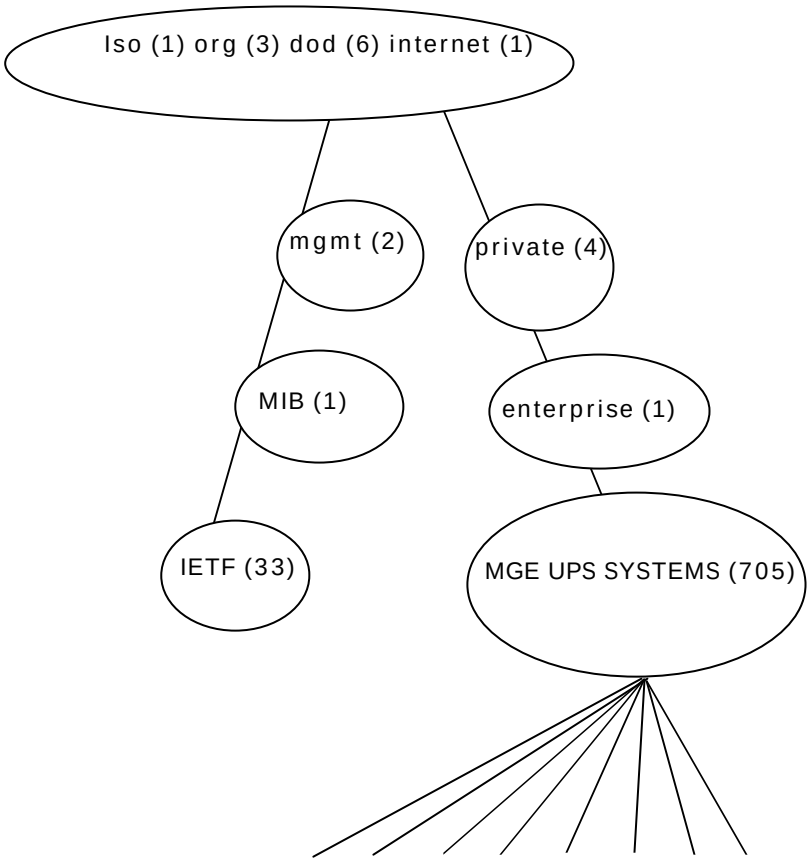
agent's MIB description



AA	04/01/02	Edition originale / First issue	P.Pellegrini		P.Vincent	
Ind	date	Modification	Nom Name Réalisé par Prepared by	Visa	Nom Name Approuvé par Approved by	Visa

contents

1. MG UPS MIB Objects

The MG UPS MIB V1.6 defines all objects for managing UPSs on a Network.
The following OID refers to the entry point of the MG UPS MIB in the Internet tree:
{iso(1).org(3).dod(6).internet(1).private(4).entreprises(1).merlinGerin(705).ups(1)}

1.3.6.1.4.1.705.1.

■ **1: upsmgIdent: "UPS Identification Group"**

1: upsmgIdentFamilyName:	**STRING** UPS Family name. i.e. "PULSAR", "GALAXY", etc.
2: upsmgIdentModelName:	**STRING** UPS Model name. i.e. "SV6", "PSX30", etc.
3: upsmgIdentRevisionLevel:	**STRING** UPS revision level. i.e. "V1.2"
4: upsmgIdentFirmwareVersion:	**STRING** UPS firmware version. i.e. "V1.0"
5: upsmgIdentUserID:	**STRING** UPS identification string (user-defined)
6: upsmgIdentInstallationDate:	**STRING** UPS installation date (user-defined)
7: upsmgIdentSerialNumber:	**STRING** UPS serial number.

1.3.6.1.4.1.705.1.

■ **2: upsmgManagement: "UPS Management Group"**

1: upsmgManagersNum:	**Integer** Number of managers. (8, 16 or 24 depending on the Agent)
2: upsmgManagersTable:	**TABLE** Description of all the managers that will receive traps transmitted by the agent. The table gives information such as the manager's IP address, the severity level of the traps to be sent to the manager, or how the acknowledgment procedure is configured.
1: upsmgManagerEntry:	**TABLE** Description of one of the managers in the Managers table.
1: mgmanagerIndex***.index***	**Integer** Manager's index number in the table, ranging from 1 to upsmgManagersNum.
2: mgmanagerDeviceNumber***.index***	**Integer** An entry is allocated to this object when the manager is powered by the UPS. It contains the input number used by the manager in the devices table. If the manager is not powered by the UPS, this object is set to 0.
3: mgmanagerNMSType***.index***	**Integer** Manager type - umclient(1), - decnetview(2), - umview(3), - dview(4), - hpopenview(5), - sunnetmanager(6), - novellnms(7), - ibmnetview(8), - other(9), - autolearning(10); this value is used by UM-Link to register an automatically detected manager.
4: mgmanagerCommType***.index***	**Integer** Communication protocol level used by the manager: - other(1): none of the following

	- invalid(2): an invalidated manager - cmip(3): OSI CMIP - snmpv1(4): SNMPv1 - snmpv2(5): SNMPv2 Value 2 indicates that the corresponding entry is free in the Managers table.
5: mgmanagerDescr***.index***	**String** Description of the manager.
6: mgmanagerAddress***.index***	**Internet** IP address of the manager's host workstation.
7: mgmanagerCommunity***.index***	**String** Manager's community name. The default value is "public".
8: mgmanagerSeverityLevel***.index***	**Integer** Trap severity level. Maximum severity (from 1 to 7) of traps sent to the manager by the agent. No traps, with a higher level of severity, will be sent. Default value: 4
9: mgmanagerTrapAck***.index***	**Integer** Type of acknowledgment for the associated manager: - mgack(1), - mgnoack(2), - stdnomg(3), - mgacks(4), - cpqnoack(5) mgack or mgacks indicate that the manager is using the MGE UPS SYSTEMS trap acknowledgement system; mgnoack, ietfnoack and cpqnoack indicate that the manager (MGE UPS SYSTEMS, IETF, Compaq respectively) is not using the system.

