

PowerNet Management Information Base (MIB) Reference Guide

Network Management Card 3 (NMC 3)

GUTOR Modular DC UPS

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About This Guide

This introduction provides the following information to help you use this guide.

- **Guide Purpose**
- **Guide Structure**
- **Related Documents**

Guide Purpose

This guide describes how to use the PowerNet Management Information Base (MIB), version 4.4.2, to manage the GUTOR Modular DC UPS devices via Simple Network Management Protocol (SNMP).

NOTE: This guide does not describe all of the OIDs in the MIB, only the OIDs supported by GUTOR Modular DC UPS devices.

Guide Structure

This guide's chapters describe how to use the PowerNet MIB:

- **Chapter 1: PowerNet MIB Structure** provides an overview of the PowerNet MIB and its Object Identifications (OIDs).
- Chapter 2 through Chapter 4 describe how to use PowerNet MIB OIDs to manage specific products:
 - **Chapter 2: How to Monitor a UPS**
 - **Chapter 3: How to Monitor a Universal Input/Output Module**
 - **Chapter 4: How to Monitor a Charger**

Related Documents

This guide describes how to use the PowerNet MIB only. For information about GUTOR Modular DC UPS devices, see the User Guide for that product. See your network management system (NMS) documentation for information about your NMS.

Chapter 1: PowerNet MIB Structure

This chapter categorizes the PowerNet MIB into its major OID and trap components as follows:

- **PowerNet MIB Traps**
- **PowerNet MIB OIDs**

PowerNet MIB Traps

The AP9643 Network Management Card 3 can send traps to an NMS when specific events occur. The NMS does not need the PowerNet MIB to receive the trap, but it does need the MIB to interpret the trap's meaning. Also, the trap receiver definitions that the device uses determine which NMSs can receive traps.

PowerNet MIB OIDs

The PowerNet MIB OIDs allow an NMS to use its SNMP browser to monitor the AP9643 Network Management Card 3. The following sections further explain how to use OIDs:

- **SNMP Access Controls**
- **SNMP Browser Structure**
- **PowerNet MIB OIDs Structure**
- **Tabled OIDs**

SNMP Access Controls

The AP9643 Network Management Card 3 has a console program that you can use to define specific SNMP access values for up to four SNMP channels.

Action	Result
Disable SNMP access completely	Prevent SNMP access by any NMS.
Use an NMS IP Address as an SNMP channel value	Limit channel access to only the defined NMS.
Define a non-default password for an SNMP channel	Limit channel access to an NMS that knows the password.
Select the type of access used by an SNMP channel	Allow an NMS to have write access, read access, or no access.

For more information on SNMP access controls, see the Network Management Card User Interface (UI).

SNMP Browser Structure

The PowerNet MIB fits into a hierarchical structure within the SNMP browser's categories. For example, PowerNet MIB OIDs fit into the browser's structure, as follows:

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

PowerNet MIB OIDs Structure

The PowerNet MIB OIDs also are categorized into a hierarchical structure, with [apc] at the top and individual OIDs under specific OID categories or within specific OID tables (See **Tabled OIDs**). For example, under [apc], the [products] category provides OIDs that you use to monitor specific products.

The [hardware] category under [products] provides OIDs that you use to monitor specific products.

[hardware]
This category contains sub-categories for each type of hardware product that you can monitor using PowerNet MIB OIDs. The following chapter describe how to use the OIDs in those sub-categories: <ul style="list-style-type: none">• For [ups], see Chapter 2: How to Monitor a UPS.

The [system] category provides read-only OIDs that identify models of UPS devices by unique numbers that other OIDs can reference. For example, the MIB-II system OIDs (listed under [internet], [mgmt], [mib-2], and [system]) use a PowerNet MIB [system] OID number for the MIB-II's [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. For example, you can select [apc] to list the current values for all PowerNet MIB OIDs, or [ups] to list the current values for all PowerNet MIB UPS OIDs. (An OID table appears enclosed in braces {.})

Chapter 2: How to Monitor a UPS

This chapter describes how to use PowerNet MIB OIDs to monitor a GUTOR Modular DC UPS device through its AP9643 Network Management Card 3.

NOTE: The OID numbers provided in this topic are not the full OIDs as listed in the MIB. To get the full OID number for each OID listed, prepend the base OID (1.3.6.1.4.1.318) to the beginning of the OID. For example, the OID number provided for [upsBasicBatteryStatus] is 1.1.1.2.1.1 and its full OID number is 1.3.6.1.4.1.318.1.1.1.2.1.1

ThePowerNet MIB OIDs that you can use to monitor a UPS are in categories under the heading [ups]. To list the categories, perform the following steps:

1. Select [products] under [apc].
2. Select [hardware].
3. Select [ups].

OID Categories	Tasks
[upsIdent] [upsBattery] [upsInput] [upsOutput] [upsComm] [upsState] [upsDiagnostics] [upsDCOutput]	View information about the UPS and its overall operation (See How to Monitor a UPS).
[upsConfig]	View parameters that affect the overall operation of the UPS (See How to Check a UPS Configuration).
[upsTest]	View information on how the scheduling of UPS tests is configured (See How to Check a UPS Test Configuration).

