndex
     upsPhaseNumOutputPhases
     upsPhaseOutputVoltageOrientation
     upsPhaseOutputFrequency
```

View data on voltage, current, load, and power of output phases

In the **[upsPhase]** category, under **{upsPhaseOutputPhaseTable}**, use the tabled OIDs to obtain the following information for each output phase of the uninterruptible power supply:

- The output voltage, output current, output load (in VA and as a percentage of total output load capacity), output power (in Watts and as a percentage of total output power capacity) now.
- The minimum and maximum value recorded for the output current, output load, percentage of load capacity being used, output power, and percentage of output power being used since the corresponding counters were reset by the OIDs in the **[upsPhaseResetValues]** category.

See the **upsPhaseNumOutputPhases** OID in **"View status of each output feed (phase) of the uninterruptible power supply" on page 33** for the number of output phases.

```
{upsPhaseOutputPhaseTable}
 [upsPhaseOutputPhaseEntry]
     upsPhaseOutputPhaseTableIndex
     upsPhaseOutputPhaseIndex
     upsPhaseOutputVoltage
     upsPhaseOutputCurrent
     upsPhaseOutputMaxCurrent
     upsPhaseOutputMinCurrent
     upsPhaseOutputLoad
     upsPhaseOutputMaxLoad
     upsPhaseOutputMinLoad
     upsPhaseOutputPercentLoad
     upsPhaseOutputMaxPercentLoad
     upsPhaseOutputMinPercentLoad
     upsPhaseOutputPower
     upsPhaseOutputMaxPower
     upsPhaseOutputMinPower
     upsPhaseOutputPercentPower
     upsPhaseOutputMaxPercentPower
     upsPhaseOutputMinPercentPower
```

Synchronize the Actions of Uninterruptible Power Supplies

Synchronized Control Groups are supported for most uninterruptible power supply models of the Smart-UPS and Symmetra uninterruptible power supply product lines and for IBM uninterruptible power supplies.

Configure synchronized control groups

Use the OIDs in the **[upsSyncCtrlGroupConfig]** category to configure a Network Management Card to be a Synchronized Control Group member, enable or disable the group membership of the Network Management Card and configure the following parameters to be used for Synchronized Control Group actions:

- The time in seconds that the initiator of a synchronized restart or sleep action waits for all group members to regain input power before completing the restart sequence of a restart or sleep action.
- A percentage of battery capacity (an offset) that is subtracted from the Return Battery Capacity of the initiator of a synchronized restart or sleep action before that Return Battery Capacity is required of other group members.
- The MultCast IP Address of the group.

```
upsSCGMembershipGroupNumber
upsSCGActiveMembershipStatus
upsSCGPowerSynchronizationDelayTime
upsSCGReturnBatteryCapacityOffset
upsSCGMultiCastIP
```

Check the status of uninterruptible power supplies in a Synchronized Control Group

Use the **[upsSyncCtrlGroupStatus]** OIDs to view the following information about the uninterruptible power supplies of Network Management Cards that are members of a Synchronized Control Group:

- The number of active communicating members in the Synchronized Control Group.
- The IP address of any active, communicating member.
- Whether the input power of the uninterruptible power supply of a specific member is acceptable (within tolerance) or not acceptable (not within tolerance).
- Whether the uninterruptible power supply of a specific member is providing output power to the load.

```
upsSCGNumOfGroupMembers
{upsSCGStatusTable}
 [upsSCGStatusEntry]
     upsSCGStatusTableIndex
     upsSCGMemberIP
     upsSCGACInputStatus
     upsSCGACOutputStatus
```

View the State of an Uninterruptible Power Supply

Use the **[upsState]** OIDs to display ASCII character strings containing flags representing the current state and the current faults of an uninterruptible power supply. Read the flags from left to right. Not all flags are defined; some are reserved for future use. The **[upsState]** OIDs are in two sub-categories, **[upsBasicState]** for basic-signaling (simple-signaling) uninterruptible power supplies, and **[upsAdvState]** for advanced-signaling (smart-signaling) uninterruptible power supplies. All uninterruptible power supplies except Back-UPS models support smart signaling. Not all states and not all faults are supported by or relevant to any one uninterruptible power supply model.

View the state of a basic-signaling uninterruptible power supply

Use the single OID in the **[upsBasicState]** category to display an ASCII string containing the 64 flags representing the current state of a basic-signaling (simple-signaling) uninterruptible power supply.

```
upsBasicStateOutputState
```

For the meaning of each flag, use a MIB browser to view the description of the **upsBasicStateOutputState** OID in the MIB.

View the state of an advanced-signaling uninterruptible power supply

Use the OIDs in the **[upsAdvState]** category to display an ASCII string containing flags representing the current active faults of an advanced-signaling (smart-signaling) uninterruptible power supply:

- The ASCII string for the faults of most single-phase uninterruptible power supply models contains 32 flags.
- The ASCII strings for the faults of Symmetra 3-phase uninterruptible power supplies and Silcon uninterruptible power supplies each contain 64 flags.

For the meaning of each flag, use a MIB browser to view the descriptions of **upsAdvStateAbnormalConditions** for single-phase uninterruptible power supplies, **upsAdvStateSymmetra3PhaseSpecificFaults** for Symmetra 3-phase uninterruptible power supplies, and **upsAdvStateDP300ESpecificFaults** for Silcon uninterruptible power supplies.

```
upsAdvStateAbnormalConditions
upsAdvStateSymmetra3PhaseSpecificFaults
upsAdvStateDP300ESpecificFaults
```

Manage Outlet Groups of an Uninterruptible Power Supply

Use the **[upsOutletGroups]** OIDs with uninterruptible power supply models that support outlet groups to start or stop devices sequentially, restart locked devices, or shed non-essential devices to preserve runtime for critical loads.

View the name, state, and command-pending status of a group

Use the OIDs in the **[upsOutletGroupStatus]** subcategory to obtain the name, state (on or off), and command-pending status of each outlet group of the uninterruptible power supply. The maximum number of outlet groups for an uninterruptible power supply is three.

```
{upsOutletGroupStatusTable}
 [upsOutletGroupStatusEntry]
     upsOutletGroupStatusIndex
     upsOutletGroupStatusName
     upsOutletGroupStatusGroupState
     upsOutletGroupStatusCommandPending
```

Name an outlet group and configure its delay times

Use the **[upsOutletGroupConfig]** OIDs to configure the name of each outlet group and the three delays that the outlet group uses when the uninterruptible power supply applies power to the group (power-on delay), removes power from the group (power-off delay), or restarts the group (restart duration). You can configure these delays to turn on or turn off the outlet groups and their attached equipment sequentially.

```
upsOutletGroupConfigTableSize
{upsOutletGroupConfigTable}
  [upsOutletGroupConfigEntry]
     upsOutletGroupConfigIndex
     upsOutletGroupConfigName
     upsOutletGroupConfigPowerOnDelay
     upsOutletGroupConfigPowerOffDelay
     upsOutletGroupConfigRebootDuration
```

Control an outlet control group

Use the **[upsOutletGroupControl]** OIDs to do the following for any outlet group:

- Obtain the identifying name and number of the group, and obtain the state (on, off, or unknown) of the group.
- Cause a group to do any of these actions:
  - Turn on, turn off, or restart immediately.
  - Turn off (immediately or after its power-off delay), wait its restart duration delay, wait its power-on delay, and restart.
  - Turn on after its power-on delay, or off after its power-off delay.
- Cancel a pending command for an outlet group.

```
upsOutletGroupControlTableSize
{upsOutletGroupControlTable}
  [upsOutletGroupControlEntry]
     upsOutletGroupControlIndex
     upsOutletGroupControlName
     upsOutletGroupControlCommand
```

Perform Diagnostics on a Symmetra Uninterruptible Power Supply

Use the **[upsDiagnostics]** OIDs to perform diagnostic procedures on a Symmetra uninterruptible power supply. The **[upsDiagnostics]** OIDs are in the following subcategories:

- **[upsDiagnosticIM]**
- **[upsDiagnosticPowerModules]**
- **[upsDiagnosticBatteries]**
- **[upsDiagnosticSubsystem]**
- **[upsDiagnosticExternalDevices]**
- **[upsDiagnosticComBus]**

View information about each intelligence module

Use the **[upsDiagnosticIM]** tabled OIDS to view the following:

- The number of intelligence modules in or attached to the uninterruptible power supply.
- For each intelligence module:
  - Its type (main, redundant, or unknown).
  - Its status (on, off, not installed, on and failed, off and failed, not communicating).
  - Its model number; main firmware, secondary firmware, and hardware revisions; its date of manufacture; and its serial number. These parameters are set at the factory or in the firmware.

```
upsDiagIMTableSize
{upsDiagIMTable}
  [upsDiagIMEntry]
     upsDiagIMIndex
     upsDiagIMType
     upsDiagIMStatus
     upsDiagIMFirmwareRev
     upsDiagIMSlaveFirmwareRev
     upsDiagIMHardwareRev
     upsDiagIMSerialNum
     upsDiagIMManufactureDate
```

View information about the power modules

Use the **[upsDiagnosticPowerModules]** OIDs to view the following:

- The number of power modules in or attached to the uninterruptible power supply.
- For each power module:
  - Its status (on, off, not installed, on and failed, off and failed, not communicating).
  - Its model number, its firmware and hardware revisions, its date of manufacture, and its serial number. These parameters are set at the factory.

```
upsDiagPMTableSize
{upsDiagPMTable}
  [upsDiagPMEntry]
     upsDiagPMIndex
     upsDiagPMStatus
     upsDiagPMFirmwareRev
     upsDiagPMHardwareRev
     upsDiagPMSerialNum
     upsDiagPMManufactureDate
```

View information about the batteries

Use the **[upsDiagnosticBatteries]** OIDs to view the following:

- The number of battery frames containing batteries.
- The number of batteries in each battery frame of the uninterruptible power supply.
- For each battery:
  - The status (unknown, not installed, operating properly, failed, in a high-temperature condition, in need of immediate replacement, or in a low-capacity condition).
  - The serial number, hardware revision, date of manufacture, and type.

```
upsDiagBatteryTableSize
{upsDiagBatteryTable}
  [upsDiagBatteryEntry]
     upsDiagBatteryFrameIndex
     upsDiagBatteryIndex
     upsDiagBatteryStatus
     upsDiagBatterySerialNumber
     upsDiagBatteryHardwareRev
     upsDiagBatteryManufactureDate
     upsDiagBatteryType
```

View information about the frames and their devices

Use the **[upsDiagnosticSubsystem]** tabled OIDs to view the following:

- The number of frames associated with the uninterruptible power supply.
- For each frame, its type (unknown, not installed, Main, XR, or LXR), firmware revision, hardware revision, serial number, and date of manufacture.
- For each frame, the number of internal bypass switches, battery monitoring boards, and external switch gear cards that it contains and the following information about each of these switches, boards, and cards:
  - Its status (unknown, not installed, off but not failed, on and operational, off and failed, on and failed, or not communicating).
  - Its firmware revision, hardware revision, serial number, and date of manufacture.
- For each frame, the number of display interface cards, DC circuit breakers, system power supplies, XR communication cards, external power frame boards, and chargers that it contains and the status of each of these devices:
  - For a display interface card, system power supply, XR communication card, external power frame board, or charger, the status (unknown, not installed, off but not failed, on and operational, off and failed, on and failed, or not communicating).
  - For a DC circuit breaker, the status (unknown, not installed, open, or closed).

```
upsDiagSubSysFrameTableSize
{upsDiagSubSysFrameTable}
  [upsDiagSubSysFrameEntry]
     upsDiagSubSysFrameIndex
     upsDiagSubSysFrameType
     upsDiagSubSysFrameFirmwareRev
     upsDiagSubSysFrameHardwareRev
     upsDiagSubSysFrameSerialNum
     upsDiagSubSysFrameManufactureDate
upsDiagSubSysIntBypSwitchTableSize
{upsDiagSubSysIntBypSwitchTable}
  [upsDiagSubSysIntBypSwitchEntry]
     upsDiagSubSysIntBypSwitchFrameIndex
     upsDiagSubSysIntBypSwitchIndex
     upsDiagSubSysIntBypSwitchStatus
     upsDiagSubSysIntBypSwitchFirmwareRev
     upsDiagSubSysIntBypSwitchHardwareRev
     upsDiagSubSysIntBypSwitchSerialNum
     upsDiagSubSysIntBypSwitchManufactureDate
upsDiagSubSysBattMonitorTableSize
{upsDiagSubSysBattMonitorTable}
  [upsDiagSubSysBattMonitorEntry]
     upsDiagSubSysBattMonitorFrameIndex
     upsDiagSubSysBattMonitorIndex
     upsDiagSubSysBattMonitorStatus
     upsDiagSubSysBattMonitorFirmwareRev
     upsDiagSubSysBattMonitorHardwareRev
     upsDiagSubSysBattMonitorSerialNum
     upsDiagSubSysBattMonitorManufactureDate
```

```
upsDiagSubSysExternalSwitchGearTableSize
{upsDiagSubSysExternalSwitchGearTable}
  [upsDiagSubSysExternalSwitchGearEntry]
     upsDiagSubSysExternalSwitchGearFrameIndex
     upsDiagSubSysExternalSwitchGearIndex
     upsDiagSubSysExternalSwitchGearStatus
     upsDiagSubSysExternalSwitchGearFirmwareRev
     upsDiagSubSysExternalSwitchGearHardwareRev
     upsDiagSubSysExternalSwitchGearSerialNum
     upsDiagSubSysExternalSwitchGearManufactureDate
upsDiagSubSysDisplayInterfaceCardTableSize
{upsDiagSubSysDisplayInterfaceCardTable}
  [upsDiagSubSysDisplayInterfaceCardEntry]
     upsDiagSubSysDisplayInterfaceCardFrameIndex
     upsDiagSubSysDisplayInterfaceCardIndex
     upsDiagSubSysDisplayInterfaceCardStatus
upsDiagSubSysDCCircuitBreakerTableSize
{upsDiagSubSysDCCircuitBreakerTable}
  [upsDiagSubSysDCCircuitBreakerEntry]
     upsDiagSubSysDCCircuitBreakerFrameIndex
     upsDiagSubSysDCCircuitBreakerIndex
     upsDiagSubSysDCCircuitBreakerStatus
upsDiagSubSysSystemPowerSupplyTableSize
{upsDiagSubSysSystemPowerSupplyTable}
  [upsDiagSubSysSystemPowerSupplyEntry]
     upsDiagSubSysSystemPowerSupplyFrameIndex
     upsDiagSubSysSystemPowerSupplyIndex
     upsDiagSubSysSystemPowerSupplyStatus
upsDiagSubSysXRCommunicationCardTableSize
{upsDiagSubSysXRCommunicationCardTable}
  [upsDiagSubSysXRCommunicationCardEntry]
     upsDiagSubSysXRCommunicationCardFrameIndex
     upsDiagSubSysXRCommunicationCardIndex
     upsDiagSubSysXRCommunicationCardStatus
```

```
upsDiagSubSysExternalPowerFrameBoardTableSize
{upsDiagSubSysExternalPowerFrameBoardTable}
  [upsDiagSubSysExternalPowerFrameBoardEntry]
      upsDiagSubSysExternalPowerFrameBoardFrameIndex
      upsDiagSubSysExternalPowerFrameBoardIndex
      upsDiagSubSysExternalPowerFrameBoardStatus
upsDiagSubSysChargerTableSize
{upsDiagSubSysChargerTable}
  [upsDiagSubSysChargerEntry]
      upsDiagSubSysChargerFrameIndex
      upsDiagSubSysChargerIndex
      upsDiagSubSysChargerStatus
```

View information on external devices

Use the **[upsDiagnosticExternalDevices]** OIDs to view the following information on external devices:

- The status of the switch gear (unknown, not installed, operating correctly, failed, not communicating, or in an over-temperature condition).
- The status of the switch gear input, output, and bypass switches and the molded case circuit breaker (MCCB) box (unknown, not installed, opened, or closed).
- The status of the transformer (unknown, not installed, operating correctly, failed, not communicating, in an over-temperature condition, open, or closed).