1.3.6.1.4.1.705.1.

■ **3: upsmgReceptacle: "UPS Receptacle Group"**

1: upsmgReceptaclesNum:	**Integer** Number of output receptacles.
2: upsmgReceptaclesTable:	**TABLE** Output Receptacles table, containing information such as the output ID (user-defined) or on/off status of the receptacle.
1: upsmgReceptacleEntry	**TABLE** Description of an entry in the Receptacles table.
1: mgreceptacleIndex***.index***	**Integer** Receptacle index number in the table, ranging from 1 to upsmgReceptaclesNum.
2: mgreceptacleLevel***.index***	**Integer** Receptacle level. Value 2 indicates that the corresponding entry is invalid in the table. Values 1 and 4 are reserved. Values greater than 4 are used to regroup equivalent receptacles.
3: mgreceptacleType***.index***	**String** Description of receptacle type.
4: mgreceptacleIdent***.index***	**String** Description of receptacle.
5: mgreceptacleState***.index***	**Integer** Receptacle state: manualON(1): after manual power-up, manualOFF(2): after manual shutdown, normalON(3): after power is restored following a transfer to battery backup, normalOFF(4): after shutdown following a transfer to battery backup, controlON(5): after a Control ON operation, controlOFF(6): after a Control OFF operation,

	scheduleON(7): after a scheduled power-up, scheduleOFF(8): after a scheduled shutdown.
6: mgreceptacleReceptacle***.index***	**Integer** Object used to manage logical dependencies between receptacles. It contains the number of the top level receptacle. The default value is 0 (the receptacle does not depend on another receptacle).
7: mgreceptaclePowerCons***.index***	**Integer** Receptacle rated output in Volt-Amperes.
8: mgreceptacleOverload***.index***	**Integer** Receptacle overload status
9: mgreceptacleAutonomy***.index***	**Integer** Receptacle battery backup time. (Status)

1.3.6.1.4.1.705.1.

■ **4: upsmgConfig: "UPS Configuration Group"**

1: upsmgConfigBatteryInstalled	**Integer** Battery installation state: yes(1), no(2)
2: upsmgConfigNominalBatteryVoltage	**Integer** Battery rated voltage. (dV)
3: upsmgConfigNominalBatteryTime	**Integer** Rated battery backup time when fully charged. (Seconds)
4: upsmgConfigNominalRechargeTime	**Integer** Rated battery total recharge time. (Seconds)
5: upsmgConfigMinRechargeLevel:	**Integer** Minimum battery charge level. (%)
6: upsmgConfigMaxRechargeTime:	**Integer** Maximum time before restarting UPS. (Seconds)
7: upsmgConfigLowBatteryTime:	**Integer** Remaining battery backup time. (Seconds)
8: upsmgConfigLowBatteryLevel:	**Integer** Minimum battery charge level, at which UPS shutdown is initiated. (%)
9: upsmgConfigAutoRestart:	**Integer** "Automatic restart" status. always(1) never(2) onmain(3)
10: upsmgConfigShutdownTimer:	**Integer** UPS battery backup time on transfer to battery. (Seconds)
11: upsmgConfigSysShutDuration:	**Integer** Battery backup time after shutdown command. (Seconds)
12: upsmgConfigVARating	**Integer** UPS rated output in Volt-Amperes.
13: upsmgConfigLowTransfer	**Integer** Minimum voltage threshold for transfer to battery.
14: upsmgConfigHighTransfer	**Integer** Maximum voltage threshold for transfer to battery.
15: upsmgConfigOutputNominalVoltage	**Integer** Rated output voltage (dV).
16: upsmgConfigOutputNominalCurrent	**Integer** Rated output current .
17: upsmgConfigOutputNominalFrequency	**Integer** Rated output frequency (dHz).
18: upsmgConfigByPassType	**Integer** Bypass type: none(1) relay(2) static(3)
19: upsmgConfigAlarmAudible	**Integer** Audible alarm state: yes(1), no(2)
20: upsmgConfigAlarmTimeDelay	**Integer** Audible alarm time delay. (Seconds)
21: upsmgConfigDevicesNum:	**Integer** Number of devices supplied.
22: upsmgConfigDevicesTable:	**TABLE** Table listing devices connected to the UPS. The table contains information such as device ID (user-defined), VA rating, and the shutdown and reboot duration.
1: upsmgDeviceEntry:	**TABLE** Entry in the Devices table.

1: mgdeviceIndex***.index***	**Integer** Device index number in the table, ranging from 1 to upsmgConfigDevicesNum.
2: mgdeviceReceptacleNum***.index***	**Integer** Number of the receptacle to which the device is connected
3: mgdeviceIdent***.index***	**String** Text description of device.
4: mgdeviceVARating***.index***	**Integer** Volt-Ampere rating of connected device.
5: mgdeviceSequenceOff***.index***	**Integer** Sets position of device in shutdown sequence.
6: mgdeviceSequenceOn***.index***	**Integer** Sets position of device in reboot sequence.
7: mgdeviceShutdownDuration***.index***	**Integer** Time required for device to shutdown. (Seconds)
8: mgdeviceBootUpDuration***.index***	**Integer** Time required for device to reboot. (Seconds)
23: upsmgConfigReceptaclesTable:	**TABLE** UPS Receptacles table, containing information on the behavior of UPS outputs on battery back-up, such as the battery backup time for specific outputs, the delay before restart, and the shutdown duration of the receptacle which is calculated as a function of the devices connected to the output.
1: upsmgCfgReceptEntry	**TABLE** Description of an entry in the Receptacles table.
1: mgreceptacleIndex***.index***	**Integer** Receptacle index number in the table, ranging from 1 to upsmgReceptaclesNum.
2: mgreceptacleStateTurnOn***.index***	**Integer** State of receptacle at reboot: on(1) off(2) last(3) schedule(4)
3: mgreceptacleStateMainReturn***.index***	**Integer** State of receptacle when power is restored: on(1) off(2) last(3) schedule(4)
4: mgreceptacleStateDischarge***.index***	**Integer** State of receptacle upon return transfer following battery discharge: on(1) off(2) last(3) schedule(4)
5: mgreceptacleShutoffLevel***.index***	**Integer** Battery level at which the shutdown sequence is initiated. (%)
6: mgreceptacleShutoffTimer***.index***	**Integer** Time delay before initiating shutdown sequence after transfer to battery.
7: mgreceptacleRestartLevel***.index***	**Integer** Battery level at which the restart sequence is initiated. (%)
8: mgreceptacleRestartDelay***.index***	**Integer** Time delay before initiating restart sequence after shutdown. (Seconds)
9: mgreceptacleShutdownDuration***.index***	**Integer** Maximum shutdown duration for the devices supplied by the receptacle. (Seconds)
10: mgreceptacleBootUpDuration***.index***	**Integer** Maximum restart duration for the devices supplied by the receptacle. (Seconds)
24: upsmgConfigExtAlarmNum:	**Integer** Number of external alarms.
25: upsmgConfigExtAlarmTable:	**TABLE** Table describing the relay contacts monitored by the UM–Sensor environment sensor.

