
*Minuteman
SNMP-S
and
SNMP-M*

User Manual

for:

Minuteman SNMP-S and SNMP-M™

by:

MINUTEMAN®
UNINTERRUPTIBLE POWER SUPPLIES

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This equipment generates, uses, and can radiate radio frequency energy; and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

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Conventions Used In This Guide

This guide uses these conventions:

Bold italic print, as shown in this example, indicates field names, menu items, or values in the Minuteman SNMP-S software agent.

Bold print, as shown in this example, indicates filenames, directories, or items that you must type exactly as they appear.

Italic print words or letters in braces { }

indicate values that you must supply. For example:

{drive}:**setup**

Italic print words or letters in brackets < > indicate keys to press. If two keys are separated by a + plus symbol, then the first key should be pressed and held down while pressing the second key. For example: *<alt+enter>*.

Note: Notes contrast from the text to emphasize their importance.

Warning: These messages alert you to specific procedures or practices; serious consequences may result including injury if you disregard them.

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Your Minuteman SNMP-S monitors one UPS attached to an EtherNet network using a Network Management Station. The complete Minuteman SNMP-S package includes hardware and software, a UPS cable, a power supply, a UPS Management Information Base (MIB), and a manual.

Minuteman SNMP-S Features

The Minuteman SNMP-S hardware adapter runs an embedded Simple Network Management Protocol (SNMP) software agent. This agent responds to SNMP GETS and SETS and, also, forwards traps to designated recipients when critical conditions occur to the UPS—such as going on battery backup.

The Minuteman SNMP-S features:

- **Compact Size**—A small unit that takes less space on your work area. Dimensions are 4¾" x 3½" (12 x 8½ cm).
- **One Serial Port**—A DIP switch changes the adapter's single serial port to a configuration port for installation or to a communication port for normal operations.
- **Remote monitoring**—Monitors utility power and low battery status for one UPS from a remote workstation (NMS).
- **Remote Control**—Turns the UPS inverter off when the NMS sends the proper command.
- **NMSs To Receive UPS Alarms**—These traps (unsolicited messages) inform you about the power condition of your UPS.
- **Works with all major NMSs on EtherNet**—Minuteman SNMP-S works with the most widely used Network Management Systems: HP Open View, Novell NMS, Sun NetManager, IBM NetView, and many more.

Example Network With Minuteman SNMP-S

A typical installation of Minuteman SNMP-S monitoring a UPS on an EtherNet network follows in the illustration below. The Minuteman SNMP-S adapter communicates with the UPS to inform you of your system's power condition.

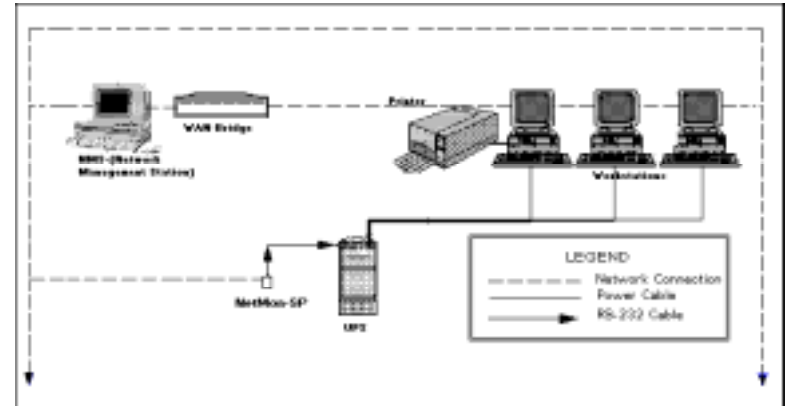


Figure 1 Minuteman SNMP-S Monitoring a UPS on EtherNet

The standard Minuteman SNMP-S package contains a Minuteman Unit with supporting hardware and software.

Minuteman SNMP-S Package Contents

The components of your package are:

<input type="checkbox"/> Minuteman SNMP-S Unit
<input type="checkbox"/> Two 3.5" Diskettes
<input type="checkbox"/> Power Supply
<input type="checkbox"/> Minuteman Manual
<input type="checkbox"/> Configuration Cable labeled NSP-CFG-01A
<input type="checkbox"/> UPS Interface cable
<input type="checkbox"/> Worksheet included in the <i>Manual</i>

The Minuteman SNMP-S Unit

Figures 2 and 3 show the Minuteman SNMP-S's panels and top. The network connection panel illustrates the following:

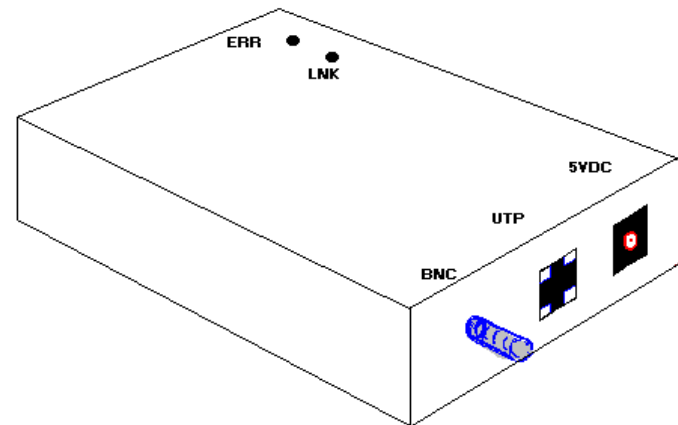


Figure 2 Minuteman SNMP-S Network Connection Panel

Network connection ports—Minuteman SNMP-S provides a BNC connector for 10Base-2 connection and a UTP (RJ-45) connector for 10Base-T networks.

Power connection port—Minuteman SNMP-S provides a connector for a 5VDC power supply.

The following illustration shows the serial port and the DIP switch. The serial port serves two purposes—adapter configuration and UPS communication.

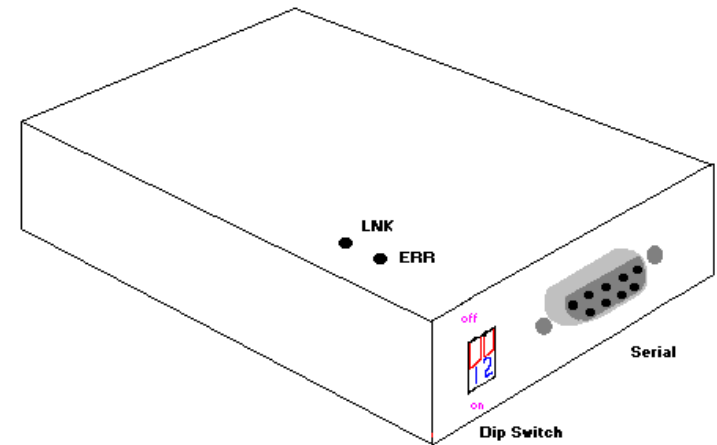


Figure 3 Minuteman SNMP-S Serial Port Panel

Status LEDs

The LED indicators inform you of network activity, which is the green LNK light, and the UPS status, which is the red ERR light.

DIP Switches

Use the DIP switch to configure with a dumb terminal or to communicate with the UPS for status monitoring.

Serial Port

The Minuteman SNMP-S uses this port for configuration during installation or for communications during normal operations.

Two 3.5” Diskettes

Your package contains two 3.5” MIB diskettes—one in DOS format and one in TAR format. These diskettes contain the UPS MIB file.

Copy the MIB file to the appropriate **NMS MIB** directory for the UPS connected to your Minuteman SNMP-S.

The DOS disk also contains a copy of the programmed image file and the downloaded **.exe** program. See the *Upload Firmware* section for further explanation of these files.

Configuration Cable

Your package contains a cable labeled NSP-CFG-01A, female-to-female. Use this cable to connect the Minuteman SNMP-S serial port and a dumb terminal or PC for configuration. When you configure the Minuteman SNMP-S, be sure to set the DIP switch to the proper setting. Any dumb terminal or terminal emulation package, such as Microsoft Windows' Terminal will work fine.

WARNING: If you are using a power supply other than the one supplied with the Minuteman SNMP-S, be sure that the polarity of the new power supply is correct. If the polarity of the new power supply is incorrect, you may run the risk of damaging the adapter.

Power Supply

The two types of power supplies offered are:

Power Supply Type	Input	Output
Wall Cube	120 VAC, 60 Hz	5 VDC, 1 amp
Universal	230 VAC, 50 Hz	5 VDC, 1 amp

UPS Interface Cable

The manufacture-specific interface cable connects the UPS to the Minuteman SNMP-S unit. The table below defines the basic UPS device port configuration:

1	Low Battery	6	Not connected
2	Not Connected	7	Set to Voltage High (+12V)
3	Set to Voltage Low (-12 V)	8	Power Fail
4	Inverter Shutoff	9	Not connected
5	Ground		

System Requirements

Minuteman SNMP-S requires a terminal for configuration and a network connection with an NMS for operation. The following is a description of all required components and a list of the most widely used NMSs.

- The components of your standard Minuteman SNMP-S package
- Connection to an EtherNet network
- An SNMP-based management station

Some NMSs that support the Minuteman SNMP-S are:

HP OpenView for UNIX

HP OpenView for Microsoft Windows

Novell NMS

SunConnect SunNet Manager

IBM NetView/6000

- A dumb terminal or a PC with an emulation package to configure the Minuteman SNMP-S SNMP Agent
- An RS232 communication port on your PC or terminal
- A UPS—any UPS type

You can interface any contact closure UPS with Minuteman SNMP-S if you have the manufacture's specific cable supplied with your kit.

- Network identification values for the Minuteman SNMP-S:
 - IP Address
 - Net Mask
 - IP Addresses for the NMS
 - Definitions of Communities
 - IP Address of the Gateway/Router

Installation

This section describes the installation of the Minuteman SNMP-S adapter when you connect it to the UPS and the network. (Refer to the *Configuration* section for network communications' setup.) For configuration, connect the Minuteman SNMP-S temporarily to a PC with a terminal emulation package or to a dumb terminal. The following steps guide you in connecting the Minuteman SNMP-S to the network and UPS.

1. Install the UPS.
3. Adjust the DIP switches on the Minuteman SNMP-S for Configuration. Switch 1 is ON when down; switch 2 is OFF when up.
4. Temporarily, connect the Minuteman SNMP-S adapter to a dumb terminal or to a PC with the terminal emulation package.
 - a) Using the configuration cable, connect the end of the cabled labeled "CPU/ NSP-CFG-01A" into a dedicated RS-232 serial port on the configuration PC.
 - b) Connect the other end into the Minuteman SNMP-S's serial port.
4. Configure the communications settings.
 - a) Use the following settings to configure the dumb terminal or PC.



Baud rate →	9600	Flow Control Xon/XOFF	
Data bits →	8	Handshaking →	None
Stop bit →	1	Terminal Type:→	ANSI (VT100)
Parity →	None	Local Echo →	Off

- b) A Windows's communication screen with the typical Minuteman SNMP-S setting:

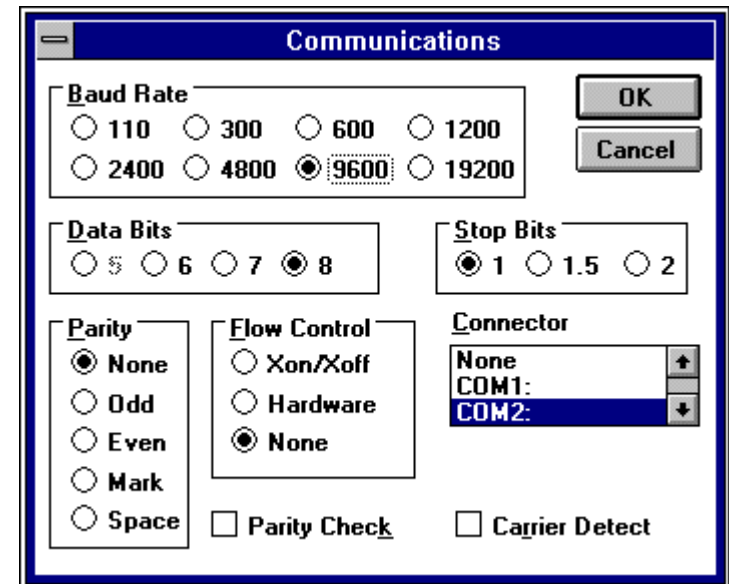


Figure 4 Communication Screen (Windows)

5. Press **OK** if you have the Windows Communications screen or accept your communication settings in the terminal emulation package. The terminal is now configured to communicate with the Minuteman SNMP-S adapter.
6. Connect the power supply with the 5VDC connector to the Minuteman SNMP-S adapter's power input. Connect the other end of the power supply with a standard plug into the UPS. Approximately five seconds after you supply power, the adapter displays the introductory screen on your terminal. Press <enter> to get to the main menu.
7. You are now ready to configure the Minuteman SNMP-S adapter. Refer to the *Configuration* section for a detailed discussion.
8. Turn DIP switch 1 on the Minuteman SNMP-S from the **DOWN** (ON) position to the **UP** (OFF) position.
9. Disconnect the configuration cable from the Minuteman SNMP-S adapter and the dumb terminal or PC. Store this cable for future use.
10. Disconnect the Minuteman SNMP-S adapter from the PC or terminal and from the power supply.
11. DIP switch 1 is still set to **OFF** (UP) position.