```
upsDiagSwitchGearStatus
upsDiagSwitchGearInputSwitchStatus
upsDiagSwitchGearOutputSwitchStatus
upsDiagSwitchGearBypassSwitchStatus
upsDiagMCCBBoxStatus
upsDiagTransformerStatus
```

View status of the communication buses

Use the **[upsDiagnosticComBus]** OIDs to view the status (unknown, not installed, operating correctly, not communicating, or failing to receive or transmit data) of the following communication buses:

- The internal and external communication buses of the main intelligence module (MIM) and redundant intelligence module (RIM).
- The MIM-to-RIM communication bus.

```
upsDiagComBusMIMStatus
upsDiagComBusRIMStatus
upsDiagComBusMIMtoRIMStatus
upsDiagComBusExternalMIMStatus
upsDiagComBusExternalRIMStatus
```

Manage an Environmental Monitor

Locate the OIDs

To locate the OIDs to monitor, configure, and control an Environmental Monitor through its Network Management Card or PowerNet agent, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[environmentalMonitor]**
- One of the following subcategories:
  - **[external]**
  - **[integrated]**

Note

The **[measureUps]** OIDs, a sub-category of **[hardware]** OIDs, are used to manage the older product line of Environmental Monitoring Units and Environmental Monitoring Cards.

Manage an External Environmental Monitor

Use the three sub-categories of **[external]** OIDs to manage an External Environmental Monitor:

- **[emIdent]**
- **[emConfig]**
- **[emStatus]**

View the firmware revision

Use the one **[emIdent]** OID to identify the firmware used by the External Environmental Monitor.

```
emIdentFirmwareRevision
```

Configure the probes and contacts

Use the **[emConfig]** OIDs to do the following:

- View the number of a probe and the setting for how the temperature of a probe is configured and reported (Fahrenheit or Celsius).
- For a probe, configure the name, temperature thresholds, humidity thresholds, and the threshold violations that will generate alarms.
- Configure a name for each input contact, and enable or disable the alarm for each contact.

```
emConfigProbesNumProbes
{emConfigProbesTable}
  [emConfigProbesEntry]
     emConfigProbeNumber
     emConfigProbeName
     emConfigProbeHighTempThreshold
     emConfigProbeLowTempThreshold
     emConfigProbeTempUnits
     emConfigProbeHighHumidThreshold
     emConfigProbeLowHumidThreshold
     emConfigProbeHighTempEnable
     emConfigProbeLowTempEnable
     emConfigProbeHighHumidEnable
     emConfigProbeLowHumidEnable
emConfigContactsNumContacts
{emConfigContactsTable}
  [emConfigContactsEntry]
     emConfigContactNumber
     emConfigContactName
     emConfigContactEnable
```

View the status of an External Environmental Monitor

Use the **[emStatus]** OIDs to view the status of an External Environmental Monitor:

- View the status of the communication to and from the agent.
- View the number of probes and, for each probe, its name, its connection status, the setting for how its temperature is reported (Fahrenheit or Celsius), its current temperature and humidity, and any violations of its temperature or humidity thresholds.
- View the number of input contacts and, for each contact, its name and status (normal, in a fault condition, or disabled).

```
emStatusCommStatus
emStatusProbesNumProbes
{emStatusProbesTable}
  [emStatusProbesEntry]
     emStatusProbeNumber
     emStatusProbeName
     emStatusProbeStatus
     emStatusProbeCurrentTemp
     emStatusProbeTempUnits
     emStatusProbeCurrentHumid
     emStatusProbeHighTempViolation
     emStatusProbeLowTempViolation
     emStatusProbeHighHumidViolation
     emStatusProbeLowHumidViolation
emStatusContactsNumContacts
{emStatusContactsTable}
  [emStatusContactsEntry]
     emStatusContactNumber
     emStatusContactName
     emStatusContactStatus
```

Manage an Integrated Environmental Monitor

Use the three sub-categories of **[integrated]** OIDs to manage an Integrated Environmental Monitor, which is a component of both the Network Management Card of the IBM UPS 7500XHV and IBM UPS 10000XHV:

- **[iemIdent]**
- **[iemConfig]**
- **[iemStatus]**

View the hardware revision

Use the one **[iemIdent]** OID to identify the hardware revision of the Integrated Environmental Monitor.

```
iemIdentHardwareRevision
```

Configure the probe, contacts, and relay

Use the **[iemConfig]** OIDs to configure the one probe, two input contacts, and one output relay of the Integrated Environmental Monitor:

- View the setting for how the temperature of the probe is reported (Fahrenheit or Celsius).
- For the probe, configure the name, the temperature and humidity thresholds, and the threshold violations that will generate alarms.
- Configure a name for each input contact and enable or disable its alarm.
- For the output relay, configure the name, the normal state of the relay (high or low), and the fault condition used to activate the relay.

```
iemConfigProbesNumProbes
{iemConfigProbesTable}
  [iemConfigProbesEntry]
     iemConfigProbeNumber
     iemConfigProbeName
     iemConfigProbeHighTempThreshold
     iemConfigProbeLowTempThreshold
     iemConfigProbeTempUnits
     iemConfigProbeHighHumidThreshold
     iemConfigProbeLowHumidThreshold
     iemConfigProbeHighTempEnable
     iemConfigProbeLowTempEnable
     iemConfigProbeHighHumidEnable
     iemConfigProbeLowHumidEnable
iemConfigContactsNumContacts
{iemConfigContactsTable}
  [iemConfigContactsEntry]
     iemConfigContactNumber
     iemConfigContactName
     iemConfigContactEnable
iemConfigConfigRelaysNumRelays
{iemConfigRelaysTable}
  [iemConfigRelaysEntry]
     iemConfigRelayNumber
     iemConfigRelayName
     iemConfigRelayNormalState
     iemConfigRelayFaultCondition
```

View the status of an Integrated Environmental Monitor

Use the **[iemStatus]** OIDs to view the status of an Integrated Environmental Monitor:

- View the number of probes and, for each probe, its name, its connection status, the setting for how its temperature is reported (Fahrenheit or Celsius), its current temperature and humidity, and any violations of its temperature or humidity thresholds.
- View the number of input contacts and, for each contact, its name and status (normal, in a fault condition, or disabled).

```
iemStatusProbesNumProbes
{iemStatusProbesTable}
  [iemStatusProbesEntry]
     iemStatusProbeNumber
     iemStatusProbeName
     iemStatusProbeStatus
     iemStatusProbeCurrentTemp
     iemStatusProbeTempUnits
     iemStatusProbeCurrentHumid
     iemStatusProbeHighTempViolation
     iemStatusProbeLowTempViolation
     iemStatusProbeHighHumidViolation
     iemStatusProbeLowHumidViolation
iemStatusContactsNumContacts
{iemStatusContactsTable}
  [iemStatusContactsEntry]
     iemStatusContactNumber
     iemStatusContactName
     iemStatusContactStatus
iemStatusRelaysNumRelays
{iemStatusRelaysTable}
  [iemStatusRelaysEntry]
     iemStatusRelayNumber
     iemStatusRelayName
     iemStatusRelayStatus
```

Manage an Environmental Management System

Locate the OIDs

To locate the OIDs to monitor, configure, and control an Environmental Management System, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[environmentalMonitor]**
- **[envMgtSystem]**

View Identification Parameters

Use the **[emsIdent]** OIDs to view the name, model number, firmware and hardware revision, date of manufacture, and serial number that uniquely identify your Environmental Management System. All parameters except the name and firmware revision are set at the factory and cannot be changed. See the **emsConfigName** OID in **"Configure the device name and check-log light" on page 61** to define the name.

```
emsIdentEMSName
emsIdentProductNumber
emsIdentFirmwareRev
emsIdentHardwareRev
emsIdentDateOfManufacture
emsIdentSerialNumber
```

Control an Environmental Management System

Open or close an output relay immediately

Use the **[emsOutputRelayControl]** tabled OIDs to open or close an output relay of the Environmental Management System immediately or to display the current state of that relay.

```
{emsOutputRelayControlTable}
  [emsOutputRelayControlEntry]
     emsOutputRelayControlOutputRelayIndex
     emsOutputRelayControlOutputRelayName
     emsOutputRelayControlOutputRelayCommand
```

Turn on or turn off an outlet immediately

Use the **[emsOutletControl]** tabled OIDs to turn on or turn off an outlet of the Environmental Management System immediately or to display the current state of that outlet.

```
{emsOutletControlTable}
  [emsOutletControlEntry]
     emsOutletControlOutletIndex
     emsOutletControlOutletName
     emsOutletControlOutletCommand
```

Reset a sensor

Use the **[emsSensorControl]** tabled OIDs to reset a sensor of the Environmental Management System. To identify the sensor to reset, you can display its system name, which describes its general purpose (for example, leak sensor), and its user-defined name, which you can configure.

See the **emsSensorConfigSensorUserName** OID in **"Configure the sensors" on page 63** to configure the user-defined name.

Some sensors cannot be manually reset and will not be affected by this command.

```
{emsSensorControlTable}
  [emsSensorControlEntry]
     emsSensorControlSensorIndex
     emsSensorControlSensorSystemName
     emsSensorControlSensorUserName
     emsSensorControlSensorCommand
```

Turn an alarm device on or off

Use the **[emsAlarmDeviceControl]** tabled OIDs to activate or deactivate an alarm device of the Environmental Management System or learn whether a specific alarm device is installed. Responses are device-specific; for example, the command turns a beacon on or off.

```
{emsAlarmDeviceControlTable}
  [emsAlarmDeviceControlEntry]
     emsAlarmDeviceControlDeviceIndex
     emsAlarmDeviceControlDeviceName
     emsAlarmDeviceControlDeviceCommand
```

Configure an Environmental Management System

Configure the device name and check-log light

Use the **[emsConfig]** OIDs to name the Environmental Management System and to set the minimum level of event (informational, warning, or severe) that will cause the check-log light to illuminate. You can also disable the check-log light.

```
emsConfigName
emsConfigCheckLogLight
```

Configure the probes

Use the **[emsProbeConfig]** tabled OIDs to configure the name and high and low temperature and humidity thresholds for each probe. Use whole numbers for relative humidity percentages and degrees of temperature. The **emsStatusSysTempUnits** OID determines which units of temperature measurement are used (Celsius or Fahrenheit).

```
{emsProbeConfigTable}
  [emsProbeConfigEntry]
     emsProbeConfigProbeIndex
     emsProbeConfigProbeName
     emsProbeConfigProbeHighTempThresh
     emsProbeConfigProbeLowTempThresh
     emsProbeConfigProbeHighHumidityThresh
     emsProbeConfigProbeLowHumidityThresh
```

Configure the input contacts

Use the **[emsInputContactConfig]** tabled OIDs to configure the name and normal state (open or closed) of each input contact of the Environmental Management System.

```
{emsInputContactConfigTable}
  [emsInputContactConfigEntry]
     emsInputContactConfigInputContactIndex
     emsInputContactConfigInputContactName
     emsInputContactConfigInputContactNormalState
```

Configure the output relays

Use the **[emsOutputRelayConfig]** tabled OIDs to configure the name and normal state (open or closed) of each output relay of the Environmental Management System.

```
{emsOutputRelayConfigTable}
  [emsOutputRelayConfigEntry]
     emsOutputRelayConfigOutputRelayIndex
     emsOutputRelayConfigOutputRelayName
     emsOutputRelayConfigOutputRelayNormalState
```

Configure the outlets

Use the **[emsOutletConfig]** tabled OIDs to configure the name and normal state (on or off) of each outlet of the Environmental Management System.

```
{emsOutletConfigTable}
  [emsOutletConfigEntry]
     emsOutletConfigOutletIndex
     emsOutletConfigOutletName
     emsOutletConfigOutletNormalState
```

Configure the sensors

Use the **[emsSensorConfig]** tabled OIDs to configure each sensor of the Environmental Management System, as follows:

- Display the system name (for example, beacon) of the sensor to identify which sensor to configure.
- Configure a user-defined name for the sensor.
- For the AUX sensor only, configure the normal state (open or closed).
- Configure the delay (in seconds) after a sensor detects an alarm condition before the condition is reported.

```
{emsSensorConfigTable}
  [emsSensorConfigEntry]
     emsSensorConfigSensorIndex
     emsSensorConfigSensorSystemName
     emsSensorConfigSensorUserName
     emsSensorConfigSensorNormalState
     emsSensorConfigSensorAlarmDelay
```

View Status of the Environmental Management System

View the overall status of the system

Use the **[emsStatus]** OIDs to view the following information about the Environmental Management System:

- The name.
- The status of communication to and from the agent.
- The total number of each component supported: temperature and humidity probes (local and remote), input contacts, output relays, outlets, sensors, remote Air Removal Units (ARUs), remote temperature and humidity probes, and alarm devices.
- The temperature units (Celsius or Fahrenheit) used to measure and display temperature for the Environmental Management System.
- The configured setting for the minimum severity level of events that will cause the check-log light to illuminate.

```
emsStatusEMSName
emsStatusCommStatus
emsStatusProbeCount
emsStatusInputContactCount
emsStatusOutputRelayCount
emsStatusOutletCount
emsStatusSensorCount
emsStatusAlinkAruDeviceCount
emsStatusAlinkProbeDeviceCount
emsStatusAlarmDeviceCount
emsStatusSysTempUnits
emsStatusCheckLogLight
```

View the status of the probes

Use the **[emsProbeStatus]** tabled OIDs to view the following information about each probe of the Environmental Management System:

- The name.
- The current temperature and the high and low temperature thresholds, displayed in the temperature scale (Celsius or Fahrenheit) determined by **emsStatusSysTempUnits** OID.
- The current humidity and the high and low humidity thresholds.
- The serial number of the remote (A-Link) probe.
- The state of communication to and from the agent.

```
{emsProbeStatusTable}
  [emsProbeStatusEntry]
     emsProbeStatusProbeIndex
     emsProbeStatusProbeName
     emsProbeStatusProbeTemperature
     emsProbeStatusProbeHighTempThresh
     emsProbeStatusProbeLowTempThresh
     emsProbeStatusProbeHumidity
     emsProbeStatusProbeHighHumidityThresh
     emsProbeStatusProbeLowHumidityThresh
     emsProbeStatusProbeSerialNumber
     emsProbeStatusProbeCommStatus
```

View the status of the input contacts

Use the **[emsInputContactStatus]** tabled OIDs to view the name, state (open or closed), and normal state (open or closed) of each input contact of the Environmental Management System.

```
{emsInputContactStatusTable}
  [emsInputContactStatusEntry]
     emsInputContactStatusInputContactIndex
     emsInputContactStatusInputContactName
     emsInputContactStatusInputContactState
     emsInputContactStatusInputContactNormalState
```

View the status of the output relays

Use the **[emsOutputRelayStatus]** tabled OIDs to view the name, state (open or closed), and normal state (open or closed) of each output relay of the Environmental Management System.

```
{emsOutputRelayStatusTable}
  [emsOutputRelayStatusEntry]
     emsOutputRelayStatusOutputRelayIndex
     emsOutputRelayStatusOutputRelayName
     emsOutputRelayStatusOutputRelayState
     emsOutputRelayStatusOutputRelayNormalState
```

View the status of the outlets

Use the **[emsOutletStatus]** tabled OIDs to view the name, state (on or off), and normal state (on or off) of each outlet of the Environmental Management System.

```
{emsOutletStatusTable}
  [emsOutletStatusEntry]
     emsOutletStatusOutletIndex
     emsOutletStatusOutletName
     emsOutletStatusOutletState
     emsOutletStatusOutletNormalState
```

View the status of the alarm devices

Use the **[emsAlarmDeviceStatus]** tabled OIDs to view the name and the state (on or active, off or inactive, or not installed) of each alarm device of the Environmental Management System.