1: upsmgExtAlarmEntry	**TABLE** Description of an entry in the External Alarms table.
1: mgextAlarmIndex***.index***	**Integer** Contact index number in the table, ranging from 1 to upsmgConfigExtAlarmNum.
2: mgextAlarmUID***.index***	Description of relay contact.
26: upsmgConfigEmergencyTestFail:	**Integer** Configuration of the SNMP agent to generate UPS shutdown on reception of negative test event.
27: upsmgConfigEmergencyOnByPass:	**Integer** Configuration of the SNMP agent to generate UPS shutdown on reception of transfer to bypass event.
28: upsmgConfigEmergencyOverload:	**Integer** Configuration of the SNMP agent to generate UPS shutdown on reception of overload event.
29: upsmgConfigControlDayTable:	UPS ON/OFF schedule table, indicating, for each day of the week, the power-on time and power-off time.
1: upsmgCtrlDayEntry	**TABLE** Description of an entry in the scheduled on/off table.
1: mgcontrolDayIndex***.index***	**Integer** Index number in the table, ranging from 1 to 7. Sunday(1) Monday(2) etc.
2: mgcontrolDayOn***.index***	**Integer** Schedules power-on time. The value must be entered in seconds starting at 00.00 (midnight). A value greater than 86400 indicates that no power-on operation has been scheduled.
3: mgcontrolDayOff***.index***	**Integer** Schedules power-off time. The value must be entered in seconds starting at 00.00 (midnight). A value greater than 86400 indicates that no power-off operation has been scheduled.
30: upsmgConfigLowBooster:	**Integer** Low booster threshold. (dV)
31: upsmgConfigHighBooster:	**Integer** High booster threshold. (dV)
32: upsmgConfigLowFader:	**Integer** Low fader threshold. (dV)
33: upsmgConfigHighFader:	**Integer** High fader threshold. (dV)

1.3.6.1.4.1.705.1.

■ **5: upsmgBattery: "UPS battery backup time group"**

1: upsmgBatteryRemainingTime:	**Integer** Remaining battery backup time. (Seconds)
2: upsmgBatteryLevel:	**Integer** Battery charge level. (%)
3: upsmgBatteryRechargeTime	**Integer** Recharge time required for the battery level to reach the level set by upsmgConfigRechargeLevel. (Seconds)
4: upsmgBatteryRechargeLevel	**Integer** (%) (? ? ?)
5: upsmgBatteryVoltage	**Integer** Voltage delivered by the battery. (dV) (? ? ?)
6: upsmgBatteryCurrent	**Integer** Current delivered by the battery. (? ? ?)
7: upsmgBatteryTemperature:	**Integer** UPS internal temperature. (°C) (? ? ?)
8: upsmgBatteryFullRechargeTime	**Integer** Time required to fully recharge the battery. (Seconds)
9: upsmgBatteryFaultBattery:	**Integer** Battery fault indicator: yes(1), no(2).
10: upsmgBatteryNoBattery:	**Integer** Battery presence indicator: yes(1), no(2).
11: upsmgBatteryReplacement	**Integer** Battery replacement indicator: yes(1), no(2).
12: upsmgBatteryUnavailableBattery	**Integer** Battery unavailable indicator: yes(1), no(2).
13: upsmgBatteryNotHighCharge	**Integer** Battery not charged to maximum indicator: yes(1), no(2).

14: upsmgBatteryLowBattery	**Integer** Low battery indicator: yes(1), no(2).
15: upsmgBatteryChargerFault	**Integer** Charger fault indicator: yes(1), no(2).
16: upsmgBatteryLowCondition	**Integer** State indicating that battery has entered low condition: yes(1), no(2).
17: upsmgBatteryLowRecharge	**Integer** Low battery recharge indicator: yes(1), no(2).

■ **6: upsmgInput: "UPS input group"**

1: upsmgInputPhaseNum:	**Integer** Number of input phases.
2: upsmgInputPhaseTable:	**TABLE** Phase state table, including information such as the input phase voltage, frequency and current.
1: upsmgInputPhaseEntry	**TABLE** Description of an entry in the Inputs table.
1: mginputIndex***.index***	**Integer** Index number in the table, ranging from 1 to upsmgInputPhaseNum.
2: mginputVoltage***.index***	**Integer** Input voltage. (dV)
3: mginputFrequency***.index***	**Integer** Input frequency. (dHz)
4: mginputMinimumVoltage***.index***	**Integer** Minimum voltage of phase during the previous minute. (dV)
5: mginputMaximumVoltage***.index***	**Integer** Maximum voltage of phase during the previous minute. (dV)
6: mginputCurrent***.index***	**Integer** Input current. ()
3: upsmgInputBadStatus:	**Integer** Incorrect input voltage or frequency: yes(1), no(2).
4: upsmgInputLineFailCause	**Integer** Cause of outage: no(1): no outage outoftolvolt(2): voltage out of tolerance outoftolfreq(3): frequency out of tolerance utilityoff(4): no voltage.