12. Place the Minuteman SNMP-S close enough to the UPS it is monitoring so the UPS interface cable can connect to the Minuteman SNMP-S's serial port and the UPS's serial port.
13. Connect the Minuteman SNMP-S to the Ethernet cable—either UTP or BNC.
14. Re-insert the power jack into the Minuteman SNMP-S's power connection.

Verify The Minuteman SNMP-S Operation

15. After you complete all configuration settings and connect the Minuteman SNMP-S to the network, *check the LINK status.*

LED Status After Power Up

- a) Momentarily, green and red LEDs do not light.
- b) Green LED pulses randomly showing network activity.
- c) After five to ten seconds from power up, the red LED flashes rapidly; this indicates that Minuteman SNMP-S is determining which UPS model is connected to your system. This takes a few seconds.
- d) After Minuteman SNMP-S determines the UPS mode, the red light turns off.
- e) The red LED pulses once for every UPS communication failure it detects.
- f) If the LED detects three failures in a row, the red LED turns on and stays on solidly.
- g) If the LED receives one good UPS message, it turns off the red LED light.

Establish Network Communications

1. PING the Minuteman SNMP-S. Issue a PING command from the NMS (Network Management Station).
 - a) If you do not get a response, check the Minuteman SNMP-S's network connection and IP address.
2. Test the adapter with an NMS. Perform a "*get*" and a "*set*."
 - a) If the get or set commands fail, check the Minuteman SNMP-S access controls. The manager must have read permission to execute a *get* command successfully and read/write permission to execute a *set* command successfully.

(See *Configuring the NMS* section for a detailed discussion.)

Your Minuteman SNMP-S SNMP adapter is now installed and completely functional.

Configuration of the SNMP-S

You have previously installed the UPS, and you are ready to configure the Minuteman SNMP-S to work on your network. Minuteman SNMP-S is temporarily connected to a PC with a terminal emulation package or to a dumb terminal.

NOTE: Refer to the *Installation* section for the proper setting of the hardware adapter prior to configuring the device.

Press any key to display the *Main Menu*. From this menu you can select to enter the IP address, Gateway address, and MIB system group; you can set the access controls of SNMP communities; set traps, display settings; reset the settings to default values; save the new values and exit the program, and upgrade Firmware (See caution in the *Upgrade Firmware* section); and exit without saving.

```
<<<<<          Main Menu          >>>>>
<<<<<----->>>>>
 1. Set the IP Address, Gateway Address & MIB System Group.
 2. Set Access Controls of SNMP Communities.
 3. Set Trap Receivers.
 4. Additional Setup Screen.
 5. Display Settings.
 6. Reset Configuration to Default.
 7. Save and Exit.
 8. Upgrade Firmware.
 0. Exit without Saving.

Choose a Number =>█
```

Figure 5 Main Menu

To select any option on the *Main Menu*, enter the number of the option you want at the Choose a Number=> prompt. The program displays the desired screen.

Set IP And Gateway Addresses And MIB System Group

To set the IP address, Gateway address, MIB system group, and other system configurations, type 1 at the prompt. The following screen displays:

```
Local Address: (Invalid)                               Serial NO: 00:00:00:07:00:00
Gateway Address: (Invalid)
Network ID: (Invalid)
sysContact:
sysName:
sysLocation:

COMMANDS:
 1. Set the IP address, Netmask and Gateway.
 2. Set sysContact.
 3. Set sysName.
 4. Set sysLocation.
 0. Return to previous menu.

USAGES:
 1 IP_address(XXX.XXX.XXX.XXX) [ Mask_bit_count Gateway(XXX.XXX.XXX.XXX) ]
 2 String_of_sysContact
 3 String_of_sysName
 4 String_of_sysLocation

EXAMPLE:
to set the IP address to 127.100.90.57
-> 1 127.100.90.57

Enter Command ->|
```

Figure 6 IP Address for the Minuteman SNMP-S and More

NOTE: The minimum requirement to operate Minuteman SNMP-S is to set the IP address.

To enter values, enter the number of the option, type a *<space>*, and enter the name. Press *<enter>*. Your new value displays next to the field heading on the top of the screen.

If you want to return to the *Main Menu*, press **0** (zero) and press *<enter>*.

For more information on IP addresses and net masks, see the [Reference](#) section of the *Appendix* in this manual.

The following table contains the values with their MASK_BIT_COUNT:

0	255.255.255.0	4	255.255.255.240
1	255.255.255.128	5	255.255.255.248
2	255.255.255.192	6	255.255.255.252
3	255.255.255.224	7	255.255.255.254

To assign the IP address of Minuteman SNMP-S, the gateway, and the network, type at the prompt:

1, *<space>*, the IP address of the Minuteman SNMP-S, *<space>*, **0** to **7**, *<space>*, the IP address of the gateway.

```
Enter Command =>1 198.218.129.200 6 198.218.129.201
```

The Gateway IP Address is optional; the program generates the Network IP address.

To assign the system contact name, type **2** and enter the name of the person to contact about the Minuteman SNMP-S:

```
Enter Command =>2 Lois_Lane
```

To assign the UPS name, type **3** and enter name of the UPS:

```
Enter Command =>3 Sparky No1
```

To assign the UPS location, type **4** and enter the location name:

```
Enter Command =>4 Room 1583
```

The top of the screen displays your new values:

```
Local Address: 198.218.129.200                               Serial NO: 00:C0:02:07:00:90
Gateway Address: 198.218.129.201
Network Id: 198.218.129.200 (255:255:255:252)
sysContact: Lois Lane
sysName: Sparky No1
sysLocation: Room 1583
```

Record the definitions on your Worksheet for reference. To return to the Main Menu, type **0** and press *<enter>*.

Set Access Controls

To set access controls of SNMP communities from the Main Menu, type **2** at the Choose a Number => prompt. The following screen displays a column of four Manager IP addresses with their access permission, the commands, and an example to guide you. Use this screen to specify which managers have access to the Minuteman SNMP-S agent, the community names, and what type of access the IP managers have—read only or read and write.

```
Current access controls of SNMP communities:
  Manager_IPAddr   Community String   Access Permission
  -----
1. 000.000.000.000                               NotAccess
2. 000.000.000.000                               NotAccess
3. 000.000.000.000                               NotAccess
4. 000.000.000.000                               NotAccess

COMMAND:
set      --set all values of an entry's fields.
clear    --reset to default.
'b'     --return to main menu.

USAGES:
set Entry_Num IP_Address(XXX.XXX.XXX.XXX) Community_String Access(r/w)
clear Entry_Num

EXAMPLE:
to set entry #3 to IP address=138.239.0.24,
community string=private and access permission=write
-> set 3 138.239.0.24 private w

Enter Command ->
```

Figure 7 Access Controls

To set an access control, at the prompt type:

Set, <space>, enter the number of the column from **1** through **4**, <space>, enter the IP address, <space>, name of the community string, <space>, and access code—**r** for read only or **w** for read and write. Press <enter>. For example:

```
Enter Command =>set 1 132.217.227.025 Dept#1 r
```

The new values display on the top of the screen:

```

Current access controls of SNMP communities:
  Manager_IPAddr      Community String      Access Permission
  *****          *****          *****
1. 132.217.227.025 Dept#1      ReadOnly
2. 132.217.227.026 Dept#2      ReadOnly
3. 132.217.227.027 Dept#2      Read/Write
4. 132.217.227.032 Dept#7      Read/Write

```

To clear access controls of any manager IP address, type **clear**, <space>, and the desired list number at the prompt. Press <enter>.

```

Enter Command =>clear 3

```

The top of the screen reflects your changes:

```

Current access controls of SNMP communities:
  Manager_IPAddr      Community String      Access Permission
  *****          *****          *****
1. 132.217.227.025 Dept#1      ReadOnly
2. 132.217.227.026 Dept#2      ReadOnly
3. 000.000.000.000      NotAccess
4. 000.000.000.000      NotAccess

```

To return to the Main Menu, type **0** and press <enter>.

Set Trap Receivers

Use this screen to determine which IP managers receive traps (messages) from your Minuteman SNMP-S. This screen permits you to send traps about your UPS to four IP addresses (managers). Also, you may determine the severity levels to assign to a particular manager. To access the trap setting screen, type **3** from the Main Menu. The following screen displays:

```
Current trap receivers:
  Receiver_ipAddr  Severity  Community string  Accept
*****
1. 000.000.000.000 INFORMATIONAL
2. 000.000.000.000 INFORMATIONAL
3. 000.000.000.000 INFORMATIONAL
4. 000.000.000.000 INFORMATIONAL
                                NO
                                NO
                                NO
                                NO

COMMAND:
set --set all values of an entry's fields.
clear --reset to default. <ESC> -- return to main menu.
'0' --return to main menu.

USAGES:
set Entry_Num IpAddr(XXX.XXX.XXX.XXX) severity(1,2 or 3) CommunityString
clear Entry_Num
Where severity : 1-INFORMATIONAL, 2-WARNING, 3-SEVERE.

EXAMPLE:
to set entry #2 to IP address=128.239.1.57,
severity=WARNING and community string=public
=> set 2 128.239.1.57 2 public

Enter Command ->
```

Figure 8 Trap Receivers

To set traps, at the prompt type:

Set, *<space>*, enter the number of the column from **1** through **4**, *<space>*, enter the IP address, *<space>*, severity code–1,2, or 3, and name of the community string. Press *<enter>*. The severity level codes for messages are:

- **1** Informational
- **2** Warning
- **3** Severe

The trap receiver receives all assigned severity level messages and the ones rated above. If you assign severity code 2, the manager receives warning and severe levels.

A set trap example.

```
Enter Command =>set 3 138.238.138.059 3 Dept#3
```

The top of the screen reflects your changes:

```
Current trap receivers:
Receiver_IpAddr  Severity      Community string  Accept
*****
1. 138.238.138.057 INFORMATIONAL Dept#1           YES
2. 138.238.138.058 WARNING       Dept#2           YES
3. 138.238.138.059 SEVERE         Dept#3           YES
4. 138.238.138.060 INFORMATIONAL Dept#4           YES
```

To remove a trap receiver from the list, type **clear**, *<space>*, and the desired list number at the prompt. Press *<enter>*.

```
Enter Command =>clear 2
```

The top of the screen reflects your changes:

```
Current trap receivers:
Receiver_IpAddr  Severity      Community string  Accept
*****
1. 138.238.138.057 INFORMATIONAL Dept#1           YES
2. 000.000.000.000 NO DEFINE
3. 000.000.000.000 NO DEFINE
4. 138.238.138.060 INFORMATIONAL Dept#4           YES
```

To return to the Main Menu, type **0** at the prompt and press *<enter>*.

Additional Setup Screen

Minuteman does not use this option at this time. If you select No. 4, the screen first displays a blank screen followed by the Main Menu.

Display Settings

This screen displays all of Minuteman SNMP-S's current settings. To access this screen, type **5** at the prompt from the Main Menu. The current settings display:

```
Local Address: 132.217.227.250          Serial No: 00:C0:02:07:00:90
Gateway Address: (Invalid)
Network Id: 132.217.000.000 (255:255:000:000)
sysContact: lois_lane
sysName: Sparky_Hot
sysLocation: Room_1583

Current access controls of SNMP communities:
  Manager_IpAddr  Community String  Access Permission
  -----
1. 132.217.227.025 Dept#1          ReadOnly
2. 132.217.227.026 Dept#2          ReadOnly
3. 000.000.000.000                NotAccess
4. 000.000.000.000                NotAccess

Current trap receivers:
  Receiver_IpAddr  Severity  Community string  Accept
  -----
1. 138.238.138.057 INFORMATIONAL Dept#1          YES
2. 000.000.000.000 NO DEFINE
3. 000.000.000.000 NO DEFINE
4. 138.238.138.060 INFORMATIONAL Dept#4          YES

[Press any key to continue]
```

Figure 9 Display All Current Settings

The settings are the following fields:

- Local, Minuteman SNMP-S's, Address and serial number (physical address)
- Gateway and Network address
- System Contact Name (Your system administrator's or a contact's name)
- System Name
- Location (location of your UPS and Minuteman SNMP-S)
- List of the current communities with their access control code
- List of the current trap receivers with their severity level codes

Reset Configuration to Default

If you press <6>, the program resets all fields to default. To display the results, press <5> for Display Settings. Most fields have no values.

```
Local Address: (Invalid)                               Serial 00: 00:00:00:00:00:00
Gateway Address: (Invalid)
Network Id: (Invalid)
SysContact:
SysName:
SysLocation:

Current access controls of SNMP communities:
  Manager IpAddr   Community String   Access Permission
  *****
1. 000.000.000.000   *****          NotAccess
2. 000.000.000.000   *****          NotAccess
3. 000.000.000.000   *****          NotAccess
4. 000.000.000.000   *****          NotAccess

Current trap receivers:
  Receiver IpAddr  Severity           Community string   Accept
  *****
1. 000.000.000.000 INFORMATIONAL      *****          NO
2. 000.000.000.000 INFORMATIONAL      *****          NO
3. 000.000.000.000 INFORMATIONAL      *****          NO
4. 000.000.000.000 INFORMATIONAL      *****          NO

[Press any key to continue]
```

Figure 10 Reset Values To Default

To Save and Exit

If you are satisfied with your configurations, save them and exit. To save, press <7>. The screen displays the following message:

```
<<<<----->>>>
End of UPS SNMP Agent Setup Program.
Turn off DIP switch of setup.
Disconnect the power of SNMP agent.
Connect the power of SNMP agent.
<<<<----->>>>
```

Figure 11 Save and Exit Messages For Configuration

This messages informs or directs you.