How to Monitor a UPS

You use GETs (SNMP read commands) to read the OIDs to view information about the UPS.

Most PowerNet MIB categories have OIDs that you can use to view information about the operation of the UPS. These OIDs respond to GETs, but not to SETs: You can view (GET) information about UPS operation, but you cannot affect (SET) that operation.

OID Categories	Information Reported
[upsIdent]	The UPS identification parameters. See [upsIdent] UPS Identification OIDs.
[upsBattery]	The UPS battery status. See [upsBattery] UPS Battery OIDs.
[upsInput]	The voltage input to the UPS. See [upsInput] UPS Input OIDs.
[upsOutput]	The voltage output by the UPS. See [upsOutput] UPS Output OIDs.
[upsComm]	The UPS device's communication status. See [upsComm] UPS Communication OIDs.
[upsState]	The UPS device's state, See [upsState] UPS State OIDs.
[upsDiagnostics]	The UPS device's diagnostics. See [upsDiagnostics] UPS Diagnostics OIDs.
[upsDCOutput]	The DC power output by the UPS. See [upsDCOutput] UPS DC Output OIDs.

[upsIdent] UPS Identification OIDs

The [upsIdent] category has OIDs in two sub-categories, [upsBasicIdent] and [upsAdvIdent] that report UPS identification parameter values.

[upsBasicIdent]

OID Name	OID Number	Information Reported
upsBasicIdentModel	1.1.1.1.1.1	The UPS model name.
upsBasicIdentModelType	1.1.1.1.1.4	The detailed model information of the system.

[upsAdvIdent]

OID Name	OID Number	Information Reported
upsAdvIdentFirmwareRevision	1.1.1.1.2.1	The firmware revision of the UPS system's microprocessor.
upsAdvIdentDateOfManufacture	1.1.1.1.2.2	The date when the UPS was manufactured in mm/dd/yy (or yyyy) format.
upsAdvIdentSerialNumber	1.1.1.1.2.3	An 8-character string identifying the serial number of the UPS internal microprocessor. This number is set at the factory. NOTE: This number does NOT correspond to the serial number on the rear of the UPS.

[upsBattery] UPS Battery OIDs

The [upsBattery] category has OIDs in three sub-categories, [upsBasicBattery], [upsAdvBattery], and [upsHighPrecBattery], that provide UPS battery status information.

[upsBasicBattery]

OID Name	OID Number	Information Reported
upsBasicBatteryStatus	1.1.1.2.1.1	The status of the UPS batteries: <ul style="list-style-type: none">• unknown (1): The Management Card or PowerNet Agent cannot report the status.• batteryNormal (2): Within normal operating parameters.• batteryLow (3): Insufficient battery capacity to support the UPS equipment load.• batteryInFaultCondition (4): The battery has an internal error condition.
upsBasicBatteryLastReplacementDate	1.1.1.2.1.3	The date when the UPS system's batteries were last replaced in mm/dd/yy or mm/dd/yyyy format.

[upsAdvBattery]

OID Name	OID Number	Information Reported
upsAdvBatteryCapacity	1.1.1.2.2.1	The remaining battery capacity expressed in percent of full capacity.
upsAdvBatteryTemperature	1.1.1.2.2.2	The current internal UPS temperature expressed in Celsius. Temperatures below zero read as 0.
upsAdvBatteryActualVoltage	1.1.1.2.2.8	The actual battery bus voltage in Volts.
upsAdvBatteryCurrent	1.1.1.2.2.9	The battery current in Amps.

[upsHighPrecBattery]

OID Name	OID Number	Information Reported
upsHighPrecBatteryTemperature	1.1.1.2.3.2	The current internal UPS temperature expressed in tenths of degrees Celsius. Temperatures below zero read as 0.
upsHighPrecBatteryCurrent	1.1.1.2.3.5	The battery current in tenths of Amps.
upsHighPrecBatteryVoltage	1.1.1.2.3.7	The actual battery bus voltage expressed as tenths of Volts.

[upsInput] UPS Input OIDs

The [upsInput] category has read-only OIDs in [upsAdvInput] that provide information about the UPS input (utility line) voltage.

