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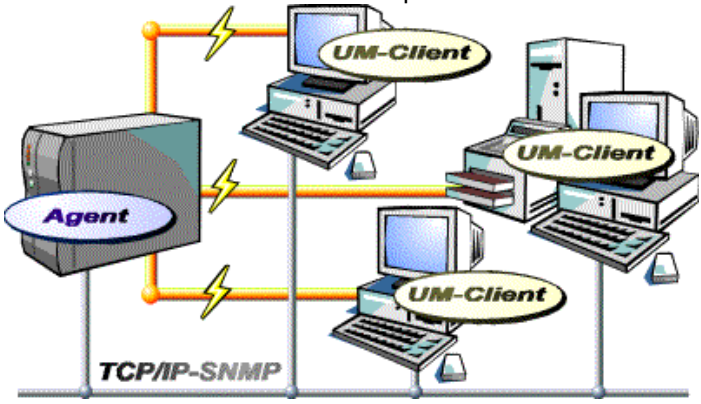
Introduction

Congratulations for the purchase of your new MGE UPS SYSTEMS SNMP Card. The MGE UPS SYSTEMS SNMP Card plugs directly into your MGE UPS to allow a network supervisor to monitor and control the UPS via SNMP protocol. Another feature for this SNMP Card is to enable protection of several computers connected to the Ethernet network. Refer to the Welcome screen of Solution-Pac CD ROM to discover how to install the UM-Client shutdown module on the protected computers.

The UPS SNMP card which implements both MGE V1.6 MIB and IETF MIB can be installed and configured in a matter of minutes.
This user manual describes configuration of the communication protocols embedded on the SNMP board. The /Manual/Mib/Eng/AGENTMIB.DOC (/Manual/Mib/Fra/MIBAGENT.DOC) files of the Solution-Pac CD-ROM are the English (French) Reference Manuals describing the MIB contents of embedded agents.

Pulsar UPSs including an SNMP board provide an Ethernet interface through the RJ45 connector located on the UPS rear panel. It enables such a topology :



Refer to the WAN part of Interactive HTML documentation available from welcome screen of Solution-Pac for information concerning distributed architecture.
The UPS can be connected to a HUB using a standard Ethernet cable. It can also be directly connected to a computer through a CROSS wired cable.
This interface can be configured using either RS232 Terminal Console or BOOTP or SNMP protocol.

Package contents

The following items should be packaged with your UPS SNMP Card :

- the UPS SNMP Adapter card,
- one 3.5" DOS formatted Diskette,
- this User Manual,
- one RS232 Configuration cable.

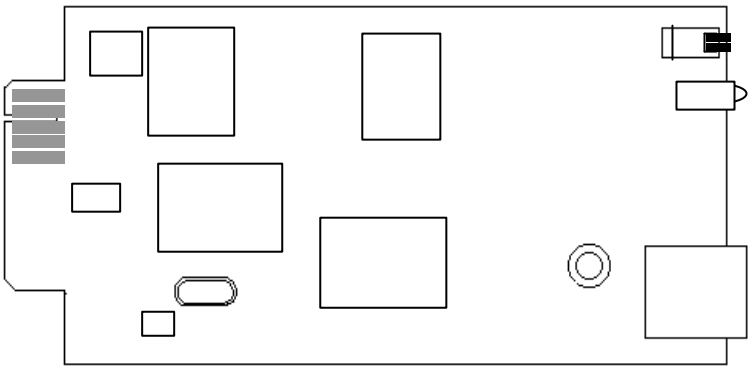
If any of the above are missing, please contact your dealer immediately.