```
{emsAlarmDeviceStatusTable}
  [emsAlarmDeviceStatusEntry]
     emsAlarmDeviceStatusDeviceIndex
     emsAlarmDeviceStatusDeviceName
     emsAlarmDeviceStatusDeviceState
```

View the status of the sensors

Use the **[emsSensorStatus]** tabled OIDs to view the following information about each sensor:

- The system name (for example, beacon) of the sensor.
- The user-defined name of the sensor.
- The state of the sensor (faulted, not faulted, or not installed).
- The delay, in seconds, after the sensor detects an alarm condition before the condition is reported.

```
{emsSensorStatusTable}
  [emsSensorStatusEntry]
     emsSensorStatusSensorIndex
     emsSensorStatusSensorSystemName
     emsSensorStatusSensorName
     emsSensorStatusSensorState
     emsSensorStatusSensorAlarmDelay
```

Manage a Rack Air Removal Unit

Locate the OIDs

To locate the OIDs to monitor, configure, and control a rack Air Removal Unit, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[rARU]**

View Identification Parameters

Use the **[rARUIdent]** tabled OIDs to view the name that uniquely identifies each rack Air Removal Unit accessible from this IP address. See the **rARUConfigAruName** OID in **"Configure a Rack Air Removal Unit" on page 70** to define the name.

```
{rARUIdentTable}
  [rARUIdentEntry]
     rARUIdentIndex
     rARUIdentName
```

Configure a Rack Air Removal Unit

Use the **[rARUConfig]** tabled OIDs to perform the following configuration tasks for each rack Air Removal Unit accessible at this IP address:

- Name the probe of the ARU.
- As the setpoint (**rARUConfigAruRemoteSetpoint**), configure either of the following:
  - the temperature for the remote ARU to maintain.
  - one of four kilowatt mode settings for the ARU.
- Configure the remote temperature override threshold (**rARUConfigAruTepmOvrdSetpoint**) at or above which the ARU will increase its fan speed to bring the temperature back in range. This setting is used only if the setpoint (**rARUConfigAruRemoteSetpoint**) is a kilowatt mode setting, and if the temperature override (**rARUConfigAruTempOvrdEnableDisable**) is enabled.

For more information on kilowatt mode and on the temperature override function, see the *User's Manual* for the Air Removal Unit.

Use only a whole number of degrees when you define a temperature, and use the temperature units (Celsius or Fahrenheit) defined by the **rARUStatusSysTempUnits** OID.

```
{rARUConfigTable}
  [rARUConfigEntry]
     rARUConfigAruIndex
     rARUConfigAruName
     rARUConfigAruRemoteSetpoint
     rARUConfigAruTempOvrdEnableDisable
     rARUConfigAruTepmOvrdSetpoint
```

View the Status of a Rack Air Removal Unit

Use the **[rARUStatus]** OIDs to view the following information for the rack Air Removal Units accessible from this IP address:

- The number of ARUs.
- The temperature scale (Celsius or Fahrenheit) that is set in the agent and that the ARUs use to report temperature.
- For each ARU:
  - The name.
  - The setpoint temperature to maintain.
  - The current value for the remote temperature setpoint and the manual setpoint. (The manual setting takes precedence unless you set the ARU to remote at the ARU itself. If the ARU is set to remote, the value of the **rARUStatusAruManualSetpoint** OID indicates that it is set to remote.)
  - The temperature reading for each of the three probes.
  - The alarm state (indicating any of three fan failures, the presence of smoke, or an exhaust temperature that is moderately or severely too high).
  - The status of communication to and from the agent.

```
rARUStatusAruDeviceCount
rARUStatusSysTempUnits
{rARUStatusTable}
  [rARUStatusEntry]
     rARUStatusAruIndex
     rARUStatusAruName
     rARUStatusAruRemoteSetpoint
     rARUStatusAruManualSetpoint
     rARUStatusAruTemp1
     rARUStatusAruTemp2
     rARUStatusAruTemp3
     rARUStatusAruTempOvrdEnableDisable
     rARUStatusAruTempOvrdSetpoint
     rARUStatusAruAlarmState
     rARUStatusAruCommStatus
```

Manage MasterSwitch

Locate the OIDs

To locate the OIDs to monitor, configure, and control a MasterSwitch unit, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[masterswitch]**
- Any of the following sub-categories:
  - **[sPDUIdent]**
  - **[sPDUMasterControl]**
  - **[sPDUMasterConfig]**
  - **[sPDUOutletControl]**
  - **[sPDUOutletConfig]**

View Identification Parameters

Use the **[sPDUIdent]** OIDs to view the hardware and firmware revision, date of manufacture, model number, and serial number that uniquely identify your MasterSwitch unit. All parameters are set at the factory or in the firmware and cannot be changed.

```
sPDUIdentHardwareRev
sPDUIdentFirmwareRev
sPDUIdentDateOfManufacture
sPDUIdentModelNumber
sPDUIdentSerialNumber
```

Control and Configure the MasterSwitch Unit

Control all the outlets

Use the **[sPDUMasterControl]** OIDs to turn on, restart, or turn off all outlets immediately or sequentially; view the status of each outlet (on or off); and identify whether any outlet has a command pending.

```
sPDUMasterControlSwitch
sPDUMasterState
sPDUMasterPending
```

Configure delays and a name for the MasterSwitch unit

Use the **[sPDUMasterConfig]** OIDs to do the following:

- Define a delay to occur before a MasterSwitch unit provides power to its outlets after power is applied to the unit.
- View the delay, in seconds, that will be used for a restart operation. For this delay, from the time power is turned off to the time power is re-applied to the unit, the MasterSwitch unit uses the maximum delay that is configured for any outlet (the maximum value of the **sPDUOutletRebootDuration** tabled OID).
- Define a name for the MasterSwitch unit.

```
sPDUMasterConfigPowerOn
sPDUMasterConfigReboot
sPDUMasterConfigPDUName
```

Control and Configure Individual Outlets

Control how an outlet turns on, turns off, and restarts

Use the **[sPDUOutletControl]** OIDs to do the following:

- View the parameters for each outlet by its name and number.
- Turn on or turn off an individual outlet of the MasterSwitch unit, either immediately or after a delay.
- Restart an individual outlet, either immediately or with a delay before the outlet is turned off and a delay before it is turned on.
- Identify whether an individual outlet has a command pending.

```
sPDUOutletControlTableSize
{sPDUOutletControlTable}
  [sPDUOutletControlEntry]
     sPDUOutletControlIndex
     sPDUOutletPending
     sPDUOutletCtl
     sPDUOutletCtlName
```

Name outlets, and configure delays for outlet operations

Use the **[sPDUOutletConfig]** tabled OIDs to name each outlet and to configure any outlet to do the following:

- Turn on or off immediately or after a delay period.
- Restart with a defined delay period before restarting.

```
{sPDUOutletConfigTable}
  [sPDUOutletConfigEntry]
     sPDUOutletConfigIndex
     sPDUOutletPowerOnTime
     sPDUOutletName
     sPDUOutletPowerOffTime
     sPDUOutletRebootDuration
```

Manage MasterSwitch VM

Locate the OIDs

To locate the OIDs to monitor, configure, and control a MasterSwitch VM unit, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[masterswitchVM]**
- Any of the following sub-categories:
  - **[sPDUIdentVM]**
  - **[sPDUMasterControlVM]**
  - **[sPDUMasterConfigVM]**
  - **[sPDUMasterStatusVM]**
  - **[sPDUOutletControlVM**
  - **[sPDUOutletConfigVM**
  - **[sPDUOutletdStatusVM**

View Identification Parameters

Use the **[sPDUIdentVM]** tabled OIDs to view the following information:

- The number of MasterSwitch VM units accessible at this IP address.
- The name, hardware and firmware revision, date of manufacture, model number, and serial number that uniquely identify each MasterSwitch VM unit. All of these parameters except the name are set at the factory or in the firmware and cannot be changed.

```
sPUIdentVMTableSize
{sPDUIdentVMTable}
  [sPDUIdentVMEntry]
     sPDUIdentVMIndex
     sPDUIdentNameVM
     sPDUIdentHardwareRevVM
     sPDUIdentFirmwareRevVM
     sPDUIdentDateOfManufactureVM
     sPDUIdentModelNumberVM
     sPDUIdentSerialNumberVM
```

Control and Configure MasterSwitch VM Units

Control the outlets and the overload alarm for all units

Use the **[sPDUMasterControlVM]** OIDs to view information on each MasterSwitch VM unit controllable at this IP address, and specify commands to do the following for a unit:

- Turn on, turn off, or restart all the outlets immediately.
- Turn on all the outlets according to the power-on delay of each outlet.
- Turn off all the outlets according to the power-off delay of each outlet.
- Restart the outlets with delays:
  - Turn all outlets off immediately, and turn them on sequentially.
  - Turn all outlets off and on sequentially.
- Cancel all pending commands to the unit.
- Disable the unit alarm for the current overload condition for the duration of that overload only.

```
sPDUMasterControlVMTableSize
{sPDUMasterControlVMTable}
  [sPDUMasterControlVMEntry]
     sPDUMasterControlVMIndex
     sPDUMasterControlVMName
     sPDUMasterControlVMCommand
```

Configure unit name, startup delay, and overload parameters

Use the **[sPDUMasterConfigVM]** OIDs to do the following for each MasterSwitch VM unit accessible from this IP address:

- Configure its name.
- Define when power is supplied automatically to the outlets after power is applied to the unit (never, immediately, or after a specified delay).
- Set the overload warning threshold and low-load warning threshold and define when an audible alarm will sound:
  - Never.
  - When a warning threshold is violated, indicating that an overload or low-load condition is imminent.
  - When an overload or low-load condition exists.
- Configure when extra outlets will turn on in response to a request to turn on additional outlets:
  - Always.
  - Except when an overload condition is imminent (indicated by a violation of the overload warning threshold) or an overload condition exists.
  - Except when an overload condition exists.

```
sPDUMasterConfigVMTableSize
{sPDUMasterConfigVMTable}
  [sPDUMasterConfigVMEntry]
     sPDUMasterConfigVMIndex
     sPDUMasterConfigVMName
     sPDUMasterConfigVMColdstartDelay
     sPDUMasterConfigVMAudioAlarmActivated
     sPDUMasterConfigVMHighLoadWarningThreshold
     sPDUMasterConfigVMLowLoadWarningThreshold
     sPDUMasterConfigVMOverloadRestriction
```

View the Status of a MasterSwitch VM Unit

Use the **[sPDUMasterStatusVM]** OIDs to view the following information for a specified MasterSwitch VM unit:

- The name of the unit.
- Whether the unit has a pending command on any outlet.
- Whether the overload warning threshold or low-load threshold of the unit has been violated.
- The total power being used by the attached equipment as a percentage of full load, and the total power capacity of the unit.
- The number of controllable outlets for the unit.
- The longest restart duration configured for any outlet of the unit.

```
sPDUMasterStatusVMTableSize
{sPDUMasterStatusVMTable}
  [sPDUMasterStatusVMEntry]
     sPDUMasterStatusVMIndex
     sPDUMasterStatusVMName
     sPDUMasterStatusVMCommandPending
     sPDUMasterStatusVMOverloadCondition
     sPDUMasterStatusVMLowLoadCondition
     sPDUMasterStatusVMCurrentLoad
     sPDUMasterStatusVMMaxLoad
     sPDUMasterStatusVMOutletCount
     sPDUMasterStatusVMRebootDuration
```

Control and Configure MasterSwitch VM Outlets

Turn on, turn off, or restart an outlet, and view its state

Use the **[sPDUOutletControlVM]** tabled OIDs to perform the following tasks on a MasterSwitch VM outlet that you identify by name and number:

- View the state (on or off) of the outlet.
- Cause the outlet to do the following:
  - Turn on or off immediately or after a delay period.
  - Restart immediately or with a defined delay period before restarting.
- Cancel pending commands for the outlet.

```
{sPDUOutletControlVMTable}
  [sPDUOutletControlVMEntry]
     sPDUOutletControlVMIndex
     sPDUOutletControlVMName
     sPDUOutletControlVMOutletIndex
     sPDUOutletControlVMOutletName
     sPDUOutletControlVMOutletCommand
```

Configure the name, delays, and restart duration of an outlet

Use the **[sPDUOutletConfigVM]** tabled OIDs to configure the following for an outlet of a MasterSwitch VM unit:

- The name of the outlet.
- The response of the outlet when the unit is turned on or off or when it receives a command that requests a turn-on or turn-off delay:
  - Never turn on or off automatically.
  - Turn on or off immediately.
  - Turn on or off after a defined delay.
- The delay period before the outlet turns on during a restart sequence.

```
{sPDUOutletConfigVMTable}
  [sPDUOutletConfigVMEntry]
     sPDUOutletConfigVMIndex
     sPDUOutletConfigVMName
     sPDUOutletConfigVMOutletIndex
     sPDUOutletConfigVMOutletName
     sPDUOutletConfigVMPowerOnTime
     sPDUOutletConfigVMPowerOffTime
     sPDUOutletConfigVMRebootDuration
```

View Status of Outlets of a MasterSwitch VM Unit

Use the **[sPDUOutletStatusVM]** tabled OIDs to view the following information about a MasterSwitch VM outlet:

- The name of the MasterSwitch VM unit that contains the outlet.
- The name, number, and state (on or off) of the outlet.
- Whether a command is pending for the outlet.

```
{sPDUOutletStatusVMTable}
  [sPDUOutletStatusVMEntry]
     sPDUOutletStatusVMIndex
     sPDUOutletStatusVMName
     sPDUOutletStatusVMOutletIndex
     sPDUOutletStatusVMOutletName
     sPDUOutletStatusVMOutletState
     sPDUOutletStatusVMCommandPending
```

Manage MasterSwitch Plus

Locate the OIDs

To locate the OIDs to monitor, configure, and control a MasterSwitch Plus unit, use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[masterswitchMSP]**
- Any of the following sub-categories:
  - **[sPDUIdentMSP]**
  - **[sPDUMasterControlMSP]**
  - **[sPDUMasterConfigMSP]**
  - **[sPDUMasterStatusMSP]**
  - **[sPDUOutletControlMSP}**
  - **[sPDUOutletConfigMSP]**
  - **[sPDUOutletStatusMSP]**

View Identification Parameters

Use the **[sPDUIdentMSP]** tabled OIDs to view the following information:

- The number of MasterSwitch Plus units accessible at this IP address.
- The name, hardware and firmware revision, date of manufacture, model number, and serial number that uniquely identify each MasterSwitch Plus unit. All of these parameters except the name are set at the factory or in the firmware and cannot be changed.

```
sPUIdentMSPTableSize
{sPDUIdentMSPTable}
  [sPDUIdentMSPEntry]
     sPDUIdentMSPIndex
     sPDUIdentNameMSP
     sPDUIdentHardwareRevMSP
     sPDUIdentFirmwareRevMSP
     sPDUIdentDateOfManufactureMSP
     sPDUIdentModelNumberMSP
     sPDUIdentSerialNumberMSP
```

Control and Configure MasterSwitch Plus Units

Control a MasterSwitch Plus unit

Use the **[sPDUMasterControlMSP]** OIDs to view the name and number of each MasterSwitch VM unit controllable at this IP address, and specify commands to do the following for a unit:

- Turn on, turn off, or restart all the outlets immediately.
- Turn on all the outlets according to the power-on delay of each outlet, with an option to ignore the battery capacity threshold.
- Turn off all the outlets according to the power-off delay of each outlet.
- After the device running PowerChute confirms shutdown, do either of the following:
  - Graceful Restart: Turn all outlets off immediately, and turn each outlet on after its restart duration time.
  - Graceful Shutdown: Turn each outlet off after its power-off delay, and turn each outlet on after its power-on and restart delays.
- Cancel all pending commands to the unit.
- Restore all the settings of the unit to their defaults.