[upsAdvInput]

OID Name	OID Number	Information Reported
upsAdvInputFrequency	1.1.1.3.2.4	The current input frequency to the UPS system in Hz.
upsAdvInputTotalActivePower	1.1.1.3.2.12	The input total active power (sum of all three phases) of the UPS system in kW.

[upsOutput] UPS Output OIDs

The [upsOutput] category has read-only OIDs in [upsAdvOutput] that provide information about the UPS output voltage.

[upsAdvOutput]

OID Name	OID Number	Information Reported
upsAdvOutputActivePower	1.1.1.4.2.8	The total output active power of the UPS system in W. The total active power is the sum of phase 1, phase 2 and phase 3 power.

[upsComm] UPS Communication OIDs

The [upsComm] category has read-only OIDs that display the UPS device's communication status.

OID Name	OID Number	Information Reported
upsCommStatus	1.1.1.8.1	The status of agent's communication with UPS.

[upsState] UPS State OIDs

The [upsState] category has OIDs in one sub-category, [upsAdvState] that report information about the UPS device's state.

[upsAdvState]

OID Name	OID Number	Information Reported
upsAdvStateGutorModularSpecificFaults	1.1.1.11.2.16	<p>An ASCII string containing the 64 flags representing the current active Charger Rectifier and UPS specific faults for Gutor Modular models.</p> <p>If the Network Card is unable to determine the values of the flags, this variable is set to 'UNKNOWN'. If the connected UPS does not use this variable, it is set to 'NOT SUPPORTED'.</p> <p>Flag allocation:</p> <ul style="list-style-type: none">• Flag 1 to 16 for breakers status• Flag 17 to 32 for module errors• Flag 33 to 44 For charger errors• Flag 45 to 54 for battery errors• Flag 55 to 64 for temperature errors <p>For flag definitions, view the OID in an SNMP browser,</p>

[upsDiagnostics] UPS Diagnostics OIDs

The [upsDiagnostics] category has OIDs in one sub-category, [upsDiagnosticSubsystem], that report information about the UPS device's diagnostics.

[upsDiagnosticSubsystem]

OID Name	OID Number	Information Reported
upsDiagSubSysNetworkComCardModelNumber	1.1.1.13.4.26.1.2	<p>A character string identifying the model number of the UPS network and display interface communication card.</p> <p>This value is set at the factory.</p>
upsDiagSubSysNetworkComCardSerialNumber	1.1.1.13.4.26.1.3	<p>A character string identifying the serial number of the UPS network and display interface communication card.</p> <p>This value is set at the factory.</p>
upsDiagSubSysNetworkComCardDateOfManufacture	1.1.1.13.4.26.1.4	<p>The date when the UPS network and display interface communication card was manufactured in mm/dd/yyyy format.</p> <p>This value is set at the factory.</p>
upsDiagSubSysNetworkComCardHardwareRev	.1.1.1.13.4.26.1.5	<p>The hardware revision of the UPS network and display interface communication card.</p> <p>This value is set at the factory.</p>

OID Name	OID Number	Information Reported
upsDiagSubSysNetworkComCardFirmwareAppRev	1.1.1.13.4.26.1.6	An ID string identifying the application firmware revision of the UPS network and display interface communication card.

[upsDCOutput] UPS DC Output OIDs

The [upsDCOutput] category has OIDs in one sub-category, [upsDCOutputStatus], that provides information about the DC power output.

[upsDCOutputStatus]

OID Name	OID Number	Information Reported
upsDCOutputStatusVoltageNominal	1.1.1.17.1.2.1.2	The desired voltage for this output in tenths of VDC. When the output is on and there are no fault conditions, the actual voltage should be near the nominal.
upsDCOutputStatusCurrentRating	1.1.1.17.1.2.1.3	The amount of current this output is able to supply in tenths of amperes.
upsDCOutputStatusVoltage	1.1.1.17.1.2.1.4	The voltage measured on this output in tenths of VDC.
upsDCOutputStatusCurrent	1.1.1.17.1.2.1.5	The current drawn by the load measured on this output in tenths of amperes.

How to Check a UPS Configuration

You can use the OID in the [upsConfig] category to check how the UPS responds to specific operating conditions.

[upsConfig]

The [upsConfig] category has one subcategory, [upsAdvConfig] which displays the monitoring options for the UPS.

[upsAdvConfig]

OID Name	OID Number	Information Reported
upsAdvConfigBattCabAmpHour	1.1.1.5.2.17	Configure the amp-hour setting of the UPS battery solution. The value shows the maximum battery capacity configured for the UPS when using a third party battery solution regardless of the breaker positions.

How to Check a UPS Test Configuration

This section contains information on using OIDs to display the UPS device's testing capabilities and testing configurations. **NOTE:** These OIDs do not initiate or perform any tests.

[upsTest]

The [upsTest] category contains the [upsAdvTest] sub-category for viewing test settings for the UPS.