Important information

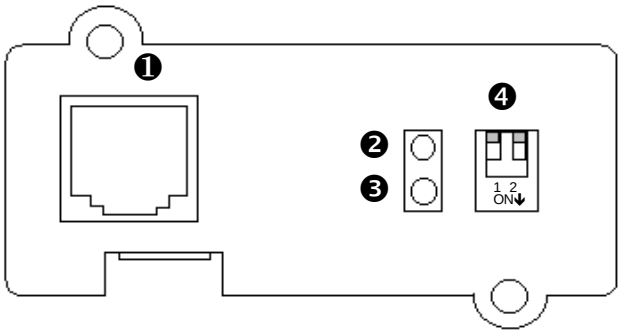
The card you have just bought is **an ACTIVE** element.
Particularly, when there is a mains failure, the card causes a shutdown of the UPS after a certain period. As a preset value, this period of time (shutdown timer) is set at **30 minutes**.
If you are not using the protection software (UM-Client), you can change this value with UM-Console(+), display module available on Solution-Pac CD-Rom (go in "Configuration/Configuration of the Systems).

Features Overview

Take a few minutes to familiarize yourself with the UPS SNMP Adapter card and its features.



UPS SNMP Adapter Card



UPS SNMP Adapter Card Front Panel

Features :

- ❶ 10Base-T Ethernet connector.
- ❷ Red Status LED. For more LED information, refer to the following LED Table.
- ❸ Green Link LED. For more LED information, refer to the following LED Table.
- ❹ Dip Switches (Normal position is 1 Off and 2 Off. Software download position is 1 On and 2 Off).

LED Table		
Green LED	Red LED	Status
Solid On	Flashing	Connected to Ethernet (no traffic)
Flashing	Flashing	Transmitting or Receiving Ethernet Data
Solid Off	Flashing	Not connected to Ethernet Network
Solid On	Solid On	Hardware problem
Solid Off	Solid Off	No power or initializing SNMP Agent
Off	Flashing	Upgrade Mode

Installation and configuration

This chapter describes how to configure your UPS SNMP card. Initial configuration can be done via a dumb terminal or a PC running in the dumb terminal emulation mode. It can also be done through the network using NMS (Network Management System) since the UPS SNMP adapter card comes with a **default IP address of 172.17.xxx.yyy**, where xxx and yyy are decimal values of the last two bytes of its MAC address.

IP Communication

IP address :
To communicate, the SNMP agent has a single IP address which is set to a default value, you can keep this default value or change it.
An IP address is made of two parts : first part defines the sub-network class on which the device is connected and the other part defines the number of the device in the sub-network. A sub-network mask allows to identify the IP address sub-network part. Three sub-network mask define network classes :

255.0.0.0	for the Class A Internet addresses
255.255.0.0	for the Class B Internet addresses
255.255.255.0	for the Class C Internet addresses

MAC address

A label sticker with SNMP board MAC address is located on the board. This MAC address (or physical address) is made of 6 bytes in hexadecimal format according to this way : 00 E0 D8 **LL MM NN**.

- 00 E0 D8 value of this code identifies the company producing the board.
- LL MM NN identifies the serial number of the device. Ex. : 0B A5 3C.

Default IP address

The SNMP board is initially configured with a default IP address. By default the 4 bytes are found from the MAC address in the following way :
172.17.xxx.yyy where **xxx** is the decimal value of the **MM** MAC address part and **yyy** is the decimal value of the **NN** MAC address part.
Example, MAC address 00 E0 D8 0B A5 3C is related to IP 172.17.165.60.

For the SNMP card, default IP configuration values are :

- IP address : 172.17.xxx.yyy (object upsmgAgentIpaddress)
- Subnet mask : 255.255.0.0 (object upsmgAgentSubnetMask) corresponding to it's default IP address on the 172.17.0.0 sub-network which is a Class B Network.
- Default Gateway : 0.0.0.0 (object upsmgAgentDefGateway), 0.0.0.0 means that there is no Gateway and that the NMS are connected on the same sub-network.

