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1 What is a NetCom?

A NetCom is a standalone UPS monitoring application. It consists of a small computer with a serial interface for connecting to and communicating with a UPS and an Ethernet interface for connecting to your local network. The NetCom has its own embedded web server to allow you to view the status of the UPS using an Internet browser. It supports the Simple Network Management Protocol (SNMP) for integration with a Network Management System and Telnet for configuration.

You can configure the NetCom to perform appropriate actions when an event is detected. The user configurable actions include e-mail (and alphanumeric paging) and shutdown of remote computer systems. The NetCom consists of two primary components. The NetCom communicates with the UPS and performs all event management. The Remote shutdown agent runs on one or more remote computers and communicates with the NetCom to allow remote shutdown of up to 24 computers powered by the UPS. An optional component, the NetCom Forwarder, runs on a remote computer to allow the NetCom to shut down additional computers.

The entire suite of management products from Mitsubishi includes:

- MultiLink – monitor up to one thousand devices including UPSs, PDUs, rack and environmental monitors and IP cameras
- DiamondLink – UPS management and system shutdown software
- NetCom – SNMP/Web UPS management device

2 Who Do I Contact For Technical Support?

For help on configuring and using NetCom or any Mitsubishi UPS product, contact the Technical Support group at:

<table>
<thead>
<tr>
<th>Phone</th>
<th>847-478-2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fax</td>
<td>847-478-2301</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:DiamondLink@meau.mea.com">DiamondLink@meau.mea.com</a></td>
</tr>
<tr>
<td>Web</td>
<td><a href="http://www.meau.com">http://www.meau.com</a></td>
</tr>
</tbody>
</table>

3 What are the System Requirements for NetCom?

Check the Mitsubishi web site (http://www.meau.com) for the latest list of system requirements.

The NetCom runs as a standalone unit. It requires a 120-volt AC power source, an RS232 communications cable (included) for connecting to the UPS, and a standard network cable for connecting to the local Ethernet network.

3.1 Operating System Requirements

The remote shutdown agents will run on the following operating systems:

- Windows 2000
- Windows 2003
- Windows XP
- Linux Red Hat 7.3, 8.0
- Red Hat Enterprise 2.1 ES (update 5), 3.0 ES (update 4)
- SLES 9.0
- HP-UX 11.0, 11i v1, 11i v2
- Sun Solaris 8
3.2 Web Browser Requirements

Supported web browsers include:

- Internet Explorer 6.0 or higher
- Mozilla

The NetCom requires Macromedia Flash 6.0 or higher.

3.3 Special Requirements for Windows Internet Explorer

In some instances, the caching on Internet Explorer can cause the wrong page to be displayed on the NetCom user interface. For example, you might click on the Variables menu option but see the Event Log page. If this happens, follow these steps to correctly configure the caching for Internet Explorer:

- Open Internet Explorer and select the Tools menu option.
- Select the Internet Options... submenu.
- Under the Temporary Internet files section, click the Settings... button.
- Click the Every visit to the page radio button.
- Click the OK button.
- Close the Internet Options dialog box.

3.4 Special Requirements for Windows XP Service Pack 2

When Windows XP Service Pack 2 is installed on a computer it will turn on the personal firewall. Follow these steps to open up the web port for NetCom:

- Select Start Menu ► Control Panel.
- Select Network Connections and right click on the connection that is being used.
- Click on Properties and click the Advanced tab in the Properties dialogue.
- Press the Settings... button to bring up the Firewall dialogue.
- Go to the Exceptions tab and click the Add Port button.
- For Name enter NetCom Web Port and for Port Number enter 80. Press the OK button.
- You should now be able to access the NetCom web port through the XP Firewall.

4 How Do I Install the NetCom?

4.1 Installing the NetCom Utilities

The NetCom CD contains the following:

- SNMP MIB
- NetCom Quick Start Guide (PDF)
- NetCom User Manual (PDF)
- NetCom Utilities
  - NetCom Setup Utility
To install the NetCom Utilities or access any of the documents, place the NetCom CD in the CD drive. The NetCom Utilities CD should automatically start. Follow the instructions provided on your screen.

4.2 Installing the NetCom Hardware

Most of the configuration parameters for the Mitsubishi NetCom can be set using the web interface but the initial network settings must be made by connecting a Windows computer to the NetCom using the included configuration cable.

There are two ways to perform the initial configuration of the NetCom:

- **NetCom Setup Utility**
- **HyperTerminal Setup**

4.2.1 NetCom Setup Utility

The NetCom Setup Utility is the recommended tool for performing the initial configuration of the NetCom.

1. Install the NetCom utilities from the CD to your Microsoft Windows system.
2. Select `Start` ➤ `Mitsubishi` ➤ `NetCom Setup`.
3. Follow the step-by-step instructions provided by the setup utility for setting up the NetCom.
4. Remove power from the NetCom.
5. Set the configuration dip switch 1 back into the off (up) position.
6. Connect one end of the communications cable to the UPS and the other end to the NetCom device port.
7. Reapply power to the NetCom.

Your NetCom should now be configured and ready for use.

4.2.2 HyperTerminal Setup

The NetCom can also be configured using the Microsoft Windows HyperTerminal application (or a similar utility).

1. Connect one end of the configuration cable to your computer and the other end to the NetCom configuration port (labeled “Terminal”).
2. Open a HyperTerminal session by clicking on `Start` ➤ `Programs` ➤ `Accessories` ➤ `Hyperterminal` ➤ `HyperTerminal`
3. Select an available communications port from the drop-down list.
4. Select the following port settings:
   - Bits per second: 9600
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow Control: None
5. Set the NetCom configuration switch (labeled “1”) to the on (down) position.
6. Remove power from the NetCom by pulling out the power connector.
7. Restore power to the NetCom by reinserting the power connector.
8. The NetCom menu should display in your HyperTerminal window.
4.2.3 Setup Menu

There are four available menu options:

- Network Settings
- Network Management System Settings
- SNMP Trap Receiver Settings
- Date/Time Settings

4.2.3.1 Network Settings

The network settings menu option allows you to configure the initial network settings that must be configured prior to using the NetCom. This option should be used to set the IP address, network mask, and network gateway for the NetCom.

If you are unsure of these settings, please ask your network administrator for assistance.

This menu option will also allow you to set the user name and password required for logging in from a web browser. The user name has a maximum length of 15 characters. The password has a maximum length of 15 characters.

Note: These are the only parameters that must be set before the NetCom can be put on the network for use. All other parameters can be set through the web browser interface.

4.2.3.2 Network Management System Settings

The Network Management System (NMS) Settings menu option allows you to enter the NMSs that are allowed to access the NetCom. To allow access, enter the IP address and community string (SNMP password) for the NMS. You can choose to allow read only (allow SNMP GETs) or read/write access (allow SNMP GETs and SETs).

4.2.3.3 SNMP Trap Receiver Settings

The SNMP Trap Receiver Settings menu option allows you to enter the systems to which the NetCom will send SNMP traps (alarms) when UPS events occur. To set up a trap receiver, enter the IP address of the system and the community string. To enable the NetCom to send traps to this receiver, select enable. You can also enable or disable trap authentication. If enabled, the trap receiver will receive warnings of unauthorized SNMP activities, such as an SNMP GET from an IP address or community string not defined in the NMS settings.

4.2.3.4 Date/Time Settings

The Date/Time Settings menu option allows you to set the date and time for the NetCom as well as the time zone. The most critical of these is the time zone. The time synchronization utility provided with the NetCom allows you to synchronize time on all NetComs to that of your local system. The time zone will set the correct time on the NetCom based upon your local time.
4.2.4 Saving the NetCom Settings

When all configuration settings have been made, the last step is to exit the setup menu. You will be asked whether you want to save the changes that you have made. Select 2 to save the settings to the NetCom. The NetCom will inform you when the settings have been successfully saved.