```
sPDUMasterControlMSPTableSize
{sPDUMasterControlMSPTable}
  [sPDUMasterControlMSPEntry]
     sPDUMasterControlMSPIndex
     sPDUMasterControlMSPName
     sPDUMasterControlMSPCommand
```

Configure a MasterSwitch Plus unit

For each MasterSwitch Plus unit accessible at this address, use the **[sPDUMasterConfigMSP]** OIDs to define the following:

- Define the name of the unit.
- Specify a delay period from the time power is applied to the unit until the unit supplies power to its outlets, or specify that the unit will supply power to its outlets immediately.
- Enable or disable the **Manual** button on the unit.

```
sPDUMasterConfigMSPTableSize
{sPDUMasterConfigMSPTable}
  [sPDUMasterConfigMSPEntry]
     sPDUMasterConfigMSPindex
     sPDUMasterConfigMSPName
     sPDUMasterConfigMSPPowerOnTimeDelay
     sPDUMasterConfigMSPManualButton
```

View Status about a MasterSwitch Plus Unit

Use the **[sPDUMasterStatusMSP]** OIDs to view the name of any MasterSwitch Plus unit accessible at this IP address and the number of controllable outlets at that unit.

```
sPDUMasterStatusMSPTableSize
{sPDUMasterStatusMSPTable}
  [sPDUMasterStatusMSPEntry]
     sPDUMasterStatusMSPIndex
     sPDUMasterStatusMSPName
     sPDUMasterStatusMSPOutletCount
```

Control and Configure Outlets of a Unit

Control individual outlets of a MasterSwitch Plus unit

Use the **[sPDUOutletControlMSP]** tabled OIDs to control an outlet identified by the MasterSwitch Plus unit name, outlet name, and outlet number in any of the following ways:

- View or immediately change the outlet state (on or off).
- Immediately restart the outlet.
- Turn on the outlet after its power-on delay, with an option to ignore the battery capacity threshold.
- After the device running PowerChute confirms shutdown, do either of the following:
  - Graceful Restart: Turn the outlet off after its power-off delay, and turn it on after its restart duration time.
  - Graceful Shutdown: Turn the outlet off after its power-off delay, and turn it on after its power-on and restart delays.

```
{sPDUOutletControlMSPTable}
  [sPDUOutletControlMSPEntry]
     sPDUOutletControlMSPIndex
     sPDUOutletControlMSPName
     sPDUOutletControlMSPOutletIndex
     sPDUOutletControlMSPOutletName
     sPDUOutletControlMSPOutletCommand
```

Configure individual outlets of a MasterSwitch Plus unit

Use the **[sPDUOutletConfigMSPall]** tabled OIDs to configure values for individual outlets:

- Display the name of the MasterSwitch Plus unit and the number of the outlet to configure.
- Define the name of the outlet.
- Set the mode for the outlet as either graceful shutdown mode or annunciator control mode. In annunciator control mode, the outlet configuration options are “immediate on” and “immediate off” only. The purpose of annunciator control mode is to respond to environmental alarms.

See the **[sPDUOutConfigMSPgs]** OIDs in **"Configure outlet parameters for graceful shutdown mode" on page 92** for options you can set for graceful shutdown mode.

See the [**sPDUOutConfigMSPannun]** OIDs in **"Configure outlet parameters for annunciator mode" on page 96** for options you can set for annunciator mode.

```
{sPDUOutletConfigMSPallTable}
 [sPDUOutletConfigMSPallEntry]
     sPDUOutletConfigMSPallIndex
     sPDUOutletConfigMSPallName
     sPDUOutletConfigMSPallOutletIndex
     sPDUOutletConfigMSPallOutletName
     sPDUOutletConfigMSPallOutletCtrlMode
```

Configure outlet parameters for graceful shutdown mode. Use the **[sPDUOutletConfigMSPgs]** tabled OIDs to configure individual outlets in relation to graceful shutdown mode:

- Display the MasterSwitch Plus unit number and name and the outlet number and name of the outlet to configure.
- Display the outlet control mode to confirm that the mode of the outlet is set to graceful shutdown.
- Configure how the outlet will behave during a graceful shutdown sequence:
  - Define whether it will turn off.
  - If it will turn off, define which conditions will initiate the turn-off, and configure values for those conditions where appropriate:
    - Confirmation from its device.
    - A specified amount of remaining battery runtime.
    - A low-battery warning.
    - A specified power-off delay.
    - A multiplier value that enables “load shedding” as uninterruptible power supply battery runtime decreases. Load-shedding turns outlets off in stages, so that power is maintained to your most important equipment for as long as possible. See **"Example of a load-shedding configuration" on page 93**.
  - Define whether it will turn on when input power is restored.
  - If it will turn on, define what conditions will imitate the turn-on, and configure values for those conditions:
    - A specified power-on delay.
    - A specified battery capacity.
- Define the restart duration time that the outlet will wait after turning off during a graceful restart sequence before turning on again.

```
{sPDUOutletConfigMSPgsTable}
  [sPDUOutletConfigMSPgsEntry]
     sPDUOutletConfigMSPgsIndex
     sPDUOutletConfigMSPgsName
     sPDUOutletConfigMSPgsOutletIndex
     sPDUOutletConfigMSPgsOutletName
     sPDUOutletConfigMSPgsOutletCtrlMode
     sPDUOutletConfigMSPgsDeviceConfirm
     sPDUOutletConfigMSPgsLowBattWarning
     sPDUOutletConfigMSPgsLowBattMult
     sPDUOutletConfigMSPgsRestartDelay
     sPDUOutletConfigMSPgsPowerOnDelay
     sPDUOutletConfigMSPgsPowerOffDelay
     sPDUOutletConfigMSPgsBattCapThresh
     sPDUOutletConfigMSPgsRebootDuration
```

Example of a load-shedding configuration. You can configure the eight outlets of the MasterSwitch Plus unit to turn off in up to seven stages during a power outage so that devices attached to those outlets shut down in an ordered sequence based on the importance you assign to them. Such *load-shedding* allows you to extend uninterruptible power supply runtime to more important equipment by eliminating less significant equipment in stages from the uninterruptible power supply load as a power outage continues to reduce available battery runtime.

In the table on the next page, which shows a sample load-shedding configuration, the following OID values are referenced:

- Low Battery Warning is the value of the **sPDUOutletConfigMSPgsLowBattWarning** OID.
- Low Battery Multiplier is the value of the **sPDUOutletConfigMSPgsLowBattMult** OID.

Uninterruptible Power Supply Parameters			MasterSwitch Plus Unit Parameters			
Low Battery Signal Time	**Runtime Remaining**	**State**	**Outlet**	**Low Battery Warning**	**Low Battery Multiplier**	**Low Battery Multiplier x uninterruptible power supply Low Battery Signal Time**
25 minutes	60 minutes	On battery	1	60 six-second intervals (60 x 6 seconds = 6 minutes)	7	7 x 25 = 175 minutes
			2	60 six-second intervals (60 x 6 seconds = 6 minutes)	6	6 x 25 = 150 minutes
			3	120 six-second intervals (120 x 6 seconds = 12 minutes)	2	2 x 25 = 50 minutes
			4	70 six-second intervals (70 x 6 seconds = 7 minutes)	2	2 x 25 = 50 minutes
			5	-1: (Turn off the outlet based on runtime remaining.)	3	3 x 25 = 75 minutes
			6	-1: (Turn off the outlet based on runtime remaining.)	2	2 x 25 = 50 minutes
			7	-1: (Turn off the outlet based on runtime remaining.)	1	1 x 25 = 25 minutes
			8	-2: (Do not turn off the outlet.)	3	3 x 25 = 75 minutes

If the Low Battery Signal Time of the uninterruptible power supply is set to 25 minutes, and the uninterruptible power supply switches to battery operation with 60 minutes of Runtime Remaining, the outlets will turn off as follows:

- Outlet 1 will begin its turn-off sequence immediately, without waiting the 6-minute Low Battery Warning period, because the Runtime Remaining of 60 minutes is already less than 175 minutes (Low Battery Multiplier x the Low Battery Signal Time of the uninterruptible power supply).
- Outlet 2 will begin its turn-off sequence immediately, without waiting the 6-minute Low Battery Warning period, because the Runtime Remaining of 60 minutes is already less than 150 minutes (Low Battery Multiplier x the Low Battery Signal Time of the uninterruptible power supply).
- Outlet 3 will begin its turn-off sequence after 10 minutes, when the Runtime Remaining is depleted to less than 50 minutes (Low Battery Multiplier x the Low Battery Signal Time of the uninterruptible power supply). The full 12-minute Low Battery Warning period will not yet have expired.
- Outlet 4 will begin its turn-off sequence when the 7-minute Low Battery Warning period expires, instead of waiting until after 10 minutes when the Runtime Remaining would be depleted to less than 50 minutes (Low Battery Multiplier x the Low Battery Signal Time of the uninterruptible power supply).
- Outlet 5 will begin its turn-off sequence immediately because the 60-minute Runtime Remaining is already less than 75 minutes (Low Battery Multiplier x the Low Battery Signal Time of the uninterruptible power supply).
- Outlet 6 will begin its turn-off sequence after 10 minutes, when the Runtime Remaining is depleted to less than 50 minutes (Low Battery

Multiplier x the Low Battery Signal Time of the uninterruptible power supply).

- Outlet 7 will begin its turn-off sequence after 35 minutes, when the Runtime Remaining is depleted to less than 25 minutes (Low Battery Multiplier x the Low Battery Signal Time of the uninterruptible power supply).
- Outlet 8 will remain on because the value defined for the Low Battery Warning indicates that the outlet should not turn off. The 75 minutes (Low Battery Multiplier x the uninterruptible power supply Low Battery Signal Time) is ignored.

Configure outlet parameters for annunciator mode. Use the **[sPDUOutConfigMSPannun]** tabled OIDs to configure individual outlets in relation to annunciator mode:

- Display the MasterSwitch Plus unit number and name and the outlet number and name of the outlet to configure.
- Display the outlet control mode to confirm that the mode of the outlet is set to annunciator.
- Define the initial (default) state of the outlet as either on or off.
- Define the time in seconds that an alarm from an Environmental Monitor must continue before it causes an alarm condition, if the environmental alarm is enabled.

```
{sPDUOutletConfigMSPannunTable}
  [sPDUOutletConfigMSPannunEntry]
     sPDUOutletConfigMSPannunIndex
     sPDUOutletConfigMSPannunName
     sPDUOutletConfigMSPannunOutletIndex
     sPDUOutletConfigMSPannunOutletName
     sPDUOutletConfigMSPannunOutletCtrlMode
     sPDUOutletConfigMSPannunInitialState
     sPDUOutletConfigMSPannunAlarmActionDly
```

Configure outlets to respond to an environmental alarm. Use the **[sPDUOutConfigMSPmups]** tabled OIDs to configure individual outlets to begin their turn-off sequence in response to alarm conditions from the Environmental Monitor or to ignore those alarm conditions:

- Display the MasterSwitch Plus unit number and name and the outlet number and name of the outlet to configure.
- For this outlet, enable or disable any of the alarms for the zone (1, 2, 3, or 4) that the Environmental Monitor is monitoring.
- Disable the low or high humidity or temperature alarms for probe 1 or 2.

```
{sPDUOutletConfigMSPmupsTable}
  [sPDUOutletConfigMSPmupsEntry]
     sPDUOutletConfigMSPmupsIndex
     sPDUOutletConfigMSPmupsName
     sPDUOutletConfigMSPmupsOutletIndex
     sPDUOutletConfigMSPmupsOutletName
     sPDUOutletConfigMSPmupsZone1
     sPDUOutletConfigMSPmupsZone2
     sPDUOutletConfigMSPmupsZone3
     sPDUOutletConfigMSPmupsZone4
     sPDUOutletConfigMSPmupsP1LowHum
     sPDUOutletConfigMSPmupsP1HiHum
     sPDUOutletConfigMSPmupsP1LowTemp
     sPDUOutletConfigMSPmupsP1HiTemp
     sPDUOutletConfigMSPmupsP2LowHum
     sPDUOutletConfigMSPmupsP2HiHum
     sPDUOutletConfigMSPmupsP2LowTemp
     sPDUOutletConfigMSPmupsP2HiTemp
```

View the Status of MasterSwitch Plus Outlets

Use the **[sPDUOutletStatusMSP]** tabled OIDs to view the status of any outlet of a MasterSwitch Plus unit:

- Display the number and name of the MasterSwitch Plus unit and the number and name of the outlet.
- View the current state (on or off) and the configured control mode (graceful shutdown or annunciator) of the outlet.
- View the status of commands (whether commands are pending) for the outlet.

```
{sPDUOutletStatusMSPTable}
  [sPDUOutletStatusMSPEntry]
     sPDUOutletStatusMSPIndex
     sPDUOutletStatusMSPName
     sPDUOutletStatusMSPOutletIndex
     sPDUOutletStatusMSPOutletName
     sPDUOutletStatusMSPOutletState
     sPDUOutletStatusMSPCommandPending
     sPDUOutletStatusMSPOutletCtrlMode
```

Manage a Rack PDU

Locate the OIDs

To locate the OIDs to monitor, configure, and control a rack power distribution unit (PDU), use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[rpdu]**
- Any of the following sub-categories:
  - **[rPDUIdent]**
  - **[rPDULoad]**
  - **[rPDUOutlet]**
  - **[rPDUPowerSupply]**

Name the PDU and View Identification Parameters

Use the **[rPDUIdent]** OIDs to define a name for the rack PDU and view its hardware and firmware revision, date of manufacture, model number, and serial number. All of these parameters are set at the factory or in the firmware and cannot be changed.

```
rPDUIdentName
rPDUIdentHardwareRev
rPDUIdentFirmwareRev
rPDUIdentDateOfManufacture
rPDUIdentModelNumber
sPDUIdentSerialNumberMSP
```

View Rated Power and Number of Phases

Use the **[rPDULoadDevice]** OIDs to view, for this rack PDU, the maximum rated power that each phase can provide and the number of phases available.

```
rPDULoadDevMaxPhaseLoad
rPDULoadDevNumPhases
```

View and Configure Load Thresholds by Phase

Use the **[rPDULoadConfig]** tabled OIDs to view and configure the low-load, overload warning (near-overload), and overload thresholds for each phase of the rack PDU.

```
{rPDULoadConfigTable}
  [rPDULoadConfigEntry]
     rPDULoadConfigIndex
     rPDULoadConfigLowLoadThreshold
     rPDULoadConfigNearOverloadThreshold
     rPDULoadConfigOverloadThreshold
```

View the Load Status of Each Phase

Use the **[rPDULoadStatus]** tabled OIDs to view the load of each phase of the rack PDU and whether that load is normal or is in violation of the low-load, near-overload, or overload threshold.

A trap is generated if the load is at or below the low-load threshold, is at or above the overload threshold, or returns to normal after either of those conditions.

```
{rPDULoadStatusTable}
  [rPDULoadStatusEntry]
     rPDULoadStatusIndex
     rPDULoadStatusPhaseLoad
     rPDULoadStatusPhaseLoadState
```

Control Outlets of a Rack PDU

Control power to all the outlets

Use the **[rPDUOutletDevice]** OIDs to view the number of controllable outlets at this rack PDU and control the outlets in any of the following ways:

- Immediately apply power to all outlets, remove power from all outlets, or restart all outlets.
- Apply power to each outlet after its power-on delay, or remove power from each outlet after its power-off delay.
- First turn off each outlet after its power-off delay, and then restart each outlet after the largest restart duration specified for an outlet and after the power-on delay of each outlet.
- Cancel all pending commands to outlets.
- After power is applied to the rack PDU, apply power to the outlets after a specified cold-start delay, immediately, or never. (A *cold-start* delay is the time that the PDU waits before applying power to its outlets when it is started from a completely off condition, not with only its outlets turned off.)

```
rPDUOutletDevCommand
rPDUOutletDevColdstartDelay
rPDUOutletDevNumCntrlOutlets
```

Control individual outlets by phase

Use the **[rPDUOutletControl]** tabled OIDs to identify an outlet by its name and the phase or phases with which it is associated, display the current state of the outlet, and control the outlet in any of the following ways:

- Immediately apply power to the outlet, remove power from the outlet, or restart the outlet.
- Apply power to the outlet after its power-on delay, or remove power from the outlet after its power-off delay.
- First turn off each outlet after its power-off delay, and then restart the outlet after its restart duration and its power-on delay.
- Cancel all pending commands to the outlet.