RS232 Terminal Configuration

The most important feature of this configuration is the assignment of a valid network IP address. Follow these steps to configure your UPS SNMP card:

1. Prepare a dumb terminal or PC running in the dumb terminal emulation mode.
2. Completely shutdown the UPS.
3. Insert the SNMP card into the UPS and check that DIP switches are both to Off position (note that UPS U-Talk protocol is now disabled).
4. Choose an IP configuration for the card.
5. Connect the UPS and terminal (on a free port) using the RS232 male-female serial cable that was packaged with your SNMP card.
6. Set the terminal serial port parameters to:

Baud Rate : 9600	Data Bits: 8
Stop Bits: 1	Parity: None
Handshaking: None	Terminal Type: ANSI (VT100)
Local Echo: Off	

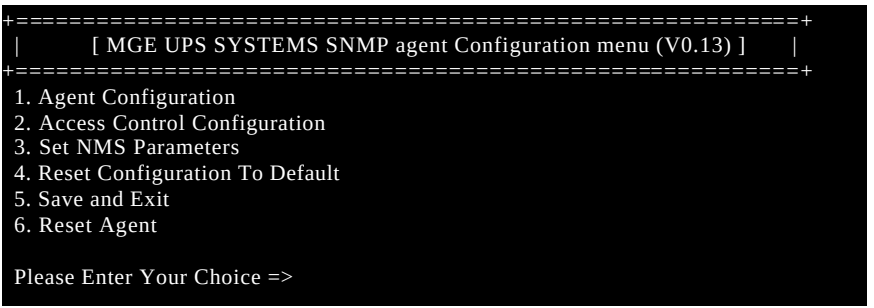
7. Power on the UPS, wait some time and key in “Enter” on the keyboard.
   (**Note:** For EXTreme UPSs you press five times “Enter” key.)
   If the next screen doesn’t appear, disconnect and reconnect the cable and press again “Enter”

8. Default password is "public" (**it is always the same string as for the write community name**)
9. Configure the UPS SNMP Adapter card as described in the ***UPS SNMP Agent Setup Program*** section of this chapter.

Note: From 3.60c and higher, same configuration menu is available through Telnet.

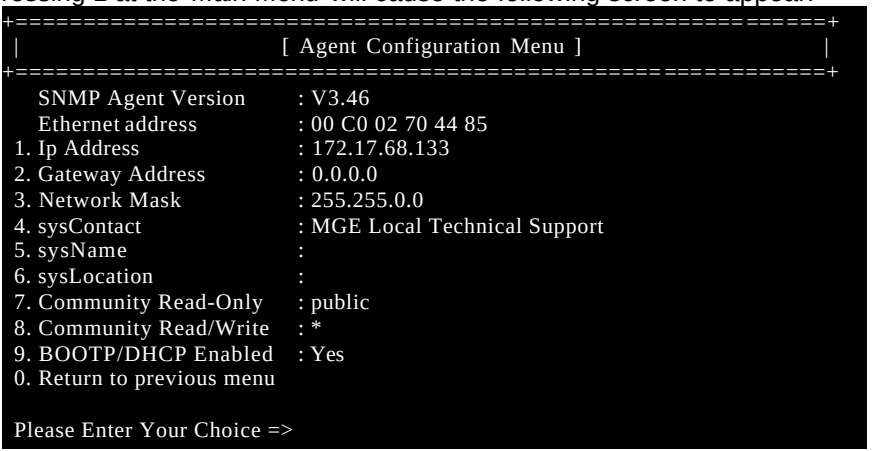
UPS SNMP Agent Setup Program

The UPS SNMP Setup Program provides you with an easy-to-use configuration interface. All alpha-numeric characters are acceptable and case sensitive entries. Pressing any key in step 8 above will cause the following *Main Menu* screen to appear.



Agent Configuration

Pressing 1 at the *Main Menu* will cause the following screen to appear:



This screen offers the following configuration options :

IP Address	Enter SNMP Agent IP Address.
Gateway Address	Enter the Gateway Address if a router exists.
Network Mask	Enter the netmask.
SysContact	People responsible for the UPS SNMP agent.

