agent's MIB description

référence reference n°: 34003597XT
indice index: AA
page: 1/26

Iso (1) org (3) dod (6) internet (1)

mgmt (2) private (4)

MIB (1) enterprise (1)

IETF (33) MGE UPS SYSTEMS (705)

<table>
<thead>
<tr>
<th>Ind</th>
<th>date</th>
<th>Modification</th>
<th>Nom Name</th>
<th>Visa</th>
<th>Nom Name</th>
<th>Visa</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>04/01/02</td>
<td>Edition originale / First issue</td>
<td>P.Pellegrini</td>
<td>P.Vincent</td>
<td>P.Vincent</td>
<td></td>
</tr>
</tbody>
</table>
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:


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: Integer Manager's index number in the table, ranging from 1 to upsmgManagersNum.
2: mgmanagerDeviceNumber: 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: 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: 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:
   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.
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>mgdeviceIndex.index</td>
<td>Integer</td>
<td>Device index number in the table, ranging from 1 to upsmgConfigDevicesNum.</td>
</tr>
<tr>
<td>2</td>
<td>mgdeviceReceptacleNum.index</td>
<td>Integer</td>
<td>Number of the receptacle to which the device is connected</td>
</tr>
<tr>
<td>3</td>
<td>mgdeviceIdent.index</td>
<td>String</td>
<td>Text description of device.</td>
</tr>
<tr>
<td>4</td>
<td>mgdeviceVARating.index</td>
<td>Integer</td>
<td>Volt-Ampere rating of connected device.</td>
</tr>
<tr>
<td>5</td>
<td>mgdeviceSequenceOff.index</td>
<td>Integer</td>
<td>Sets position of device in shutdown sequence.</td>
</tr>
<tr>
<td>6</td>
<td>mgdeviceSequenceOn.index</td>
<td>Integer</td>
<td>Sets position of device in reboot sequence.</td>
</tr>
<tr>
<td>7</td>
<td>mgdeviceShutdownDuration.index</td>
<td>Integer</td>
<td>Time required for device to shutdown. (Seconds)</td>
</tr>
<tr>
<td>8</td>
<td>mgdeviceBootUpDuration.index</td>
<td>Integer</td>
<td>Time required for device to reboot. (Seconds)</td>
</tr>
<tr>
<td>23</td>
<td>upsmgConfigReceptaclesTable</td>
<td>TABLE</td>
<td>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.</td>
</tr>
<tr>
<td>1</td>
<td>upsmgCfgReceptEntry</td>
<td>TABLE</td>
<td>Description of an entry in the Receptacles table.</td>
</tr>
<tr>
<td>1</td>
<td>mgreceptacleIndex.index</td>
<td>Integer</td>
<td>Receptacle index number in the table, ranging from 1 to upsmgReceptaclesNum.</td>
</tr>
<tr>
<td>2</td>
<td>mgreceptacleStateTurnOn.index</td>
<td>Integer</td>
<td>State of receptacle at reboot: on(1) off(2) last(3) schedule(4)</td>
</tr>
<tr>
<td>3</td>
<td>mgreceptacleStateMainReturn.index</td>
<td>Integer</td>
<td>State of receptacle when power is restored: on(1) off(2) last(3) schedule(4)</td>
</tr>
<tr>
<td>4</td>
<td>mgreceptacleStateDischarge.index</td>
<td>Integer</td>
<td>State of receptacle upon return transfer following battery discharge: on(1) off(2) last(3) schedule(4)</td>
</tr>
<tr>
<td>5</td>
<td>mgreceptacleShutoffLevel.index</td>
<td>Integer</td>
<td>Battery level at which the shutdown sequence is initiated. (%)</td>
</tr>
<tr>
<td>6</td>
<td>mgreceptacleShutoffTimer.index</td>
<td>Integer</td>
<td>Time delay before initiating shutdown sequence after transfer to battery.</td>
</tr>
<tr>
<td>7</td>
<td>mgreceptacleRestartLevel.index</td>
<td>Integer</td>
<td>Battery level at which the restart sequence is initiated. (%)</td>
</tr>
<tr>
<td>8</td>
<td>mgreceptacleRestartDelay.index</td>
<td>Integer</td>
<td>Time delay before initiating restart sequence after shutdown. (Seconds)</td>
</tr>
<tr>
<td>9</td>
<td>mgreceptacleShutdownDuration.index</td>
<td>Integer</td>
<td>Maximum shutdown duration for the devices supplied by the receptacle. (Seconds)</td>
</tr>
<tr>
<td>10</td>
<td>mgreceptacleBootUpDuration.index</td>
<td>Integer</td>
<td>Maximum restart duration for the devices supplied by the receptacle. (Seconds)</td>
</tr>
<tr>
<td>24</td>
<td>upsmgConfigExtAlarmNum</td>
<td>Integer</td>
<td>Number of external alarms.</td>
</tr>
<tr>
<td>25</td>
<td>upsmgConfigExtAlarmTable</td>
<td>TABLE</td>
<td>Table describing the relay contacts monitored by the UM–Sensor environment sensor.</td>
</tr>
</tbody>
</table>
agent's MIB description