```
{rPDUOutletControlTable}
  [rPDUOutletControlEntry]
     rPDUOutletControlIndex
     rPDUOutletControlOutletName
     rPDUOutletControlOutletPhase
     rPDUOutletControlOutletCommand
```

Configure Outlets

Set outlets by phase to correct or prevent overload

Use the **[rPDUOutletPhase]** tabled OIDs to configure, for a specified phase, whether to allow power to be supplied on request to additional outlets in response to either a near-overload condition or an overload condition, neither condition, or both conditions.

```
{rPDUOutletPhaseTable}
  [rPDUOutletPhaseEntry]
     rPDUOutletPhaseIndex
     rPDUOutletPhaseOverloadRestriction
```

Configure the delays for outlet actions

Use the **[rPDUOutletConfig]** tabled OIDs to do the following:

- Identify an outlet by the phase or phases with which it is associated and by an outlet name that you can define here.
- Configure the power-on delay, power-off delay, and restart duration of the outlet.

```
{rPDUOutletConfigTable}
  [rPDUOutletConfigEntry]
     rPDUOutletConfigIndex
     rPDUOutletConfigOutletName
     rPDUOutletConfigOutletPhase
     rPDUOutletConfigPowerOnTime
     rPDUOutletConfigPowerOffTime
     rPDURebootDuration
```

View Status of an Outlet and Power Supply

View the status of an outlet

Use the **[rPDUOutletStatus]** tabled OIDs to view the name of an outlet, the phase or phases with which the outlet is associated, the state of the outlet (on or off), and whether any command is pending for the outlet.

```
{rPDUOutletStatusTable}
  [rPDUOutletStatusEntry]
     rPDUOutletStatusIndex
     rPDUOutletStatusOutletName
     rPDUOutletStatusOutletPhase
     rPDUOutletStatusOutletState
     rPDUOutletStatusCommandPending
```

View the status of either power supply

Use the **[rPDUPowerSupplyDevice]** OIDs to view whether Power Supply 1 or Power Supply 2 is functioning properly.

```
rPDUPowerSupply1Status
rPDUPowerSupply2Status
```

Manage an Automatic Transfer Switch

Locate the OIDs

To locate the OIDs to monitor, configure, and control an Automatic Transfer Switch (ATS), use your MIB browser to select, in order, the following OID categories:

- **[apc]**
- **[products]**
- **[hardware]**
- **[automaticTransferSwitch]**
- Any of the following sub-categories:
  - **[atsIdent]**
  - **[atsCalibration]**
  - **[atsControl]**
  - **[atsConfig]**
  - **[atsStatus]**
  - **[atsStatusinput]**
  - **[atsStatusOuput]**

To manage the embedded Network Management Card of the Automatic Transfer Switch, see **"Manage Agents and Management Cards" on page 8**.

View Identification Parameters of the ATS

Use the **[atsIdent]** tabled OIDs to view the following information about the Automatic Transfer Switch:

- Its hardware and firmware revisions.
- The release date of its current firmware.
- Its date of manufacture, model number, and serial number.
- The RMS utility voltage in volts.
- The frequency of its input power frequency in Hz.

The first six OIDs are set at the factory or in the firmware.

```
atsIdentHardwareRev
atsIdentFirmwareRev
atsIdentFirmwareDate
atsIdentDateOfManufacture
atsIdentModelNumber
sPDUIdentSerialNumberMSP
atsIdentNominalLineVoltage
atsIdentNominalLineFrequency
```

View I/O Data, Power Supply Voltages, and Calibration Factors

Use the **[atsCalibration]** OIDs to view the following:

- The number of inputs, the number of phases per input, and, for each phase of each input, the line voltage calibration factor.
- The number of supported power supply voltages (24 V, 12 V, and 5 V), and for each power supply voltage, the type and calibration factor.
- The number of output lines for this device, the number of output phases for this device, and, for each phase, a description of each calibration factor (one for each output phase and one for neutral) and the output calibration factor in amps.

All calibration factors are set at the factory.

```
{atsCalibrationInputTable}
  [atsCalibrationInputPhaseEntry]
     atsCalibrationInputTableIndex
     atsCalibrationInputPhaseTableIndex
     atsLineVoltageCalibrationFactor
     atsCalibrationPowerSupplyVoltages
{atsCalibrationPowerSupplyVoltageTable}
  [atsCalibrationPowerSupplyVoltageEntry]
     atsCalibrationPowerSupplyVoltageTableIndex
     atsCalibrationPowerSupplyVoltage
     atsPowerSupplyVoltageCalibrationFactor
atsCalibrationNumOutputs
atsCalibrationNumOutputPhases
{atsCalibrationOutputTable}
  [atsCalibrationOutputEntry]
     atsCalibrationOutputTableIndex
     atsCalibrationOutputPhasesTableIndex
     atsOutputCurrentCalibrationFactor
```

Reset the ATS and Clear Its Alarms

Use the **[atsControl]** OIDs to reset the Automatic Transfer Switch when power is applied and to clear its alarms.

```
atsControlResetATS
atsControlClearAllAlarms
```

Configure the ATS

Use the **[atsConfig]** OIDs to name the Automatic Transfer Switch and configure the following:

- Set the preferred source of power.
- Disable the capability to set source preference from the front panel. (To re-enable the front panel, you must use the serial interface of the ATS.)
- Configure a wide, medium, or narrow range for acceptable voltage. The ATS switches to the alternative source of power when voltage is outside the selected range.
- Configure high or low sensitivity to frequent, small line voltage changes.
- Set the over-current alarm threshold.
- Reset the ATS to its default values.

```
atsConfigProductName
atsConfigPreferredSource
atsConfigFrontPanelLockout
atsConfigVoltageSensitivity
atsConfigTransferVoltageRange
atsConfigCurrentLimit
atsConfigResetValues
```

View the Status of the ATS

Use the **[atsStatus]** OIDs to reset to defaults all maximum and minimum ATS values for input voltage, input power, and output current recorded since the last time they were read or reset by this OID, and to view the following:

- The state of the communication of the ATS on the network (established, never established, or lost).
- The selected source of power, and whether both sources are available.
- Any violation of the output current threshold. (If the ATS exceeds the threshold, it cannot switch to the alternative power source.)
- The status of the 5 V and 24 V power supplies. A power supply has failed when it is not operating correctly and cannot be reconfigured through the internal **Configuration** menu.

```
atsStatusCommStatus
atsStatusSelectedSource
atsStatusRedundancyState
atsStatusOverCurrentState
atsStatus5VPowerSupply
atsStatus24VPowerSupply
atsStatusResetMaxMinValues
```

Name and View the Status of Input Feeds

Use the **[atsStatusInput]** OIDs to name each input feed and to view the following information about the input feeds:

- The number of input feeds.
- For each input feed, the number of phases, voltage orientation (single-phase, split phase, 3-phase phase-to-neutral, 3-phase phase-to-phase, or unknown), frequency, and type.
- For each phase of each input feed, the input voltage, current, and power, and the minimum and maximum values for input voltage, current, and power since they were last reset by the **atsStatusResetMaxMinValues** OID.

```
atsNumInputs
{atsInputTable}
  [atsInputEntry]
     atsInputTableIndex
     atsNumInputPhases
     atsInputVoltageOrientation
     atsInputFrequency
     atsInputType
     atsInputName
{atsInputPhaseTable}
  [atsInputPhaseEntry]
     atsInputPhaseTableIndex
     atsInputPhaseIndex
     atsInputVoltage
     atsInputMaxVoltage
     atsInputMinVoltage
     atsInputCurrent
     atsInputMaxCurrent
     atsInputMinCurrent
     atsInputPower
     atsInputMaxPower
     atsInputMinPower
```

Name and View the Status of Output Feeds

Use the **[atsStatusOutput]** OIDs to name each output feed and to view the following information about the output feeds:

- The number of output feeds and the number of phases for each.
- The description of each output phase used in this device and one for neutral.
- For each output feed, the number of phases, voltage orientation (single-phase, split phase, 3-phase phase-to-neutral, 3-phase phase-to-phase, or unknown), and frequency.
- For each phase of each output feed:
  - The output voltage.
  - The output current drawn by the load, and the output power.
  - The percentage of the ATS output capacity and the percentage of the ATS load capacity presently being used, both measured at a redundancy of (n + x).
  - Minimum and maximum values for output current, output power, percentage of output capacity, and percentage of output load since they were last reset by the **atsStatusResetMaxMinValues** OID.

```
atsNumOutputs
{atsOutputTable}
  [atsOutputEntry]
     atsOutputTableIndex
     atsNumOutputPhases
     atsOutputVoltageOrientation
     atsOutputFrequency
 {atsOutputPhaseTable}
   [atsOutputPhaseEntry]
     atsOutputPhaseTableIndex
     atsOutputPhaseIndex
     atsOutputVoltage
     atsOutputCurrent
     atsOutputMaxCurrent
     atsOutputMinCurrent
     atsOutputLoad
     atsOutputMaxLoad
     atsOutputMinLoad
     atsOutputPercentLoad
     atsOutputMaxPercentLoad
     atsOutputMinPercentLoad
     atsOutputPower
     atsOutputMaxPower
     atsOutputMinPower
     atsOutputPercentPower
     atsOutputMaxPercentPower
     atsOutputMinPercentPower
```

Manage a NetworkAIR® FM System

Locate the OIDs

In a MIB browser, select, in order, these OID categories to locate the OIDs to manage a NetworkAIR FM System through its Network Management Card:

- **[apc]**
- **[products]**
- **[hardware]**
- **[airConditioners]**
- **[airFM]**
- Either of the following subcategories:
  - **[airFMIdent]**
  - **[airFMStatus]**

View Identification Parameters

Use the **[airFMIdent]** OIDs to view, for each NetworkAIR FM Module, the hardware and firmware revision, date of manufacture, model number, and serial number that uniquely identifies the unit. All parameters are set at the factory or in the firmware and cannot be changed.

```
airFMIdentName
airFMIdentTableSize
{airFMIdentTable}
  [airFMIdentTableEntry]
      airFMIdentModuleIndex
      airFMIdentModuleModelNumber
      airFMIdentModuleDateOfMfg
      airFMIdentModuleSerialNumber
      airFMIdentModuleFirmwareRev
      airFMIdentModuleHardwareRev
```

View Status of the System and Modules

Use the **airFMStatus** OIDs to view the following information:

- Whether the NetworkAIR FM System is on or off.
- The average temperature and humidity of returned air for the Modules in the System.
- The System action air temperature and humidity.
- The highest air temperature reading from the remote sensors connected to this System, and the lowest air temperature reading from the remote sensors connected to this System.
- The average air temperature and humidity of the remote sensors connected to the System.
- The state (enabled or disabled) of the cooling, reheating, humidifying, and dehumidifying functions of the System.
- Information for each Module:
  - The output capacity in kilowatts.
  - The current temperature and humidity of supplied air (to the room).
  - The current temperature and humidity of returned air (from the room).

For each type of temperature status, the OID you use determines whether the temperature is reported in Fahrenheit or Celsius.

```
airFMStatusSystemOn
airFMStatusSystemAverageRetTempC
airFMStatusSystemAverageRetTempF
airFMStatusSystemAverageRetHum
airFMStatusSystemActionTempC
airFMStatusSystemActionTempF
airFMStatusSystemActionHum
airFMStatusSystemRemoteHighTempC
airFMStatusSystemRemoteHighTempF
airFMStatusSystemRemoteAvgTempC
airFMStatusSystemRemoteAvgTempF
airFMStatusSystemRemoteAvgHum
airFMStatusSystemRemoteLowTempC
airFMStatusSystemRemoteLowTempF
airFMStatusSystemCoolingEnabled
airFMStatusSystemReheatingEnabled
airFMStatusSystemHumidifyEnabled
airFMStatusSystemDehumidifyEnabled
airFMStatusModuleTableSize
{airFMStatusModuleTable}
  [airFMStatusModuleEntry]
     airFMStatusModuleIndex
     airFMStatusModuleOutputCapacity
     airFMStatusModuleSupplyTempC
     airFMStatusModuleSupplyTempF
     airFMStatusModuleSupplyHum
     airFMStatusModuleReturnTempC
     airFMStatusModuleReturnTempF
     airFMStatusModuleReturnHum
```

Manage a NetworkAIR® Portable Air Conditioner

Locate the OIDs

In a MIB browser, select, in order, these OID categories to locate the OIDs to manage a NetworkAIR Portable Air Conditioner through its Network Management Card:

- **[apc]**
- **[products]**
- **[hardware]**
- **[airConditioners]**
- **[airPA]**
- Either of the following subcategories:
  - **[airPAIdent]**
  - **[airPAStatus]**

View Identification Parameters

Use the **[airPAIdent]** OIDs to view the hardware and firmware revision, date of manufacture, model number, and serial number that uniquely identifies the NetworkAIR Portable Air Conditioner. All parameters are set at the factory or in the firmware and cannot be changed.

```
airPAIdentName
airPAModelNumber
airPADateOfManufacture
airPASerialNumber
airPAFirmwareRevision
airPAHardwareRevision
```

View Status

Use the **[airPAStatus]** OIDs to view the following information:

- Whether the system power of the NetworkAIR Air Conditioner is on or off.
- The present operating mode of the NetworkAIR Air Conditioner (off, venting, or cooling).
- The temperature setpoint of the NetworkAIR Air Conditioner.
- The speed setting of the blower (high or low).
- Whether the compressor, condenser fan, and condensate pump of the NetworkAIR Air Conditioner are on or off.
- The temperature of the supplied air.
- The temperature of the returned air.
- The remote temperature and humidity.

For each type of temperature status, the OID you use determines whether the temperature is reported in Fahrenheit or Celsius.