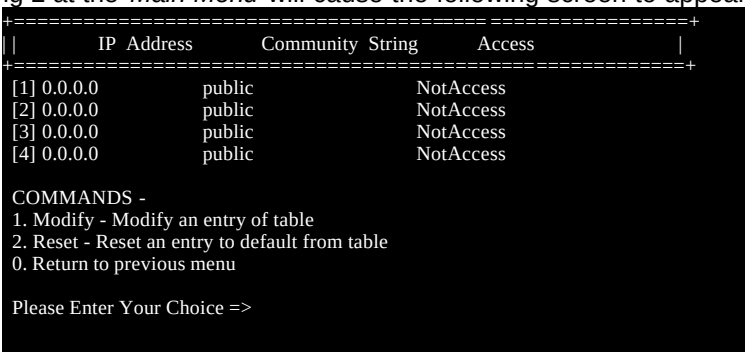
SysName	The name of the UPS SNMP Agent.
SysLocation	The UPS SNMP Agent physical location.
Community Read-Only (default value is “public”)	This parameter is the common community name which provides read-only access right.
Community Read/Write (default value is “public”)	This parameter is the common community name which provides read/write access right. **The community RW string is the same string as the password for accessing to the RS232 menu**. For SNMP SET request, a manager should use the RW community name. For GET and GET_NEXT requests, a manager can use either the RW community name or the RO.
BOOTP/DHCP Enabled (default value is “YES”)	This is the parameter enabling or disabling the BootP/DHCP process. These protocols are internet standards used to get an IP address from a server.

After entering the configuration setting, pressing <Enter> will cause the screen to scroll and a new screen will appear with the new entry.
Example: To set the IP address to 138.239.001.097 enter the following

Please Enter Your Choice => 1
Enter IP Address:138.239.001.097
Then press <Enter>

Access Control Configuration

Pressing 2 at the *Main Menu* will cause the following screen to appear :



This screen allows you to set the following options:

IP address: IP address used to identify the management station. 0.0.0.0 means entry not configured.

Community String: Low level password associated with the IP address. A Community string entry must be made. It is recommended to use something like private or public.

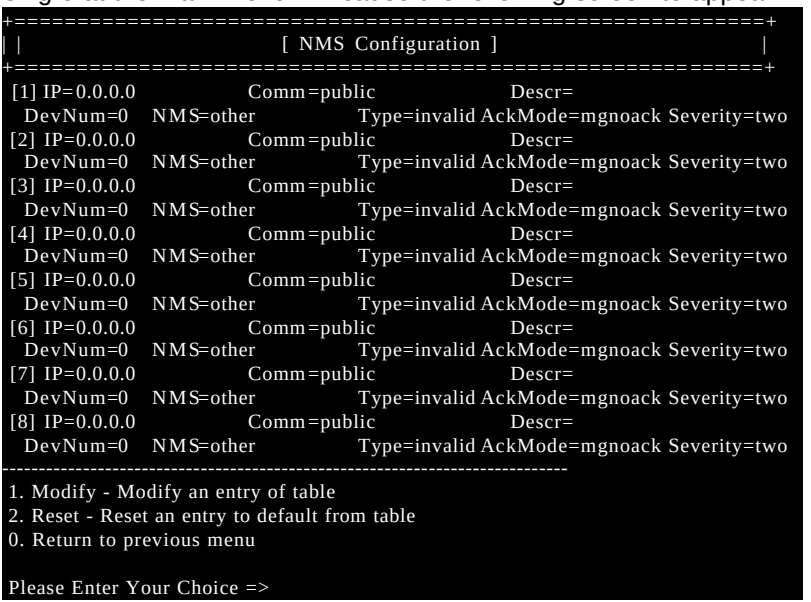
Access Permission: Available options are NotAccess, Read, and Read/Write.