1: upsmgExtAlarmEntry

1: mgextAlarmIndex.index

2: mgextAlarmUID.index

26: upsmgConfigEmergencyTestFail:

27: upsmgConfigEmergencyOnByPass:

28: upsmgConfigEmergencyOverload:

29: upsmgConfigControlDayTable:

1: upsmgCtrlDayEntry

1: mgcontrolDayIndex.index

2: mgcontrolDayOn.index

3: mgcontrolDayOff.index

30: upsmgConfigLowBooster:

31: upsmgConfigHighBooster:

32: upsmgConfigLowFader:

33: upsmgConfigHighFader:

1.3.6.1.4.1.705.1.

5: upsmgBattery: “UPS battery backup time group”

1: upsmgBatteryRemainingTime:

2: upsmgBatteryLevel:

3: upsmgBatteryRechargeTime

4: upsmgBatteryRechargeLevel

5: upsmgBatteryVoltage

6: upsmgBatteryCurrent

7: upsmgBatteryTemperature:

8: upsmgBatteryFullRechargeTime

9: upsmgBatteryFaultBattery:

10: upsmgBatteryNoBattery:

11: upsmgBatteryReplacement

12: upsmgBatteryUnavailableBattery

13: upsmgBatteryNotHighCharge

TABLE Description of an entry in the External Alarms table.

Integer Contact index number in the table, ranging from 1 to upsmgConfigExtAlarmNum.

Description of relay contact.

Integer Configuration of the SNMP agent to generate UPS shutdown on reception of negative test event.

Integer Configuration of the SNMP agent to generate UPS shutdown on reception of transfer to bypass event.

Integer Configuration of the SNMP agent to generate UPS shutdown on reception of overload event.

TABLE Description of an entry in the scheduled on/off table.

Integer Index number in the table, ranging from 1 to 7. Sunday(1), Monday(2), etc.

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.

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.

Integer Low booster threshold. (dV)

Integer High booster threshold. (dV)

Integer Low fader threshold. (dV)

Integer High fader threshold. (dV)

Integer Remaining battery backup time. (Seconds)

Integer Battery charge level. (%)  

Integer Recharge time required for the battery level to reach the level set by upsmgConfigRechargeLevel. (Seconds)

Integer (%) (? ??)

Integer Voltage delivered by the battery. (dV) (? ??)

Integer Current delivered by the battery. (? ??)

Integer UPS internal temperature. (°C) (? ??)

Integer Time required to fully recharge the battery. (Seconds)

Integer Battery fault indicator: yes(1), no(2).

Integer Battery presence indicator: yes(1), no(2).

Integer Battery replacement indicator: yes(1), no(2).

Integer Battery unavailable indicator: yes(1), no(2).

Integer Battery not charged to maximum indicator: yes(1), no(2).
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>upsmgBatteryLowBattery</td>
<td>Integer</td>
<td>Low battery indicator: yes(1), no(2).</td>
</tr>
<tr>
<td>15</td>
<td>upsmgBatteryChargerFault</td>
<td>Integer</td>
<td>Charger fault indicator: yes(1), no(2).</td>
</tr>
<tr>
<td>16</td>
<td>upsmgBatteryLowCondition</td>
<td>Integer</td>
<td>State indicating that battery has entered low condition: yes(1), no(2).</td>
</tr>
<tr>
<td>17</td>
<td>upsmgBatteryLowRecharge</td>
<td>Integer</td>
<td>Low battery recharge indicator: yes(1), no(2).</td>
</tr>
</tbody>
</table>