[upsAdvTest]

OID Name	OID Number	Information Reported
upsAdvTestBatteryLastDate	1.1.1.7.2.13	The latest date when the UPS performed a battery diagnostic test (battery monitoring test), regardless of the test result, in YYYY-MM-DD format.
upsAdvTestBatteryProcessStatus	1.1.1.7.2.14	The results of the latest battery diagnostic test (battery monitoring test) <ul style="list-style-type: none">• ok(1): A successful completion of the test.• preconditionNotMeet(2): The test did not start, due to low capacity or low load.• batteryTestInProgress(3): A test is in progress.• refused(4): The test was refused and did not take place.• aborted(5): The test started but it was either canceled or the system encountered an error.• pending(6): The test will commence shortly.
upsAdvTestBatteryConditionStatus	1.1.1.7.2.15	Result of the latest successful test: <ul style="list-style-type: none">• 1: Unknown• 2: Nattery OK• 3: Battery capacity decreased• 4: Battery defect

Chapter 3: How to Monitor a Universal Input/Output Module

This chapter describes how to use the following PowerNet MIB OIDs to monitor a universal input/output (UIO) module inserted into a Network Management Card 3 (AP9643).

NOTE: The OID numbers provided in this topic are not the full OIDs as listed in the MIB. To get the full OID number for each OID listed, add 1.3.6.1.4.1.318 to the beginning. For example, the OID number provided for `[uioSensorStatusPortID]` is 1.1.25.1.2.1.1 and its full OID number is 1.3.6.1.4.1.318.1.1.25.1.2.1.1

[universalInputOutput] Universal Input/Output OIDs

The `[universalInputOutput]` category has OIDs in one sub-category, `[uioSensor]` that reports universal input/output module values.

[uioSensor]

OID Name	OID Number	Information Reported
<code>uioSensorStatusPortID</code>	1.1.25.1.2.1.1	The ID of the port to which the sensor is attached.
<code>uioSensorStatusSensorName</code>	1.1.25.1.2.1.3	The sensor name.
<code>uioSensorStatusTemperatureDegF</code>	1.1.25.1.2.1.5	The sensor's current temperature reading in degrees Fahrenheit. -1 indicates an invalid reading due to lost communications.
<code>uioSensorStatusTemperatureDegC</code>	1.1.25.1.2.1.6	The sensor's current temperature reading in degrees Celsius. -1 indicates an invalid reading due to lost communications.

Chapter 4: How to Monitor a Charger

This chapter describes how to use the following PowerNet MIB OIDs to monitor a charger inserted into a Network Management Card 3 (AP9643).

NOTE: The OID numbers provided in this topic are not the full OIDs as listed in the MIB. To get the full OID number for each OID listed, add 1.3.6.1.4.1.318 to the beginning. For example, the OID number provided for [chargerIdentSerialNumber] is 1.1.29.1.3 and its full OID number is 1.3.6.1.4.1.318.1.1.29.1.3

[charger] Charger OIDs

The [charger] category has OIDs in three sub-categories, [chargerIdent], [chargerInput], and [chargerOutput] that reports charger values.

[chargerIdent]

OID Name	OID Number	Information Reported
chargerIdentModel	1.1.29.1.1	A character string identifying the model name of the Charger. This value is set at the factory.
chargerIdentSerialNumber	1.1.29.1.3	A character string identifying the serial number of the Charger. This value is set at the factory.
chargerIdentModelType	1.1.29.1.4	The detailed model information of the Charger

[chargerInput]

OID Name	OID Number	Information Reported
chargerInputPhaseVoltage	1.1.29.2.1.1.2	The input voltage in VAC, or -1 if it's unsupported by this Charger.
chargerInputPhaseCurrent	1.1.29.2.1.1.5	The input current in 0.1 amperes, or -1 if it's unsupported by this Charger.

[chargerOutput]

OID Name	OID Number	Information Reported
chargerOutputStatus	1.1.29.3.1	The current state of the Charger. If the Charger is unable to determine the state of the Charger this variable is set to unknown(1). <ul style="list-style-type: none">•unknown (1)•initialising (2)•standby (3)•onBattery (4)•floatCharging (5)•boostCharging (6)•initialCharging (7)•directfeed (8)
chargerOutputTotalCurrent	1.1.29.3.3	The current in amperes drawn by the load on the Charger.

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Connect to localized Schneider Electric web site for specific countries, each of which provides customer support information.
 - **www.se.com/support/**
Global support searching Schneider Electric Knowledge Base and using e-support.
- Contact the Schneider Electric Customer Support Center by telephone or e-mail.
 - Local, country-specific centers: go to **www.se.com > Support > Operations around the world** for contact information.

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