1.3.6.1.4.1.705.1.

■ **7: upsmgOutput: "UPS output group"**

1: upsmgOutputPhaseNum:	**Integer** Number of output phases.
2: upsmgOutputPhaseTable:	**TABLE** Phase state table, including information such as the output phase voltage, frequency, current and load.
1: upsmgOutputPhaseEntry	**TABLE** Description of an entry in the Outputs table.
1: mgoutputPhaseIndex***.index***	**Integer** Index number in the table, ranging from 1 to upsmgOutputPhaseNum.
2: mgoutputVoltage***.index***	**Integer** Output voltage. (dV)
3: mgoutputFrequency***.index***	**Integer** Output frequency. (dHz)
4: mgoutputLoadPerPhase***.index***	**Integer** Load per phase. (%)
5: mgoutputCurrent***.index***	**Integer** Output current. () (? ? ?)
3: upsmgOutputOnBattery:	**Integer** UPS is on battery: yes(1), no(2)
4: upsmgOutputOnByPass	**Integer** Bypass state: yes(1), no(2)
5: upsmgOutputUnavailableByPass	**Integer** Bypass not available: yes(1), no(2)
6: upsmgOutputNoByPass	**Integer** Bypass not installed: yes(1), no(2)
7: upsmgOutputUtilityOff	**Integer** UPS in battery backup time: yes(1), no(2)
8: upsmgOutputOnBoost	**Integer** Output on booster indicator: yes(1), no(2)
9: upsmgOutputInverterOff	**Integer** Inverter state. yes(1), no(2)

10: upsmgOutputOverLoad — **Integer** Overload indicator: yes(1), no(2)
11: upsmgOutputOverTemp — **Integer** Excess temperature indicator: yes(1), no(2)
12: upsmgOutputOnBuck — **Integer** Transfer to fader indicator: yes(1), no(2)

1.3.6.1.4.1.705.1.

■ **8: upsmgEnviron: "UPS environment group"**

1: upsmgEnvironAmbientTemp: — **Integer** Ambient temperature measured by UM–Sensor 1. ()
2: upsmgEnvironAmbientHumidity: — **Integer** Relative humidity measured by UM–Sensor 1. ()
3: upsmgEnvironExtAlarmTable: — **TABLE** Table indicating the state of the relay contacts monitored by UM-Sensor.
1: upsmgEnvironExtAlarmEntry — **TABLE** Description of an entry in the External Alarms table.
1: mgalarmNum***.index*** — **Integer** Table index number.
2: mgalarmState***.index*** — **Integer** External relay contact state.
4: upsmgEnvironSensorNum: — **Integer** Number of UM-Sensor units (0 to 4).
5: upsmgEnvironSensorTable: — **Integer** Table containing measurements made by UM-Sensor units.
1: upsmgEnvironSensorEntry — Description of an entry in the Measurements table.
1: mgEvnIndex***.index*** — **Integer** Index number in the table, ranging from 1 to upsmgEnvironEnvironNum.
2: mgEvnTemperature***.index*** — **Integer** Temperature measurement. ()
3: mgEvnHumidity***.index*** — **Integer** Humidity measurement. ()

1.3.6.1.4.1.705.1.

■ **9: upsmgControl: "UPS control group"**

1: upsmgControlReceptaclesTable: — **TABLE** Receptacles table, indicating the (user-definable) objects for controlling the on/off sequences of UPS outputs.
1: upsmgCtrlReceptEntry — **TABLE** Description of an entry in the Receptacles table.
1: mgreceptacleIndexc***.index*** — **Integer** Receptacle index number in the table, ranging from 1 to upsmgReceptaclesNum.
2: mgreceptacleOnDelay***.index*** — **Integer** Time delay before powering up receptacle during a Control ON sequence. (Seconds)
3: mgreceptacleOnCtrl***.index*** — **Integer** Object used to trigger or stop the Control ON sequence:
nothing(1)
start(2)
stop(3)
4: mgreceptacleOnStatus***.index*** — **Integer** Control ON sequence state
none(1)
started(2)
inprogressinups(3)
completed(4)
5: mgreceptacleOffDelay***.index*** — **Integer** Time delay before starting a shutdown sequence during a Control OFF operation. (Seconds)
6: mgreceptacleOffCtrl***.index*** — **Integer** Object used to trigger or stop the Control OFF sequence:
nothing(1)

	start(2) stop(3)
7: mgreceptacleOffStatus***.index***	**Integer** Control OFF sequence state none(1) started(2) inprogressinups(3) completed(4)
8: mgreceptacleToggleDelay***.index***	**Integer** Time delay before starting a shutdown sequence during a Toggle OFF/ON operation. (Seconds)
9: mgreceptacleToggleCtrl***.index***	**Integer** Object used to initiate or stop the Toggle OFF/ON sequence: nothing(1) start(2) stop(3)
10: mgreceptacleToggleStatus***.index***	**Integer** Toggle OFF/ON sequence state none(1) started(2) inprogressinups(3) completed(4)
11: mgreceptacleToggleDuration***.index***	**Integer** Receptacle shutdown time delay during Toggle OFF/ON sequence.
2: upsmgControlDayOff:	**Integer** Triggers scheduled UPS shutdown. yes(1), no(2)
3: upsmgControlDayOn:	**Integer** Triggers receptacle reboot after scheduled shutdown. yes(1), no(2)

1.3.6.1.4.1.705.1.