1. The Setup program has ended.
2. Turn off the DIP switch (switch 1 UP).
3. Disconnect the power supply from the Minuteman SNMP-S.
4. **Re-connect the power supply to the Minuteman SNMP-S.**

Upload Firmware

CAUTION: The firmware upload has already been accomplished at the factory. Before you proceed with this option, you must contact our technical support team for assistance.

This option supports upgrades to the firmware program when they become available. Should an upgrade be available, call our technical support team for assistance with the upgrade.

If you inadvertently use this option, your system suspends (locks). To restart, unplug the power supply from the Minuteman SNMP-S, and re-connect the power supply to the Minuteman SNMP-S.

Exit Without Saving

This options lets you quit the program without saving any of your configuration settings. To exit, type **0** (zero).

To complete the Minuteman SNMP-S installation and configuration process, you must compile the necessary MIBs to configure the NMS.

Any NMS with a MIB compiler can manage the Minuteman SNMP-S adapter. For instructions on how to compile MIBs for the most popular NMSs—Novell's NetWare Management Station, Hewlett-Packard's OpenView Network Node Manager, and SunConnect's SunNet Manager; see the corresponding heading below.

General Network Management Stations

Follow these general procedures to configure an NMS:

- Compile the device MIBs.
- Add the Minuteman object to the *Management Map*.
- Ping the Minuteman SNMP-S.

HP OpenView Network Node Manager for HP-UX

Compile the Device MIB

1. Copy the UPS MIB file from the TAR formatted diskette into the subdirectory `/usr/ov/snmp_mibs`.
2. From the main menu, select *Options*
3. Load/Unload *MIBs: SNMP...*
4. Select *Load*.
5. Select the MIB file copied earlier.
6. Select *OK*.

Add the Minuteman Object to the Management Map

1. Select the submap then *Edit: Add Object*.
2. Select the group computer.
3. With the middle (or opposite) mouse button, drag the generic symbol subclass device to the submap.
4. Enter a name for the object in the Selection and Label fields of the *Add Object* box.
5. Highlight *IP Map* from *Object Attributes* group.
6. Select Set Object Attributes button.
7. Enter Host name and IP address of Minuteman SNMP-S adapter.
8. Enter *OK*.

9. Enter **OK** at *Add Object* menu.
10. Enter **OK** at *Add Object:palette*.

Poll the Device OIDs

1. From the main menu, select **Monitor: MIB** values then **Browse MIB: SNMP**.
2. Move around the MIBs to view the UPS device information.

Set the Device OIDs

From the main menu, select **Monitor: MIB** values then **Browse MIB: SNMP**.

1. Select a MIB variable you want to alter; click on it.
2. Enter the new value then click on **Set**.
3. Click on **Start Query** to view the changes.

Ping the Minuteman SNMP-S

1. Change active Window to **Shell**.
2. Type ping <IP address> and press <enter>.

Novell's NetWare Management Station v.2.0

Compile the Device MIB

1. Copy the UPS MIB file from the DOS formatted diskette into the subdirectory
2. `\nms\snmpmibs\current`.
3. From the main menu, select **Tools** then SNMP MIB Compiler.
4. From the *SNMP MIB Compiler* box, select **Compile**.

Add the Minuteman Object to the Management Map

The NMS will discover the Minuteman and add it to the Management map during its discovery pass.

Poll the Device OIDs

1. From the main menu, select ***Tools*** then the ***SNMP MIB Browser***.
2. From the ***SNMP MIB Browser*** box, select the IP protocol and then enter the IP Address.
3. select the profile ***to read***.
4. select ***OK***.

Set the Device OIDs

1. From the main menu, select ***Tools*** then ***SNMP MIB Browser***.
2. From the ***SNMP MIB Browser*** box, select ***Add***.
3. From the ***SNMP Profile Editor*** box,
4. assign the profile a name, a community, and a poll interval.
5. select the OID groups from the Group Choice then select ***Add*** to transfer them to the Group Selection(s).
6. Save the profile.

Ping the Minuteman SNMP-S

1. From the main menu, first select ***Fault***, second ***Test Connectivity***, and third ***Once***.
2. From the ***Test Connectivity*** box,
3. type in the IP address.
4. select ***Test***.

SunConnect SunNet Manager

Compile the Device MIB

1. Copy the UPS MIB file from the TAR formatted diskette into the subdirectory specified by ***na.snmp.schemas*** keyword in ***\$(SNMHOME)/snm.conf***.
2. Execute ***mib2schema*** on the MIBs. This creates respective ****.mib.oid*** and ****.mib.schema*** and ****.mib.traps*** files.
3. In the ***SNM console window***, select ***File|Load***.
4. Select ***Management Database***.
5. Click on ****.mib schema***, where *= the name of each MIB copied in step 1 and select ***Load***.
6. Start a new shell window; change to the subdirectory ***\$(SNMHOME)/agent*** and execute ***build_oid***. This creates an oid database using all compiled MIBs.
7. Append ****.mib.traps*** to the file specified by ***na.snmp-trap.default*** keyword in ***\$(SNMHOME)/snm.conf***.

Add the Minuteman Object to the Management Map

1. Enter the submap where the managed device will be placed.
2. Select **Edit, Create, Component, lanbox** with the right (opposite) mouse button. Select **Create**.
3. The **Properties** box displays.
4. Enter the Minuteman SNMP-S 's name as it appears in **etc/hosts** or in the name server.
5. Enter the **SNMP WrCommunity**.
6. Select the desired MIBs.
7. Choose a color for the device.
8. Select **Apply**. This adds the device to the submap.
9. Create a managed device view with the following steps:
10. Select the relevant submap .
11. Select **Edit, Create, View**, subnet with the right (opposite) mouse button.
12. Select **Create** and press <enter>.
13. Enter the view name.
14. Copy and paste the glyph into the managed device view.

Poll the Device OIDs

1. Select the device glyph with the right mouse button.
2. Select **Quick Dum, *-MIB** then one of the MIB groups. A window appears displaying a snapshot of the group.

3. Set the device OIDs

4. Select the device glyph with the right mouse button.
5. Select **Set Request, *-MIB, {OID name}**.
6. When the **Set Tool** application displays, Click on **Get** to receive the current values.
7. Select a new value by clicking on **New Value** then by clicking **Set**.
8. Click on **Get** again to view the changes.

Ping the Minuteman SNMP-S

1. Change active Window to Shell.
2. Type ping <IP address> and press <enter>.

This appendix has three sections: *Reference*, *Glossary*, and *Troubleshooting*.

Reference

This section discusses Communities, IP Addresses, Sub net masking, and routers/gateways.

Communities

A community is a string of printable ASCII characters that identifies a user group with the same access privileges. For example, a common community name is “public.”

For security purposes, the SNMP agent validates requests before responding. The agent can be configured so that only trap managers that are members of a community can send requests and receive responses from a particular community. This prevents unauthorized managers from viewing or changing the configuration of a device.

IP Addresses

Every device on an internetwork must be assigned a unique IP (Internet Protocol) address. An IP address is a 32-bit value comprised of a network ID and a host ID. The network ID identifies the logical network to which a particular device belongs. The host ID identifies the particular device within the logical network. IP addresses distinguish devices on an internetwork from one another so that IP packets are properly transmitted.

IP addresses appear in dotted decimal (rather than in binary) notation. Dotted decimal notation divides the 32-bit value into four 8-bit groups, or octets, and separates each octet with a period. For example, 199.217.132.1 is an IP address in dotted decimal notation.

To accommodate networks of different sizes, the IP address has three divisions—Classes A for large, B for medium, and C for small. The difference among the network classes is the number of octets reserved for the network ID and the number of octets reserved for the host ID.

<i>Class</i>	<i>Value of First Octet</i>	<i>Network ID</i>	<i>Host ID</i>	<i>Number of Hosts</i>
<i>A</i>	<i>1-126</i>	<i>first octet</i>	<i>last three octets</i>	<i>16,387,064</i>
<i>B</i>	<i>128-191</i>	<i>first two octets</i>	<i>last two octets</i>	<i>64,516</i>
<i>C</i>	<i>192-223</i>	<i>first three octets</i>	<i>last octet</i>	<i>254</i>

Any value between 0 and 255 is valid as a host ID octet except for those values the InterNIC reserves for other purposes.

<i>Value</i>	<i>Purpose</i>
<i>0, 255</i>	<i>Subnet masking</i>
<i>127</i>	<i>Loopback testing and interprocess communication on local devices</i>
<i>224-254</i>	<i>IGMP multicast and other special protocols</i>

Subnetting and Subnet Masks

Subnetting divides a network address into subnetwork addresses to accommodate more than one physical network on a logical network.

For example: A Class B company has 100 LANs (Local Area Networks) with 100 to 200 nodes on each LAN. To classify the nodes by its LANs on one main network, this company segments the network address into 100 subnetwork addresses. (If the Class B network address is 150.1.x.x, the address can be segmented further from 150.1.1.x through 150.1.100.x.)

A subnet mask is a 32-bit value that distinguishes the network ID from the host ID for different subnetworks on the same logical network. Like IP addresses, subnet masks consist of four octets in dotted decimal notation. You can use subnet masks to route and filter the transmission of IP packets among your subnetworks. The value “255” is assigned to octets that belong to the network ID, and the value “0” is assigned to octets that belong to the host ID.

For the example above, if you want all the devices on the subnetworks to receive each other’s IP packets, set the subnet mask to 255.255.0.0. If you want the devices on a single subnetwork only to receive IP packets from other devices on its own subnetwork, set the subnet mask to 255.255.255.0 for the devices on that subnetwork.

<i>Subnet Mask</i>	<i>Routing and Filtering</i>
<i>0.0.0.0</i>	<i>IP packets are transmitted to all devices.</i>
<i>255.0.0.0</i>	<i>IP packets are only transmitted to devices whose IP address’s first octet matches the sender’s IP address’s first octet.</i>
<i>255.255.0.0</i>	<i>IP packets are only transmitted to devices whose IP address’s first two octets match the sender’s IP address’s first two octets.</i>
<i>255.255.255.0</i>	<i>IP packets are only transmitted to devices whose IP address’s first three octets match the sender’s IP address’s first three octets.</i>

Gateways

Gateway, also referred to as a router, is any computer with two or more network adapters connecting to different physical networks. Gateways allow for transmission of IP packets among networks on an internetwork.

Glossary

The Glossary section defines the terms used in the Minuteman -MP environment.

Agent	Implemented SNMP applications in network elements (hosts). Agents perform the network management's functions as requested by the network administrator from an NMS.
Dry Closure Input	Non-powered contact type inputs—switch, relay contact, open-collector.
Dry Closure Output	Form C dry-contact outputs which are common, normally open, or normally closed.
EtherNet	Local Area Network technology, originally developed by the Xerox Corporation, can link up to 1,024 nodes in a bus network. EtherNet provides raw data transfer in a rate of 10 megabits/sec. with actual throughputs in 2 to 3 megabits/sec. using a baseband (single-channel) communication technique. EtherNet uses carrier sense multiple access collision detection (CSMA/CD) that prevents network failures when two devices attempt to access the network at the same time. LAN hardware manufactures use EtherNet protocol; their products may not be compatible.
Gateway	A computer that attaches to a number of networks and routes packets between them. The packets can be different protocols at the higher levels.
IP	<i>Internet Protocol</i> —The TCP/IP standard protocol defines the IP datagram as the unit of information passed across a network.
IP Address	<i>Internet Protocol Address</i> —A 32-bit address assigned to hosts participating in a TCP/IP network. The IP address consists of network and host portions. It is assigned to an interconnection of a host to a physical network.
MAC	<i>Medium Access Control</i> —The network layer between the physical and the datalink layers. Specifically, the physical (hardware) address exists in this layer.
MIB	<i>Management Information Base</i> —The database, i.e., set of variables maintained by a gateway running SNMP.
NC	<i>Normally Closed</i> —Refers to a contact switch that is normally closed.
NIC	<i>Network Interface Controller</i> —The hardware interface to the physical connection to the network.
NMS	<i>Network Management Station</i>

NO	<i>Normally Open</i> —Refers to a contact switch that is normally open.
OID	<i>Object Identifier</i> —The variables defined in a MIB.
Personality	The current device specific software uploaded to the Minuteman SNMP-S.
Router	A computer that manages traffic between different network segments or different network topologies. It directs the destination IP address. The network media can be different, but the higher level protocols must be the same.
RS-232	A specification for serial communication between data communication equipment and computers.
SNMP	<i>Simple Network Management Protocol</i> —A standard protocol used to monitor IP hosts, networks, and gateways. SNMP defines a set of simple operations that can be performed on the OIDs of the MIBs managed by the monitored Agents. It employs the UDP/IP transport layer to move its object between the Agents and the NMS.
Sub-Agent	A software module that manages specific MIB sub-groups for an Agent. They communicate with the Agent using a SMUX (multiplexer).
TCP/IP	<i>Transmission Control Protocol/Internet Protocol</i> —A protocol suite used by more than 15 million users with a UNIX association and widely used to link computers of different kinds.
TES	<i>Terminal Emulation Software</i> —Communications program to transform a personal computer into a terminal for the purpose of data communications.
TFTP Server	<i>Trivial File Transfer Protocol Server</i> —A host to provide services according to TFTP; a TCP/IP standard protocol for file transfer with minimal capability and overhead depending on UDP for its datagram delivery service.
UDP/IP	<i>User Datagram Protocol/Internet Protocol</i> —A TCP/IP standard protocol. It enables transfer of information between applications running on different host. It is referred to as an unreliable, connectionless datagram delivery service.
UPS	<i>Uninterruptible Power Supply</i> —A device that supplies power to your system with rechargeable batteries if there is an AC power failure.