To enable the NetCom for use, first remove power from the NetCom. Set the configuration dip switch 1 back into the off (up) position. Connect one end of the communications cable to the UPS and the other end to the NetCom device port. Reapply power to the NetCom.

Your NetCom is now configured and ready for use.

5 How Do I Use the NetCom User Interface?

5.1 Browsing to the NetCom

To access the user interface, use your Internet browser to connect to the NetCom. The NetCom has its own web server.

To connect to the NetCom, enter the following address:

http://ip_address  (where ip_address is the IP address of the NetCom)

The default username is admin and the default password is admin.

5.2 Setting the Nominal Values on the NetCom

The first time you use the NetCom, you will need to set the nominal values for your UPS. The following screen will be displayed:

<table>
<thead>
<tr>
<th>Input</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (V)</td>
<td>0</td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>0</td>
</tr>
<tr>
<td>Output</td>
<td></td>
</tr>
<tr>
<td>Voltage (V)</td>
<td>0</td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>0</td>
</tr>
<tr>
<td>Volt-Amp (VA)</td>
<td>0</td>
</tr>
<tr>
<td>Battery</td>
<td></td>
</tr>
<tr>
<td>Voltage (V)</td>
<td>60</td>
</tr>
</tbody>
</table>

Enter the appropriate values for the nominal values and click the Save Changes button. You can view or change these nominal values at a later time by clicking the Nominal Values menu option.
5.3 NetCom User Interface Components

The NetCom user interface has the following menu items:

- UPS Status
- Identification
- Variables
- Event Log
- Agent Setup
- Nominal Values
- SNMP Setup
- Shutdown Setup
- Email Setup
- Log Out

5.3.1 UPS Status

Click the **UPS Status** menu option to display the UPS Overview page. This page displays the overall status of the UPS.

---

**UPS Overview**

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Battery Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volts</td>
<td>Volts</td>
<td>Percent</td>
</tr>
<tr>
<td>140</td>
<td>140</td>
<td>100</td>
</tr>
<tr>
<td>136</td>
<td>136</td>
<td>90</td>
</tr>
<tr>
<td>132</td>
<td>132</td>
<td>80</td>
</tr>
<tr>
<td>128</td>
<td>128</td>
<td>70</td>
</tr>
<tr>
<td>124</td>
<td>124</td>
<td>60</td>
</tr>
<tr>
<td>120</td>
<td>120</td>
<td>50</td>
</tr>
<tr>
<td>116</td>
<td>116</td>
<td>40</td>
</tr>
<tr>
<td>112</td>
<td>112</td>
<td>30</td>
</tr>
<tr>
<td>108</td>
<td>108</td>
<td>20</td>
</tr>
<tr>
<td>104</td>
<td>104</td>
<td>10</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>120.0</td>
<td>120.0</td>
<td>100</td>
</tr>
</tbody>
</table>

**UPS Name:** 192.168.123.66

<table>
<thead>
<tr>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (Hz)</td>
</tr>
<tr>
<td>Voltage (V)</td>
</tr>
<tr>
<td>Current (Amps)</td>
</tr>
<tr>
<td>Power (Watts)</td>
</tr>
</tbody>
</table>

**Output**

<table>
<thead>
<tr>
<th>Source</th>
<th>Utility Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (Hz)</td>
<td>60.0</td>
</tr>
<tr>
<td>Voltage (V)</td>
<td>120.0</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>275</td>
</tr>
</tbody>
</table>

**Battery**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Status</th>
<th>Charge (%)</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>OK</td>
<td>100</td>
<td>13.2</td>
</tr>
</tbody>
</table>
5.3.2 Identification

Click the **Identification** menu option to display the Identification page. This page displays identification information for the UPS, including settable items such as contact information. To set this information, click the **Agent Setup** menu option.

```
<table>
<thead>
<tr>
<th>Identification</th>
<th>UPS Name: Lab 22 - UPS 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS Serial Number</td>
<td>A123456789</td>
</tr>
<tr>
<td>Battery Installation Date</td>
<td>03/05/2005</td>
</tr>
<tr>
<td>Battery Age (Years)</td>
<td>0.6</td>
</tr>
<tr>
<td>Contact Name</td>
<td>Bob Jones</td>
</tr>
<tr>
<td>Contact Number</td>
<td>847-555-1234</td>
</tr>
<tr>
<td>Contact Email Address</td>
<td><a href="mailto:bob.jones@company.com">bob.jones@company.com</a></td>
</tr>
</tbody>
</table>
```

5.3.3 Variables

Click the **Variables** menu option to display the Variables page. This page displays the list of available UPS parameters. The variables are listed in groups (Input, Output, Battery and System).

Note: the list of variables will vary based on UPS model.

```
<table>
<thead>
<tr>
<th>Variables</th>
<th>UPS Name: Lab 22 - UPS 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td></td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60.0</td>
</tr>
<tr>
<td>Voltage (V)</td>
<td>120.0</td>
</tr>
<tr>
<td>Current (Amps)</td>
<td>5.0</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>450</td>
</tr>
<tr>
<td>Output</td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Utility Power</td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60.0</td>
</tr>
<tr>
<td>Voltage (V)</td>
<td>120.0</td>
</tr>
<tr>
<td>Current (Amps)</td>
<td>3.0</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>275</td>
</tr>
<tr>
<td>Load (%)</td>
<td>47</td>
</tr>
<tr>
<td>Battery</td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>Good</td>
</tr>
<tr>
<td>Status</td>
<td>OK</td>
</tr>
</tbody>
</table>
```

If the NetCom is unable to communicate with the UPS for some reason, the Variables page will still display the system information. This is important information as it
includes the Firmware Version of the NetCom. If you need to contact technical support, please have the UPS model and NetCom firmware version available.

5.3.4 Event Log

Click the Event Log menu option to display the Event Log page. This page displays the UPS event log.

When an event occurs, it will be written to the event log with a date/time stamp. When the event is cleared (alarm removed), it will be written to the event log in the format “event removed”, where event is the name of the event being cleared. Click the Clear Log button to clear the event log.

5.3.5 Agent Setup

Click the Agent Setup menu option to display the Agent Setup page. This page allows you to configure the NetCom, including displaying identification information for the UPS.

You can set the following values:

**General Information**

- **UPS Name** – By default, the NetCom will be named based on its IP address. You can enter a more descriptive name for the UPS using this field.
- **Contact Name** – Enter the name of the person responsible for this UPS.
- **Contact Email** – Enter the email address of the contact person.
- **Contact Number** – Enter the phone number of the contact person.
- **Battery Install Date** – Enter the installation date of the battery. This date is used in calculating the age of the battery.
- **UPS Serial Number** – Enter the serial number of the UPS.

**Date / Time Setup**

- **System Clock** – Enter the year, month, day, hour, minute and second for the local time for the NetCom. Note: the NetCom does not have a real-time clock. If the NetCom is
powered down, you will need to reset the system time when power is restored to the NetCom.

- **Daylight Savings Time** – Click this checkbox to automatically adjust for daylight savings time.
- **Time Zone** – Select the time zone for the NetCom.

### SNMP Setup

- **IP Address** – Enter the IP Address for the NetCom. Contact your network administrator if you are unsure as to what value to use.
- **Net Mask** – Enter the network mask for the NetCom. Contact your network administrator if you are unsure as to what value to use.
- **Gateway** – Enter the gateway for the NetCom. Contact your network administrator if you are unsure as to what value to use.
- **User Name** – Enter the user name to use for logging into the NetCom.
- **Net Mask** – Enter the password to use for logging into the NetCom.