Example of use : If you want that only IP address 172.17.1.1 has Read access with public and only IP address 172.17.1.2 has Read/Write access with private, define new other RO and R/W “secret” community names in Agent configuration screen and configure entries as follows :

[1] 172.17.1.1	public	Read
[2] 172.17.1.2	private	Read/Write
[3] 0.0.0.0	public	NotAccess
[4] 0.0.0.0	public	NotAccess

Set NMS Parameters

Pressing 3 at the Main Menu will cause the following screen to appear:



Note : you don't have to register servers on which UM-Client is or will be

installed UM-Client will register itself automatically. You only have to register managers which purpose is to receive traps.

This screen allows you to set the Trap configurations with following options :

- IP: IP address of the NMS to receive the Trap.
- Community: NMS community string.
- Description: Description of the NMS.
- DevNum: Refers to the UPS receptacle powering the NMS. If the NMS uses an independent power supply, enter 0.
- NMS: Network Management Station type. A submenu will be displayed for you to choose from.
- Type: Network protocol used. In the displayed submenu you must select option 4 (snmpv1) to validate the entry.
- AckMode: Response required when a Trap is sent. Five options are available in the displayed submenu :
  1. mgack — Manager must acknowledge each trap.
  2. mgnoack — No acknowledgment required. This is the default setting.
  3. stdnomg — Send IETF traps to host IP address, no acknowledgment required.
  4. mgacks — Secured way of acknowledgement.
  5. cpqnoack — Compaq traps (not implemented)
- Severity: Trap Level or Criticity level (from 1 to 7) under which the traps are not sent from the agent to the manager. Most critical level

for a trap is 1.

The Setup Program will prompt you the options above. When prompted, simply enter the information and press <Enter>. Next option will appear.

Reset Configuration to Default

Pressing 4 will reset the SNMP Agent to its default settings.

Save and Exit

Pressing 5 at the Main Menu will save the configuration to the SNMP Agent and exit the UPS SNMP Agent Setup Program. When you have exited the program, the new configuration can take effect.

If you exit the program accidentally, simply restart the program and key in Enter.

Save and Restart

Pressing 6 at the Main Menu will save the configuration to the SNMP Agent and restart the snmp agent.

Configuration with Bootp/DHCP

BOOTP/DHCP protocols allow a device connected to an IP network to get an IP from a BOOTP/DHCP server.

The SNMP board implements a BOOTP/DHCP client, and the object upsmgAgentBootP enables this function.

1.3.6.1.4.1.705.1.12.16.0 : upsmgAgentBootP is an object from the MGE V1.6. MIB and you can change it's value by performing a SNMP request to it or by using UM-Vision software from Management PAC CD ROM.

By default SNMP board is configured with this BOOTP function enabled (value of upsmgAgentBootP set to «yes»(1)).

Configuration with SNMP

The default IP address enables communication between the SNMP agent and the devices connected to the 172.17.0.0 Network (class B Network). Following objects from MGE V1.6. MIB define IP configuration :

1.3.6.1.4.1.705.1.12.1.0 : upsmgAgentIpaddress,
1.3.6.1.4.1.705.1.12.2.0 : upsmgAgentSubnetMask,
1.3.6.1.4.1.705.1.12.3.0 : upsmgAgentDefGateway
If you change IP address for another sub-network class, change also the sub-network mask.

To communicate at initial step with the device, your computer must be configured with an IP address for the same network class as the UPS default IP address. (you also can add a routing condition on your PC by keying Route add <agent default IP address> <PC IP address>).

Setting new IP address and sub-network mask can then be performed through the network using SNMP SET command on upsmgAgentIpaddress and upsmgAgentSubnetMask objects.
It is recommended to use UM-Vision (Screen UPS Configuration), since it performs the modification of the two objects in the same SNMP SET request. You can also configure default gateway IP address. The gateway will re-send frames emitted from the agent to NMSs not connected to the same network.