■ **10: upsmgTest: "UPS test group "**

1: upsmgTestBatterySchedule	**Integer** Schedules automatic battery test for UPSs that support this function.
2: upsmgTestDiagnostics:	**Integer** Starts the diagnostics program: default(1), start(2).
3: upsmgTestDiagResult	**Integer** Result of test: success(1), failed(2), none(3)
4: upsmgTestBatteryCalibration:	**Integer** Starts the battery test: default(1), start(2).
5: upsmgTestLastCalibration	**String** Date of previous test.
6: upsmgTestIndicators	**Integer** Starts the UPS indicator test: default(1), start(2).
7: upsmgTestCommandLine:	**String** Transmits a line of ASCII commands to the UPS.
8: upsmgTestCommandReady:	**Integer** Warns UPS that the command line is ready. yes(1), no(2)
9: upsmgTestResponseLine:	**String** Enables receipt of ASCII response from UPS.
10: upsmgTestResponseReady:	**Integer** Informs agent that response has been received. yes(1), no(2)
11: upsmgTestBatteryResult:	**Integer** Result of previous battery test. (? ? ?)

1.3.6.1.4.1.705.1.

■ **11: upsmgTraps: "UPS trap group"**

There are no objects defined for this group.	Refer to the section entitled "MGE MIB specific traps"

1.3.6.1.4.1.705.1.

■ **12: upsmgAgent: "UPS agent group"**

1: upsmgAgentIpAddress:	**Internet** IP address of UM–Agent host workstation.
2: upsmgAgentSubnetMask:	**Internet** Sub-network mask indicating network class.
3: upsmgAgentDefGateway:	**Internet** IP address of default gateway (if applicable)
4: upsmgAgentBaudRate:	**Integer** Communications port transmission speed (mandatorily 2400 bauds)
5: upsmgAgentPollRate:	**Integer** Frequency at which the agent polls the connected UPS with ASCII commands. **(DO NOT MODIFY)**
6: upsmgAgentType	**Integer** Type of agent: UM-Link Ethernet (1) UM-Agent Ethernet (3) Other(5)
7: upsmgAgentTrapAlarmDelay:	**Integer** Delay, before a trap is retransmitted if it has not been acknowledged.
8: upsmgAgentTrapAlarmRetry:	**Integer** Record of the number of times a trap is retransmitted if it is not acknowledged.
9: upsmgAgentReset:	**Integer** Resets agent. yes(1), no(2)
10: upsmgAgentFactReset:	**Integer** Resets MIB to default (factory) settings. yes(1), no(2)
11: upsmgAgentMibVersion	**Integer** Version of MIB being implemented.
12: upsmgAgentFirmwareVersion	**Integer** Version of agent.
13: upsmgAgentCommUPS:	**Integer** State of communication with UPS. No communication (2). The other values of the object depend on the devices connected to the communications path. The value is calculated using the following formula: 1000*NSE+100*NSW+10*UPSW+UPST where - UPST: UPS type (5: no UPS, 3: Protocol Interface, 1: UPS) - UPSW: number of switchable receptacles on UPS - NSW: number of UM-Switch(s) - NSE: number of UM-Sensor(s).
14: upsmgAgentTrapAck:	**Integer** Object used by certain Managers to acknowledge traps.
15: upsmgAgentAutoLearning:	**Integer** Configures automatic learning (1) enable, (2) Disable.
16: upsmgAgentBootP:	**Integer** Configures the BootP process (1) enable, (2) Disable.
17: upsmgAgentTFTP:	**Integer** Configures the TFTP downloading process (1) enable, (2) Disable.
18: upsmgAgentTrapSignature:	**Integer** Signature transmitted with traps.

1.3.6.1.4.1.705.1.

■ **13: upsmgRemote: "Source UPS group"**

1: upsmgRemoteOnBattery:	**Integer** This object enables a manager to indicate the state of the source UPS. This object is only accessible if the configuration managed by the agent does not comprise a UPS. RemoteOnBattery(1) RemoteReturnFromBattery(2)

	RemoteBatteryFault(3) RemoteOverLoad(4)
2: upsmgRemoteIpAddress:	**Internet** IP address of the agent for the source UPS.

2. IETF UPS MIB Objects

The IETF UPS MIB defines standard objects for managing UPSs on a network. The MIB is defined in ASN.1 format in the Request For Comment RFC1628.
The standard IETF UPS-MIB, as implemented by UM–Agent, enables any management application using the MIB to see, monitor and manage the UPSs controlled by the agent.

The ASN.1 definition of this IETF UPS MIB uses new SNMPv2 capabilities from:

- RFC-1442 (Structure of Management Information)
- RFC-1443 (Textual Conventions)
- RFC-1444 (Conformance Statements)

The first group in this MIB (upsObjects(1) includes nine groups of objects that are implemented in UM–Agent. A short description of these objects is given in this section.

The following OID refers to the entry point of the IETF UPS MIB in the Internet tree structure:
{iso(1).org(3).dod(6).internet(1).mgmt(2).mib(1).upsMIB(33)}

■ **1: upsIdent: "Device identification group"**

1: upsIdentManufacturer:	Name of UPS manufacturer.
2: upsIdentModel:	see upsmgIdentModelName for MGE MIB.
3: upsIdentUPSSoftware:	see upsmgIdentFirmwareVersion for MGE MIB.
4: upsIdentAgentSoftwareVersion:	see upsmgAgentVersion for MGE MIB.
5: upsIdentName:	see upsmgIdentUserID for MGE MIB.
6: upsIdentAttachedDevices:	see Devices table for MGE MIB.

■ **2: upsBattery: "Battery backup time group"**

1: upsBatteryStatus:	see battery state trap indicator for MGE MIB.
2: upsBatterySecondsOnBattery:	Battery backup time used.
3: upsBatteryEstimatedMinutesRemaining:	see upsmgBatteryRemainingTime for MGE MIB.
4: upsBatteryEstimatedChargeRemaining:	see upsmgBatteryLevel for MGE MIB.
5: upsBatteryVoltage:	see upsmgBatteryVoltage for MGE MIB.
6: upsBatteryCurrent:	see upsmgBatteryCurrent for MGE MIB.
7: upsBatteryTemperature:	see upsmgBatteryTemperature for MGE MIB.