<table>
<thead>
<tr>
<th>Configuration</th>
<th>UPS Name: Lab 22 - UPS 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>UPS Name</td>
<td>Lab 22 - UPS 1</td>
</tr>
<tr>
<td>Contact Name</td>
<td>Bob Jones</td>
</tr>
<tr>
<td>Contact Email</td>
<td><a href="mailto:bobjones@company.com">bobjones@company.com</a></td>
</tr>
<tr>
<td>Contact Number</td>
<td>947-655-1234</td>
</tr>
<tr>
<td>Battery Install Date</td>
<td>Year: 2005 Month: 03 Day: 05</td>
</tr>
<tr>
<td>UPS Serial Number</td>
<td>AL23456789</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Date / Time Setup</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(24hr Format)</td>
<td>Year</td>
</tr>
<tr>
<td>System Clock:</td>
<td>2005</td>
</tr>
</tbody>
</table>

- Automatically adjust for daylight savings time
- Time Zone

<table>
<thead>
<tr>
<th><strong>SNMP Card Setup</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Setting</td>
<td>IP Address</td>
</tr>
<tr>
<td>IP Address</td>
<td>192</td>
</tr>
<tr>
<td>Net Mask</td>
<td>256</td>
</tr>
<tr>
<td>Gateway</td>
<td>192</td>
</tr>
</tbody>
</table>

| User Name | Password |
5.3.6 Nominal Values

Click the **Nominal Values** menu option to display the Nominal Values page. To change nominal values, click the **Change Nominal Values** link.

```
<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>Output Voltage</td>
<td>Voltage</td>
</tr>
<tr>
<td>120 V</td>
<td>120 V</td>
<td>60 V</td>
</tr>
<tr>
<td>Input Frequency</td>
<td>Output Frequency</td>
<td></td>
</tr>
<tr>
<td>60 Hz</td>
<td>60 Hz</td>
<td></td>
</tr>
</tbody>
</table>
```

Change Nominal Values
5.3.7 SNMP Setup

Click the **SNMP Setup** menu option to modify the SNMP configuration.

**NMS Setup**

You can configure up to 4 Network Management Stations (NMS) that will be allowed to access the SNMP information on the NetCom. For each NMS enter the following information:

- **IP Address** – Enter the IP Address for the NMS. Contact your network administrator if you are unsure as to what value to use.
- **Community** – Enter the SNMP community string the NMS will use. Contact your network administrator if you are unsure as to what value to use.
- **Access** – Click the RO radio button to allow read-only access or the RW radio button to allow read-write access.

**Trap Receivers Setup**

You can configure up to 10 IP addresses to which the NetCom will send SNMP traps (alarms). For each trap receiver enter the following information:
- **IP Address** – Enter the IP Address for the trap receiver. Contact your network administrator if you are unsure as to what value to use.

- **Community** – Enter the SNMP community string the trap receiver will use. Contact your network administrator if you are unsure as to what value to use.

- **Trap Ctrl** – Click the Trap Ctrl check box to enable SNMP traps to this trap receiver.

- **Authenticate** – Click the Authenticate check box if you want the NetCom to send a trap when a system not on the NMS list attempts to access the NetCom.

Click the **Save Changes** button to save the changes.

### 5.3.8 Shutdown Setup

Click the **Shutdown Setup** menu option to modify the shutdown configuration.

#### Shutdown Setup

<table>
<thead>
<tr>
<th>Send Shutdown Message</th>
<th>Shutdown on Low Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enable</strong></td>
<td><strong>Enable</strong></td>
</tr>
<tr>
<td>Battery Capacity</td>
<td>0 ( % )</td>
</tr>
<tr>
<td>Estimated Runtime</td>
<td>0 ( min )</td>
</tr>
<tr>
<td>On Battery</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agent IP Address</th>
<th>Delay (min)</th>
<th>Agent IP Address</th>
<th>Delay (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.123.157</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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You can set the following values:

**Send Shutdown Message**

You can configure the shutdown of remote computers to be initiated on one of the following three conditions:

- **Battery Capacity** – Click the **Battery Capacity** radio button and enter a battery capacity threshold (in percent). When the battery capacity falls below the threshold value, a shutdown message will be sent to all listed systems.

- **Estimated Runtime** – Click the **Estimated Runtime** radio button and enter a runtime threshold (in minutes). When the estimated runtime falls below the threshold value, a shutdown
- On Battery
  - Click the **On Battery** radio button. When the UPS goes on battery, a shutdown message will be sent to all listed systems.

**Shutdown on Low Battery**

Click the **Enable** check box to enable shutdown of remote systems based on the UPS reporting a low battery condition. Enter the delay (in seconds) from the time the low battery message is sent to the remote system until the remote system should initiate its shutdown.

**Systems to Shut Down**

You can send shutdown messages to up to 24 computers. For each system to be shut down enter the following information:

- **IP Address**
  - Enter the IP Address for the computer to be shut down. Contact your network administrator if you are unsure as to what value to use.

- **Delay (min)**
  - Enter the delay from the time the message is sent to the computer until the system should initiate its shutdown. A delay of 2, for example, will send the message to the remote shutdown agent that it should initiate its shutdown in 2 minutes. If the utility power returns before the delay time has elapsed, a message will be sent to the remote shutdown agent to cancel the shutdown.

**5.3.9 Email Setup**

Click the **Email Setup** menu option to modify the email configuration. The NetCom can send email or alphanumeric pages to up to three recipients when a UPS event occurs. The NetCom uses your local email server to send the email/page.
You must set the following values (contact your network administrator if you are unsure as to what values to use):

- **Email Server Address** – Enter the IP address of the local email server. The NetCom will use this server to send the email/page.

- **Email Server Port** – Enter the network port used by the local email server. The default email port is 25.

- **From Address** – Enter a valid email address for the local email server. The local email server will use this email address to validate that the NetCom is allowed to send mail using the email server. Note: The email/page from the NetCom will show “Mitsubishi SNMP/Web Card” as the sender.

You can configure the NetCom to send the email/page to up to 3 recipients. Enter the email address for each recipient to which you want the NetCom to send an email/page. The email address has a maximum length of 30 characters.

To verify your email settings, click the **Send Test Email** button. The NetCom will use your settings to send a test email/page to the recipients you have entered. If the email/page is not received, please recheck your settings or contact your network administrator to verify you are using the correct settings. Click the **Save Settings** button to save your email configuration.

### 5.3.10 Log Out

Click the **Log Out** menu option to log out. You will have to log in again to access the NetCom.
6 How Do I Use the Remote Shutdown Agents?

6.1 Installing the Remote Shutdown Agent

The Remote Shutdown Agent should be installed on a computer that is being powered by a UPS but is not communicating to it through the communications cable. Installing this software will allow the NetCom to shut down remote computers when events occur on the UPS.

6.1.1 Windows

Perform the following steps to install the remote shutdown agent on Windows:

1. Insert the CD.
2. Browse to the location on the CD for the Windows Agent.
3. Run the Setup file by double-clicking on it.
4. Reply to the standard installation prompts.
5. As an added security option, the Remote Shutdown Agent can be configured to only shut down when it receives a shutdown message from a particular system. From the remote shutdown agent configuration screen, enter the IP address of the NetCom. Leave the field blank to allow any NetCom to connect to the remote shutdown agent.
6. The shutdown agent can be configured to run in redundant mode. In redundant mode, the computer will only be shut down when all configured systems have sent a shutdown message. To set up the remote shutdown agent to be managed by redundant systems click the radio button labeled This agent will be managed by redundant servers.
7. Check the Netcom checkbox by the NetCom’s IP address.