Troubleshooting

- Problem:** The TES (Terminal Emulation Software) does not display anything.
- Solution:* **Make sure the Dip switch is set correctly. Switch 1 is ON when DOWN and Switch 2 is UP.** This applies only when you power up.
- Make sure the TES's communication parameters are correct.** They should be 9600 baud rate, no parity, 8-data bits, and 1 stop bit.
- Make sure the ends of the NSP-CFG-01A cable are plugged into their respective ports.**
- The ends of the cable indicate which belongs to the CPU and which belongs to the Minuteman SNMP-S.
- The end of the hooded cable nearest the label belongs to the CPU, and the end farthest away belongs to the Minuteman SNMP-S.
- PROBLEM:** The NMS cannot ping the Minuteman SNMP-S.
- Solution:* **Make sure the network connection to the Minuteman SNMP-S is good.**
- Solution:* **Make sure the cable is in good condition.**
- Solution:* **Make sure to set the Community String [Set Access Controls, Type 2, Set 1 through 4]. Follow these steps:**
- Name the community with any lowercase name. (A UPS monitors a designated community.)
- Solution* **Make sure to set the Manager Table. Set Access Controls, Type 3, Set 1 through 4]. Follow these steps:**
- Define the Manager IP Address, Community string, and Access Permission together.
- The trap manager's community should be the same number as the number of the community it monitors.
- The trap manager's status is set to Accept YES to enable sending traps or to Accept to No to disable.

Placing a Technical Support Call

In order to diagnose the problem you are having, our technicians need the following information from you:

Installation Site:

Company Name: _____

Address: _____

City: _____ State: _____ ZIP code: _____

Installation Site Contact:

Full Name: _____

Phone Number: _____ Fax Number: _____

If you are a consultant,

Consultant Name: _____

Phone Number: _____ Fax Number: _____

Computer System:

Operating System and version: _____

System Manufacturer: _____

System Model Number: _____

NMS name and revision number: _____

UPS:

Manufacturer: _____

Model Name/Number: _____

Type of Port Connector (How many pins, male or female.):

What are the symptoms?

 ***Technical Support*** 

Have the information listed above ready. You can reach us by calling:

Main Telephone Number:	214-446-7363
Toll Free Number:	800-238-7272
Fax:	214-446-9011
Quick Fax 24 Hour Info by Phone	800-263-3933
Quick Fax Int'l Number:	214-664-3833
Internet:	minuteman - ups.com
E-Mail Address:	Webmaster @ minuteman - ups.com

Reference Worksheet

Local Address: _____.____.____.____ Serial No: ____:____:____:____:____
 Gateway Address: _____.____.____.____
 Network ID: _____.____.____.____
 System's Contact Name: _____
 System's Name: _____
 System's Location: _____

Current access controls of SNMP communities:

Manager IP Address	Community String	Access Permission

Current trap receivers:

Receiver IP Address	Severity	Community	Accept

Minuteman *SNMP-M*[™]

User Manual

for:

Minuteman SNMP-M[™]

SNMP-M

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Your Minuteman SNMP-M gives you a comprehensive network solution to manage your UPSs on EtherNet or Token Ring networks. The complete Minuteman SNMP-M package includes hardware and software, UPS cables, a power supply, and a UPS Management Information Base (MIB). With this adapter unit, you can monitor and manage critical elements about your UPS. One Minuteman SNMP-M can control and monitor up to four UPSs connected to a network. (Consult your sales representative for the number of UPSs your Minuteman SNMP-M will support.)

Minuteman SNMP-M Features

The Minuteman SNMP-M hardware adapter runs an embedded Simple Network Management Protocol (SNMP) software agent. This agent responds to SNMP GETS and SETS and, also, forwards traps to designated recipients when critical conditions occur to the UPS—such as going on battery backup.

The Minuteman SNMP-M features:

- **Remote Monitoring**—Monitors the input and output conditions for up to four UPSs from a remote workstation (NMS).
- **Remote Control**—Minuteman SNMP-M receives commands from the NMS, such as turn off the UPS, and forwards these instructions to the device.
- **NMSs To Receive UPS Alarms**—These traps (unsolicited messages) inform you about the condition of your UPS and Minuteman MP.
- **Environmental Control**—Minuteman SNMP-M measures humidity and temperature.
- **Auxiliary Port for additional monitoring and controlling**—Through relay contacts, the auxiliary port can monitor up to four external devices, such as security alarms or fire alarms, for a change in condition. Also, up to two devices, such as an air conditioner, can be controlled on and off.

- **Supplementary Power Supply**—With this option, the Minuteman SNMP-M adapter can draw power from two separate sources, the UPS and utility power. Allows you to power-off or reboot the UPS without dropping communications to the NMS.
- **Works with all major NMSs**—Minuteman SNMP-M works with the most widely used Network Management Systems: HP Open View, Novell NMS, Sun NetManager, IBM NetView, and many more.
- **Works with EtherNet and Token Ring Topologies**

Example Network With Minuteman Monitoring

A typical installation of Minuteman SNMP-M monitoring four UPSs follows in the illustration below. The Minuteman SNMP-M adapter communicates with the UPS and monitors external devices, such as smoke detectors and security alarms.

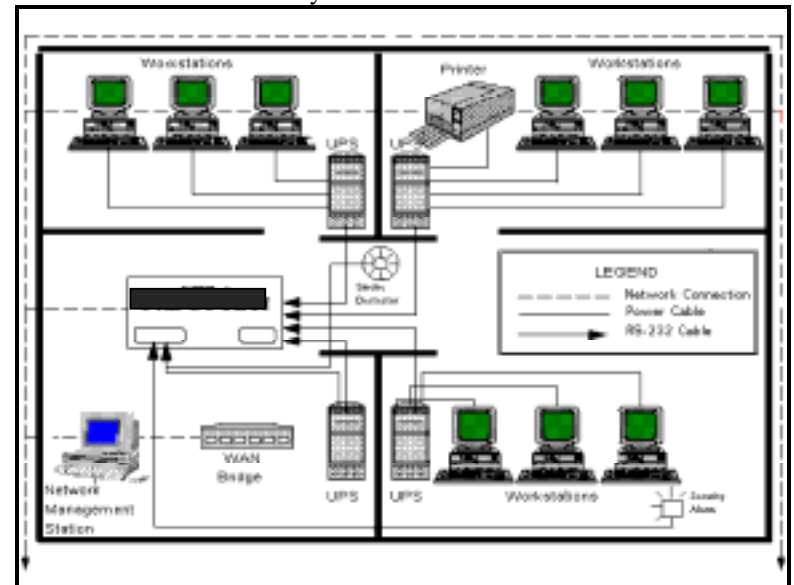


Figure 12 A Minuteman SNMP-M Monitoring Four UPSs

Minuteman SNMP-M Package

The standard Minuteman package contains a Minuteman Unit along with supporting hardware and software. According to your request, your package may contain optional components—additional power supply units, interface cables, and T connectors.

Minuteman SNMP-M Package Contents

The components of your package are:

Standard Contents	Optional Components
<input type="checkbox"/> Minuteman Unit	<input type="checkbox"/> Additional Power Supply**
<input type="checkbox"/> Two 3.5" Diskettes	<input type="checkbox"/> T Connector*
<input type="checkbox"/> Configuration Cable	<input type="checkbox"/> Additional Interface Cables for more than one UPS
<input type="checkbox"/> UPS Interface cable	
<input type="checkbox"/> Power Supply	
<input type="checkbox"/> Minuteman Manual	
<input type="checkbox"/> Worksheet (2)	

*Your package includes a T connector if the Minuteman supports an EtherNet 10Base2 network.

**Your package contains extra power supplies if you requested them.

The Minuteman Unit

The following illustrations show the Minuteman SNMP-M's front and rear panels. The front panel illustration points out the location of the auxiliary and configuration ports, Status LEDs, environment sensors, and network interface card.

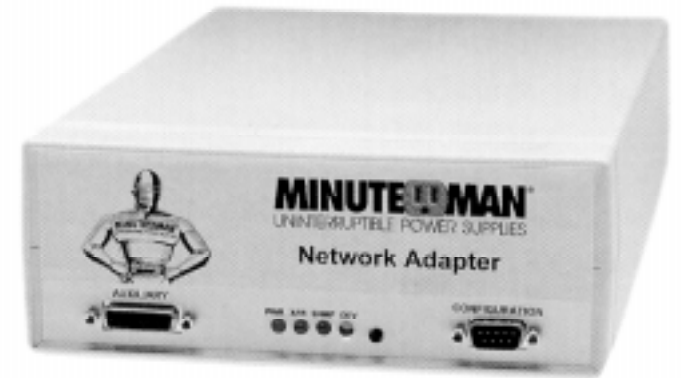


Figure 13 Minuteman SNMP-M's Front Panel

The rear panel illustration points out power supply and device ports, and the Interface Card that contains the following:

Network connection ports—Minuteman SNMP-M provides an RJ-45 connector for 10Base-T networks and a BNC connector for 10Base-2 connection.

The Network Interface Card's (NIC) LEDs—The green light indicates a network connection and the red light indicates transmission or reception.

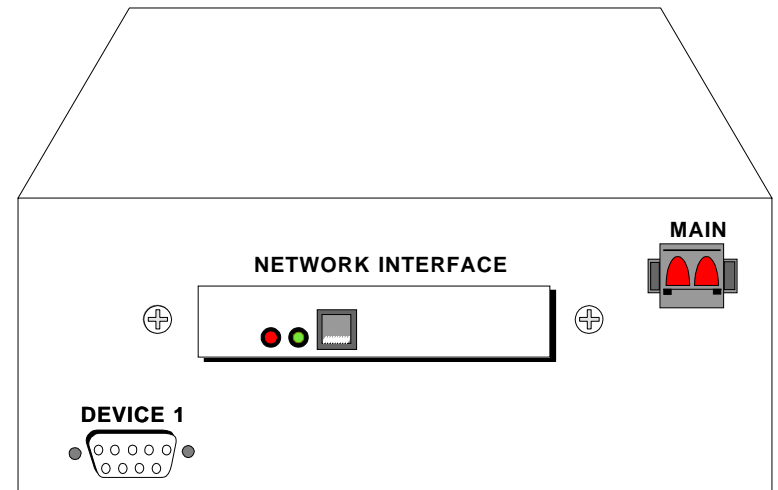


Figure 14 Minuteman SNMP-M's Back Panel

Auxiliary Port Pinout

Use the auxiliary port to connect the monitoring and control devices to the Minuteman adapter. If utilizing the functionality of this port, contact your sales representative to purchase a specialized cable. If you want to build your own cable, the table below defines the port configuration and designates how the relay contact pins are wired. Pins 3-8 are to be used when controlling up to two external devices on and off. Pin 1 and pins 9-12 are to be used when monitoring up to four external devices.

1	Common	9	Closure Input 4
2	Not connected	10	Closure Input 3
3	Relay 2 NC contact	11	Closure Input 2
4	Relay 2 NO contact	12	Closure Input 1
5	Relay 2 NO Common contact	13	Not connected
6	Relay 1 NC contact	14	Not connected
7	Relay 1 NO contact	15	Not connected
8	Relay 1 Common contact		

Status LEDs

The status LEDs blink when certain conditions occur. The table below describes the LEDs' status and the occurring conditions.

Status of LED	Description
PWR (Power)	The proxy agent on the Minuteman is active.
XFR (Configuration)	When Minuteman SNMP-M uploads a proxy agent (firmware)
SNMP	Minuteman SNMP-M sends a SNMP packet.
DEV (Device)	RS-232 communication between Minuteman SNMP-M and the UPS is active.

Two 3.5" Diskettes

Your package contains two 3.5" MIB diskettes—one in DOS format and one in TAR format. These diskettes contain the MIBs and Minuteman SNMP-M's image file that is already loaded into the adapter. The diskette contains four UPS MIBs with the extension name of *.mib* and a file named *Minuteman .mib*. The UPS MIB files have a number contained in the prefix name. This number corresponds directly to the UPS device port number on the back of the Minuteman SNMP-M. (See Figure 2.) For each UPS connected to the Minuteman SNMP-M, the corresponding MIB file, along with the *Minuteman .mib*, should be copied to the appropriate *NMS MIB* directory. The *.img* file is provided only as a backup in case the Minuteman SNMP-M software agent fails and needs to be uploaded again.