```
airPASystemPower
airPAOperatingMode
airPASetpoint
airPABlowerSpeed
airPACompressor
airPACondenserFan
airPACondensatePump
airPASupplyTempF
airPASupplyTempC
airPAReturnTempF
airPAReturnTempC
airPARemoteTempF
airPARemoteTempC
airPARemoteHumidity
```

PowerNet MIB Traps

Overview

This section provides the following information about SNMP traps:

- It describes the PowerNet MIB traps that various APC hardware devices (including Management Cards) and a PowerNet Agent can send to a Network Management Station (NMS) to alert the NMS that a specific event has occurred.

See **"PowerNet MIB Trap Definitions" on page 127**.

- It describes how to define which NMSs can receive those traps.

See **"How to define trap receivers" on page 125**.

No device can generate all traps, and no NMS can receive a trap until at least one of the four trap receiver definitions exists for the device. By default, all devices, Network Management Cards, and agents have no trap receivers defined.

Trap severity levels

Each trap has one of the following severity levels:

- **Severe:** Alerts a trap receiver of an event that requires immediate corrective action.
- **Warning:** Alerts a trap receiver of an event that can adversely affect the operation of a device if the situation worsens.
- **Informational:** Alerts a trap receiver of an event that cannot adversely affect the operation a device.

How to define trap receivers

Each PowerNet agent, Network Management Card, or other hardware device can send traps to as many as four trap receivers.

In a MIB browser, select, in order, these OID categories to access the PowerNet MIB OIDs that you use to define a trap receiver:

- **[apc]**
- **[apcmgmt]**
- **[mconfig]**

OID	Task
mconfigNumTrapReceivers	The number of NMSs to receive traps (always 4).
{mconfigTrapReceiverTable} [mconfigTrapReceiverEntry]	A tabled set of OIDs to define parameters for each trap receiver:
trapIndex	• The trap receiver number (the read-only index to the trap receiver entry).
receiverAddr	• The IP address of the NMS. The default value, 0.0.0.0, prevents all NMSs from receiving traps.
communityString	• The password (community name) that a trap must use to be sent to this trap receiver.
severity	• The severity of traps to send to this NMS. Traps of this severity or greater are sent. See **"Trap severity levels" on page 125**: • **informational (1)** • **warning (2)** • **severe (3)**
acceptThisReceiver	• Enables or disables sending traps to this NMS. • **yes (1)**: Enable • **no (2)**: Disable
receiveTrapType	• The type of traps that this NMS will receive. You must use **powernet (1)** with a Network Management Card.

PowerNet MIB Trap Definitions

Trap	Severity†	Number and Description
communicationLost	S	1: The SNMP Agent of a Network Management Card lost communication with the uninterruptible power supply.
upsOverload	S	2: The uninterruptible power supply sensed a load greater than the rated-load capacity.
upsDiagnosticsFailed	S	3: The uninterruptible power supply failed a self-test.
upsDischarged	S	4: A low-battery condition exists; runtime may not be sufficient if input power fails.
upsOnBattery	W	5: The uninterruptible power supply switched to battery power.
smartBoostOn	W	6: The uninterruptible power supply enabled its Boost feature.
lowBattery	S	7: The uninterruptible power supply batteries will be exhausted soon if power is not restored.
communicationEstablished	I	8: The SNMP agent of the Network Management Card established communication with the uninterruptible power supply.
powerRestored	I	9: Utility power restored.
upsDiagnosticsPassed	I	10: The uninterruptible power supply passed a self-test.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
returnFromLowBattery	I	11: The uninterruptible power supply returned from a low-battery condition.
upsTurnedOff	W	12: The uninterruptible power supply was turned off.
upsSleeping	W	13: The uninterruptible power supply turned off its outlets (entered sleep mode) waiting for input power to be restored.
upsWokeUp	I	14: Input power was restored and the uninterruptible power supply exited sleep mode.
upsRebootStarted	W	15: The uninterruptible power supply started a restart sequence.
upsDipSwitchChanged	W	16: A DIP switch setting changed and could alter uninterruptible power supply performance.
upsBatteryNeedsReplacement	S	17: An uninterruptible power supply battery needs replacement.
contactFault	S	18: The Environmental Monitor contact *x* changed from its normal position.
contactFaultResolved	I	19: The Environmental Monitor contact *x* returned to its normal position.
hardwareFailureBypass	S	20: The uninterruptible power supply (Matrix-UPS) switched to bypass because of a hardware failure.
softwareBypass	W	21: The uninterruptible power supply (Matrix-UPS) was put on bypass by software or by the uninterruptible power supply front panel.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
switchedBypass	W	22: The uninterruptible power supply (Matrix-UPS) was put on bypass by the switch at the uninterruptible power supply.
returnFromBypass	I	23: The uninterruptible power supply (Matrix-UPS) returned from bypass mode.
bypassPowerSupplyFailure	S	24: The base module bypass power supply of the uninterruptible power supply (Matrix-UPS) needs repair.
baseFanFailure	S	25: The base module fan of the uninterruptible power supply (Matrix-UPS) needs repair.
batteryPackCommLost	S	26: Communication with the external battery packs of the uninterruptible power supply was lost (Matrix-UPS or Smart-UPS XL).
batteryPackCommEstablished	I	27: Communication with external battery packs was regained (Matrix-UPS or Smart-UPS XL).
calibrationStart	I	28: A runtime calibration has started.
restartAgent	I	29: The SNMP agent of the Network Management Card is restarting as commanded by the NMS.
upsTurnedOn	I	30: The uninterruptible power supply is turned on.
smartTrimOn	W	31: The uninterruptible power supply enabled its Trim feature.
codeAuthenticationDone	I	32: Authentication of the TFTP agent file code image is done.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
upsOverloadCleared	I	33: The uninterruptible power supply overload condition is corrected.
smartBoostOff	I	34: The uninterruptible power supply (Smart-UPS) returned from using its Boost feature.
smartAvrReducingOff	I	35: The uninterruptible power supply (Matrix-UPS) returned from using its Trim feature.
upsBatteryReplaced	I	36: A faulty battery was replaced.
calibrationEnd	I	37: A runtime calibration ended.
dischargeCleared	I	38: An uninterruptible power supply discharge condition ended.
gracefullShutdown	I	39: A graceful shutdown started.
Not currently used.	*none*	40: *Reserved for future use.*
outletOn	I	41: The MasterSwitch outlet specified by **sPDUOutletControlIndex** is turned on, or if the value is 0, all outlets are on.
outletOff	I	42: The MasterSwitch outlet specified by **sPDUOutletControlIndex** is turned off, or if that value is 0, all outlets are off.
outletReboot	I	43: The MasterSwitch outlet specified by **sPDUOutletControlIndex** was restarted, or if that value is 0, all outlets were restarted.
configChange	W	44: The MasterSwitch SNMP configuration changed.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
configChangeOutlet	W	45: The configuration of the MasterSwitch outlet specified by **sPDUOutletConfigIndex** changed, or if that value is 0, the master outlet configuration changed.
accessViolationConsole	W	46: Three unsuccessful MasterSwitch console login attempts occurred.
accessViolationHTTP	W	47: An unsuccessful MasterSwitch HTTP login attempt occurred.
passwordChange	W	48: The MasterSwitch console password changed.
badVoltage	W	49: The uninterruptible power supply output voltage is not within the acceptable range.
badVoltageCleared	I	50: The uninterruptible power supply output voltage is again within the acceptable range.
chargerFailure	W	51: The uninterruptible power supply battery charger failed.
chargerFailureCleared	I	52: The uninterruptible power supply battery charger returned to normal operation.
batteryOverTemperature	W	53: The uninterruptible power supply battery temperature exceeded the temperature threshold.
batteryOverTemperatureCleared	I	54: The uninterruptible power supply battery temperature no longer exceeds the temperature threshold.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
smartRelayFault	W	55: The Boost or Trim relay failed.
smartRelayFaultCleared	I	56: The Boost or Trim relay failure is corrected.
humidityThresholdViolation1	W	57: The Environmental Monitor probe 1 humidity threshold was violated.
humidityThresholdViolationCleared1	I	58: The Environmental Monitor probe 1 humidity threshold is no longer violated.
TemperatureThresholdViolation1	W	59: The Environmental Monitor probe 1 temperature threshold was violated.
TemperatureThresholdViolationCleared1	I	60: The Environmental Monitor probe 1 temperature threshold is no longer violated.
humidityThresholdViolation2	W	61: The Environmental Monitor probe 2 humidity threshold was violated.
humidityThresholdViolationCleared2	I	62: The Environmental Monitor probe 2 humidity threshold is no longer violated.
TemperatureThresholdViolation2	W	63: The Environmental Monitor probe 2 temperature threshold was violated.
TemperatureThresholdViolationCleared2	I	64: The Environmental Monitor probe 2 temperature threshold is no longer violated.
mupsCommunicationEstablished	I	65: Communication with the Environmental Monitor is established.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
mupsCommunicationLost	W	66: Communication with the Environmental Monitor was lost.
batteryIncrease	I	67: The number of Symmetra uninterruptible power supply batteries was increased.
batteryDecrease	I	68: The number of Symmetra uninterruptible power supply batteries was decreased.
powerModuleIncrease	I	69: The number of Symmetra uninterruptible power supply power modules was increased.
powerModuleDecrease	I	70: The number of Symmetra uninterruptible power supply power modules was decreased.
intelligenceModuleInserted	I	71: An intelligence module was inserted into the Symmetra uninterruptible power supply.
intelligenceModuleRemoved	I	72: An intelligence module was removed from the Symmetra uninterruptible power supply.
rintelligenceModuleInserted	I	73: A redundant intelligence module was inserted into the Symmetra uninterruptible power supply.
rintelligenceModuleRemoved	I	74: A redundant intelligence module was removed from the Symmetra uninterruptible power supply.
extBatteryFrameIncrease	I	75: An external battery frame was added to the Symmetra uninterruptible power supply.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
extBatteryFrameDecrease	I	76: An external battery frame was removed from the Symmetra uninterruptible power supply.
abnormalCondition	S	77: See **"Symmetra Uninterruptible Power Supply Subtraps" on page 165** for the subtraps that identify which abnormal condition has occurred.
abnormalConditionCleared	I	78: See **"Symmetra Uninterruptible Power Supply Subtraps" on page 165** for the subtraps that identify which abnormal condition is corrected.
deviceStatusChange	I	79: The status of the device being monitored has changed.
noBatteries	W	80: The uninterruptible power supply has no batteries attached.
noBatteriesCleared	I	81: Batteries have been attached to the uninterruptible power supply.
userAdded	I	82: A new user was added.
userDeleted	I	83: A user was deleted.
userModified	I	84: A user's parameters were modified.
msvmCommunicationEstablished	I	85: Communication with the **MasterSwitch VM** unit is established.
msvmCommunicationLost	S	86: Communication with the MasterSwitch VM unit was lost.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
msvmOverload	S	87: The MasterSwitch VM unit is near or at an overload condition.
msvmOverloadCleared	I	88: The overload condition on the MasterSwitch VM unit is corrected.
msvmOutletOn	I	89: An outlet on the MasterSwitch VM unit turned on.
msvmOutletOff	I	90: An outlet on the MasterSwitch VM unit turned off.
msvmDeviceConfigChange	I	91: A device configuration change was made on the MasterSwitch VM unit.
msvmOutletConfigChange	I	92: An outlet configuration change was made on the MasterSwitch VM unit.
msvmLowLoad	I	93: The MasterSwitch VM unit has violated the low load threshold.
msvmLowLoadCleared	I	94: The low-load condition on the MasterSwitch VM unit is corrected.
msvmNearOverload	S	95: The MasterSwitch VM unit is near or at an overload condition.
msvmNearOverloadCleared	I	96: The overload condition on the MasterSwitch VM unit is corrected.
msvmPowerSupplyStatusChange	I	97: The status of the power supply on the MasterSwitch VM unit has changed.
mspCommunicationEstablished	I	98: Communication with the MasterSwitch Plus unit is established.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
mspCommunicationLost	I	99: Communication with the MasterSwitch Plus unit was lost.
mspOutletOn	I	100: An outlet on the MasterSwitch Plus unit turned on.
mspOutletOff	I	101: An outlet on the MasterSwitch Plus unit turned off.
mspDeviceConfigChange	I	102: A device configuration change was made on the MasterSwitch Plus unit.
mspOutletConfigChange	I	103: An outlet configuration change was made on the MasterSwitch Plus unit.
rsSourceSwitched	I	104: The Redundant Switch has switched its source. Variables: 1. The current source: 0 for A; 1 for B. 2. The 32-character name of the source. 3. An integer indicating the cause of the transfer: • **0**: no transfers recorded • **1**: user action or preferred switching • **3**: line notch or spike • **5**: low line voltage • **7**: high line voltage • **9**: frequency out of range 4. A character string describing the transfer cause.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
rsLostRedundancy	S	105: The Redundant Switch lost redundancy. Variables: 1. The unavailable source: **0** for A; **1** for B. 2. The 32-character name of the unavailable source.
rsRedundancyRestored	I	106: Redundancy is restored to the Redundant Switch. Variables: 1. The source to which power was restored: **0** for A; **1** for B. 2. The 32-character name of the restored source.
rsConfigChange	I	107: A configuration change was made on a Redundant Switch.
rsCommunicationEstablished	I	108: Communication with the Redundant Switch is established.
rsCommunicationLost	S	109: Communication with the Redundant Switch was lost.
Traps 110 through 120 are for DC-powered systems. See the *MIB Reference Guide* (990-1375) for DC systems.		
logicPowerSuppliesIncreased	I	121: The number of system power supplies increased at the uninterruptible power supply.
logicPowerSuppliesDecreased	I	122: The number of system power supplies decreased at the uninterruptible power supply.
externalSwitchGearClosed	I	123: The identified external switch gear at the uninterruptible power supply is closed.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
externalSwitchGearOpened	I	124: The identified external switch gear at the uninterruptible power supply is open.
generalDeviceEvent	I	125: The identified general event occurred at the uninterruptible power supply.
atsSourceSwitched	I	126: The Automatic Transfer Switch has switched source.
atsLostRedundancy	S	127: The Automatic Transfer Switch lost redundancy.
atsRedundancyRestored	I	128: Redundancy was restored to the Automatic Transfer Switch.
atsConfigChange	I	129: A configuration change was made on the Automatic Transfer Switch.
atsCommunicationEstablished	I	130: Communication with the Automatic Transfer Switch is established.
atsCommunicationLost	S	131: Communication with the Automatic Transfer Switch was lost.
atsOverCurrent	S	132: The output current of the Automatic Transfer Switch exceeded the threshold.
atsOverCurrentCleared	I	133: The output current of the Automatic Transfer Switch is back below the threshold.
atsPowerSupplyFailure	S	134: The Automatic Transfer Switch power supply failed.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
atsPowerSupplyFailureCleared	I	135: The Automatic Transfer Switch power supply failure is corrected.
Traps 136 through 162 are for DC-powered systems. See the *MIB Reference Guide* (990-1375) for DC systems.		
iemHighTempThresholdViolation	S	163: The high temperature threshold of the Integrated Environmental Monitor was exceeded.
iemHighTempThresholdViolationCleared	I	164: The high temperature threshold violation of the Integrated Environmental Monitor is corrected.
iemLowTempThresholdViolation	S	165: The low temperature threshold of the Integrated Environmental Monitor was violated.
iemLowTempThresholdViolationCleared	I	166: The low temperature threshold violation of the Integrated Environmental Monitor is corrected.
iemHighHumidThresholdViolation	S	167: The high humidity threshold of the Integrated Environmental Monitor was exceeded.
iemHighHumidThresholdViolationCleared	I	168: The high humidity threshold violation of the Integrated Environmental Monitor is corrected.
iemLowHumidThresholdViolation	S	169: The low humidity threshold of the Integrated Environmental Monitor was violated.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
iemLowHumidThresholdViolationCleared	I	170: The low humidity threshold violation of the Integrated Environmental Monitor is corrected.
iemProbeDisconnected	W	171: The probe of the Integrated Environmental Monitor was disconnected.
iemProbeConnected	I	172: The probe of the Integrated Environmental Monitor is connected.
iemContactFault	S	173: A contact fault occurred in the Integrated Environmental Monitor.
iemContactFaultCleared	I	174: The contact fault of the Integrated Environmental Monitor is corrected.
iemRelayFault	W	175: The output relay of the Integrated Environmental Monitor has a fault condition.
iemRelayFaultCleared	I	176: The fault condition of the output relay of the Integrated Environmental Monitor is corrected.
bmBatManCommEstab	I	177: Serial communications is established with the Battery Management System.
bmBatManCommLost	S	178: Serial communications was lost with the Battery Management System.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