### 6: upsmgInput: "UPS input group"

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>upsmgInputPhaseNum:</td>
<td>Integer</td>
<td>Number of input phases.</td>
</tr>
<tr>
<td>2</td>
<td>upsmgInputPhaseTable:</td>
<td>TABLE</td>
<td>Phase state table, including information such as the input phase voltage, frequency and current.</td>
</tr>
<tr>
<td></td>
<td>upsmgInputPhaseEntry</td>
<td>TABLE</td>
<td>Description of an entry in the Inputs table.</td>
</tr>
<tr>
<td></td>
<td>mginputIndex.index</td>
<td>Integer</td>
<td>Index number in the table, ranging from 1 to upsmgInputPhaseNum.</td>
</tr>
<tr>
<td></td>
<td>mginputVoltage.index</td>
<td>Integer</td>
<td>Input voltage. (dV)</td>
</tr>
<tr>
<td></td>
<td>mginputFrequency.index</td>
<td>Integer</td>
<td>Input frequency. (dHz)</td>
</tr>
<tr>
<td></td>
<td>mginputMinimumVoltage.index</td>
<td>Integer</td>
<td>Minimum voltage of phase during the previous minute. (dV)</td>
</tr>
<tr>
<td></td>
<td>mginputMaximumVoltage.index</td>
<td>Integer</td>
<td>Maximum voltage of phase during the previous minute. (dV)</td>
</tr>
<tr>
<td></td>
<td>mginputCurrent.index</td>
<td>Integer</td>
<td>Input current. (.)</td>
</tr>
<tr>
<td>3</td>
<td>upsmgInputBadStatus:</td>
<td>Integer</td>
<td>Incorrect input voltage or frequency: yes(1), no(2).</td>
</tr>
</tbody>
</table>

### 1.3.6.1.4.1.705.1.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>upsmgOutput: &quot;UPS output group&quot;</td>
<td>Integer</td>
<td>Number of output phases.</td>
</tr>
<tr>
<td></td>
<td>upsmgOutputPhaseNum:</td>
<td>Integer</td>
<td>Output phase Num.</td>
</tr>
<tr>
<td></td>
<td>upsmgOutputPhaseTable:</td>
<td>TABLE</td>
<td>Description of an entry in the Outputs table.</td>
</tr>
<tr>
<td></td>
<td>mgoutputPhaseIndex.index</td>
<td>Integer</td>
<td>Index number in the table, ranging from 1 to upsmgOutputPhaseNum.</td>
</tr>
<tr>
<td></td>
<td>mgoutputVoltage.index</td>
<td>Integer</td>
<td>Output voltage. (dV)</td>
</tr>
<tr>
<td></td>
<td>mgoutputFrequency.index</td>
<td>Integer</td>
<td>Output frequency. (dHz)</td>
</tr>
<tr>
<td></td>
<td>mgoutputLoadPerPhase.index</td>
<td>Integer</td>
<td>Load per phase, (%)</td>
</tr>
<tr>
<td></td>
<td>mgoutputCurrent.index</td>
<td>Integer</td>
<td>Output current. ( ) ( ? ? ?)</td>
</tr>
<tr>
<td>3</td>
<td>upsmgOutputOnBattery:</td>
<td>Integer</td>
<td>UPS is on battery: yes(1), no(2)</td>
</tr>
<tr>
<td>4</td>
<td>upsmgOutputOnByPass</td>
<td>Integer</td>
<td>Bypass state: yes(1), no(2)</td>
</tr>
<tr>
<td>5</td>
<td>upsmgOutputUnavailableByPass</td>
<td>Integer</td>
<td>Bypass not available: yes(1), no(2)</td>
</tr>
<tr>
<td>6</td>
<td>upsmgOutputNoByPass</td>
<td>Integer</td>
<td>Bypass not installed: yes(1), no(2)</td>
</tr>
<tr>
<td>7</td>
<td>upsmgOutputUtilityOff</td>
<td>Integer</td>
<td>UPS in battery backup time: yes(1), no(2)</td>
</tr>
<tr>
<td>8</td>
<td>upsmgOutputOnBoost</td>
<td>Integer</td>
<td>Output on booster indicator: yes(1), no(2)</td>
</tr>
<tr>
<td>9</td>
<td>upsmgOutputInverterOff</td>
<td>Integer</td>
<td>Inverter state. yes(1), no(2)</td>
</tr>
</tbody>
</table>
10: upsmgOutputOverLoad
11: upsmgOutputOverTemp
12: upsmgOutputOnBuck

Integer Overload indicator: yes(1), no(2)
Integer Excess temperature indicator: yes(1), no(2)
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
  1: mgalarmNum.index
  2: mgalarmState.index

4: upsmgEnvironSensorNum:
5: upsmgEnvironSensorTable:
 TABLE Description of an entry in the Measurements table.