Configuration Cable

The Minuteman SNMP-M must be configured to run on your network using a dumb terminal or terminal emulation package, such as Microsoft Windows terminal. The cable labeled Net-CFG-01A must be connected to the Minuteman SNMP-M configuration port and a serial communications port on your terminal.

UPS Interface Cables

The manufacture-specific Interface cable connects the UPS to the Minuteman SNMP-M unit. Your package contains the one interface cable and any additional cables you requested. The table below defines the UPS device ports (1-4), configuration:

1	Power Fail	6	TXD
2	Power Fail/Low Battery Common	7	RS-232 Common
3	RXD	8	Low Battery
4	Shutdown (+)	9	Not connected
5	Shutdown Return		

Power Supply

If you elected to receive the supplemental power supply, you can use it as a redundant dual power input. This feature allows the Minuteman SNMP-M adapter to draw power from two separate sources—the UPS and a wall outlet. This provision allows the network manager to power-off or reboot the UPS without losing communications to the NMS.

The two types of power supplies offered are:

Power Supply Type	Input	Output
Table Top	120 VAC, 60 Hz	12 VDC, 1 amp
Universal	230 VAC, 50 Hz	12 VDC, 1 amp

Minuteman SNMP-M requires a terminal for configuration and a network connection, along with an NMS for operation. The following is a description of all components required, as well as, a list of the most widely used NMSs.

- The components of your standard Minuteman SNMP-M package
- Connection to an EtherNet or Token Ring network
- An SNMP-based management station

Some NMSs that support the Minuteman SNMP-M are:

- HP OpenView for UNIX
- HP OpenView for Microsoft Windows
- Novell NMS
- SunConnect SunNet Manager
- IBM NetView/6000

- A dumb terminal or a PC with an emulation package to configure the Minuteman SNMP-M SNMP Agent
- An RS232 communication port on your PC or terminal
- A UPS—any UPS type
You can interface any contact closure UPS with Minuteman SNMP-M if you have its manufacture's specific cable as supplied with the kit.
- Network identification values for the Minuteman SNMP-M:
 - IP Address
 - Net Mask
 - IP Addresses for each NMS
 - Definitions of Communities
 - IP Addresses of the Gateways/Routers

This section describes the installation of the Minuteman SNMP-M adapter when connecting it to the UPS and the network. (Refer to the *Configuration* section for network communications setup.) Follow these steps to connect the Minuteman to the network and UPS:

1. Connect one end of the UPS cable to the communications port on the UPS and the other end to device port 1 on the Minuteman adapter unit. If you have additional UPSs to install, connect them with the interface cables in the same manner to the subsequent device ports.
2. Temporarily, connect the Minuteman adapter to a dumb terminal or PC with a terminal emulation package.
 - a) Using the configuration cable, connect the end of the cable labeled “CPU/NET-CFG-01A” into a dedicated RS-232 serial port on the configuration PC.
 - b) Connect the end labeled “MINUTEMAN ” into the Minuteman Adapter’s configuration port.
3. Configure the dumb terminal or PC to the following settings.

Baud rate →	9600	Flow Control →	Xon / Xoff
Data bits →	8	Handshaking →	None
Stop bits →	1	Terminal Type →	ANSI (VT100)
Parity →	None	Local Echo →	Off

4. Connect the power supply with the 15-pin, VGA-style connector to the Minuteman adapter’s main power input.
5. Connect the end of the power supply with a standard plug into the UPS.
6. If you have a supplementary power supply, connect the end of the power supply with the 15-pin, VGA-style connector into the Minuteman SNMP-M adapter unit’s auxiliary power input. Connect the end of the power supply with the standard plug into a utility outlet or a second UPS.
7. Make the Application Tables configurations. (See the *Configuration* section for a detailed discussion.)
8. Connect Minuteman SNMP-M to the Network.
9. After all configuration settings are complete and the Minuteman SNMP-M has been connected to the network, test the Minuteman SNMP-M with an NMS. (See *Configuring the NMS* section for a detailed discussion.)
10. Review the *Upper Menu* and *BootROM* menu sections of this

manual. Once all additional settings to the Minuteman SNMP-

M have been completed, disconnect the configuration cable and store it for future use.

**Your Minuteman SNMP-M SNMP adapter
is now installed and completely functional.**

You have previously installed the UPS, and you are ready to configure the Minuteman SNMP-M to work on your network. For Minuteman SNMP-M to operate efficiently for your system, you must define the Application tables, compile the MIBs, and configure the NMS. If you have the terminal connected to Minuteman SNMP-M when the power is first applied, your terminal screen will display the initialization sequence.

```
ATZ
ATS0=2
Modem IS NOT attached.
Press <BACKSPACE> to remain in boot ROM after tests

Testing ROM at Segment 0000H .. OK
Testing ROM at Segment 1000H .. OK
Testing ROM at Segment 1000H .. OK
Testing EPROM at Segment F800H .. OK
UPS Comm Port .. OK
Testing EEPROM at Segment 8000H .. 0

Initializing..... Please wait 30 seconds...NONE.  Press [Enter] to continue.

ALT-F10  HELP  RPS1-BES  F8X  9600 N01  LOG CLOSED  PRT OFF  CR  CR
```

Figure 15 Initialization Sequence

When the Minuteman SNMP-M completes initialization, it prompts you to press <enter> to continue the configuration. The program displays the *Application Menu*.

Application Tables

At the Enter Choice: prompt, type **1** for *Edit IP Address, Community, etc...* and press `<enter>`. The *Application Tables* menu holds the *Community Table, Manager Table, Assignments Table, Gateway (IP Router) Table*, the *Network Mask*, and *IP Address* fields. This screen allows you to define the following:

- Which Communities can access the Minuteman SNMP-M.
- What type of access communities can have.
- Which managers receive traps for specific communities.
- Assignment of UPS by device port number as they relate to specific communities.
- Which gateway or router device the Minuteman SNMP-M must access to transmit or receive data on the network.
- IP Address and net mask of the Minuteman SNMP-M.

```

-----COMMUNITY TABLE-----
#      Name      Access
1)
2)
3)
4)
5)
6)
7)
8)
9)
10)

-----MANAGER TABLE-----
#      Manager  Cnty Nbr Trap Port
11)
12)
13)
14)
15)
16)
17)
18)
19)
20)

---ASSIGNMENTS---
Port Community#  IP
21) 1      0      31)
22) 2      0      32)
23) 3      0      33)
24) 4      0      34)
      35)
41) Net Mask (255.225.0.0)
42) IP Address 10.0.0.01

Edit or Delete entry? :
ALT-F10  HELP  |  #MSI-BRS  |  FDX  |  9600 NUI  |  LDC CLOSED  |  PRT OFF  |  CR  |  CR
  
```

Figure 16 Applications Tables Menu

The **Community Table**, **Trap Manager Table**, and **Gateway Table** work together with Minuteman SNMP-M's IP address and net mask. For more information on these items; see the [Reference](#) section of the *Appendix* in this manual.

Default values display within brackets. To accept them, press <enter>. (Make yourself several Worksheets copies to ensure you have spares). Record the definitions on your Worksheet for reference. The Worksheet divisions reflect those of the Applications menu.

When you define the elements of the **Application Tables**, follow the same procedures for each definition. To define any options on the applications table, type **e** at the **E)dit or D)elele entry? :** The program keeps prompting you. For each entry, press <return> to execute the command. Repeat these steps for additional definitions.

Community Table

Be sure to define at least one community first so that the Trap Manager and Port Communities can work together effectively. The Community name acts as a password and must match the NMS community name exactly to perform the GET or SET you select. See the [Reference](#) section of the *Appendix* for more information on communities. To define a community, follow these steps after you type **e** for edit and press <enter>:

The program prompts you to:

```
Entry number to edit : 1
```

Press <enter>. The program prompts you to type the community name.

```
Community name [] : public
```

After you enter the community name, press <enter>. The program prompts you for the community's access type. Enter the first initial of the access type.

```
Access type (A)ll, (R)ead [R] : A or R : A
```

The **All** value accomplishes SNMP GETS and SETS. The **Read** value limits you to GETS.

Manager Table

This table allows you to enter IP addresses for up to ten NMSs or trap receivers on your network.

After you type e for edit, the program prompts:

```
Entry number to edit : 11
```

The program prompts:

```
Trap manager address [] : 129.1.0.17
```

Enter the IP address of the NMS. See the [Reference](#) section of the *Appendix* for more information on IP addresses. The program prompts:

```
Community reference [0] : 1
```

The community number corresponds to entries 1 through 10 in the *Community Table*. Identify the community of which the IP address is a member. Enter the community number. The program prompts:

```
Member [N] : Y or N
```

The *Mbr* field of the *Manager* table limits which IP addresses can access the Minuteman SNMP-M. If one of the entries in the *Manager Table* has the *Mbr* field set to *Y*, only the listed members of the associated Community have access to the Minuteman SNMP-M adapter. If the *Mbr* field is set to *N*, access is denied to members of the associated Community.

NOTE: If all listed members have access set to N, then all will be offered access.

Type *Y* for yes if the NMS is a member of this community or *N* for no if it is not. The program prompts:

```
Trap [Y] : Y or N
```

If you want this NMS or computer system to receive traps, type *Y* for yes; or, if you do not want them to receive traps, type *N* for no. The program supplies the number 162 in parentheses, which at this time is the only one Minuteman SNMP-M can work with.

```
SNMP Port number [162]: 162
```

Assignments Table

Each UPS connected to the Minuteman SNMP-M must be assigned to a community. The port number in the table refers to the device number on the back of the Minuteman SNMP-M where each UPS is connected.

After you type **e** for edit, the system prompts you for the number to edit:

```
Entry number to edit : 21
```

The program prompts:

```
Port 1 community [0] :1
```

Enter the number of the community to which you want to assign the port.

Gateway Table

If a router, bridge, or similar internetworking device separates your Minuteman SNMP-M and any of the devices (*i.e.*, NMS) outlined in the Manager Table, you must make the appropriate entries in the Gateway Table. If there are no devices separating the Minuteman SNMP-M, then this section does not apply and should be left blank. See the [Reference](#) section of the *Appendix* for more information on gateways (routers).

After you type **e** for edit, the system prompts you for the number to edit:

```
Entry number to edit : 31
```

The system prompts you for a gateway IP address. Supply the one for the gateway on the Minuteman SNMP-M network.

```
IP [] : 199.217.132.199
```

The program prompts for the subnetwork IP address on the NMS's network.

```
Subnet [] : 190.1.0.0
```

The program prompts you for the subnetwork's mask:

```
Mask [] : 255.255.0.0
```

Net Mask

Enter the Network Mask for the Minuteman SNMP-M adapter. See the [Reference](#) section of the *Appendix* for more information on net masks. After you type e for edit and the system prompts you for the number to edit:

```
Entry number to edit : 41
```

The program prompts:

```
Netmask [ ] : 255.255.0.0
```

IP Address

Enter the IP address for the Minuteman SNMP-M adapter. See the [Reference](#) section of the *Appendix* for more information on IP addresses. After you type e for edit and the system prompts you for the number to edit:

```
Entry number to edit : 42
```

The program prompts

```
IP Address [0.0.0.0] :199.217.132.1
```

You have completed the configuration of the *Application Tables*; it should resemble the screen illustration below:

```
-----APPLICATION TABLE-----
#      Name      Access
1) public      n
2)
3)
4)
5)
6)
7)
8)
9)
10)

-----ROUTER TABLE-----
#      Manager      Cnty Hbr Tray Port
11) 199.217.132.199 1   Y   Y   162
12)
13)
14)
15)
16)
17)
18)
19)
20)

---ASSIGNMENTS---
Port Community#      IP      SubNet      Mask
21) 1      1      31)
22) 2      0      32)
23) 3      0      33)
24) 4      0      34)
35)

41) Net Mask (255.255.0.0)
42) IP Address (199.217.132.1)

Exit or Delete entry? :
[HLT-F10-HELP] [MSI-RSS] [F10] [SWR0-DEL] [LOG-CANCEL] [PRT-OFF] [CR] [CA]
```

Figure 17 Applications Tables With Definitions

To initialize the Minuteman SNMP-M with the *Application Tables* definitions, press <enter>. The program returns you to the upper menu.

A message informs you:

```
Initializing... Please wait 30 seconds...DONE. Press [ENTER] to continue
```

You have now completed the necessary items to configure the Minuteman SNMP-M adapter and have it fully perform its role of communicating UPS status data across the SNMP network.

If you haven't done so already, connect the Minuteman SNMP-M adapter to the network. You are now ready to proceed with testing the Minuteman SNMP-M adapter across your SNMP network.

Proceed to the next section, *Configuring the NMS*, to test the Minuteman SNMP-M adapter. Otherwise, finish reviewing the *Upper Menu* section and then proceed to configuring the NMS.