6.1.2 Linux

Perform the following steps to install the remote shutdown agent on Linux:

1. Insert the CD.
2. Mount the CD.
3. Browse to the location of the Linux Management Server and run SetupRA.
4. During the installation you will be asked if redundant management servers will manage the remote shutdown agent.
   - If you do not want to have a redundant setup answer ‘n’ at this prompt. The installation will then ask for the IP address of the NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom.
   - If you do want to have a redundant setup then answer ‘y’ at this prompt. The installation will then ask for the IP address of the first managing server. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom. You will then be asked the same questions about the redundant NetCom.

6.1.3 HP-UX

Perform the following steps to install the remote shutdown agent on HP-UX:

1. Insert the CD.
2. Mount the CD.
3. Browse to the location of the HP-UX Management Server and run Install.
4. During the installation you will be asked if redundant management servers will manage the remote shutdown agent.
   - If you do not want to have a redundant setup answer ‘n’ at this prompt. The installation will then ask for the IP address of the NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom.
   - If you do want to have a redundant setup then answer ‘y’ at this prompt. The installation will then ask for the IP address of the first NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom. You will then be asked the same questions about the redundant NetCom.

6.1.4 Solaris

Perform the following steps to install the remote shutdown agent on Solaris:

1. Insert the CD.
2. Mount the CD.
3. Browse to the location of the Linux Management Server and run install.
4. During the installation you will be asked if redundant management servers will manage the remote shutdown agent.
   - If you do not want to have a redundant setup answer ‘n’ at this prompt. The installation will then ask for the IP address of the NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom.
   - If you do want to have a redundant setup then answer ‘y’ at this prompt. The installation will then ask for the IP address of the first NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom. You will then be asked the same questions about the redundant NetCom.

6.1.5 AIX

Perform the following steps to install the remote shutdown agent on AIX:

1. Insert the CD.
2. Mount the CD.
3. Browse to the location of the Linux Management Server and run install.
4. During the installation you will be asked if redundant management servers will manage the remote shutdown agent.
   - If you do not want to have a redundant setup answer ‘n’ at this prompt. The installation will then ask for the IP address of the NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom.
   - If you do want to have a redundant setup then answer ‘y’ at this prompt. The installation will then ask for the IP address of the first NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom. You will then be asked the same questions about the redundant NetCom.
6.1.6 Netware

Perform the following steps to install the remote shutdown agent on Netware:

1. Insert CD into the CD-ROM drive of the Netware Client computer.
2. From the Agent\Netware subdirectory of the CD, copy the contents into a directory on the NetWare server.
3. From the NetWare system console, load the configuration module (PMCONFIG.NLM) using the default path. For example, if the files were copied into a folder called Mitsubishi on the SYS: volume, the module would be loaded as follows:

SYS:Mitsubishi/PMCONFIG

4. After accepting the License Agreement, you will be asked if redundant Management Servers will manage your remote shutdown agent.
   - If you do not want to have a redundant setup then answer ‘n’ at this prompt. The installation will then ask for the IP address of the NetCom. Either enter the specific IP address of the NetCom or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom.
   - If you do want to have a redundant setup then answer ‘y’ at this prompt. The installation will then ask for the IP address of the first NetCom. Either enter the specific IP address or enter a ‘*’ to allow any NetCom to connect to it. Enter ‘y’ when asked if the managing server is a Netcom or ‘n’ if not. You will then be asked the same questions about the second management server.

6.1.7 Mac OS X

Perform the following steps to install the remote shutdown agent on Mac OS X:

1. Copy the DiamondLinkRAX.X-OSX.tar.gz file to your hard drive. Browse to its location with the Mac file manager.
2. Click the icon for the DiamondLinkRAX.X-OSX.tar.gz file.
3. A new folder named DiamondLinkRAX.X-OSX will be created in the same location as the DiamondLinkRAX.X-OSX.tar.gz file.
4. Browse into the new folder.
5. Click on the DiamondLinkRAX.X-OSX.pkg file.
6. Follow the installation prompts to install the software.
7. Following the completion of the installation, the files will be installed but the service will need to be started.

Perform the following steps to configure and start the remote shutdown agent:

Starting and Configuring the Remote Agent Service:

1. Open a command terminal.
2. While logged in as root, run the following command: /etc/DevMan setup
3. The script will now ask you questions about configuring the software.
4. The setup will ask you to specify the IP address of the NetCom. Leave this address blank if you want to allow any NetCom to manage the shutdown agent.
5. The DevMan script has other useful options. Run it without the setup argument to see the Usage line.

Perform the following steps to uninstall the remote shutdown agent:
1. Open a command terminal.
2. Go to the location where you unzipped the DiamondLinkRAX.X-OSX.tar.gz file during the installation.
3. Go into the DiamondLinkRAX.X-OSX folder that was created.
4. Run the following command: 

```
./Uninstall
```

6.2 Configuring the Remote Shutdown Agents from the NetCom

Select the **Shutdown Setup** menu option from the NetCom user interface to configure the NetCom to shut down remote computers.

7 How Do I Use the NetCom Forwarder?

The NetCom is limited to shutting down 24 remote computers. If there is a need to shut down additional computers, you can use the NetCom Forwarder to do so. The NetCom Forwarder is purchased as a separate software product. Contact Mitsubishi or your NetCom vendor to purchase this software. The NetCom Forwarder will run on Windows XP Professional, Windows 2000 or Windows 2003.

7.1 Installing and Configuring the Forwarder Agent

Perform the following steps to install the Forwarder Agent:

1. Insert the CD. The installation will start automatically. Reply to the standard prompts.
2. Configure the forwarder to communicate with the Netcom. Enter the IP address of the Netcom and check the Netcom box.

![Mitsubishi DiamondLink - Configuration](image)

7.2 Configuring the NetCom to send shutdown messages to the Forwarder Agent

Perform the following steps to configure the NetCom to send alarms to the Forwarder Agent:

1. Browse to the Netcom and select the **Shutdown Setup** menu option.
2. Enter the IP address of the computer running the forwarder into one of the available Agent IP Address edit fields. Set the delay to 0.

7.3 Configuring the Forwarder Agent to Shut Down Remote Computers

Perform the following steps to add remote shutdown agents to the Forwarder Agent:

1. On the computer running the forwarder agent, select Start ► Mitsubishi DiamondLink ► Configure Forwarder. The following screen will be displayed:
2. Click the **Add Agent** button.
3. Enter the IP Address of the computer to be shut down. Note: This computer must be running the Remote Shutdown Agent software.
4. Enter the time (in seconds) the remote system should wait after it receives the shutdown message until it initiates a system shutdown.
5. Click the **OK** button.

Repeat this process for each remote computer to be shut down.

To edit an existing agent, select the agent from the list and click the **Edit** button. Modify the agent and click the **OK** button to save the changes.

To delete an existing agent, select the agent from the list and click the **Delete Agent** button.

**Important!** The forwarder service must be restarted in order for any changes (add, edit or delete) to take effect. To restart the service you can either reboot your computer or stop and restart the **DiamondLink Remote Shutdown Agent – Forwarder** service using **Start ➤ Control Panel ➤ Administrative Tools ➤ Services**.