1: upsmgEnvironSensorEntry
  1: mgEvnIndex.index
  2: mgEvnTemperature.index
  3: mgEvnHumidity.index

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
2: mgreceptacleOnDelay.index
3: mgreceptacleOnCtrl.index
4: mgreceptacleOnStatus.index
5: mgreceptacleOffDelay.index
6: mgreceptacleOffCtrl.index

Integer Receptacle index number in the table, ranging from 1 to upsmgReceptaclesNum.
Integer Time delay before powering up receptacle during a Control ON sequence. (Seconds)
Integer Object used to trigger or stop the Control ON sequence:
  nothing(1)
  start(2)
  stop(3)
Integer Control ON sequence state
  none(1)
  started(2)
  inprogressinups(3)
  completed(4)
Integer Time delay before starting a shutdown sequence during a Control OFF operation. (Seconds)
Integer Object used to trigger or stop the Control OFF sequence:
  nothing(1)
7: mgreceptacleOffStatus

Integer Control OFF sequence state
nothing(1)
started(2)
inprogressinups(3)
completed(4)

8: mgreceptacleToggleDelay

Integer Time delay before starting a shutdown sequence during a Toggle OFF/ON operation. (Seconds)

9: mgreceptacleToggleCtrl

Integer Object used to initiate or stop the Toggle OFF/ON sequence:
nothing(1)
start(2)
stop(3)

10: mgreceptacleToggleStatus

Integer Toggle OFF/ON sequence state
nothing(1)
started(2)
inprogressinups(3)
completed(4)

11: mgreceptacleToggleDuration

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"
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)
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)
2: upsmgRemoteIpAddress:

   RemoteBatteryFault(3)
   RemoteOverLoad(4)

   **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"

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>upsIdentManufacturer:</td>
<td>Name of UPS manufacturer.</td>
</tr>
<tr>
<td>2</td>
<td>upsIdentModel:</td>
<td>see upsmgIdentModelName for MGE MIB.</td>
</tr>
<tr>
<td>3</td>
<td>upsIdentUPSSoftware:</td>
<td>see upsmgIdentFirmwareVersion for MGE MIB.</td>
</tr>
<tr>
<td>4</td>
<td>upsIdentAgentSoftwareVersion:</td>
<td>see upsmgAgentVersion for MGE MIB.</td>
</tr>
<tr>
<td>5</td>
<td>upsIdentName:</td>
<td>see upsmgIdentUserID for MGE MIB.</td>
</tr>
<tr>
<td>6</td>
<td>upsIdentAttachedDevices:</td>
<td>see Devices table for MGE MIB.</td>
</tr>
</tbody>
</table>

### 2: upsBattery: "Battery backup time group"

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>upsBatteryStatus:</td>
<td>see battery state trap indicator for MGE MIB.</td>
</tr>
<tr>
<td>2</td>
<td>upsBatterySecondsOnBattery:</td>
<td>Battery backup time used.</td>
</tr>
<tr>
<td>3</td>
<td>upsBatteryEstimatedMinutesRemaining:</td>
<td>see upsmgBatteryRemainingTime for MGE MIB.</td>
</tr>
<tr>
<td>4</td>
<td>upsBatteryEstimatedChargeRemaining:</td>
<td>see upsmgBatteryLevel for MGE MIB.</td>
</tr>
<tr>
<td>5</td>
<td>upsBatteryVoltage:</td>
<td>see upsmgBatteryVoltage for MGE MIB.</td>
</tr>
<tr>
<td>6</td>
<td>upsBatteryCurrent:</td>
<td>see upsmgBatteryCurrent for MGE MIB.</td>
</tr>
<tr>
<td>7</td>
<td>upsBatteryTemperature:</td>
<td>see upsmgBatteryTemperature for MGE MIB.</td>
</tr>
</tbody>
</table>

### 3: upsInput: "Inputs group"

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>upsInputLineBads:</td>
<td>Out of tolerance condition counter.</td>
</tr>
<tr>
<td>2</td>
<td>upsInputNumLines</td>
<td>see upsmgInputPhaseNum for MGE MIB.</td>
</tr>
<tr>
<td>3</td>
<td>upsInputTable</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>upsInputLineIndex:</td>
<td>see mginputIndex for MGE MIB</td>
</tr>
<tr>
<td>5</td>
<td>upsInputLineFrequency:</td>
<td>see mginputFrequency for MGE MIB</td>
</tr>
<tr>
<td>6</td>
<td>upsInputLineVoltage:</td>
<td>see mginputVoltage for MGE MIB</td>
</tr>
<tr>
<td>7</td>
<td>upsInputLineCurrent:</td>
<td>see mginputCurrent for MGE MIB.</td>
</tr>
<tr>
<td>8</td>
<td>upsInputLineTruePower:</td>
<td>Active input power in Watts.</td>
</tr>
</tbody>
</table>
■ 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 mgoutputPhasIndex 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:


