Powerware® Environmental Rack Monitor
User’s Guide
Class B EMC Statements

FCC Part 15

NOTE This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ICES-003

This Class B Interference Causing Equipment meets all requirements of the Canadian Interference Causing Equipment Regulations ICES-003.

Cet appareil numérique de la classe B respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.
Requesting a Declaration of Conformity

Units that are labeled with a CE mark comply with the following harmonized standards and EU directives:

- Harmonized Standards: EN 50091-1-1 and EN 50091-2; IEC 60950 Third Edition

The EC Declaration of Conformity is available upon request for products with a CE mark. For copies of the EC Declaration of Conformity, contact:

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Chapter 1  Introduction

The Powerware® Environmental Rack Monitor (ERM) is designed to remotely monitor the temperature, humidity, and status of two contact devices via a standard Web browser, providing greater management control and flexible monitoring.

To install the ERM on a network and change its default configuration, you need a workstation running Microsoft® Windows® (9x, Me, NT4.0, 2000, XP or later). If your network dynamically configures IP address, all you need is a workstation with a Web browser.

The ERM’s unique benefits include the following:

- **Hot-swappable TH-Module**, simplifying installation by allowing you to install the TH-Module safely without powering down the ERM.
- Monitoring of temperature and humidity information for any desired environment to protect your critical equipment.
- Monitoring the status of two user-provided contact devices to protect your critical equipment.
- Configuration from HTTP Web browser or SNMP management software.
- E-mail notification through SMTP (simple mail transport protocol) via e-mail client software, a PCS (personal communication services) phone, or alphanumeric pager when acceptable alarm limits are exceeded or contact status changes.
- History log files (data and events) for recording temperature and humidity problems. Changes in contact closure status are logged in the ERM’s Event History Log.

For more detailed information that is not included in this manual, first register your product at warranty.powerware.com, then visit our Web site: www.powerware.com/rackmonitor. You can also download firmware upgrades, the latest manuals, and other documentation.
INTRODUCTION

Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and maintenance of the Environmental Rack Monitor. Please read all instructions before operating the equipment and save this manual for future reference.

DANGER
All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside the ERM.

WARNING
• To reduce the risk of fire or electric shock, install the Environmental Rack Monitor in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 40°C (104°F). Do not operate near water or excessive humidity (95% maximum).
• Remove watches, rings, or other metal objects before installation or maintenance of the Environmental Rack Monitor.
• Before plugging the Environmental Rack Monitor power adapter in, verify that the rating of the power source is matched with the rating of the power adapter.
Chapter 2  Installation

ERM Installation

To install the Environmental Rack Monitor (ERM):

1. Connect the supplied straight-through CAT 5 network cable from the ERM’s RJ-45 connector (labeled “TH-Module-1”) to the TH-Module’s RJ-45 connector (labeled “010101”). See Figure 3 on page 6.

**NOTE** If the supplied straight-through CAT5 network cable is not long enough for your application, you may substitute a longer cable (not to exceed 20m/65.6 ft).

2. If applicable, connect external contact closure inputs to the screw terminals on the TH-Module (see Figure 1 and Table 1).

**NOTE** Contact closure device 1 is connected between Pins 1 and 2. Device 2 is connected between Pins 3 and 4 (as labeled to show device 1 and 2). Contact closure devices may be normally open or normally closed.

![Figure 1. TH-Module Screw Terminal](image-url)
### Table 1. TH-Module Screw Terminal Pin Assignment

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Description</th>
<th>Normally Open/Normally Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contact 1 Return</td>
<td>NC</td>
</tr>
<tr>
<td>2</td>
<td>Contact 1 Signal Input</td>
<td>NO</td>
</tr>
<tr>
<td>3</td>
<td>Contact 2 Return</td>
<td>NC</td>
</tr>
<tr>
<td>4</td>
<td>Contact 2 Signal Input</td>
<td>NO</td>
</tr>
</tbody>
</table>

3. Insert the detachable power cord into the ERM power inlet (labeled “12 VDC”).

4. Attach the cable clamp to the ERM as shown in Figure 2.

![Figure 2. Cable Clamp](image)

5. Plug the other end of the power cord into a power outlet.

6. Continue to “Configuration” on page 5 to configure the ERM.
Chapter 3  Configuration

Use the following procedures to access the Environmental Rack Monitor’s (ERM’s) configuration menus through a serial port, Web browser, or Telnet utility.