### 7.4 Configuring the Remote Shutdown Agents to Receive Messages From the Forwarder Agent

Each shutdown agent must be configured to receive messages from the Forwarder Agent. On the remote agent configuration screen, enter the IP address of the Forwarder Agent. Make sure that you check the **NetCom** check box.
Appendix A – NetCom MIB

-- Mitsubishi.mib - MIB file for Mitsubishi UPSs

UPS-MIB DEFINITIONS ::= BEGIN

IMPORTS
  TRAP-TYPE
    FROM RFC-1215
  DisplayString
    FROM RFC1213-MIB
  OBJECT-TYPE
    FROM RFC-1212
  Gauge, Counter, TimeTicks, mgmt
    FROM RFC1155-SMI

  PositiveInteger ::= INTEGER
  NonNegativeInteger ::= INTEGER
  TimeStamp ::= TimeTicks
  TimeInterval ::= INTEGER (0..2147483647)
  TestAndIncr ::= INTEGER (0..2147483647)
  AutonomousType ::= DisplayString

Tag OBJECT IDENTIFIER ::= { enterprises 13891 }
MitsubishiUPS OBJECT IDENTIFIER ::= { Tag 101 }

upsIdent OBJECT IDENTIFIER ::= { MitsubishiUPS 1 }

upsIdentManufacturer OBJECT-TYPE
  SYNTAX DisplayString
  ACCESS read-only
  STATUS mandatory
  DESCRIPTION
    "The name of the UPS manufacturer."
  ::= { upsIdent 1 }

upsIdentModel OBJECT-TYPE
  SYNTAX DisplayString
  ACCESS read-only
  STATUS mandatory
  DESCRIPTION
    "The UPS Model designation."
  ::= { upsIdent 2 }

upsIdentUPSSoftwareVersion OBJECT-TYPE
  SYNTAX DisplayString
  ACCESS read-only
  STATUS mandatory
  DESCRIPTION
    "The UPS firmware/software version(s). This variable may or may not have the same value as upsIdentAgentSoftwareVersion in some implementations."
  ::= { upsIdent 3 }
upsIdentAgentSoftwareVersion OBJECT-TYPE
  SYNTAX  DisplayString
  ACCESS  read-only
  STATUS  mandatory
  DESCRIPTION
    "The UPS agent software version. This variable may or may
    not have the same value as upsIdentUPSSoftwareVersion in
    some implementations."
  ::= { upsIdent 4 }

upsIdentName OBJECT-TYPE
  SYNTAX  DisplayString
  ACCESS  read-write
  STATUS  mandatory
  DESCRIPTION
    "A string identifying the UPS. This object should be
    set by the administrator."
  ::= { upsIdent 5 }

upsIdentAttachedDevices OBJECT-TYPE
  SYNTAX  DisplayString
  ACCESS  read-write
  STATUS  mandatory
  DESCRIPTION
    "A string identifying the devices attached to the output
    of the UPS. This object should be set by the administrator."
  ::= { upsIdent 6 }

upsBattery OBJECT IDENTIFIER ::= { MitsubishiUPS 2 }

upsBatteryStatus OBJECT-TYPE
  SYNTAX  INTEGER
  { unknown(1),
    batteryNormal(2),
    batteryLow(3),
    batteryDepleted(4)
  }
  ACCESS  read-only
  STATUS  mandatory
  DESCRIPTION
    "The indication of the capacity remaining in the UPS batteries.
    A value of batteryNormal indicates a normal battery condition.
    A value of batteryLow indicates the remaining battery run-time
    will not maintain the output load for an extended period of time.
    A value of batteryDepleted indicates that the UPS will be unable
    to sustain the present load when and if the utility power is lost."
  ::= { upsBattery 1 }

upsSecondsOnBattery OBJECT-TYPE
  SYNTAX  NonNegativeInteger -- UNITS seconds
  ACCESS  read-only
  STATUS  mandatory
  DESCRIPTION
    "If the unit is on battery power, the elapsed time in seconds
    since the UPS last switched to battery power, or the time since
the network management system was last restarted, whichever is less. 
Zero shall be returned if the unit is not on battery power."
 ::= { upsBattery 2 }

upsEstimatedMinutesRemaining OBJECT-TYPE
SYNTAX   PositiveInteger   -- UNITS minutes
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
   "An estimate of the time in minutes until the battery is depleted 
under the present load conditions if the utility power is off and 
remains off, or if it were to be lost and remain off."
 ::= { upsBattery 3 }

upsEstimatedChargeRemaining OBJECT-TYPE
SYNTAX   INTEGER   -- UNITS percent
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
   "An estimate of the battery charge remaining expressed as a 
percent of full charge."
 ::= { upsBattery 4 }

upsBatteryVoltage OBJECT-TYPE
SYNTAX   NonNegativeInteger   -- UNITS 0.1 Volt DC
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
   "The magnitude of the present battery voltage (0.1 Volt DC)."
 ::= { upsBattery 5 }

upsBatteryCurrent OBJECT-TYPE
SYNTAX   INTEGER (-2147483648..2147483647)   -- UNITS 0.1 Amp DC
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
   "The present battery current (0.1 Amp DC)."
 ::= { upsBattery 6 }

upsBatteryTemperature OBJECT-TYPE
SYNTAX   INTEGER (-2147483648..2147483647)   -- UNITS degrees Centigrade
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
   "The ambient temperature at or near the UPS Battery casing (degrees Centigrade)."
 ::= { upsBattery 7 }

upsInput OBJECT IDENTIFIER ::= { MitsubishiUPS 3 }

upsInputLineBads OBJECT-TYPE
SYNTAX   Counter
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
   "A count of the number of times the input entered an 
out-of-tolerance condition as defined by the manufacturer.
This count is incremented by one each time the input transitions from zero out-of-tolerance lines to one or more input lines out-of-tolerance.

 ::= { upsInput 1 }

upsInputNumLines OBJECT-TYPE
SYNTAX  NonNegativeInteger
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The number of input lines utilized in this device. This variable indicates the number of rows in the input table."
 ::= { upsInput 2 }

upsInputTable OBJECT-TYPE
SYNTAX  SEQUENCE OF UpsInputEntry
ACCESS  not-accessible
STATUS  mandatory
DESCRIPTION
"A list of input table entries. The number of entries is given by the value of upsInputNumLines."
 ::= { upsInputTable 1 }

UpsInputEntry ::= 
SEQUENCE
{
  upsInputLineIndex PositiveInteger,
  upsInputFrequency NonNegativeInteger,
  upsInputVoltage  NonNegativeInteger,
  upsInputCurrent  NonNegativeInteger,
  upsInputTruePower NonNegativeInteger
}

upsInputLineIndex OBJECT-TYPE
SYNTAX  PositiveInteger
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The input line identifier."
 ::= { upsInputEntry 1 }

upsInputFrequency OBJECT-TYPE
SYNTAX  NonNegativeInteger -- UNITS 0.1 Hertz
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The present input frequency (0.1 Hertz)."
 ::= { upsInputEntry 2 }

upsInputVoltage OBJECT-TYPE
 SYNTAX  NonNegativeInteger  -- UNITS 0.1 RMS Volt
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
 "The magnitude of the present input voltage (0.1 RMS Volt)."
 ::= { upsInputEntry 3 }

upsInputCurrent OBJECT-TYPE
 SYNTAX  NonNegativeInteger  -- UNITS 0.1 RMS Amp
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
 "The magnitude of the present input current (0.1 RMS Amp)."
 ::= { upsInputEntry 4 }

upsInputTruePower OBJECT-TYPE
 SYNTAX  NonNegativeInteger  -- UNITS Watts
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
 "The magnitude of the present input true power (watts)."
 ::= { upsInputEntry 5 }

upsOutput OBJECT IDENTIFIER ::= { MitsubishiUPS 4 }

upsOutputSource OBJECT-TYPE
 SYNTAX  INTEGER
 { other(1),
   none(2),
   normal(3),
   bypass(4),
   battery(5),
   booster(6),
   reducer(7) }
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
 "The present source of output power.  A value of none (2) indicates
 there is no source of output power (and therefore no output power),
 for example, the system has opened the output breaker."
 ::= { upsOutput 1 }

upsOutputFrequency OBJECT-TYPE
 SYNTAX  NonNegativeInteger  -- UNITS 0.1 Hertz
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
 "The present output frequency (0.1 Hertz)."
 ::= { upsOutput 2 }
upsOutputNumLines OBJECT-TYPE
SYNTAX  NonNegativeInteger
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "The number of output lines utilized in this device. This
     variable indicates the number of rows in the output table."
 ::= { upsOutput 3 }

upsOutputTable OBJECT-TYPE
SYNTAX  SEQUENCE OF UpsOutputEntry
ACCESS  not-accessible
STATUS  mandatory
DESCRIPTION
 "A list of output table entries. The number of
     entries is given by the value of upsOutputNumLines."
 ::= { upsOutputTable 1 }