■ **3: upsInput: "Inputs group"**

1: upsInputLineBads:	Out of tolerance condition counter.
2: upsInputNumLines	see upsmgInputPhaseNum for MGE MIB.
3: upsInputTable	
1: upsInputEntry	
1: upsInputLineIndex:	see mginputIndex for MGE MIB
2: upsInputLineFrequency:	see mginputFrequency for MGE MIB
3: upsInputLineVoltage:	see mginputVoltage for MGE MIB
4: upsInputLineCurrent:	see mginputCurrent for MGE MIB.
5: upsInputLineTruePower:	Active input power in Watts.

■ **4: upsOutput: "Outputs group"**

1: upsOutputSource:	see battery state trap indicator for MGE MIB.
2: upsOutputFrequency:	see mgoutputFrequency for MGE MIB.
3: upsOutputNumLines:	see upsmgOutputPhaseNum for MGE MIB.
4: upsOutputTable	
1: upsOutputEntry	
1: upsOutputLineIndex:	see mgoutputPhaseIndex for MGE MIB
2: upsOutputVoltage:	see mgoutputVoltage for MGE MIB
3: upsOutputCurrent:	see mgoutputCurrent for MGE MIB
4: upsOutputPower:	Output power in Watts.
5: upsOutputPercentLoad:	see mgoutputLoadPerPhase for MGE MIB.

■ **5: upsBypass: "Bypass group"**

The bypass group corresponds to the MG-MIB output group when UPS is on bypass.

1: upsBypassFrequency
2: upsBypassNumLines
3: upsBypassTable
1: upsBypassEntry
1: upsBypassLineIndex
2: upsBypassVoltage
3: upsBypassCurrent
4: upsBypassPower

■ **6: upsAlarm: "IETF alarms group "**

1: upsAlarmPresent:	Number of active IETF alarms.
2: upsAlarmTable:	Table of defined IETF alarms.
1: upsAlarmEntry	
1: upsAlarmId	
2: upsAlarmDescr	
3: upsAlarmTime	
3: upsWellKnownAlarms:	Defines 24 alarms. See "IETF traps and alarms".

■ **7: upsTest: "Test group"**

1: upsTestId:	Start/abort control of defined tests.
2: upsTestSpinLock:	Spin lock on test subsystem.
3: upsTestResultsSummary:	Results of previous or current diagnostics test.
4: upsTestResultsDetail:	Additional information on test results.
5: upsTestStartTime:	Time (sysUpTime) of previous test.
6: upsTestElapsedTime:	Duration of previous test.
7: upsWellKnownTests:	Defines 5 tests.
1: upsTestNoTestsInitiated:	No test requested and none under way.
2: upsTestAbortTestIn-Progress:	Current test will be interrupted.

3: upsTestGeneralSystem-Test:	Standard manufacturers test for UPSs.
4: upsTestQuickBatteryTest:	Test to establish whether the battery needs to be replaced.
5: upsTestDeepBatteryTest:	As the system is transferred to the battery at a charge level that is set by the manufacturer, it is possible to establish precisely the length of battery service life and, consequently, when it should be replaced.

■ **8: upsControl: "Control Group"**

1: upsShutdownType:	Choice between output off and system off.
2: upsShutdownAfterDelay:	Controls output or system off sequence (start/stop).
3: upsStartupAfterDelay:	Controls output or system on sequence (start/stop).
4: upsRebootWithDuration:	Controls UPS toggle operation (start/stop).
5: upsAutoRestart:	Configures automatic restart after shutdown.

■ **9: upsConfig: "Configuration group"**

1: upsConfigInputVoltage:	Rated input voltage.
2: upsConfigInputFreq:	Rated input frequency.
3: upsConfigOutputVoltage:	see upsmgConfigOutputVoltage for MGE MIB.
4: upsConfigOutputFreq:	see upsmgConfigOutputFrequency for MGE MIB.
5: upsConfigOutputVA:	see upsmgConfigVARating for MGE MIB.
6: upsConfigOutputPower:	Rated active load.
7: upsConfigLowBattTime:	see upsmgConfigLowBatteryTime for MGE MIB.
8: upsConfigAudibleStatus:	see upsmgConfigAlarmAudible for MGE MIB.
9: upsConfigLowVoltageTransferPoint:	see upsmgConfigLowTransfer for MGE MIB.
10: upsConfigHighVoltageTransferPoint:	see upsmgConfigHighTransfer for MGE MIB.

3. COMPAQ UPS MIB Objects

ATTENTION: This functionality is only implemented on certain systems.

The COMPAQ UPS MIB defines COMPAQ objects for managing UPSs on a network. The following OID refers to the entry point of the COMPAQ UPS MIB in the Internet tree structure:
{iso(1).org(3).dod(6).internet(1).private(4).entrereceptacles(1).Compaq(232).cpqUps(12)}
UM-Agent manages the following objects in the MIB:

■ **1: cpqUpsMibRev: "MIB revision group"**

1: cpqUpsMibRevMajor:	Major version of the implemented MIB.
2: cpqUpsMibRevMinor:	Major version of the implemented MIB.
3: cpqUpsMibCondition:	Overall state of system.

■ **2.1.4 cpqUpsOsCommon: "Modules group"**

1: cpqUpsOsCommonPollFreq:	Frequency at which agent polls the UPS.
2: cpqUpsOsCommonModule-Table:	Modules table.
1: cpqUpsOsCommonModule-Entry	
1: cpqUpsOsCommonModule-Index:	Index on the described software module.
2: cpqUpsOsCommonModule-Name:	Name of software module.
3: cpqUpsOsCommonModule-Version:	Version of software module.
4: cpsUpsOsCommonModule-Date:	Date of software module version.
5: cpqUpsOsCommonModule-Purpose:	Commentary on the purpose of the software module.