Upper Menu

The other options of Upper menu, besides going to the *Edit IP Address, Community, etc.*, allow you to modify: the system description, location, the contact person's name, the date, time, and the config file name. Some options are display only. These include the contact closures, temperature, humidity, and physical address. The last selection allows you to leave this screen and proceed to the BootROM menu. This menu is described in its own section titled *BootROM Menu*.

```
|
|          Copyright (c) 1994 Systems Enhancement Corporation
|          NetBox
| BootROM: 02.0 3-16-94, Model #: MODEL#, Serial #: SERIAL#
|          SEC NonSerial 05# 4-6-94 #NonSerial-12-0021-2
|
|          Jan 14, 1990  10:36 pm
|-----|
|
| Modem IS NOT attached.
|
| 1) Edit IP Address, Community, etc...      8) Display Closures
| 2) Edit System Description (sysDescr)     9) Display Temperature
| 3) Edit System Location (sysLoc)         10) Display Humidity
| 4) Edit System Contact (sysContact)     11) Display Physical Address
| 5) Edit System Name (sysName)          12) Display Error Counts
| 6) Edit Date                             13) Edit Config File Name
| 7) Edit Time                             14) Terminate to Boot ROM
|
| Enter Choice: 2
|
| Enter System Description: SNMP Adapter
|-----|
| 100-100 1000 1001-1005 100 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010
```

Figure 18 Upper Menu

To edit any of these fields, type the number of the field at the `Enter Choice:` prompt, press `<enter>`. The program prompts you to enter the new values while it displays the current ones. If you are satisfied with the current value; press `<enter>`; if not, enter a new valid value and press `<enter>`.

Edit System Description (SysDescr)

Use this option to enter or change your system's description. To edit the system's description at the prompt,

```
Enter Choice: 2
Enter System Description: SNMP Adapter
Press ENTER to continue ...
```

Edit System Location (SysLoc)

Use this option to enter or change your system's location. To edit the system's location at the prompt,

```
Enter Choice: 3
Enter System Description: Production Dept.
Press ENTER to continue ...
```

Edit System Contact (SysContact)

This field holds your network administrator's name. To edit the system's contact at the prompt,

```
Enter Choice: 4
Edit System Contact : Clark Kent
Press ENTER to continue ...
```

Edit System Name (sysName)

This field holds the system name. To edit the system's name at the prompt,

```
Enter Choice: 5
Enter System name: Minuteman SNMP-M
Press ENTER to continue ...
```

Edit Date

This field holds the current date. It resets the date to Jan 1, 1980, whenever the Minuteman SNMP-M adapter's power supply is interrupted. To edit the date at the prompt,

```
Enter Choice: 6
Current date is 01-01-1980
Enter new date (mm-dd-yy): 03-17-95
Press ENTER to continue ...
```

Edit Time

This field holds the current time. It resets to 12:00 PM whenever the adapter's power supply is interrupted. To edit the time at the prompt,

```
Enter Choice: 7
Enter time: 12:00:00 pm
Press ENTER to continue ...
```

Display Closures

This field displays whether the closures are open or closed. The switches are OPEN or CLOSED depending on the current status of the auxiliary port's four dry-closure inputs. To display the status of the closures, at the prompt,

```
Enter Choice: 3
Switch 1 = Open
Switch 2 = Open
Switch 3 = Open
Switch 4 = Open
Press ENTER to continue ...
```

Display Temperature

This field displays current temperature in Fahrenheit relative to the Minuteman SNMP-M's environment. To display the temperature,

```
Enter Choice: 9
Temperature - 77 degrees F.
Press ENTER to continue ...
```

Display Humidity

This field displays the current percentage of humidity relative to the Minuteman SNMP-M's environment. To display the humidity at the prompt,

```
Enter Choice: 10
Humidity - 31%
Press ENTER to continue...
```

Display Physical Address

This field displays the physical, MAC, address of the Network Interface Controller. To display the physical address at the prompt,

```
Enter Choice: 11
Physical Address = 00:c0:6d:10:f3:9d
Press ENTER to continue ...
```

Display Error Counts

This field displays the number of flash EPROM writes, UPS errors, NMConfig PC errors, and SNMP errors. To display the error count at the prompt,

```
Enter Choice: 12
Flash EPROM writes      =180
UPS Errors
-----
Parity errors           =0
Framing errors          =0
Rcvr overrun errors    =0
Input buffer overflows =0

NMConfig PC Errors
-----
Parity errors           =0
Framing errors          =0
Rcvr overrun errors    =0
Input buffer overflows =0

SNMP Errors
-----
Request timeouts       =0
Press ENTER to continue ...
```

Edit Config File Name

This field allows you to edit the Minuteman SNMP-M configuration file name.

Note: If you enter a new name, it changes the *nmConfigFile* name's persistent variables; use this option with *BootP* only. *BootP* does not come standard with *Minuteman SNMP-M*.

To edit the file name at the prompt,

```
Enter Choice: 13
nmconfig.CFG
Enter Config Filename:
nmconfi2.CFG
Press ENTER to continue ...
```

Terminate to Boot ROM

This field allows you to access the BootROM menu. To go to the BootROM menu at the prompt,

```
Enter Choice: 14
Are you sure you want to TERMINATE Minuteman (Y/N) Y
```

Minuteman SNMP-M displays the BootROM menu.

To complete the Minuteman SNMP-M installation and configuration process, you must compile the necessary MIBs to configure the NMS. Any NMS with a MIB compiler can manage the Minuteman SNMP-M adapter. For instructions on how to compile MIBs for the most popular NMSs—Novell's NetWare Management Station, Hewlett-Packard's OpenView Network Node Manager, and SunConnect; SunNet Manager; see the corresponding heading below.

General Network Management Stations

Follow these general procedures to configure an NMS:

- Compile the device MIBs.
- Add the Minuteman object to the Management Map.
- Ping the Minuteman SNMP-M.

HP OpenView Network Node Manager for HP-UX

Compile the Device MIBs

1. Copy the files **.mib* from the TAR formatted diskette into the subdirectory `</usr/OV/snmp_mibs.>`
2. From the main menu, select *Options*
3. Load/Unload *MIBs: SNMP...*
4. Select *Load*.
5. Select one of the MIB files copied earlier.
6. Select *OK*.
7. After this MIB has been loaded, repeat steps 4-7 until all MIBs have been compiled.

Add the Minuteman Object to the Management Map

1. Select the submap then *Edit: Add Object*.
2. Select the group object computer.
3. With the middle (or opposite) mouse button, drag the generic symbol subclass device to the submap.
4. Enter a name for the object in the *Selection and Label* fields of the *Add Object* box.
5. Highlight *IP Map* from *Object Attributes* group.
6. Select *Set Object Attributes* button.
7. Enter Host name and IP address of Minuteman SNMP-M adapter.
8. Enter *OK*.
9. Enter *OK* at *Add Object* menu.
10. Enter *OK* at *Add Object:palette*.

Poll the Device OIDs

1. From the main menu, select **Monitor: MIB values** then **Browse MIB: SNMP**.
2. Move around the MIBs to view the Minuteman or device information.

Set the Device OIDs

From the main menu, select *Monitor: MIB* values then *Browse MIB: SNMP*.

1. Select a MIB variable you want to alter and click on it.
2. Enter the new value then click on *Set*.
3. Click on *Start Query* to view the changes.

Ping the Minuteman SNMP-M

1. Change active Window to *Shell*.
2. Type **ping** <IP address> and press <enter>.

Novell's NetWare Management Station v.2.0

Compile the Device MIBs

1. Copy the files *.mib from the DOS formatted diskette into the subdirectory `\nms\snmpmibs\current`.
2. From the main menu, select **T**ools then **S**NMP MIB **C**ompiler.
3. From the SNMP MIB Compiler box, select **C**ompile.

Add the Minuteman Object to the Management Map

The NMS will discover the Minuteman and add it to the Management map during its discovery pass.

Poll the Device OIDs

1. From the main menu, select Tools then **S**NMP MIB **B**rowser.
2. From the **S**NMP MIB **B**rowser box, select the IP protocol and then enter the IP Address.
 - a) select the profile **t**o **v**iew.
 - b) select **O**K.

Set the Device OIDs

1. From the main menu, select Tools then SNMP MIB Browser.
2. From the SNMP MIB Browser box, select Add.
3. From the SNMP Profile Editor box,
 - a) assign the profile a name, a community, and a poll interval.
 - b) select the OID groups from the Group Choice then select Add to transfer them to the Group Selection(s).
 - c) Save the profile.

Ping the Minuteman SNMP-M

1. From the main menu, first select **Fault**, second **Test Connectivity**, and third **Once**.
2. From the **Test Connectivity** box,
 - a) type in the IP address.
 - b) select **Test**.

SunConnect SunNet Manager

Compile the Device MIBs

1. Copy the files ***.mib** from the TAR formatted diskette into the subdirectory specified by **na.snmp.schemas** keyword in **\$\$SNMHOME/snm.conf**.
2. Execute **mib2schema** on the MIBs. This creates respective ***.mib.oid** and ***.mib.schema** and ***.mib.traps** files.
3. In the **SNM console window**, select **File/Load**.
4. Select **Management Database**.
5. Click on ***.mib schema**, where *= the name of each MIB copied in step 1 and select **Load**. Continue this step for each MIB copied in step 1.
6. Start a new shell window; change to the subdirectory **\$\$SNMHOME/agents** and execute **build_oid**. This creates an oid database using all compiled MIBs.
7. Append ***.mib.traps** to the file specified by **na.snmp-trap.default** keyword in **\$\$SNMHOME/snm.conf**.

Add the Minuteman Object to the Management Map

1. Enter the submap where the managed device will be placed.
2. Select **Edit, Create, Component, lanbox** with the right (opposite) mouse button. Select **Create**.
3. The **Properties** box displays.
4. Enter the Minuteman SNMP-M 's name as it appears in **etc/hosts** or in the name server.
5. Enter the **SNMP WrCommunity**.
6. Select the desired MIBs.
7. Choose a color for the device.
8. Select **Apply**. This adds the device to the submap.
9. Create a managed device view by
 - a) Select the relevant submap
 - b) Select **Edit, Create, View, subnet** with the right (opposite) mouse button.
 - c) Select **Create** and press <enter>.
 - d) enter the **name**
 - e) copy and paste the glyph into the managed device view

Poll the Device OIDs

1. Select the device glyph with the right mouse button.
2. Select **Quick Dump, *-MIB** then one of the MIB groups. A window appears displaying a snapshot of the group.

Set the device OIDs

1. Select the device glyph with the right mouse button.
2. Select **Set Request, *-MIB, {OID name}**.
3. When the **Set Tool** application displays,
4. Click on **Get** to receive the current values.
5. Select a new value by clicking on **New Value** then by clicking **Set**.
6. Click on **Get** again to view the changes.

Ping the Minuteman SNMP-M

1. Change active Window to Shell.
2. Type **ping <IP address>** and press **<enter>**.

The BootROM Menu is the resident software of Minuteman SNMP-M. Options include changing the communications parameters, temperature and humidity offsets, UPS delay and locally administered address; displaying closure status, temperature, humidity, and non-serial UPS status lines; uploading firmware, and opening a direct channel to the UPS. In addition, you can test many options: RAM, EPROM, FEPRM, UPS comm port, status LEDs, and relays.

Minuteman SNMP-M has already been factory configured to operate with the uploaded firmware. Therefore, there should be no need to change the settings unless something is not working properly.

If you upgrade or need to change some fields you can change them on this menu.

To access the BootROM Menu from the upper menu, type **14** for Terminate to BootROM at the **Enter Choice:** prompt. Press *<enter>*. The program asks:

Are you sure you want to terminate Minuteman ? (Y/N)

Type **Y** for yes. The BootROM menu displays.

CAUTION: When you select *Yes*, the Minuteman SNMP-M adapter is no longer active on the network.

```
Copyright (c) 1994 Systems Enhancement Corporation
BootROM: V2.0 3-16-94, Model #: MODEL#, Serial #: SERIAL#

  1) Set Comm Parameters          10) Test EEPROM (checksum)
  2) Start NetMon                11) Test UPS Comm Port
  3) Display Closures            12) Test Status LEDs
  4) Display Temperature         13) Test All
  5) Display Humidity            14) Test Relays
  6) Upload Firmware             15) Set Temp and Humidity Offsets
  7) Open Direct Channel to UPS  16) Disp. Non-Serial UPS status lines
  8) Test ROM                    17) Test Non-Serial UPS inverter shutoff
  9) Test EEPROM (checksum)      18) Set UPS delay
                                  19) Set Locally Administered Address

Enter Choice:

ALT-F10 HELP | ANSI-ERS | F1X | 9600 MB1 | LOG CLOSED | PRT OFF | CR | CR
```

Figure 19 BootROM Menu

To change or display any field, enter the number of the field at the Enter Choice: prompt. The current value displays. If there are other valid values, they display within brackets. Press <return> after you enter information or to accept the current value at any prompt. This action executes the command. The program displays the same prompt if you enter an invalid value. If you keep pressing <enter>, the program returns to the Enter choice: prompt.