UpsOutputEntry ::= SEQUENCE
{  
qupsOutputLineIndex          PositiveInteger,
    upsOutputVoltage            NonNegativeInteger,  -- UNITS 0.1 RMS Volts
    upsOutputCurrent            NonNegativeInteger,  -- UNITS 0.1 RMS Amp
    upsOutputPower              NonNegativeInteger,
    upsOutputPercentLoad        INTEGER
 }

upsOutputLineIndex OBJECT-TYPE
SYNTAX  PositiveInteger
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "The output line identifier."
 ::= { upsOutputEntry 1 }

upsOutputVoltage OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS 0.1 RMS Volts
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "The present output voltage (0.1 RMS Volt)."
 ::= { upsOutputEntry 2 }

upsOutputCurrent OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS 0.1 RMS Amp
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
   "The present output current (0.1 RMS Amp)."
 ::= { upsOutputEntry 3 }

upsOutputPower OBJECT-TYPE
 SYNTAX  NonNegativeInteger  -- UNITS Watts
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
   "The present output true power (watts)."
 ::= { upsOutputEntry 4 }

upsOutputPercentLoad OBJECT-TYPE
 SYNTAX  INTEGER     -- UNITS percent
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
   "The percentage of the UPS power capacity presently being
    used on this output line (the greater of the percent load
    of true power capacity and the percent load of VA."
 ::= { upsOutputEntry 5 }

upsBypass OBJECT IDENTIFIER ::= { MitsubishiUPS 5 }

upsBypassFrequency OBJECT-TYPE
 SYNTAX  NonNegativeInteger  -- UNITS 0.1 Hertz
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
   "The present bypass frequency."
 ::= { upsBypass 1 }

upsBypassNumLines OBJECT-TYPE
 SYNTAX  NonNegativeInteger
 ACCESS  read-only
 STATUS  mandatory
 DESCRIPTION
   "The number of bypass lines utilized in this device. This
    entry indicates the number of rows in the bypass table."
 ::= { upsBypass 2 }

upsBypassTable OBJECT-TYPE
 SYNTAX  SEQUENCE OF UpsBypassEntry
 ACCESS  not-accessible
 STATUS  mandatory
 DESCRIPTION
   "A list of bypass table entries. The number of entries
    is given by the value of upsBypassNumLines."
 ::= { upsBypass 3 }

upsBypassEntry OBJECT-TYPE
 SYNTAX  UpsBypassEntry
 ACCESS  not-accessible
 STATUS  mandatory
DESCRIPTION
"An entry containing information applicable to a
particular bypass input."
INDEX  { upsBypassLineIndex }
 ::= { upsBypassTable 1 }

UpsBypassEntry ::= SEQUENCE
 { upsBypassLineIndex          PositiveInteger,
   upsBypassVoltage            NonNegativeInteger,
   upsBypassCurrent            NonNegativeInteger,
   upsBypassPower              NonNegativeInteger
 }

upsBypassLineIndex OBJECT-TYPE
SYNTAX  PositiveInteger
ACCESS read-only
STATUS  mandatory
DESCRIPTION
"The bypass line identifier."
 ::= { upsBypassEntry 1 }

upsBypassVoltage OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS 0.1 RMS Volts
ACCESS read-only
STATUS  mandatory
DESCRIPTION
"The present bypass voltage (0.1 RMS Volt)."
 ::= { upsBypassEntry 2 }

upsBypassCurrent OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS 0.1 RMS Amp
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The present bypass current (0.1 RMS Amp)."
 ::= { upsBypassEntry 3 }

upsBypassPower OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS Watts
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The present true power conveyed by the bypass (watts)."
 ::= { upsBypassEntry 4 }

upsAlarm OBJECT IDENTIFIER ::= { MitsubishiUPS 6 }

upsAlarmsPresent OBJECT-TYPE
SYNTAX  Gauge
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The present number of active alarm conditions."
 ::= { upsAlarm 1 }
upsAlarmTable OBJECT-TYPE
SYNTAX  SEQUENCE OF UpsAlarmEntry
ACCESS  not-accessible
STATUS  mandatory
DESCRIPTION
"A list of alarm table entries. Alarms are named by
an OBJECT IDENTIFIER, upsAlarmDescr, to allow a single
table to reflect well known alarms plus alarms defined
by a particular implementation, i.e., as documented in
the private enterprise MIB definition for the device.
No two rows will have the same value of upsAlarmDescr,
since alarms define conditions. In order to meet this
requirement, care should be taken in the definition of
alarm conditions to insure that a system cannot enter
the same condition multiple times simultaneously.

The number of rows in the table at any given time is
reflected by the value of upsAlarmsPresent."
 ::= { upsAlarm 2 }

upsAlarmEntry OBJECT-TYPE
SYNTAX  UpsAlarmEntry
ACCESS  not-accessible
STATUS  mandatory
DESCRIPTION
"An entry containing information applicable to a
particular alarm."
INDEX   { upsAlarmId }
 ::= { upsAlarmTable 1 }

UpsAlarmEntry ::=  
SEQUENCE
 {
  upsAlarmId   PositiveInteger,
  upsAlarmDescr AutonomousType,
  upsAlarmTime  TimeStamp
 }

upsAlarmId OBJECT-TYPE
SYNTAX  PositiveInteger
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"A unique identifier for an alarm condition. This
value must remain constant."
 ::= { upsAlarmEntry 1 }

upsAlarmDescr OBJECT-TYPE
SYNTAX  AutonomousType
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"A reference to an alarm description object. The object
referenced should not be accessible, but rather be used
to provide a unique description of the alarm condition."
::= { upsAlarmEntry 2 }

upsAlarmTime OBJECT-TYPE
SYNTAX TimeStamp
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The value of sysUpTime when the alarm condition was detected. If the alarm condition was detected at the time of agent startup and presumably existed before agent startup, the value of upsAlarmTime shall equal 0."

::= { upsAlarmEntry 3 }

upsAlarmID OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A unique identifier for an alarm condition. This value must remain constant."

::= { upsAlarm 4 }

upsAlarmDESCR OBJECT-TYPE
SYNTAX DisplayString (SIZE(0..63))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A reference to an alarm description object. The object references should not be accessible, but rather be used to provide a unique description of the alarm condition."

::= { upsAlarm 5 }

upsWellKnownAlarms OBJECT IDENTIFIER ::= { upsAlarm 3 }

upsAlarmBatteryBad OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"One or more batteries have been determined to require replacement."

::= { upsWellKnownAlarms 1 }

upsAlarmOnBattery OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The UPS is drawing power from the batteries."