Reset Configuration to Default

Different ways are available to reset configuration to Default :

1. Accessing to RS232 Agent Setup Program main menu through terminal and key option 4 “Reset Configuration To Default”
2. Through SNMP set to MGE MIB Object upsmgAgentFactReset (1.3.6.1.4.1.705.1.12.10.0) to 1
   You can also use graphical Interface UM-Console+ from Solution PAC CD-ROM or UM-Vision from Management CD-ROM.

Testing SNMP Card

After configuration of the UPS SNMP Adapter you can perform these tests to be sure that it is configured properly :

Check SNMP Card LED status :

The green LINK LED should be ON and red U-Talk LED should be flashing.

PING the UPS SNMP Adapter :

Perform a *PING* request from a NMS. If the SNMP card is not alive, check network connections and IP configuration, make sure both are on the same network or sub-network.

Perform a SNMP get :

To check the RO community name perform a get request from NMS to a MIB object. **upsmgIdentModelName** returns UPS model Name. (E.G.: EX10).

Perform a SNMP set :

To check the RW community name perform a set request from NMS to a setable MIB object. A set on the MIB object **upsIdentInstallationDate** will allow you to insert the date the UPS was installed, in mm/dd/yy format. The sysName, sysContact, and sys-Location strings may also be set.

Check Trap reception :

If your NMS doesn't receive traps when Events occur, verify trap receiver table upsmgManagersTable. If the NMS IP address is not in the table, add it by a SNMP set or by RS232 console menu.

Upgrade Firmware from RS232 for EX7/10 and ESV+ UPSs:

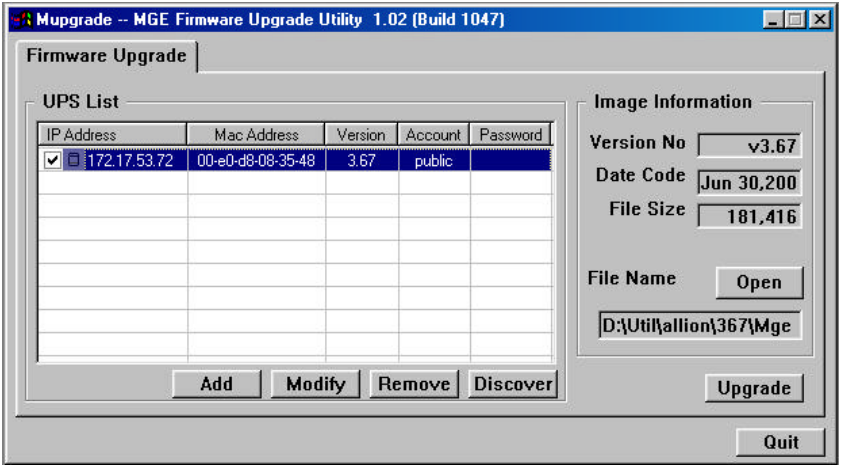
Note: This method applies **only** to EX7/10 and ESV+ UPSs.
Follow these steps to upgrade the Firmware of your UPS SNMP card :

- Prepare a PC and copy the content of the DOS floppy into a “download directory” on the PC.
- Connect the UPS and PC using the RS232 male-female serial cable that was packaged with your SNMP card.
- Turn the SNMP Card DIP Switch 1 to On.
- Reset the board (turn off and on the UPS)
- On a DOS session go to the “download directory” and Key in following command :
  download -p1 -b mgexxx.bin (p1 is for port number 1 called COM1, p2 for port number 2 called COM2)
- Reset the SNMP Card when BOOTROM code download is finished (Turn UPS OFF/ON)
  download -p1 mgexxx.bin (p1 is for port number 1 called COM1, p2 for port number 2 called COM2)
- Confirm you want to download and when RUNTIME FIRMWARE download is finished turn back DIP Switch 1 to Off.