Configuration Through a Serial Port

**Connect the ERM**

To connect the ERM through a serial port:

1. Verify that both DIP switches on the ERM are set to the **0** (off) position (see Figure 3).

2. Connect the supplied serial cable to the RJ-45 connector (labeled “TH-Module-2”) on the ERM.

3. Connect the other end of the serial cable to the COM port on the PC.

4. Connect an active Ethernet cable (supplied) to the network connector on the ERM.
Figure 3. Typical ERM Installation
Configure the ERM

To configure the ERM:

1. Open your terminal emulation program (such as HyperTerminal). See Figure 4.

2. Enter a name and choose an icon for the connection (see Figure 5).
3. Select direct COM port connection (see Figure 6).
4. Set the serial line to 9600 baud, 8 data bits, No parity, 1 stop bit, and no flow control (see Figure 7).

![COM1 Properties Screen](image)

**Figure 7. COM1 Properties Screen**

5. After a few seconds, the Password prompt appears (see Figure 8).

If the Password prompt does not appear, check the following conditions:

- Verify that the serial cable is connected to the RJ-45 connector labeled “TH-Module-2” on the ERM.
- Verify the serial line is set to 9600 baud, No parity, 8 data bits, 1 stop bit, and no flow control.
- If the serial line settings are correct, check the cabling to verify all connections are secure.
- Verify that your terminal program is on the correct communication port for the serial connection.
- Verify that the ERM has power (one or more LEDs on the ERM are illuminated). The ERM should be turned on.
6. Type your password (the default is admin) and press Enter. The Main Menu screen appears (see Figure 8).

```
|============================================================================|
| [ Rack Monitor Configuration Utility Main Menu ]                         |
|============================================================================|

Enter Password:  *****

|============================================================================|
| [ Rack Monitor Configuration Utility Main Menu ]                         |
|============================================================================|

1. Rack Monitor Configuration
2. TH-Module Configuration
3. Access Control Table
4. Trap Receiver Table
5. Reset Configuration To Default
6. Restart Rack Monitor
0. Exit

Please Enter Your Choice => _
```

Figure 8. ERM Configuration Menu
7. Type 1 on the Main Menu to display the Rack Monitor Configuration Menu screen (see Figure 9).

Figure 9. ERM Configuration Menu

Configure the System Group Parameters
To configure the IP address, Gateway address, and Network Mask parameters:

1. Type 1 on the Rack Monitor Configuration Menu screen to display the System Group Configuration Menu screen (see Figure 10 and Table 2).

2. Type 0 to return to the Rack Monitor Configuration Menu screen.

NOTE To complete the ERM configuration, continue to the following section, “Modify the Control Group Parameters” on page 13 or connect the ERM through a Web browser (see page 22).
Figure 10. System Group Configuration Menu

Table 2. System Group Parameters

<table>
<thead>
<tr>
<th>Number</th>
<th>Function</th>
<th>Description</th>
<th>Example/Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IP Address</td>
<td>The ERM IP address.</td>
<td>192.168.1.100</td>
</tr>
<tr>
<td>2</td>
<td>Gateway Address</td>
<td>The network default gateway.</td>
<td>192.168.1.254</td>
</tr>
<tr>
<td>3</td>
<td>Network Mask</td>
<td>The sub-net mask setting.</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>
Modify the Control Group Parameters

To modify the access password and enabled/disabled status of the available network protocols:

1. Type 2 on the Rack Monitor Configuration Menu screen to display the Control Group Configuration Menu screen (see Figure 11 and Table 3).