::= { upsWellKnownAlarms 2 }

upsAlarmLowBattery OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The remaining battery run-time is less than or equal to upsConfigLowBattTime."
::= { upsWellKnownAlarms 3 }

upsAlarmDepletedBattery OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The UPS will be unable to sustain the present load when and if the utility power is lost."
::= { upsWellKnownAlarms 4 }

upsAlarmTempBad OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A temperature is out of tolerance."
::= { upsWellKnownAlarms 5 }

upsAlarmInputBad OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"An input condition is out of tolerance."
::= { upsWellKnownAlarms 6 }

upsAlarmOutputBad OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"An output condition (other than OutputOverload) is out of tolerance."
::= { upsWellKnownAlarms 7 }

upsAlarmOutputOverload OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The output load exceeds the UPS output capacity."
::= { upsWellKnownAlarms 8 }

upsAlarmOnBypass OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The Bypass is presently engaged on the UPS."
::= { upsWellKnownAlarms 9 }

upsAlarmBypassBad OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "The Bypass is out of tolerance."
::= { upsWellKnownAlarms 10 }

upsAlarmOutputOffAsRequested OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "The UPS has shut down as requested, i.e., the output
is off."
::= { upsWellKnownAlarms 11 }

upsAlarmUpsOffAsRequested OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "The entire UPS has shutdown as commande.d."
::= { upsWellKnownAlarms 12 }

upsAlarmChargerFailed OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "An uncorrected problem has been detected within the
UPS charger subsystem."
::= { upsWellKnownAlarms 13 }

upsAlarmUpsOutputOff OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "The output of the UPS is in the off state."
::= { upsWellKnownAlarms 14 }

upsAlarmUpsSystemOff OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "The UPS system is in the off state."
::= { upsWellKnownAlarms 15 }

upsAlarmFanFailure OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "The failure of one or more fans in the UPS has been
detected."
::= { upsWellKnownAlarms 16 }
upsAlarmFuseFailure OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The failure of one or more fuses has been detected."
 ::= { upsWellKnownAlarms 17 }

upsAlarmGeneralFault OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A general fault in the UPS has been detected."
 ::= { upsWellKnownAlarms 18 }

upsAlarmDiagnosticTestFailed OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The result of the last diagnostic test indicates a failure."
 ::= { upsWellKnownAlarms 19 }

upsAlarmCommunicationsLost OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A problem has been encountered in the communications between the agent and the UPS."
 ::= { upsWellKnownAlarms 20 }

upsAlarmAwaitingPower OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The UPS output is off and the UPS is awaiting the return of input power."
 ::= { upsWellKnownAlarms 21 }

upsAlarmShutdownPending OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A upsShutdownAfterDelay countdown is underway."
 ::= { upsWellKnownAlarms 22 }

upsAlarmShutdownImminent OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The UPS will turn off power to the load in less than
5 seconds; this may be either a timed shutdown or a
low battery shutdown."
 ::= { upsWellKnownAlarms 23 }

upsAlarmTestInProgress OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A test is in progress, as initiated and indicated by
the Test Group. Tests initiated via other
implementation-specific mechanisms can indicate the
presence of the testing in the alarm table, if
desired, via a OBJECT-TYPE macro in the MIB
document specific to that implementation and are
outside the scope of this OBJECT-TYPE."
 ::= { upsWellKnownAlarms 24 }

upsTest OBJECT IDENTIFIER ::= { MitsubishiUPS 7 }

upsTestId OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
ACCESS read-write
STATUS mandatory
DESCRIPTION
"The test named by an OBJECT IDENTIFIER which
allows a standard mechanism for the initiation of
a test, including the well known tests identified in
this document."
 ::= { upsTest 1 }

upsTestSpinLock OBJECT-TYPE
SYNTAX TestAndIncr
ACCESS read-write
STATUS mandatory
DESCRIPTION
"A spin lock on the test subsystem."
 ::= { upsTest 2 }

upsTestResultsSummary OBJECT-TYPE
SYNTAX INTEGER
{ donePass(1),
   doneWarning(2),
   doneError(3),
   aborted(4),
   inProgress(5),
   noTestsInitiated(6) }
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The results of the current or last UPS diagnostics
test performed. The values for donePass(1),
doneWarning(2), and doneError(3) indicate that the
test completed either successfully, with a warning, or
with an error, respectively. The value aborted(4) is
returned for tests which are aborted by setting the
value of upsTestId to upsTestAbortTestInProgress.
Tests which have not yet concluded are indicated by
inProgress(5). The value noTestsInitiated(6)
indicates that no previous test results are available,
such as is the case when no tests have been run since
the last reinitialization of the network management
subsystem and the system has no provision for non-
volatile storage of test results."
::= { upsTest 3 }

upsTestResultsDetail OBJECT-TYPE
SYNTAX   DisplayString
ACCESS   read-only
STATUS    mandatory
DESCRIPTION
"Additional information about upsTestResultsSummary.
If no additional information available, a zero length
string is returned."
::= { upsTest 4 }

upsTestStartTime OBJECT-TYPE
SYNTAX   TimeStamp
ACCESS   read-only
STATUS    mandatory
DESCRIPTION
"The value of sysUpTime at the time the test in
progress was initiated, or, if no test is in progress,
the time the previous test was initiated. If the
value of upsTestResultsSummary is noTestsInitiated(6),
upsTestStartTime has the value 0."
::= { upsTest 5 }

upsTestElapsedTime OBJECT-TYPE
SYNTAX   TimeInterval
ACCESS   read-only
STATUS    mandatory
DESCRIPTION
"The amount of time, in TimeTicks, since the test in
progress was initiated, or, if no test is in progress,
the previous test took to complete. If the value of
upsTestResultsSummary is noTestsInitiated(6),
upsTestElapsedTime has the value 0."
::= { upsTest 6 }

upsWellKnownTests OBJECT IDENTIFIER ::= { upsTest  7 }

upsTestNoTestsInitiated OBJECT-TYPE
SYNTAX   INTEGER
ACCESS   read-only
STATUS    mandatory
DESCRIPTION
"No tests have been initiated and no test is in progress."
::= { upsWellKnownTests 1 }

upsTestAbortTestInProgress OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The test in progress is to be aborted / the test in
progress was aborted."
::= { upsWellKnownTests 2 }

upsTestGeneralSystemsTest OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The manufacturer’s standard test of UPS device systems."
::= { upsWellKnownTests 3 }

upsTestQuickBatteryTest OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"A test that is sufficient to determine if the battery
needs replacement."
::= { upsWellKnownTests 4 }

upsTestDeepBatteryCalibration OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The system is placed on battery to a discharge level,
set by the manufacturer, sufficient to determine
battery replacement and battery run-time with a high
degree of confidence. WARNING: this test will leave
the battery in a low charge state and will require
time for recharging to a level sufficient to provide
normal battery duration for the protected load."
::= { upsWellKnownTests 5 }

upsControl OBJECT IDENTIFIER ::= { MitsubishiUPS 8 }

upsShutdownType OBJECT-TYPE
SYNTAX INTEGER
{ output(1),
  system(2) }
ACCESS read-write
STATUS mandatory
DESCRIPTION
"This object determines the nature of the action to be
taken at the time when the countdown of the
upsShutdownAfterDelay and upsRebootWithDuration
objects reaches zero.

Setting this object to output(1) indicates that shutdown requests should cause only the output of the UPS to turn off. Setting this object to system(2) indicates that shutdown requests will cause the entire UPS system to turn off."

::= { upsControl 1 }

upsShutdownAfterDelay OBJECT-TYPE
SYNTAX INTEGER -- UNITS seconds
ACCESS read-write
STATUS mandatory
DESCRIPTION
"Setting this object will shutdown (i.e., turn off) either the UPS output or the UPS system (as determined by the value of upsShutdownType at the time of shutdown) after the indicated number of seconds, or less if the UPS batteries become depleted. Setting this object to 0 will cause the shutdown to occur immediately. Setting this object to -1 will abort the countdown. If the system is already in the desired state at the time the countdown reaches 0, then nothing will happen. That is, there is no additional action at that time if upsShutdownType = system and the system is already off. Similarly, there is no additional action at that time if upsShutdownType = output and the output is already off. When read, upsShutdownAfterDelay will return the number of seconds remaining until shutdown, or -1 if no shutdown countdown is in effect. On some systems, if the agent is restarted while a shutdown countdown is in effect, the countdown may be aborted. Sets to this object override any upsShutdownAfterDelay already in effect."