■ **2.2: cpqUpsBasic: "Basic measurements group"**

1: cpqUpsLineStatus:	Mains state at UPS input.
2: cpqUpsName:	UPS type.
3: cpqUpsEstmatedBatteryLife:	Estimated battery operation.
4: cpqUpsAutoShutdownDelay:	Time before automatic shutdown.

4. MGE MIB traps

The UM–Agent will send SNMP traps to the management stations which are configured in the MGE MIB UPS Management group.
Traps are error or warning messages sent to the managers. The messages may concern any of the folowing events that may occur on the UPS:

- errors,
- state changes,
- operations.

Traps are classified by level, each level corresponding to the degree of severity of the event. Level 1 corresponds to the most serious events.
Only traps up to the configured Trap Level are sent from UM–Agent to the manager. The default Trap Level of any manager is 4.
Most of the traps are grouped in pairs, with one trap indicating a fault on the UPS and the second one indicating that the UPS has returned to its normal state.
The following list details various pairs of traps, with their level of severity and meaning.

1:upsBatteryFault (level 2) 2:upsBatteryOK	UPS battery fault status
3:upsBatteryReplacementIndicated (level 3) 4:upsBatteryReplacementNotIndicated	UPS battery replacement indicator
5:upsAtLowBattery (level 1) 6:upsFromLowBattery	UPS low battery internal indicator
7:upsChargerFault (level 3) 8:upsChargerOK	UPS battery charger fault status
9:upsAtLowCondition (level 1) 10:upsFromLowCondition	UPS battery minimum condition status
11:upsOnBattery (level 1) 12:upsReturnFromBattery	UPS on battery backup status
13:upsOnByPass (level 2) 14:upsReturnFromByPass	UPS on bypass status
15:upsByPassUnavailable (level 3) 16:upsByPassAvailable	UPS bypass unavailable/available
17:upsUtilityFailure (level 2) 18:upsUtilityRestored	UPS mains input failure indicator
19:upsOnBoost (level 3) 20:upsReturnFromBoost	UPS booster feature enabled

21:upsOverLoad (level 2)	UPS load in excess of rated value
22:upsLoadOK	
23:upsOverTemperature (level 2)	Incorrect UPS internal temperature
24:upsTemperatureOK	
37:upsCommunicationFailure (level 1)	State of serial communication with UPS
38:upsCommunicationRestored	
39:upsInputBad (level 3)	Incorrect input voltage or frequency
40:upsInputOK	
41:upsBatteryUnavailable (level 3)	UPS battery unavailable
42:upsBatteryAvailable	
43:upsAtLowRecharge (level 4)	UPS awaiting restart condition
44:upsFromLowRecharge	
45:upsDiagnosticTestFail (level 3)	UPS internal self test state
46:upsDiagnosticTestOK	
47:upsBatteryTestOK (level 3)	UPS battery test state
48:upsBatteryTestFail	
49:upsExternalAlarmActive (level 2)	External alarm state
50:upsExternalAlarmInactive	
51:upsOnBuck (level 3)	Activation of UPS fader
52:upsReturnFromBuck	

Other traps are used to report current UPS and agent events.
Whereas the events listed above are related to a particular state of the UPS, the events described below correspond to more complex operations that require additional information to be sent to the managers. The information is sent to the manager in the form of a data packet associated with the trap containing both the OID and the value of the information.
These traps are mainly used for on/off sequences on UPS outputs.
The information associated with the trap is sent to the manager in such a way as to enable it to determine the exact delay before initiating the operation.
The following list details these traps, and their level of severity, with a brief explanation.
A toggle operation involves turning a UPS output off and then on again.

25:upsOnToStart (level 2)	UPS on procedure initiated
26:upsOnAbort	UPS on procedure cancelled
27:upsOnInProgress (niveau 1)	UPS on procedure under way
28:upsOnComplete	UPS on procedure finished
29:upsOffToStart (level 2)	UPS off procedure initiated
30:upsOffAbort	UPS off procedure cancelled
31:upsOffInProgress (niveau 1)	UPS off procedure under way

32:upsOffComplete	UPS off procedure finished
33:upsToggleToStart (level 2)	UPS toggle operation initiated
34:upsToggleAbort	UPS toggle operation cancelled
35:upsToggleInProgress (niveau 2)	UPS toggle operation under way
36:upsToggleComplete	UPS toggle operation finished
49:upsExternalAlarmActive (level 2)	External environment alarm on
50:upsExternalAlarmInactive	External environment alarm off

All these traps are defined as specific SNMP traps in version 1.6 of the MGE MIB.

5. IETF MIB traps and alarms

UM–Agent can be configured to send IETF traps instead of MG enterprise-specific SNMP traps. Each manager can be configured individually.
The second group of the IETF UPS MIB (upsTraps(2)) defines four kinds of message that are implemented by UM–Agent.

1: upsTrapOnBattery	The UPS is operating on battery power. The trap is retransmitted at one minute intervals until the UPS is either shutdown or no longer running on battery.
2: upsTrapTestCompleted	Trap sent upon completion of a UPS diagnostic test.
3: upsTrapAlarmEntryAdded	Trap sent each time an alarm is entered in the Alarms table, except for upsAlarmOnBattery and upsAlarmTestInProgress alarms.
4: upsTrapAlarmEntryRemoved	Alarm sent each time an alarm is deleted from the Alarms table, except for upsAlarmTestInProgress alarms.

The data accompanying these traps provides the manager with information on the corresponding entry in the Alarms table.