2. Type 0 to return to the Rack Monitor Configuration Menu screen.

---

**Figure 11. Control Group Configuration Menu**
### Table 3. Control Group Parameters

<table>
<thead>
<tr>
<th>Number</th>
<th>Function</th>
<th>Description</th>
<th>Example/Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HTTP Login Username</td>
<td>HTTP access login string.</td>
<td>“EATON”</td>
</tr>
<tr>
<td>2</td>
<td>Community Read-Only</td>
<td>General password for read-only access.</td>
<td>“public”</td>
</tr>
<tr>
<td>3</td>
<td>Community Read/Write</td>
<td>Administrator password for read and write access.</td>
<td>“admin”</td>
</tr>
<tr>
<td>4</td>
<td>BOOTP/DHCP Control</td>
<td>Enable/disable the BOOTP/DHCP protocols.</td>
<td>Enable</td>
</tr>
<tr>
<td>5</td>
<td>TFTP Upgrade Control</td>
<td>Enable/disable the TFTP protocol for firmware upgrades through the local network.</td>
<td>Enable</td>
</tr>
<tr>
<td>6</td>
<td>PING Echo Control</td>
<td>Enable/Disable the ERM to respond to Ping request.</td>
<td>Enable</td>
</tr>
<tr>
<td>7</td>
<td>Telnet Control</td>
<td>Enable/disable the TELNET protocol.</td>
<td>Enable</td>
</tr>
<tr>
<td>8</td>
<td>HTTP Control</td>
<td>Enable login and password request for HTTP access.</td>
<td>Enable</td>
</tr>
<tr>
<td>9</td>
<td>SNMP Control</td>
<td>Enable login and password request for SNMP access.</td>
<td>Enable</td>
</tr>
</tbody>
</table>
Modify the Parameter Group Parameters
To modify the SNMP identification information and the speed of reading data from the ERM:

1. Type 3 on the Rack Monitor Configuration Menu screen to display the Parameter Group Configuration Menu screen (see Figure 12 and Table 4).

2. Type 0 to return to the Rack Monitor Configuration Menu screen.

---

Table 4. Parameter Group Parameters

<table>
<thead>
<tr>
<th>Number</th>
<th>Function</th>
<th>Description</th>
<th>Example/Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>sysContact</td>
<td>Alphanumeric string</td>
<td>Technical Support Team</td>
</tr>
<tr>
<td>2</td>
<td>sysName</td>
<td>Alphanumeric string</td>
<td>Rack Monitor</td>
</tr>
<tr>
<td>3</td>
<td>System Location</td>
<td>Alphanumeric string</td>
<td>Technical Support Lab</td>
</tr>
<tr>
<td>4</td>
<td>Poll Rate</td>
<td>The time interval in seconds the ERM update measurement (Temperatures and Humidity) from sensor, valid value is between 3 to 60.</td>
<td></td>
</tr>
</tbody>
</table>
Configure the Email Group Parameters

To configure the Email Group parameters:

1. Type 4 on the Rack Monitor Configuration Menu screen to display the Email Group Configuration Menu screen (see Figure 13 and Table 5).

2. Type 0 to return to the Rack Monitor Configuration Menu screen.

3. Type 0 again to return to the Main Menu.

Figure 13. Email Group Configuration Menu
### Table 5. Email Group Parameters

<table>
<thead>
<tr>
<th>Number</th>
<th>Function</th>
<th>Description</th>
<th>Example/Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mail Server</td>
<td>As Administrator, you may enter the IP Address or Hostname of a SMTP mail server that will be used to send email messages from the ERM.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User Account</td>
<td>As Administrator, you may enter the User Account of the mail server that will be used by the ERM to login mail server to forward mails.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User Password</td>
<td>As Administrator, you may enter the User Password of User Account.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>DNS IP Address</td>
<td>As Administrator, you are required to enter the IP address of your network DNS server if you entered a Hostname for the Mail Server. Otherwise, this field will contain 0.0.0.0.</td>
<td></td>
</tr>
</tbody>
</table>
Set the TH-Module Configuration

To change the status and name of the TH-Module-1 and TH-Module-2:

1. Type 2 on the Main Menu to display the TH-Module Configuration Menu screen (see Figure 14).

2. Type 1 or 2 on the TH-Module Configuration Menu screen to select the TH-Module-1 or TH-Module-2 Setup screens, respectively. See Figure 15 and Figure 16.
TH-Module-2 Setup Menu

1. TH-Module-2 Status : Auto
2. TH-Module-2 Name : Desktop Sensor
0. Return to previous menu

Please Enter Your Choice => _

Figure 16. TH-Module-2 Setup Screen

3. Type 0 to return to the TH-Module Configuration Menu screen.
4. Type 0 again to return to the Main Menu.

Configure the Access Control Table

If you wish to use a workstation with SNMP Manager installed, or if you wish to set more restrictive ERM access, use the access table to add the IP address of the PCs on which you wish to modify the access permissions.