Upgrade Firmware via network:

Note: You can apply this upgrade method from 3.60c versions or higher. Follow these steps to upgrade the Firmware of your UPS SNMP card :

- Prepare a PC and copy the content of the DOS floppy into a "download directory" on the PC.
- Connect the UPS and PC through the network and check that PC and UPS IP addresses are in same netmask. (if they are not, you can type: route add <agent IP address> <PC IP address>)
- Double click on mupgrade.exe
- Click on the discover button and UPS list will appear.
- Select the SNMP board to upgrade. (Check box on the left)
- Select the line, click on "Modify" button and enter:
  - account (default value: public). It is the Read community name
  - password (default value: public). It is the Write community name
- Click "Open" and choose the file to be downloaded.
- Then click "Upgrade".



The definitions of the icon (left side) is :

- BLUE: connection between Mupgrade and SNMP Card is normal.
- GREY: The SNMP Card is detected but the connection is broken. (network is broken or the SNMP Card has different subnet with Host).
- YELLOW : SNMP Card had TFTP capability disabled (from SNMP).

MIB

The MIB (Management Information Base) is a set of objects that are processed via a network protocol. These objects determine what UPS parameters can be monitored and controlled using SNMP request.

For the managers, the SNMP board implements standard MIB II and following two MIBs for UPS control (MGE V1.6 MIB and IETF MIB).

The MGE V1.6 UPS SNMP MIB contains objects that have been divided into 13 distinct groups according to their functions.

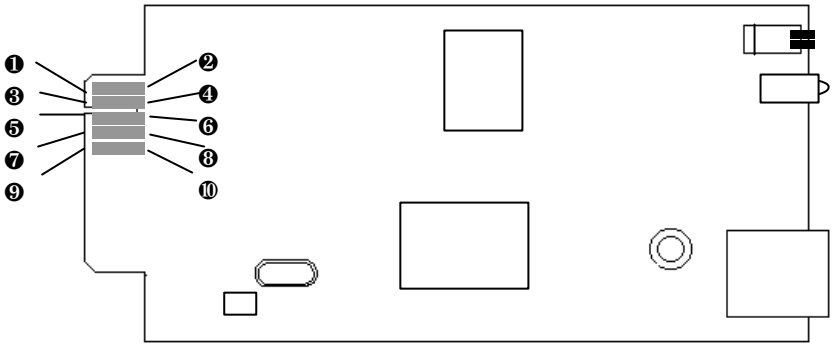
For more detailed information concerning MIB objects, their options and descriptions, reference your CD-ROM Solution-Pac and MIB definition file.

The /Manual/Mib/Eng/AGENTMIB.DOC (/Manual/Mib/Fra/MIBAGENT.DOC) files of the Solution-Pac CD-ROM are the English (French) Reference Manuals describing the MIB contents of embedded agents.

Hardware Specifications

CPU	AMD Am188ES – 20MHz
Memory	512K x 8 Static RAM / 512K x 8 Flash ROM
LAN Controller	DAVICOM DM9008
Serial Port	Two asynchronous serial ports
Network Port	10 BaseT RJ-45 phone jack connector
LED	Green led for network / red led for U-Talk
DIP switch	2 digit (default setting is Switches 1 and 2 Off)
Operating Temperature	0 ~ 40° C
Operating Humidity	10 ~ 90 %
Power Input	8~12V DC unregulated
Power Consumption	1.5 Watts Maximum
Size	130 mm x 60 mm (L x W)
Weight	80 gm
Regulatory	FCC class A CE class A

Pin Assignments



Bottom Side		Component Side	
Pin 1	GND	Pin 2	DC (8-12V)
Pin 3	Txd_UPS	Pin 4	Rxd_UPS
Pin 5	Txd_PC	Pin 6	Rxd_PC
Pin 7	NC	Pin 8	Short to pin 10
Pin 9	GND	Pin 10	Short to pin 8