Set Comm Parameters

The configuration port is used to communicate with the terminal, to configure the Minuteman SNMP-M adapter. For this serial port, the baud rate, parity, character length, and stop bits must be defined. The device ports are configured to match the communications parameters of the UPS. These ports must be defined as serial or non-serial. If serial, you must define the baud rate, parity, character length, and stop bits. Repeat the Comm Parameter definitions for each UPS you connect to the Minuteman SNMP-M's device ports.

NOTE: The Factory sets these ports to match the way you ordered the product—the number of active ports, and the make and model of each UPS that you will be connecting.

Configuration Port

This field defines the configuration port. The program prompts you to enter the values associated with the configuration port—comm port zero, the baud rate, the parity, character length, and stop bits. Select comm port number zero when configuring this port.

```
Enter Choice: 1
Enter comm port number (Config Port=0; UPS Ports=1,2,3,4) : 0
Enter NMConfig PC baud rate [9600] : 9600
Enter NMConfig PC parity (M, O, E) [n] : N
Enter NMConfig PC character length (7, 8) [8] : 8
Enter number of NMConfig PC stop bits (1, 2) [1] : 1
Press ENTER to continue
```

For the UPS Ports

This field tells Minuteman SNMP-M which port to configure and what type of port the UPS uses—non-serial or serial.

UPS Ports—Undefined

The factory sets your system and sets the UPS device ports that are not active to **UNDEFINED**. Changing this cannot activate an inactive port; this option must be accomplished at the factory.

```
Enter Choice: 1
Enter comm port number (Config Port=0; UPS Ports=1, 2, 3, 4) : 1
Enter UPS type (1=UNDEFINED, 2=NON-SERIAL, 3=SERIAL) [1] : 1
Press ENTER to continue . .
```

Device Ports—Non-Serial

This is the factory setting for all UPSs designed to provide status data via relay contacts.

The program prompts you for the normal condition of the Power Fail relay and Low Battery relay. For Example:

When normal line power is available, the Power Fail and Low Battery relays are Normally Open (NO) or Normally Closed (NC). Enter the code that corresponds to your system.

```
Enter Choice:1
Enter comm port number (Config Port=0; UPS Ports=1, 2, 3, 4) : 1
Enter UPS type (1=UNDEFINED, 2=NON-SERIAL, 3=SERIAL) [1] : 2
Enter Power Fail/Low Battery state (3=NC/NC,4=NO/NO, 5=NC/NO, 6=NO/NC [4]
Press ENTER to continue . .
```

NOTE: Refer to your UPS manual for the correct settings.

The Codes Definition Table provides you with the power fail and low battery status codes.

<i>CODES DEFINITION TABLE</i>		
<i>CODE</i>	<i>POWER FAIL STATUS</i>	<i>LOW BATTERY STATUS</i>
<i>3=NC/NC</i>	<i>normally closed</i>	<i>normally closed</i>
<i>4=NO/NO</i>	<i>normally open</i>	<i>normally open</i>
<i>5=NC/NO</i>	<i>normally closed</i>	<i>normally open</i>
<i>6=NO/NC</i>	<i>normally open</i>	<i>normally closed</i>

Device Ports—Serial

Minuteman SNMP-M has been developed to work with various manufacturers' intelligent UPSs. When purchasing a Minuteman SNMP-M for this specific application, the UPS port should be set to serial.

If your UPS uses a serial port, be sure to type **3** for serial at the Enter UPS type prompt.

```
Enter Choice: 1

Enter comm port number (Config Port=0; UPS Ports=1,2,3,4) : 1
Enter UPS type (1=UNDEFINED, 2=NON-SERIAL, 3=SERIAL) [1] : 3
Enter NMConfig PC baud rate [1200] : 1200
Enter NMConfig PC parity (M, O, E) [N] : N
Enter NMConfig PC character length (7, 8) [8] : 8
Enter number of NMConfig PC stop bits (1, 2) [1] : 1
Press ENTER to continue ...
```

Start Minuteman

This option starts the Minuteman SNMP-M agent and initiates the Upper menu. Initialization time takes approximately 30 seconds. To start the program at the prompt,

```
Enter Choice: 2
Testing FEPR0M at Segment 8000H .. 0

Initializing. Please wait 30 seconds..DONE Press [Enter] to continue.
```

Display Closures

This field displays the current status of the auxiliary port's four switches. The switches are OPEN or CLOSED depending on the current status of the auxiliary port's four dry-closure inputs. To display closures at the prompt,

```
Enter Choice: 3
Switch 1  OPEN
Switch 2  OPEN
Switch 3  OPEN
Switch 4  OPEN
Press ENTER to continue ...
```

Display Temperature

This field displays current temperature in Fahrenheit relative to the Minuteman SNMP-M's environment. To display the temperature,

```
Enter Choice: 4
Temperature - 77 degrees F.
Press ENTER to continue ...
```

Display Humidity

This field displays the current percentage of humidity relative to the Minuteman SNMP-M's environment. To display the humidity at the prompt,

```
Enter Choice: 5
Humidity - 31%
Press ENTER to continue....
```

Upload Firmware

Use this choice to upload the firmware, *i.e.*, proxy agent, to the Minuteman SNMP-M.

CAUTION: The firmware upload has already been accomplished at the factory. Before you proceed with this option, we suggest you contact our technical support team for assistance.

To upload the firmware at the Enter Choice: prompt, type **6**, press *<enter>*, and place the Minuteman SNMP-M's diskette in the drive—the first screen illustration.

A box opens that lists the available protocols—as illustrated with the second screen. At the Protocol: prompt, enter the number of the

protocol for your system.

A message box informs you with *Send {Protocol Name}* and requests you to enter the filename—the third screen illustration. (The *pmon.img* file is on the **DOS** and **TAR** diskette.)

The fourth screen displays the status of firmware upload. It tells you that the protocol is completed, the file name and size, the block check, the time of the transfer, how many bytes and blocks were transferred and their size, an error count, and if there is a last message.

The fifth screen displays the successful firmware transfer message, “Firmware uploaded - NO ERROR.”

CAUTION: You must complete the file transfer once you initiate it. If you do not let it finish, you cannot access the Minuteman SNMP-M's Upper menu.

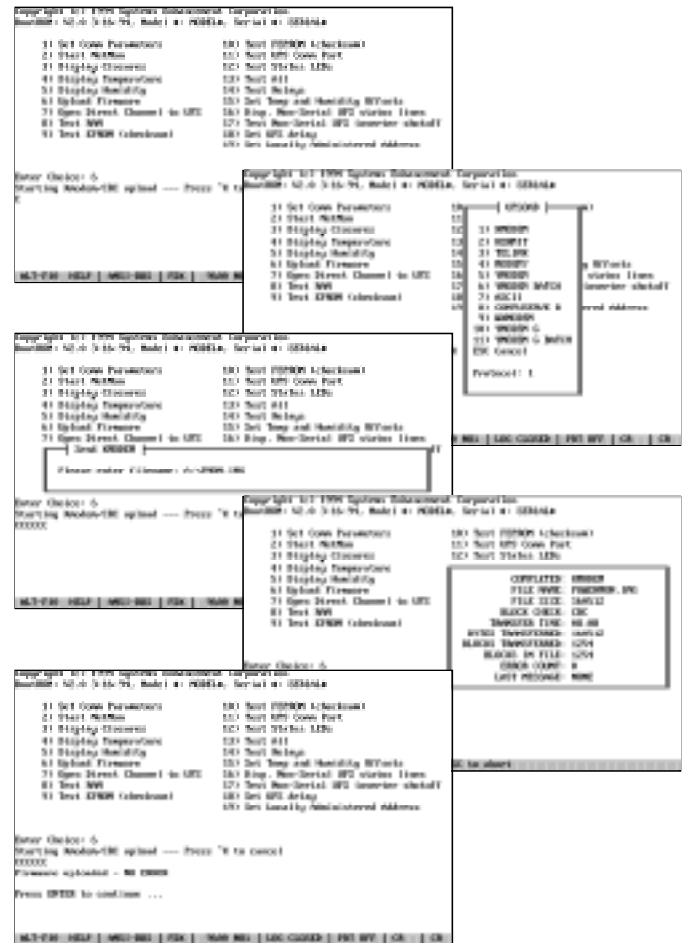


Figure 20 Uploading Firmware

Open Direct Channel to UPS

This field allows you to communicate directly with a serial UPS. To begin communications at the prompt,

```
Enter Choice: 7
Enter comm port number (Config Port=0: UPS Ports=1, 2, 3, 4) :1
Channel to UPS is OPEN ... Press <ESC> or ^C to CLOSE channel
Channel CLOSED to UPS
Press ENTER to continue ...
```

Your UPS manual can guide you in the proper procedures for communicating with the UPS.

Test RAM

This field tests validity of the static RAM (Random Access Memory) and dual-port RAM. To run a test at the prompt,

```
Enter Choice: 8
Testing RAM at Segment 0000H . OK
Testing RAM at Segment 1000H . OK
Testing RAM at Segment D000H . OK

Press ENTER to continue ...
```

Test EPROM (checksum)

This field tests the validity of the BootROM EPROM (Erasable Programmable ROM). To test the EPROM,

```
Enter Choice: 9
Testing EPROM ..OK

Press ENTER to continue ...
```

Test FEPR0M (checksum)

This field tests the validity of the firmware's FEPR0M (Flash PROM). To test the FEPR0M,

```
Enter Choice: 10
Testing FEPR0M at Segment 8000H .. OK
Press ENTER to continue
```

If the checksum is bad, you must upload the firmware again. Refer to *Upload Firmware* of this section.

Test UPS Comm Port

This field tests the validity of the device ports. To Test the UPS comm port at the prompt,

```
Enter Choice: 11
UPS Comm Port .. OK

Press ENTER to continue
```

Test Status LEDs

This field tests the validity of the status LEDs. To test the LEDs at the prompt,

```
Enter Choice: 12
Testing Status LEDs ...

Press ENTER to continue
```

Test All

This field tests the validity of the static RAM and dual-port RAM, EPROM, and UPS comm ports. To test at the prompt

```
Enter Choice: 13
Testing RAM at Segment 0000H . OK
Testing RAM at Segment 1000H . OK
Testing RAM at Segment D000H . OK
TESTING EPROM AT Segment H800H .. OK

Press ENTER to continue ..
```

Test Relays

This field tests the auxiliary port's dry-contact outputs. To test the relays at the prompt,

```
Enter Choice: 14
Relay 1 = OFF, RELAY 2 = OFF
Press any key to continue ..

Relay 1 = ON, RELAY 2 = OFF
Press any key to continue ..

Relay 1 = OFF, RELAY 2 = ON
Press any key to continue ..

Relay 1 = ON, RELAY 2 = ON
Press any key to continue ..

Relay 1 = OFF, RELAY 2 = OFF
Press ENTER to continue ..
```

CAUTION: If any equipment needs to remain alive during the test, disconnect it from the auxiliary port before implementing the test!

NOTE: You can hear the relays click as they change state.

Set Temp and Humidity Offsets

This field corrects the temperature and humidity readings. To correct the readings at the prompt,

```
Enter Choice: 4
Enter Temp. Offset (-126...126) [0] :
Enter Humidity Offset (-126...126) [0] :
Temperature and Humidity offsets are stored.
Press ENTER to continue ..
```

Disp. Non-Serial UPS status lines

This field displays the status of the power fail and low battery of the non-serial UPS on each active port. To display the values at the prompt,

```
Enter Choice: 16
Port #1  1. C0h 2. C0h 3. C0h 4. C0h 5. C0H 6. C07 8. C0H
Port #2  1. 0h 2. 0h 3. 0h 4. 0h 5. 0h 6. 0h 7. 0h 8. 0h
```

```
Port #3 1. 0h 2. 0h 3. 0h 4. 0h 5. 0h 6. 0h 7. 0h 8. 0h
Port #3 1. 0h 2. 0h 3. 0h 4. 0h 5. 0h 6. 0h 7. 0h 8. 0h
Press ENTER to continue ..
```

The following table defines the Power Fail and Low Battery Status Codes:

<i>Power Fail and Low Battery Status Codes Table</i>		
<i>CODE</i>	<i>POWER FAIL STATUS</i>	<i>LOW BATTERY STATUS</i>
<i>0h</i>	<i>open</i>	<i>open</i>
<i>40h</i>	<i>open</i>	<i>closed</i>
<i>80h</i>	<i>closed</i>	<i>open</i>
<i>C0h</i>	<i>closed</i>	<i>closed</i>

Test Non-Serial UPS inverter shutoff

This field performs the inverter shutoff of the non-serial UPS on each active port.

CAUTION: If any equipment or UPS needs to remain alive during the test, disconnect it from Minuteman SNMP-M's device port before implementing the test!