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.
    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 following 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)  
   UPS battery fault status

2. upsBatteryOK

3. upsBatteryReplacementIndicated (level 3)  
   UPS battery replacement indicator

4. upsBatteryReplacementNotIndicated

5. upsAtLowBattery (level 1)  
   UPS low battery internal indicator

6. upsFromLowBattery

7. upsChargerFault (level 3)  
   UPS battery charger fault status

8. upsChargerOK

9. upsAtLowCondition (level 1)  
   UPS battery minimum condition status

10. upsFromLowCondition

11. upsOnBattery (level 1)  
    UPS on battery backup status

12. upsReturnFromBattery

13. upsOnByPass (level 2)  
    UPS on bypass status

14. upsReturnFromByPass

15. upsByPassUnavailable (level 3)  
    UPS bypass unavailable/available

16. upsByPassAvailable

17. upsUtilityFailure (level 2)  
    UPS mains input failure indicator

18. upsUtilityRestored

19. upsOnBoost (level 3)  
    UPS booster feature enabled

20. upsReturnFromBoost
agent’s MIB description

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
### MGE UPS Systems agent’s MIB description

<table>
<thead>
<tr>
<th>Trap Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>32:upsOffComplete</td>
<td>UPS off procedure finished</td>
</tr>
<tr>
<td>33:upsToggleToStart (level 2)</td>
<td>UPS toggle operation initiated</td>
</tr>
<tr>
<td>34:upsToggleAbort</td>
<td>UPS toggle operation cancelled</td>
</tr>
<tr>
<td>35:upsToggleInProgress (niveau 2)</td>
<td>UPS toggle operation under way</td>
</tr>
<tr>
<td>36:upsToggleComplete</td>
<td>UPS toggle operation finished</td>
</tr>
<tr>
<td>49:upsExternalAlarmActive (level 2)</td>
<td>External environment alarm on</td>
</tr>
<tr>
<td>50:upsExternalAlarmInactive</td>
<td>External environment alarm off</td>
</tr>
</tbody>
</table>

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
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>upsAlarmShutdownPending</td>
<td>Countdown after shutdown (upsShutdownAfterDelay) in progress</td>
</tr>
<tr>
<td>23</td>
<td>upsAlarmShutdownImminent</td>
<td>upsShutdownAfterDelay countdown elapsed, shutdown imminent</td>
</tr>
<tr>
<td>24</td>
<td>upsAlarmTestInProgress</td>
<td>UPS test in progress</td>
</tr>
</tbody>
</table>
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 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 acknowledges reception of these traps.

For more information, please refer to the UM-Client User Manual.
8. Main MGE MIB objects

Useful SNMP 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:
    1: upsmgInputPhaseEntry
      2: mginputVoltage: Input voltage.
      3: mginputFrequency: Input frequency.
      6: mginputCurrent: Input current.

- **Group7: upsmgOutput: "UPS output group"**
  2: upsmgOutputPhaseTable:
    1: upsmgOutputPhaseEntry
      2: mgoutputVoltage: Output voltage.
      3: mgoutputFrequency: Output frequency.
      4: mgoutputLoadPerPhase: Load per phase.
      5: mgoutputCurrent: Output current.

- **Group9: upsmgControl: "UPS control group"**
  1: upsmgControlReceptaclesTable:
    1: upsmgCtrlReceptEntry
      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.
4: mgreceptacleOnStatus
Control ON sequence state
nothing(1) / start(2) / stop(3)

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
nothing(1) / started(2) / inprogress(3) / completed(4)
9. registered trademarks

UM–Client, UM–Link, UM–Agent, UM–Console, UM–View, UM–Editor and UM–Sensor are registered trademarks of MGE UPS SYSTEMS.

NetWare is a registered trademark of Novell Inc.

OS/2 is a registered trademark of International Business Machines Corporation.

Windows, Windows NT and Windows 95 are registered trademarks of Microsoft Corporation.

SCO UNIX is a registered trademark of The Santa Cruz Operations.

HPUX is a registered trademark of Hewlett-Packard Company.

UNIX is a registered trademark of UNIX System Laboratories Inc.

Other brand and product names are registered trademarks of their respective holders.