::= { upsControl 2 }

upsStartupAfterDelay OBJECT-TYPE
SYNTAX INTEGER -- UNITS seconds
ACCESS read-write
STATUS mandatory
DESCRIPTION
"Setting this object will start the output after the indicated number of seconds, including starting the UPS, if necessary. Setting this object to 0 will cause the startup to occur immediately. Setting this object to -1 will abort the countdown. If the output is already on at the time the countdown reaches 0, then nothing will happen. Sets to this object override the effect of any upsStartupAfterDelay countdown or upsRebootWithDuration countdown in progress. When read, upsStartupAfterDelay will return the number of seconds until startup, or -1 if no startup countdown is in effect. If the countdown expires during a utility failure, the startup shall not occur until the utility power is restored. On some systems, if the agent is restarted while a
startup countdown is in effect, the countdown is aborted."
 ::= { upsControl 3 }

 upsRebootWithDuration OBJECT-TYPE
   SYNTAX INTEGER -- UNITS seconds
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "Setting this object will immediately shutdown (i.e.,
turn off) either the UPS output or the UPS system (as
determined by the value of upsShutdownType at the time
of shutdown) for a period equal to the indicated
number of seconds, after which time the output will be
started, including starting the UPS, if necessary. If
the number of seconds required to perform the request
is greater than the requested duration, then the
requested shutdown and startup cycle shall be
performed in the minimum time possible, but in no case
shall this require more than the requested duration
plus 60 seconds. When read, upsRebootWithDuration
shall return the number of seconds remaining in the
countdown, or -1 if no countdown is in progress. If
the startup should occur during a utility failure, the
startup shall not occur until the utility power is
restored."
 ::= { upsControl 4 }

 upsAutoRestart OBJECT-TYPE
   SYNTAX INTEGER
   \{ on(1),
   \off(2) \}
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
   "Setting this object to 'on' will cause the UPS system
to restart after a shutdown if the shutdown occurred
during a power loss as a result of either a
upsShutdownAfterDelay or an internal battery depleted
condition. Setting this object to 'off' will prevent
the UPS system from restarting after a shutdown until
an operator manually or remotely explicitly restarts
it. If the UPS is in a startup or reboot countdown,
then the UPS will not restart until that delay has
been satisfied."
 ::= { upsControl 5 }

 upsConfig OBJECT IDENTIFIER ::= { MitsubishiUPS 9 }

 upsConfigInputVoltage OBJECT-TYPE
   SYNTAX NonNegativeInteger -- UNITS RMS Volts
   ACCESS read-write
   STATUS mandatory
   DESCRIPTION
"The magnitude of the nominal input voltage (RMS Volts).  
On those systems which support read-write access to this object, if there is an attempt to set this variable to 
a value that is not supported, the request must be 
rejected and the agent shall respond with an 
appropriate error message, i.e., badValue for SNMPv1, 
or inconsistentValue for SNMPv2."

::= { upsConfig 1 }

upsConfigInputFreq OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS 0.1 Hertz
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
"The nominal input frequency (0.1 Hertz).  On those systems 
which support read-write access to this object, if there is 
an attempt to set this variable to a value that is not 
supported, the request must be rejected and the agent 
shall respond with an appropriate error message, i.e., 
badValue for SNMPv1, or inconsistentValue for SNMPv2."

::= { upsConfig 2 }

upsConfigOutputVoltage OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS RMS Volts
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
"The magnitude of the nominal output voltage (RMS Volts).  
On those systems which support read-write access to this 
object, if there is an attempt to set this variable to 
a value that is not supported, the request must be 
rejected and the agent shall respond with an 
appropriate error message, i.e., badValue for SNMPv1, 
or inconsistentValue for SNMPv2."

::= { upsConfig 3 }

upsConfigOutputFreq OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS 0.1 Hertz
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
"The nominal output frequency (0.1 Hertz).  On those systems 
which support read-write access to this object, if there is 
an attempt to set this variable to a value that is not 
supported, the request must be rejected and the agent 
shall respond with an appropriate error message, i.e., 
badValue for SNMPv1, or inconsistentValue for SNMPv2."

::= { upsConfig 4 }

upsConfigOutputVA OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS Volt-Amps
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The magnitude of the nominal Volt-Amp rating (Volt-Amps)."

::= { upsConfig 5 }
upsConfigOutputPower OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS Watts
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The magnitude of the nominal true power rating (watts)."
 ::= { upsConfig 6 }

upsConfigLowBattTime OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS minutes
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
"The value of upsEstimatedMinutesRemaining at which a
lowBattery condition is declared. For agents which
support only discrete (discontinuous) values, then the
agent shall round up to the next supported value. If
the requested value is larger than the largest
supported value, then the largest supported value
shall be selected."
 ::= { upsConfig 7 }

upsConfigAudibleStatus OBJECT-TYPE
SYNTAX  INTEGER
{
  disabled(1),
  enabled(2),
  muted(3)
}
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
"The requested state of the audible alarm. When in
the disabled state, the audible alarm should never
sound. The enabled state is self-describing. Setting
this object to muted(3) when the audible alarm is
sounding shall temporarily silence the alarm. It will
remain muted until it would normally stop sounding and
the value returned for read operations during this
period shall equal muted(3). At the end of this
period, the value shall revert to enabled(2). Writes
of the value muted(3) when the audible alarm is not
sounding shall be accepted but otherwise shall have no
effect."
 ::= { upsConfig 8 }

upsConfigLowVoltageTransferPoint OBJECT-TYPE
SYNTAX  NonNegativeInteger  -- UNITS RMS Volts
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
"The minimum input line voltage (RMS Volts) allowed before
the UPS system transfers to battery backup."
 ::= { upsConfig 9 }
upsConfigHighVoltageTransferPoint OBJECT-TYPE
   SYNTAX   NonNegativeInteger -- UNITS RMS Volts
   ACCESS   read-write
   STATUS   mandatory
   DESCRIPTION
   "The maximum line voltage (RMS Volts) allowed before the UPS
   system transfers to battery backup."
   ::= { upsConfig  10 }

-- UPS trap information group
upsTrapInfo OBJECT IDENTIFIER ::= { MitsubishiUPS 10 }

trapCode OBJECT-TYPE
   SYNTAX   Unsigned32
   ACCESS   read-only
   STATUS   mandatory
   DESCRIPTION
   "A number identifying the event for that last trap that was sent."
   ::= { upsTrapInfo 1 }

trapDescription OBJECT-TYPE
   SYNTAX   DisplayString (SIZE (0..63))
   ACCESS   read-only
   STATUS   mandatory
   DESCRIPTION
   "A string identifying the event for that last trap that was sent."
   ::= { upsTrapInfo 2 }

-- UPS Traps
-- upsTraps OBJECT IDENTIFIER ::= { Tag 101 }

alarmCritical TRAP-TYPE
   ENTERPRISE MitsubishiUPS
   VARIABLES  { trapCode, trapDescription }
   DESCRIPTION
   "Critical alarm."
   ::= 1

alarmWarning TRAP-TYPE
   ENTERPRISE MitsubishiUPS
   VARIABLES  { trapCode, trapDescription }
   DESCRIPTION
   "Warning alarm."
   ::= 2

alarmInformation TRAP-TYPE
   ENTERPRISE MitsubishiUPS
   VARIABLES  { trapCode, trapDescription }
   DESCRIPTION
   "Information alarm."
   ::= 3

upsAlarmCleared TRAP-TYPE
   ENTERPRISE MitsubishiUPS
   VARIABLES  { trapCode, trapDescription }
   DESCRIPTION
"Alarm cleared."
\[
\begin{array}{l}
: = 4
\end{array}
\]
upsTrapInitialization TRAP-TYPE
ENTERPRISE  MitsubishiUPS
VARIABLES  \{ upsIdentName \}
DESCRIPTION
"This trap is sent each time a NetCom device is initialized."
\[
\begin{array}{l}
: = 5
\end{array}
\]
END