To begin shutoff at the prompt,

```
Enter Choice: 17
UPS Port #1 : shutdown is HIGH. Press any key to continue ...
UPS Port #1 : shutdown is LOW. Press any key to continue ...
UPS Port #2 : shutdown is HIGH. Press any key to continue ...
UPS Port #2 : shutdown is LOW. Press any key to continue ...
UPS Port #3 : shutdown is HIGH. Press any key to continue ...
UPS Port #3 : shutdown is LOW. Press any key to continue ...
UPS Port #4 : shutdown is HIGH. Press any key to continue ...
UPS Port #4 : shutdown is LOW. Press any key to continue ...
Press ENTER to continue ..
```

Set UPS Delay

This field sets UPS delay for sampling of the power fail and low battery status of the non-serial UPS on each active port. (A delay value of one approximates to 50 milliseconds.) To set the UPS delay at the prompt,

```
Enter Choice: 18
Enter Delay [0] : 1
Press ENTER to continue ..
```

Locally Administered Address

This field assigns a unique LAA (Locally Administered Address) to the MAC (Medium Access Control) of the NIC (Network Interface Card). The Minuteman only accepts an LAA in the format `xx:xx:xx:xx:xx:xx`, where `xx` represents a two-digit hexadecimal value. If you do not want to assign the NIC's MAC address a unique LAA, enter either `FF:FF:FF:FF:FF:FF` or `00:00:00:00:00:00`

```
00:00:00:00:00:00  
ff:ff:ff:ff:ff:ff
```

Appendix

This appendix has three sections: *Reference*, *Glossary*, and *Troubleshooting*.

Reference

This section discusses Communities, IP Addresses, Sub net masking, and routers/gateways.

Communities

A community is a string of printable ASCII characters that identifies a user group with the same access privileges. For example, a common community name is “public.”

For security purposes, the SNMP agent validates requests before responding. The agent can be configured so that only trap managers that are members of a community can send requests and receive responses from a particular community. This prevents unauthorized managers from viewing or changing the configuration of a device.

IP Addresses

Every device on an internetwork must be assigned a unique IP (Internet Protocol) address. An IP address is a 32-bit value comprised of a network ID and a host ID. The network ID identifies the logical network to which a particular device belongs. The host ID identifies the particular device within the logical network. IP addresses distinguish devices on an internetwork from one another so that IP packets are properly transmitted.

IP addresses appear in dotted decimal (rather than in binary) notation. Dotted decimal notation divides the 32-bit value into four 8-bit groups, or octets, and separates each octet with a period. For example, 199.217.132.1 is an IP address in dotted decimal notation.

To accommodate networks of different sizes, the IP address has three divisions—Classes A for large, B for medium, and C for small. The difference among the network classes is the number of octets reserved for the network ID and the number of octets reserved for the host ID.

<i>Class</i>	<i>Value of First Octet</i>	<i>Network ID</i>	<i>Host ID</i>	<i>Number of Hosts</i>
<i>A</i>	<i>1-126</i>	<i>first octet</i>	<i>last three octets</i>	<i>16,387,064</i>
<i>B</i>	<i>128-191</i>	<i>first two octets</i>	<i>last two octets</i>	<i>64,516</i>
<i>C</i>	<i>192-223</i>	<i>first three octets</i>	<i>last octet</i>	<i>254</i>

Any value between 0 and 255 is valid as a host ID octet except for those values the InterNIC reserves for other purposes.

<i>Value</i>	<i>Purpose</i>
<i>0, 255</i>	<i>Subnet masking</i>
<i>127</i>	<i>Loopback testing and interprocess communication on local devices</i>
<i>224-254</i>	<i>IGMP multicast and other special protocols</i>

Subnetting and Subnet Masks

Subnetting divides a network address into subnetwork addresses to accommodate more than one physical network on a logical network. For example: A Class B company has 100 LANs (Local Area Networks) with 100 to 200 nodes on each LAN. To classify the nodes by its LANs on one main network, the company segments the network address into 100 subnetwork addresses. (If a Class B network address is 150.1.x.x, the address can be segmented from 150.1.1.x through 150.1.100.x.)

A subnet mask is a 32-bit value that distinguishes the network ID from the host ID for different subnetworks on the same logical network. Like IP addresses, subnet masks consist of four octets in dotted decimal notation. You can use subnet masks to route and filter the transmission of IP packets among your subnetworks. The value “255” is assigned to octets that belong to the network ID, and the value “0” is assigned to octets that belong to the host ID.

For the example above, if you want all the devices on the subnetworks to receive each other’s IP packets, set the subnet mask to 255.255.0.0. If you want the devices on a single subnetwork only to receive IP packets from other devices on its own subnetwork, set the subnet mask to 255.255.255.0 for the devices on that subnetwork.

<i>Subnet Mask</i>	<i>Routing and Filtering</i>
<i>0.0.0.0</i>	<i>IP packets are transmitted to all devices.</i>
<i>255.0.0.0</i>	<i>IP packets are only transmitted to devices whose IP address’s first octet matches the sender’s IP address’s first octet.</i>
<i>255.255.0.0</i>	<i>IP packets are only transmitted to devices whose IP address’s first two octets match the sender’s IP address’s first two octets.</i>
<i>255.255.255.0</i>	<i>IP packets are only transmitted to devices whose IP address’s first three octets match the sender’s IP address’s first three octets.</i>

Gateways

Gateway, also referred to as a router, is any computer with two or more network adapters connecting to different physical networks. Gateways allow for transmission of IP packets among networks on an internetwork.

Glossary

The Glossary section defines the terms used in the Minuteman -MP environment.

Agent	Implemented SNMP applications in network elements (hosts). Agents perform the network management's functions as requested by the network administrator from an NMS.
BootP Server	<i>Boot Protocol Server</i> —A server that enables hosts that do not know their IP addresses to obtain them from the network.
Dry Closure Input	Non-powered contact type inputs—switch, relay contact, open-collector.
Dry Closure Output	Form C dry-contact outputs which are common, normally open, or normally closed.
EtherNet	Local Area Network technology, originally developed by the Xerox Corporation, can link up to 1,024 nodes in a bus network. EtherNet provides raw data transfer in a rate of 10 megabits/sec. with actual throughputs in 2 to 3 megabits/sec. using a baseband (single-channel) communication technique. EtherNet uses carrier sense multiple access collision detection (CSMA/CD) that prevents network failures when two devices attempt to access the network at the same time. LAN hardware manufactures use EtherNet protocol; their products may not be compatible.
Flash EPROM	<i>Erasable Programmable Read-Only Memory</i> —A logic chip that can be modified during runtime using special hardware and software connections.
Gateway	A computer that attaches to a number of networks and routes packets between them. The packets can be different protocols at the higher levels.
IP	<i>Internet Protocol</i> —The TCP/IP standard protocol defines the IP datagram as the unit of information passed across a network.
IP Address	<i>Internet Protocol Address</i> —A 32-bit address assigned to hosts participating in a TCP/IP network. The IP address consists of network and host portions. It is assigned to an interconnection of a host to a physical network.
LAA	<i>Locally Administered Address</i> —The physical layer address assigned to the NIC normally in Token Ring networks. In EtherNet networks, it is unusual, yet several vendors provide this feature.
MAC	<i>Medium Access Control</i> —The network layer between the physical and the datalink layers. Specifically, the physical (hardware) address exists in this layer.
MIB	<i>Management Information Base</i> —The database, i.e., set of variables maintained by a gateway running SNMP.
NC	<i>Normally Closed</i> —Refers to a contact switch that is normally closed.
NIC	<i>Network Interface Controller</i> —The hardware interface to the physical connection to the network.
NMS	<i>Network Management Station</i>
NO	<i>Normally Open</i> —Refers to a contact switch that is normally open.
OID	<i>Object Identifier</i> —The variables defined in a MIB.

Personality	The current device specific software uploaded to the Minuteman SNMP-M.
Router	A computer that manages traffic between different network segments or different network topologies. It directs the destination IP address. The network media can be different, but the higher level protocols must be the same.
RS-232	A specification for serial communication between data communication equipment and computers.
SNMP	<i>Simple Network Management Protocol</i> —A standard protocol used to monitor IP hosts, networks, and gateways. SNMP defines a set of simple operations that can be performed on the OIDs of the MIBs managed by the monitored Agents. It employs the UDP/IP transport layer to move its object between the Agents and the NMS.
Sub-Agent	A software module that manages specific MIB sub-groups for an Agent. They communicate with the Agent using a SMUX (multiplexer).
TCP/IP	<i>Transmission Control Protocol/Internet Protocol</i> —A protocol suite used by more than 15 million users with a UNIX association and widely used to link computers of different kinds.
TES	<i>Terminal Emulation Software</i> —Communications program to transform a personal computer into a terminal for the purpose of data communications.
TFTP Server	<i>Trivial File Transfer Protocol Server</i> —A host to provide services according to TFTP; a TCP/IP standard protocol for file transfer with minimal capability and overhead depending on UDP for its datagram delivery service.
Token Passing	Local Area Network technology developed by IBM. Controls media by circulating a token (which is a special bit configuration similar to a packet), among the workstations. A token's value is free or busy. Any workstation that needs to transmit captures a free token, changes the value to busy, and attaches to the token the address of the destination node and the data it wants to transmit. The workstation constantly monitors the network for a token that may be addressed to it. When a workstation receives a token, it attaches an acknowledgment message. When the token returns to the source node, the token's value is set back to free. Because token passing rules out data collisions, it is used in large, high-volume networks.
Token-Ring Network	In local area network architecture that combines token passing with a hybrid star/ring topology. Developed by IBM, this multi-station access unit is its hub wired with twisted-pair cable in a star configuration. The hub can serve up to 255 workstations and works as a decentralized, ring network.
UDP/IP	<i>User Datagram Protocol/Internet Protocol</i> —A TCP/IP standard protocol. It enables transfer of information between applications running on different host. It is referred to as an unreliable, connectionless datagram delivery service.
UPS	<i>Uninterruptible Power Supply</i> —A device that supplies power to your system with rechargeable batteries if there is an AC power failure.

Troubleshooting

Problem: The TES (Terminal Emulation Station) does not display anything.

Solution: Make sure to select the correct communication port.

Make sure the TES's communication parameters are correct. They should be 9600 baud rate, no parity, 8-data bits, and 1 stop bit.

If your TES can operate at 19200 baud rate, select:

Select Comm Parameters [Boot ROM menu, option 1]

Set the config port's parameter at 19200 baud rate, no parity 8-data bits, and 1 stop bit

Set the TES's communication parameters at 19200 baud rate, no parity 8-data bits, and 1 stop bit

Make sure the ends of the NET-CFG-01A cable are plugged into their respective ports.

The ends of the molded cable indicate which belongs to the CPU and which belongs to the Minuteman SNMP-M.

The end of the hooded cable nearest the label belongs to the CPU, and the end farthest away belongs to the Minuteman SNMP-M.

PROBLEM: When you activate the Start Minuteman [BootROM menu: option 2], an error message informs you, "Bad Checksum—checksum."

Solution: Call Technical Support for assistance in re-loading the software:

PROBLEM: The NMS cannot ping the Minuteman SNMP-M.

Solution: Make sure the network connection to the Minuteman SNMP-M is good.

Solution: Make sure the cable is in good condition.

Solution: Make sure to set the Community Table [Upper Menu: Option 1, Application Table: Edit #1-10]. Follow these steps:

Name the community with any lowercase name. (A UPS monitors a designated community.)

Be sure to set at least one community table so that the trap manager and port community tables are effective.

Solution Make sure to set the Manager Table. [Upper Menu: Option 1, Application Table: Edit #11-20]. Follow these steps:

Define the Community, Trap Manager, and Port Community tables together.

The trap manager's community should be the same number as the number of the community it monitors.

The trap manager's membership is set to Y to enable performing SNMP sets or to N to disable.

The trap manager's status is set to Y to enable sending traps or to N disable.

The trap manager's default port status is 162.

Solution: *Make sure to set the IP Address [Upper Menu: Option 1, Application Table: Edit #41].*

Be sure the Minuteman SNMP-M's IP address reflects the Net Mask of the trap manager's IP address. The default net mask is 255.255.0.0. Wherever a 255 appears, the Minuteman SNMP-M's IP digits must match the trap manager's.

Solution: *Be sure to set the LAA to all FF:FF:FF:FF:FF:FF; all 00:00:00:00:00:00; or to the NIC's node address [BootROM menu: option 1].*

When you change the LAA, the communication port No. 4's parameters reset. Follow these steps:

Select Set Comm Parameters [BootROM menu: option 1].

Set communication port No. 4's parameters to the ones specified for that particular Minuteman SNMP-M.

Solution *Check for proper installation for the NMS's TCPIP stack.*

Placing a Technical Support Call

In order to diagnose the problem you are having, our technicians will need the following information from you:

Installation Site:

Company Name: _____

Address: _____

City: _____ State: _____ ZIP code: _____

Installation Site Contact:

Full Name: _____

Phone Number: _____ Fax Number: _____

If you are a consultant,

Consultant Name: _____

Phone Number: _____ Fax Number: _____

Computer System:

Operating System and version: _____

System Manufacturer: _____

System Model Number: _____

NMS name and version number: _____

UPS:

Manufacturer: _____

Model Name/Number: _____

Type of Port Connector (How many pins, male or female.): _____

What are the symptoms?

 **Technical Support** 
Have the information listed above ready. You can reach

us by calling:

Main Telephone Number:	214-446-7363
Toll Free Number:	800-238-7272
Fax:	214-446-9011
Quick Fax 24 Hour Info by Phone	800-263-3933
Quick Fax Int'l Number:	214-664-3833
Internet:	minuteman - ups.com
E-Mail Address:	Webmaster @ minuteman - ups.com

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