bmBatManKneeAlarm	S	179: The Battery Management System detected a battery voltage knee threshold alarm. While supporting the equipment load, one or more batteries showed a rapid drop in voltage, indicating the approaching end of the charge of a battery. To avoid battery damage, do not allow the battery string to discharge further.
bmBatManKneeAlarmCleared	I	180: The cause of the battery voltage knee threshold alarm is corrected.
bmBatManChargerAlarm	W	181: The Battery Management System detected a charger alarm.
bmBatManChargerAlarmCleared	I	182: The cause of the charger alarm of the Battery Management System is corrected.
bmBatManBatteryAlarm	W	183: The Battery Management System detected a battery alarm.
bmBatManBatteryAlarmCleared	I	184: The cause of the battery alarm of the Battery Management System is corrected.
bmBatManEnvironmentAlarm	W	185: The Battery Management System detected an environment alarm.
bmBatManEnvironmentAlarmCleared	I	186: The cause of the environment alarm of the Battery Management System is corrected.
bmBatManMaintenanceAlarm	I	187: The Battery Management System detected a “maintenance due” alarm.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
bmBatManMaintenanceAlarmCleared	I	188: The cause of the “maintenance due” alarm of the Battery Management System is corrected.
pduCommunicationEstablished	I	189: Communication is established with the PDU. Variables: 1. The serial number 2. The device name
pduCommunicationLost	S	190: Communication was lost with the PDU. Variables: 1. The serial number 2. The device name
pduUtilityLineUndervoltage	S	191: The utility line voltage is too low for the PDU. Variables: 1. The serial number 2. The device name 3. The phase number
pduUtilityLineUndervoltageCleared	I	192: The utility line low-voltage condition of the PDU is corrected. Variables: the same as for trap 191.
pduUtilityLineOvervoltage	S	193: The utility line voltage is too high for the PDU. Variables: 1. The serial number 2. The device name 3. The phase number
pduUtilityLineOvervoltageCleared	I	194: The utility line high-voltage condition of the PDU is corrected. Variables: the same as for trap 193.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
pduGroundOvercurrent	S	195: The ground current is too high for the PDU. Variables: 1. The serial number 2. The device name
pduGroundOvercurrentCleared	I	196: The ground high-current condition of the PDU is corrected. Variables: the same as for trap 195.
pduCircuitPanelInputUndervoltage	S	197: The circuit panel input voltage is too low for the PDU. Variables: 1. The serial number 2. The device name 3. The phase number
pduCircuitPanelInputUndervoltageCleared	I	198: The circuit panel low input voltage condition of the PDU is corrected. Variables: the same as for trap 197.
pduCircuitPanelInputOvervoltage	S	199: The circuit panel input voltage is too high for the PDU. Variables: 1. The serial number 2. The device name 3. The phase number
pduCircuitPanelInputOvervoltageCleared	I	200: The circuit panel high input voltage condition of the PDU is corrected. Variables: the same as for trap 199.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
pduCircuitPanelInputUndercurrent	S	201: The circuit panel input current is too low for the PDU. Variables: 1. The serial number 2. The device name 3. The phase number
pduCircuitPanelInputUndercurrentCleared	I	202: The circuit panel low input current condition of the PDU is corrected. Variables: the same as for trap 201.
pduCircuitPanelInputOvercurrent	S	203: The circuit panel input current is too high for the PDU. Variables: 1. The serial number 2. The device name 3. The phase number
pduCircuitPanelInputOvercurrentCleared	I	204: The circuit panel high input current condition is corrected. Variables: the same as for trap 203.
pduCircuitPanelFrequencyOutOfRange	S	205: The circuit panel input frequency is out of range for the PDU. Variables: 1. The serial number 2. The device name
pduCircuitPanelFrequencyOutofRangeCleared	I	206: The circuit panel input frequency is no longer out of range. Variables: the same as for trap 205.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
pduCircuitPanelNeutralOvercurrent	S	207: The neutral circuit panel input current is too high for the PDU. Variables: 1. The serial number 2. The device name
pduCircuitPanelNeutralOvercurrentCleared	I	208: The neutral circuit panel high input current condition of the PDU is corrected. Variables: the same as for trap 207.
pduSystemOff	S	209: The PDU system is off. Variables: 1. The serial number 2. The device name
pduOnBatteryMode	S	210: The PDU is running in on-battery mode. Variables: 1. The serial number 2. The device name
pduMaintenanceBypassMode	I	211: The PDU is running in maintenance bypass mode. Variables: 1. The serial number 2. The device name
pduAtypicalBypassMode	W	212: The PDU is running in atypical bypass mode. Variables: 1. The serial number 2. The device name
pduNoPanelFeedMode	S	213: The PDU is running with no feed from the circuit panel. Variables: 1. The serial number 2. The device name
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
pduUpsOperationMode	I	214: The PDU is running in uninterruptible power supply operation mode. Variables: 1. The serial number 2. The device name
pduForcedBypassMode	W	215: The PDU is running in forced bypass mode. Variables: 1. The serial number 2. The device name
pduInputTransformerOverTemperature	S	216: The temperature of the input transformer of the PDU is too high Variables: 1. The serial number 2. The device name
pduInputTransformerOverTemperatureCleared	I	217: The temperature of the input transformer of the PDU is no longer too high. Variables: the same as for trap 216.
pduUPSInputVoltageLost	S	218: The PDU input voltage for phase *N* was lost. Variables: 1. The serial number 2. The device name 3. The phase number
pduUPSInputVoltageRestored	I	219: The PDU input voltage for phase *N* is restored. Variables: the same as for trap 218.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
pduContactFault	S	220: A contact closure in the PDU is in an abnormal position. Variables: 1. The serial number 2. The device name 3. The number of the contact
pduContactFaultCleared	I	221: A contact closure in the PDU has returned to a normal position. Variables: the same as for trap 220.
rmPDUUndercurrent	S	222: The input current of a phase of the rack PDU is too low. Variables: 1. The serial number 2. The device name 3. The phase number
rmPDUUndercurrentCleared	I	223: The low input current condition for a phase of the rack PDU is corrected. Variables: the same as for trap 222.
rmPDUOvercurrent	S	224: The input current of a phase of the rack PDU is too high. Variables: 1. The serial number 2. The device name 3. The phase number
rmPDUOvercurrentCleared	I	225: The high input current condition for a phase of the rack PDU is corrected. Variables: the same as for trap 224.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
rmPDUOverload	S	226: A phase of the rack PDU is overloaded. Variables: 1. The serial number 2. The device name 3. The phase number
rmPDUOverloadCleared	I	227: The output overload condition for a phase of the rack PDU is corrected. Variables: the same as for trap 226.
rmPDUCommunicationEstablished	I	228: Communication is established with the rack PDU. Variables: 1. The serial number 2. The device name
rmPDUCommunicationLost	S	229: Communication was lost with the rack PDU. Variables: the same as for trap 228.
emsCommunicationEstablished	I	230: Communication is established with the Environmental Management System. Variables: 1. The serial number 2. The device name
emsCommunicationLost	S	231: Communication was lost with the Environmental Management System. Variables: the same as for trap 230.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
emsProbeConnected	I	232: A probe was connected to the Environmental Management System. Variables: 1. The host device serial number 2. The host device name 3. The probe number 4. The probe name
emsProbeDisconnected	S	233: A probe was disconnected from the Environmental Management System. Variables: the same as for trap 232.
emsSensorConnected	I	234: A sensor was connected to the Environmental Management System. Variables: 1. The host device serial number 2. The host device name 3. The sensor number 4. The sensor name
emsSensorDisconnected	S	235: A sensor was disconnected from the Environmental Management System. Variables: the same as for trap 234.
emsSensorFault	S	236: A sensor in the Environmental Management System is in a fault condition. Variables: 1. The host device serial number 2. The host device name 3. The sensor number 4. The sensor name
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
emsSensorFaultCleared	I	237: A sensor fault condition in the Environmental Management System is corrected. Variables: the same as for trap 236.
emsBeaconConnected	I	238 A beacon was connected to the Environmental Management System. Variables: 1. The host device serial number 2. The host device name
emsBeaconDisconnected	S	239: A beacon was disconnected from the Environmental Management System. Variables: the same as for trap 238.
emsBeaconOn	I	240: A beacon of the Environmental Management System turned on. Variables: 1. The host device serial number 2. The host device name
emsBeaconOff	I	241: A beacon of the Environmental Management System turned off. Variables: the same as for trap 240.
emsMajorAlarm	S	242: A major alarm is present in the Environmental Management System. Variables: 1. The Environmental Management System serial number 2. The Environmental Management System name
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
emsMajorAlarmCleared	I	243: A major alarm in the Environmental Management System is corrected. Variables: the same as for trap 242.
emsMinorAlarm	S	244: A minor alarm is present in the Environmental Management System. Variables: 1. The Environmental Management System serial number 2. The Environmental Management System name
emsMinorAlarmCleared	I	245: A minor alarm in the Environmental Management System is corrected. Variables: the same as for trap 244.
emsOutletStateAbnormal	W	246: An outlet on the Environmental Management System changed to its abnormal state. Variables: 1. The host device serial number 2. The host device name 3. The outlet number 4. The outlet name 5. The current outlet state (**1** = On; **2** = Off) 6. The configured normal outlet state (**1** = On; **2** = Off)
emsOutletStateNormal	I	247: An outlet on the Environmental Management System changed to its normal state. Variables: the same as for trap 246.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
emsInputContactStateAbnormal	W	248: An input contact on the Environmental Management System changed to its abnormal state. Variables: 1. The host device serial number 2. The host device name 3. The input contact number 4. The input contact name 5. The input contact state (**1** = On; **2** = Off) 6. The configured normal input contact state (**1** = On; **2** = Off)
emsInputContactStateNormal	I	249: An input contact on the Environmental Management System changed to its normal state. Variables: the same as for trap 248.
emsOutputRelayStateAbnormal	W	250: An output relay on the Environmental Management System changed to its abnormal state. Variables: 1. The host device serial number 2. The host device name 3. The output relay number 4. The output relay name 5. The output relay state (**1** = On; **2** = Off) 6. The configured normal output relay state (**1** = On; **2** = Off)
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
emsOutputRelayStateNormal	I	251: An output relay on the Environmental Management System changed to its normal state. Variables: the same as for trap 250.
emsDeviceConfigChange	I	252: A device configuration change was made on the Environmental Management System. Variables: 1. The Environmental Management System serial number 2. The Environmental Management System name
envHighTempThresholdViolation	S	253: The high temperature threshold for an Environmental Management System probe was exceeded. Variables: 1. The host device serial number 2. The host device name 3. The current temperature 4. The temperature scale 5. The probe number (or probe serial number, if it is an external device) 6. The probe name
envHighTempThresholdViolationCleared	I	254: The high temperature threshold violation for an Environmental Management System probe is corrected. Variables: the same as for trap 253.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
envLowTempThresholdViolation	S	255: The low temperature threshold for an Environmental Management System probe was violated. Variables: 1. The host device serial number 2. The host device name 3. The current temperature 4. The temperature scale 5. The probe number (or probe serial number, if it is an external device) 6. The probe name
envLowTempThresholdViolationCleared	I	256: The low temperature threshold violation for an Environmental Management System probe is corrected. Variables: the same as for trap 255.
envHighHumidityThresholdViolation	S	257: The high humidity threshold for an Environmental Management System probe was exceeded. Variables: 1. The host device serial number 2. The host device name 3. The current humidity 4. The probe number (or probe serial number, if it is an external device) 5. The probe name
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
envHighHumidityThresholdViolationCleared	I	258: The high humidity threshold violation for an Environmental Management System probe is corrected. Variables: the same as for trap 257.
envLowHumidityThresholdViolation	S	259: The low humidity threshold for an Environmental Management System probe was violated. Variables: 1. The host device serial number 2. The host device name 3. The current humidity 4. The probe number (or probe serial number, if it is an external device) 5. The probe name
envLowHumidityThresholdViolationCleared	I	260: The low humidity threshold violation for an Environmental Management System probe is corrected. Variables: the same as for trap 259.
Traps 261 through 265 are reserved for future use.		
rPDUCommunicationEstablished	I	266: Communication is established with a rack PDU. Variables: 1. The serial number 2. The device name
rPDUCommunicationLost	I	267: Communication was lost with a rack PDU. Variables: the same as for trap 266.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
rPDUOutletOn	I	268: An outlet on a switched rack PDU turned on. Variables: 1. The serial number 2. The device name 3. The outlet index number 4. The outlet name
rPDUOutletOff	I	269: An outlet on a switched rack PDU turned off. Variables: the same as for trap 268.
rPDUDeviceConfigChange	I	270: The configuration of a switched rack PDU changed. Variables: 1. The serial number 2. The device name
rPDUOutletConfigChange	I	271: The outlet configuration of a switched rack PDU changed. Variables: 1. The serial number 2. The device name 3. The outlet index number 4. The outlet name
rPDULowLoad	W	272: A rack PDU violated the low load threshold. Variables: 1. The serial number 2. The device name 3. The phase index number
rPDULowLoadCleared	W	273: The low load threshold violation for a rack PDU is corrected. Variables: the same as for trap 272.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
rPDUNearOverload	W	274: The equipment load of a rack PDU is almost at an overload condition. Variables: 1. The serial number 2. The device name 3. The phase index number 4. The phase load
rPDUNearOverloadCleared	I	275: The near-overload condition of a rack PDU is corrected. Variables: 1. The serial number 2. The device name 3. The phase index number
rPDUOverload	S	276: A rack PDU is in an overload condition. Variables: 1. The serial number 2. The device name 3. The phase index number
rPDUOverloadCleared	I	277: The overload condition of a rack PDU is corrected. Variables: the same as for trap 276.
rPDUPowerSupply1Fail	S	278: Power Supply 1 on a rack PDU has failed. Variables: 1. The serial number 2. The device name
rPDUPowerSupply1Ok	I	279: Power Supply 1 on a rack PDU is operating normally. Variables: the same as for trap 278.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
rPDUPowerSupply2Fail	S	280: Power Supply 2 on a rack PDU failed. Variables: 1. The serial number 2. The device name
rPDUPowerSupply2Ok	I	281: Power Supply 2 on a rack PDU is operating normally. Variables: the same as for trap 280.
rPDUPhaseConfigChange	I	282: A phase-configuration change was made on a rack PDU. Variables: 1. The serial number 2. The device name 3. The outlet index number (**0** indicates all outlets.) 4. The outlet name (or device name, if the change is for all outlets)
rPDUCancelPendingCommand	I	283: A command for a switched rack PDU was canceled. Variables: 1. The serial number 2. The device name 3. The outlet index number (**0** indicates all outlets.) 4. The outlet name (or device name, if the command is for all outlets)
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
aruAlinkCommunicationEstablished	I	284: Remote communication is established with the air removal unit (ARU) of the Environmental Management System. Variables: 1. The host device serial number 2. The host device name 3. The ARU number 4. The ARU name
aruAlinkCommunicationLost	S	285: Remote communication was lost with the air removal unit (ARU) of the Environmental Management System. Variables: the same as for trap 284.
aruFanFail	S	286: The fan in a remote air removal unit (ARU) of the Environmental Management System failed. 1. The host device serial number 2. The host device name 3. The ARU number 4. The ARU name
aruFanFailCleared	I	287: The failure of the fan in a remote air removal unit (ARU) of the Environmental Management System is corrected. Variables: the same as for trap 286.
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