The following is a list of the most common alarms that are added to or removed from the Alarms table:

1: upsAlarmBatteryBad	UPS battery fault: one or more batteries require replacement.
2: upsAlarmOnBattery	UPS is on battery backup
3: upsAlarmLowBattery	UPS has entered low condition. The remaining battery backup time is less than or equal to upsConfigLowBattTime.
4: upsAlarmDepletedBattery	UPS has reached the end of the backup time and is about to shutdown
5: upsAlarmTempBad	UPS internal temperature is out of tolerance
6: upsAlarmInputBad	An input condition is out of tolerance
7: upsAlarmOutputBad	An output condition (other than OutputOverload) is out of tolerance
8: upsAlarmOutputOverload	Output load exceeds rated capacity of UPS
9: upsAlarmOnBypass	UPS output is on bypass
10: upsAlarmBypassBad	UPS bypass out of tolerance
11: upsAlarmOutputOffAsRequested	UPS output turned off by Control Group
12: upsAlarmUpsOffAsRequested	UPS shutdown command executed
13: upsAlarmChargerFailed	An uncorrected problem has been detected in the UPS charger subsystem
14: upsAlarmUpsOutputOff	UPS output has been turned off
15: upsAlarmUpsSystemOff	UPS has been turned off
16: upsAlarmFanFailure	Failure detected on one or more UPS fans
17: upsAlarmFuseFailure	Failure detected on one or more UPS fuses
18: upsAlarmGeneralFault	A general fault in the UPS has been detected
19: upsAlarmDiagnosticTestFailed	Failure detected by previous diagnostic test
20: upsAlarmCommunicationsLost	A communications problem between the agent and UPS has been detected
21: upsAlarmAwaitingPower	UPS output has been turned off and UPS is waiting for input power to be restored

22: upsAlarmShutdownPending	Countdown after shutdown (upsShutdownAfterDelay) in progress
23: upsAlarmShutdownImminent	upsShutdownAfterDelay countdown elapsed, shutdown imminent
24: upsAlarmTestInProgress	UPS test in progress

6. COMPAQ MIB traps

UM–Agent can be configured to send COMPAQ traps instead of MG enterprise-specific SNMP traps. Each manager can be configured individually.

1: cpqUpsLineFailed	Mains power has failed.
2: cpqUpsLineOk	Mains power has been restored.
3: cpqUpsShutdown	The system shutdown procedure has been initiated.
4: cpqUpsConfirmation	The system is operational again following a shutdown caused by a power failure.
5: cpqUpsBatteryLow	UPS battery charge is low.

7. Traps monitored by UM-Client

UM-Client are distributed basic management applications running on host systems, that provide domain alarm messages and shutdown script initiation activated by acknowledged SNMP traps received from MGE UPS SYSTEMS agents.

UM-Client provides provides reliable cross-platform fail-safe shutdown of multiple distributed hosts powered by mid-range and large MGE UPS SYSTEMS SNMP instrumented UPS's.

It is recommended to use UM-Link configured with Auto-Learning disabled, in order to work easily with UM-Client.

Following is a list of MGE traps which are monitored by the UM-Client :

Trap Level 1 :	9 upsAtLowCondition	UPS battery minimum condition status
	31:upsOffInProgress	UPS off procedure under way
	37:upsCommunicationFailure	State of serial communication with UPS
	38:upsCommunicationRestored	
Trap Level 2 :	1:upsBatteryFault	UPS battery fault status
	13:upsOnByPass	UPS on bypass status
	17:upsUtilityFailure	UPS mains input failure indicator
	18:upsUtilityRestored	UPS mains input restored
	29:upsOffToStart	UPS off procedure initiated

UM-Client acknoledges reception of these traps.

For more information, please refer to the UM-Client User Manual.

8. Main MGE MIB objects

Useful SNMPM commands :

Snmpm get @ip 1.3.6.1.4.1.705.1.1.1.0
1.3.6.1.4.1.705.1.1.1.0 (String)=[Pulsar]

Snmpm set @ip 1.3.6.1.4.1.705.1.1.1.0 String Nom
1.3.6.1.4.1.705.1.1.1.0 (String)=[Nom]

Snmpm /c :public /gp :161 next @ip 1.3.6.1.4.1.705.1.1.1.0
1.3.6.1.4.1.705.1.1.2.0 (String) =[4.5]
For specifying community name (default :public) : /c :community_name
For specifying SNMP get port (default :161) : /gp :161

Main MGE MIB objects are the following ones :

■ **Group5: upsmgBattery: "UPS battery backup time group"**

1: upsmgBatteryRemainingTime:	Remaining battery backup time.
2: upsmgBatteryLevel:	Battery charge level.
5: upsmgBatteryVoltage	Voltage delivered by the battery.

■ **Group6: upsmgInput: "UPS input group"**

2: upsmgInputPhaseTable:	Phase state table, including information such as the input phase voltage, frequency and current.
1: upsmgInputPhaseEntry	Description of an entry in the Inputs table.
2: mginputVoltage	Input voltage.
3: mginputFrequency	Input frequency.
6: mginputCurrent	Input current.

■ **Group7: upsmgOutput: "UPS output group"**

2: upsmgOutputPhaseTable:	Phase state table, including information such as the output phase voltage, frequency, current and load.
1: upsmgOutputPhaseEntry	Description of an entry in the Outputs table.
2: mgoutputVoltage	Output voltage.
3: mgoutputFrequency	Output frequency.
4: mgoutputLoadPerPhase	Load per phase.
5: mgoutputCurrent	Output current.

■ **Group9: upsmgControl: "UPS control group"**

1: upsmgControlReceptaclesTable:	Receptacles table, indicating the (user-definable) objects for controlling the on/off sequences of UPS outputs.
1: upsmgCtrlReceptEntry	Description of an entry in the Receptacles table.
2: mgreceptacleOnDelay	Time delay before powering up receptacle during a Control ON sequence.
3: mgreceptacleOnCtrl	Object used to trigger or stop the Control ON sequence:

	nothing(1) / start(2) / stop(3)
4: mgreceptacleOnStatus	Control ON sequence state none(1) / started(2) / inprogressinups(3) / completed(4)
5: mgreceptacleOffDelay	Time delay before starting a shutdown sequence during a Control OFF operation.
6: mgreceptacleOffCtrl	Object used to trigger or stop the Control OFF sequence: nothing(1) / start(2) / stop(3)
7: mgreceptacleOffStatus	Control OFF sequence state none(1) / started(2) / inprogressinups(3) / completed(4)

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