aruSmokeAlarm	S	288: A smoke alarm is active in a remote air removal unit (ARU) of the Environmental Management System. Variables: 1. The host device serial number 2. The host device name 3. The ARU number 4. The ARU name
aruSmokeAlarmCleared	I	289: The cause of a smoke alarm in a remote air removal unit of the Environmental Management System is corrected. Variables: the same as for trap 288.
aruHighTemperatureAlarm	S	290: The temperature in a remote air removal unit (ARU) of the Environmental Management System is too high. Variables: 1. The host device serial number 2. The host device name 3. The ARU number 4. The ARU name
aruHighTemperatureAlarmCleared	I	291: The temperature in a remote air removal unit (ARU) is back within the normal range. Variables: the same as for trap 290.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
aruExhaustTemperatureAlarm	S	292: The exhaust temperature of a remote air removal unit (ARU) of the Environmental Management System is too high. Variables: 1. The host device serial number 2. The host device name 3. The ARU number 4. The ARU name
aruExhaustTemperatureAlarmCleared	I	293: The exhaust temperature of a remote air removal unit (ARU) of the Environmental Management System is back within normal range. Variables: the same as for trap 292.
envAlinkCommunicationEstablished	I	294: Communication is established with a remote probe of the Environmental Management System. Variables: 1. The host device serial number 2. The host device name 3. The probe number 4. The probe name
envAlinkCommunicationLost	S	295: Communication was lost with a remote probe of the Environmental Management System. Variables: the same as for trap 294.
emsAlinkPowerOverload	S	296: A power overload occurred in the remote Environmental Management System. Variables: 1. The host device serial number 2. The host device name

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
emsAlinkPowerOverloadCleared	I	297: A power overload is corrected in the remote Environmental Management System. Variables: the same as for trap 296.
upsOutletGroupTurnedOn	I	298: The specified outlet group turned on.
upsOutletGroupTurnedOff	W	299: The specified outlet group turned off.
smwCriticalCondition	S	300: A critical (severe) condition was detected in the Symmetra 3-Phase MW UPS. The variable is the fault condition.
smwCriticalConditionCleared	I	301: A critical (severe) condition in the Symmetra 3-Phase MW UPS is corrected. The variable is the fault condition.
smwWarningCondition	W	302: A serious (warning) condition in the Symmetra 3-Phase MW UPS was detected. The variable is the fault condition.
smwWarningConditionCleared	I	303: A serious (warning) condition in the Symmetra 3-Phase MW UPS is corrected. The variable is the fault condition.
smwICondition	I	304: A non-serious (informational) condition in the Symmetra 3-Phase MW UPS was detected. The variable is the fault condition.

† **Severity:** S = Severe, W = Warning, I = Informational

Trap	Severity†	Number and Description
smwInformationalConditionCleared	I	305: A non-serious (informational) condition in the Symmetra 3-Phase MW UPS is corrected. The variable is the fault condition.
airCriticalCondition	S	306: A NetworkAIR critical (severe) condition was detected. Variables: 1. The error condition text message 2. The error number
airCriticalConditionCleared	I	307: A NetworkAIR critical (severe) condition was corrected. Variables: the same as for trap 306.
airWarningCondition	W	308: A NetworkAIR serious (warning) condition was detected. Variables: 1. The error condition text message 2. The error number
airWarningConditionCleared	I	309: A NetworkAIR serious (warning) condition was corrected. Variables: the same as for trap 308.
airInformationalCondition	I	310: A NetworkAIR non-serious (informational) condition was detected. Variables: 1. The error condition text message 2. The error number
† **Severity:** S = Severe, W = Warning, I = Informational		

Trap	Severity†	Number and Description
airInformationalConditionCleared	I	311: A NetworkAIR non-serious (informational) condition was corrected. Variables: the same as for trap 310.

† **Severity:** S = Severe, W = Warning, I = Informational

Symmetra Uninterruptible Power Supply Subtraps

The "abnormalCondition" on page 134 and "abnormalConditionCleared" on page 134 traps for the Symmetra uninterruptible power supply have the following subtraps that identify the abnormal condition:

Note

If you receive a subtrap that is identified as subtrap number 41 or higher in the following table, check the APC Web site **www.apc.com** for the latest version of the MIB.

Subtrap	Description
SYMtrapstr1	An installed power module failed.
SYMtrapstr2	A failed power module condition is corrected.
SYMtrapstr3	An installed intelligence module failed.
SYMtrapstr4	A failed intelligence module condition is corrected.
SYMtrapstr5	An installed redundant intelligence module failed.
SYMtrapstr6	A failed redundant intelligence module condition is corrected.
SYMtrapstr7	An installed battery failed.
SYMtrapstr8	A failed battery condition is corrected.
SYMtrapstr9	The load is at or above the alarm threshold.
SYMtrapstr10	The load is back below the load alarm threshold.
SYMtrapstr11	The uninterruptible power supply lost its redundancy.
SYMtrapstr12	The loss of redundancy is corrected.
SYMtrapstr13	The redundancy of the uninterruptible power supply is at or below the alarm threshold.
SYMtrapstr14	The redundancy of the uninterruptible power supply is above the alarm threshold again.

Subtrap	Description
SYMtrapstr15	The uninterruptible power supply is on bypass. Input voltage and frequency were out of range.
SYMtrapstr16	The uninterruptible power supply returned from bypass. Input voltage and frequency are back in range.
SYMtrapstr17	The bypass contactor is stuck in the bypass position.
SYMtrapstr18	The bypass contactor is no longer stuck in the bypass position.
SYMtrapstr19	The bypass contactor is stuck in the online position.
SYMtrapstr20	The bypass contactor is no longer stuck in the online position.
SYMtrapstr21	The uninterruptible power supply is in bypass mode because of an internal fault.
SYMtrapstr22	The internal fault that put the uninterruptible power supply into bypass mode was corrected.
SYMtrapstr23	The uninterruptible power supply is in bypass mode because of an overload.
SYMtrapstr24	The overload that put the uninterruptible power supply in bypass mode has been corrected.
SYMtrapstr25	The uninterruptible power supply is in maintenance bypass mode.
SYMtrapstr26	The uninterruptible power supply is no longer in maintenance bypass mode.
SYMtrapstr27	The input circuit breaker was tripped to the open position.
SYMtrapstr28	The tripped input circuit breaker is reset.
SYMtrapstr29	A system level fan failure occurred.
SYMtrapstr30	The system level fan failure is corrected.
SYMtrapstr31	The redundant intelligence module is in control.
SYMtrapstr32	The redundant intelligence module is no longer in control.

Subtrap	Description
SYMtrapstr33	An internal uninterruptible power supply communication problem (an I2C failure) occurred.
SYMtrapstr34	The internal communication problem (the I2C failure) is corrected.
SYMtrapstr35	An uninterruptible power supply battery is overheated.
SYMtrapstr36	The overheated battery condition is corrected.
SYMtrapstr37	The load is shut down. AC input was lost while the uninterruptible power supply was in bypass.
SYMtrapstr38	The load shutdown condition is corrected.
SYMtrapstr39	Remaining runtime is below the alarm threshold.
SYMtrapstr40	Remaining runtime is above the alarm threshold again.
SYMtrapstr41 and above	Odd-numbered traps: Bit *nn* of the Abnormal Condition register is set. Even-numbered traps: Bit *nn* of the Abnormal Condition register is reset.

Index

A

Agents
- managing 8
- of hardware devices 10
- viewing information about 9

Air Removal Unit
- configuring 70
- identification parameters 69
- locating the OIDs 68
- status 71

Alarm devices, Environmental Management System
- controlling alarm devices 60
- status 67

Alarms
- Automatic Transfer Switch 111
- configuring response of MasterSwitch Plus outlets 97
- overload alarm for MasterSwitch VM 79
- testing for uninterruptible power supply 26

Annunciator mode, MasterSwitch Plus 96

Automatic Transfer Switch
- calibration factor 110
- communication status 113
- configuring 112
- I/O data 110
- identification parameters 109
- managing 108
- status 113
- supported power supply voltages 110

B

Batteries
- diagnostics for Symmetra uninterruptible power supply 44
- status of uninterruptible power supply batteries 17

BOOTP, viewing the value 11

Browsers
- OID hierarchy in MIB browser 6
- using your MIB browser 2

Bypass mode, controlling 26

C

Calibration factor, Automatic Transfer Switch 110

Calibrations, performing for uninterruptible power supply 28

Communication status
- Air Removal Unit 71
- Automatic Transfer Switch 113
- External Environmental Monitor 53
- uninterruptible power supply 29

Configuring
- Air Removal Unit 70
- Automatic Transfer Switch 112
- Environmental Management System 61
- External Environmental Monitor 52
- Integrated Environmental Monitor 54
- MasterSwitch Plus
  - load-shedding 93
  - outlets 91
  - unit 88
- rack PDU
  - load thresholds 102
  - outlets 106
- synchronized control groups 35
- uninterruptible power supply 22

Contacts
- External Environmental Monitor 52
- Integrated Environmental Monitor 54

Controlling
- Environmental Management System 59
- MasterSwitch
  - outlets 76

unit 75
MasterSwitch Plus
outlets 90
unit 87
MasterSwitch VM
outlets 82
unit 79
Cooling mode, NetworkAIR Portable Air Conditioner 123

D

Date, setting for a card or device 11
Delays
MasterSwitch outlet actions 75, 76
MasterSwitch Plus outlet actions 92
MasterSwitch VM
outlet actions 83
start-up delay 80
outlet groups 39
rack PDU outlet actions 106
Devices, diagnostics for external devices 48

E

Environmental Management System
configuring
check-log light 61
input contacts 62
outlets 62
output relays 62
probes 61
sensors 63
controlling
alarm devices 60
output relays 59
identification parameters 58
locating the OIDs 57
resetting sensors 60
status
alarm devices 67
input contacts 66
outlets 66
output relays 66
overall 64
sensors 67
turning outlets on and off 59
Environmental Monitors
External
configuring 52
status 53
Integrated
configuring 54
status 56
External devices, diagnostics 48

F

Files, transferring 12
Frames, diagnostics for Symmetra uninterruptible power supply 45

G

Graceful shutdown mode, MasterSwitch Plus 92

I

I/O data, Automatic Transfer Switch 110
Identification parameters
Air Removal Unit 69
Automatic Transfer Switch 109
Environmental Management System 58
External Environmental Monitor 51
MasterSwitch 74
MasterSwitch Plus 86
MasterSwitch VM 78
NetworkAIR FM Modules 118
NetworkAIR Portable Air Conditioner 122
rack PDU 100
uninterruptible power supply 16
Input contacts, Environmental Management System
configuring 62
status 66

Input counters, resetting for
3-phase uninterruptible power supply 30
Input voltage of uninterruptible power supply 19
Integrated Environmental Monitors
managing 54
status 56
Intelligence modules, diagnostics 42

L

Load thresholds, by phase for
rack PDU 102
Load-shedding for MasterSwitch Plus 93
Locating the OIDs
agents 8
Air Removal Unit 68
Automatic Transfer Switch 108
Environmental Management System 57
Environmental Monitors 50
MasterSwitch Plus 85
MasterSwitch VM 77
Network Management Cards 8
NetworkAIR FM system 117
NetworkAIR Portable Air Conditioner 121
rack PDU 99
uninterruptible power supply 14

M

Managing
3-phase uninterruptible power supply 30
agents 8
agents of a hardware device 10
Automatic Transfer Switch 108
Environmental Monitor
External 51
Integrated 54
Management Cards 8
MasterSwitch 73
MasterSwitch Plus 85
MasterSwitch VM 77
NetworkAIR FM System 117
NetworkAIR Portable Air Conditioner 121
outlet groups of an uninterruptible power supply 39
uninterruptible power supply 14
MasterSwitch
configuring outlets 75
controlling 75
identification parameters 74
managing 73
restarting outlets 76
turning outlets on and off 76
MasterSwitch Plus
configuring
annunciator mode 96
graceful shutdown mode 92
outlet response to alarms 97
outlets 91
the unit 88
controlling a unit
restarting 87
turning on and off 87
controlling outlets 90
identification parameters 86
load-shedding 93
locating the OIDs 85
status
outlets 98
unit 89
MasterSwitch VM
controlling
outlets 82
unit 79
delays for outlet actions 83
identification parameters 78
managing 77
overload alarm 79
overload parameters 80
start-up delay 80
status
outlets 84
unit 81

MIB
structure 4
using your MIB browser 2
version 1
Monitoring a PowerNet agent 9

N

Names, configuring
Automatic Transfer Switch 112
input feeds 114
output feeds 115
MasterSwitch
outlets 76
unit 75
MasterSwitch Plus
outlets 91
unit 88
MasterSwitch VM
outlets 83
unit 80
rack PDU 100
uninterruptible power supply 16
input feeds 31
outlet groups 39
NetworkAIR FM
locating the OIDs 117
viewing identification parameters 118
NetworkAIR Portable Air Conditioner
locating the OIDs 121
viewing identification parameters 122

O

OIDs 7
categories above PowerNet MIB 6
categories within PowerNet MIB 6
major categories
[hardware] 7
[products] 7
[software] 7
[system] 7
products that use OIDs 5
tabled 7
Operating mode, NetworkAIR Portable Air Conditioner 123
Operating parameters, uninterruptible power supply 23
Outlet groups
configuring delay times 39
controlling for an uninterruptible power supply 40
Outlets
Environmental Management System
configuring 62
controlling 59
status 66
MasterSwitch
configuring 75
controlling 76
MasterSwitch Plus
configuring 91
controlling 90
status 98
rack PDU
configuring 106
controlling 104
status 107
Output capacity, NetworkAIR FM Modules 119
Output counters, resetting for 3-phase uninterruptible power supply 30
Output relays, Environmental Management System
configuring 62
status 66
Output voltage, uninterruptible power supply 19

P

Power modules, diagnostics 43
Power supplies
status for rack PDU 107
voltages supported for Automatic Transfer Switch 110

PowerNet agent, monitoring 9
Probes
  Environmental Management System
    configuring 61
    status 65
  External Environmental Monitor 52
  Integrated Environmental Monitor 54

R

Rack Air Removal Unit. *See Air Removal Unit*
Rack PDU
  controlling outlets 104
  identification parameters 100
  load threshold by phase 102
  number of phases 101
  rated power 101
  status
    load by phase 103
    outlets 107
    power supplies 107
Resetting
  Automatic Transfer Switch 111
  Environmental Management System sensor 60
  phase input counters 30
  phase output counters 30
Restarting
  outlets
    MasterSwitch 76
    MasterSwitch Plus 92
    MasterSwitch VM 82

S

Self-tests, performing for uninterruptible power supply 28
Sensors, Environmental Management System
  configuring 63
  resetting 60
  status 67
Setpoint, for NetworkAIR Portable Air Conditioner temperature 123
Severity levels, for traps 125
Shutdown parameters, uninterruptible power supply 23
Sleep mode, initiating for uninterruptible power supply 26
SNMP, access control for NMSs 5
Software modules of an agent 9
State of uninterruptible power supplies 37
Status
  Air Removal Unit 71
  Automatic Transfer Switch 113
  communications buses, Symmetra uninterruptible power supply 49
  Environmental Management System 64
    alarm devices 67
    input contacts 66
    outlets 66
    output relays 66
    probes 65
    sensors 67
  External Environmental Monitor 53
  Integrated Environmental Monitor 56
  MasterSwitch Plus
    outlets 98
    unit 89
  MasterSwitch VM
    outlets 84
    unit 81
  NetworkAIR FM Systems and Modules
    humidity-related OIDs 119
    output capacity of each Module 119
    temperature-related OIDs 119
  NetworkAIR Portable Air Conditioner
    operating mode 123
    operational status of components (fan, blower, compressor, pump) 123
    Remote humidity OID 123
    temperature setpoint 123
    temperature-related OIDs 123
  rack PDU 103, 107

uninterruptible power supply
batteries 17
communication 29
input feeds 31
output feeds 33
synchronized control groups 36
Symmetra uninterruptible power supply
diagnostics 41
status of communication buses 49
subtraps 165
Synchronizing
control groups 35
multiple uninterruptible power supplies 35

T

Tabled OIDs 7
Time, setting for a card or device 11
Transferring files 12
Trap receivers
defining 125
setting 11
Traps
Air Removal Unit 159
Automatic Transfer Switch 138
Battery Management System 140
defining trap receivers 125
enabling argument types for 12
Environmental Management System 148, 161
External Environmental Monitor 132
Integrated Environmental Monitor 139
MasterSwitch 130
MasterSwitch Plus 135
MasterSwitch VM 134
Matrix-UPS 129
NetworkAIR 163
PDU 142
rack PDU 147, 155
Redundant Switch 136
severity levels 125
Smart-UPS XL 129
SNMP agent 127
Symmetra MW uninterruptible power supply 162
Symmetra uninterruptible power supply 133
Symmetra uninterruptible power supply subtraps 165
uninterruptible power supply 127, 131, 137
uninterruptible power supply outlet groups 162

U

Uninterruptible power supplies
configuring
identification parameters 16
operating parameters 23
shutdown parameters 23
VA ratings for devices of an uninterruptible power supply 22
controlling
bypass mode 26
outlet groups 40
uninterruptible power supply operation 26
diagnostics for Symmetra uninterruptible power supply 41
initiating sleep mode 26
input voltage 19
locating the OIDs for 14
managing
3-phase uninterruptible power supply 30
outlet groups 39
outlet groups 39
output voltage 19
performing
calibrations 28
self-tests 28
state 37
status
batteries 17
communication 29
input feeds 31
output feeds 33
Symmetra uninterruptible power supply communication buses 49

synchronizing
control groups 35
multiple uninterruptible power supplies 35
testing alarms 26

V

VA ratings for devices of an uninterruptible power supply 22
Venting mode, NetworkAIR Portable Air Conditioner 123
Version
MIB 1
of an agent 9

Edition notice

Trademarks

Part Number: *991-0264B*