1. Type 3 on the Main Menu to display the Access Control Table screen (see Figure 17).
2. Type 1 on the Access Control Table screen to modify an entry in the Access Control Table.
3. Type 2 on the Access Control Table screen to reset an entry to the default setting.
4. Type 0 to return to the Main Menu.

NOTE The configuration of Access Control Table is configured for SNMP and HTTP Network Management. Access through Telnet or RS-232 is permitted only when using the “Community Read/Write” password in the Control Group.

NOTE The community strings entered in the Community String fields are visible only in the RS-232 connection. The TELNET connection does not display the string. An asterisk “*” will be shown in the field.

NOTE If a “NotAccess” access right is associated with an IP address, the associate workstation will not be able to display any information regarding the ERM, even if the Community Read-Only string is entered.
<table>
<thead>
<tr>
<th>IP Address</th>
<th>Community String</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>NotAccess</td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>NotAccess</td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>NotAccess</td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>NotAccess</td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>NotAccess</td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>NotAccess</td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>NotAccess</td>
</tr>
</tbody>
</table>

**COMMANDS**

1. Modify - Modify an entry of table
2. Reset - Reset an entry to default from table
0. Return to previous menu

Please Enter Your Choice => _

**Figure 17. Access Control Table**

**Set Trap Receivers**

If you want to use a PC and perform the SNMP manager ‘trap’ function in order to manage the TH-Module through the ERM, the IP address of the PC must be added to the ERM list.

1. **Type 4** on the Main Menu to display the Trap Receiver Table screen (see Figure 17).
2. **Type 1** on the Trap Receiver Table screen to modify an entry in the Access Control Table.
3. **Type 2** on the Trap Receiver Table screen to reset an entry to the default setting.
4. **Type 0** to return to the Main Menu.

**NOTE** The Set Trap Receivers configuration is used only for SNMP Network Manager.
<table>
<thead>
<tr>
<th>IP Address</th>
<th>Community String</th>
<th>Severity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.65.235</td>
<td>*</td>
<td>Informational</td>
<td></td>
</tr>
<tr>
<td>192.168.61.168</td>
<td>*</td>
<td>Informational</td>
<td></td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>Informational</td>
<td></td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>Informational</td>
<td></td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>Informational</td>
<td></td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>Informational</td>
<td></td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>*</td>
<td>Informational</td>
<td></td>
</tr>
</tbody>
</table>

1. Modify - Modify an entry of table
2. Reset - Reset an entry to default from table
0. Return to previous menu

Please Enter Your Choice => _

Figure 18. Trap Receiver Table

**Complete ERM Configuration**

After configuration is complete, press “0” to exit the console connection. It is not necessary to reboot the ERM.

If you wish to reboot the ERM, type 6 to exit the console connection and restart the ERM.

**NOTE** If you want the ERM to load the factory configuration default, type 5 to Reset Configuration To Default. After completing all the settings, type 0 to terminate the connection without starting the ERM again or type 6 to terminate the connection forcing the ERM internal program to start again. At this point, the initial ERM configuration is complete.

**NOTE** If you want to restore the default ERM configuration data set in the factory, type 5.
Configuration Through a Telnet Connection

To configure the ERM parameters through a Telnet connection:

1. Verify that a TCP/IP network is already installed.
2. Run a command shell (i.e., Windows MS-DOS prompt).
3. The ERM initially tries to acquire an IP address from the DHCP network service, if it exists, on the network.
4. Type `Telnet <IP address obtained from DHCP>` and press Enter. Continue to Step 7.
5. If there is no DHCP network service on the network, contact your network administrator to obtain an IP address for your workstation that has the same network’s address as the ERM’s default IP address.

**NOTE** The default IP address of the ERM is 172.17.XXX.ZZZ where XXX and ZZZ is the last two pairs of the MAC address of the ERM in decimal.

6. Type `Telnet 172.17.XXX.ZZZ` and press Enter.
7. From this point, the configuration procedures are the same as the configuration via RS-232.

Configuration Through a Web Browser

Connect the ERM

To connect the ERM through a Web browser:

1. Verify that an active 10/100BaseT cable is connected to your PC’s Ethernet card’s network connector.
2. Verify that your PC is using a Web browser such as Microsoft Internet Explorer.
3. Connect another network cable (twisted-pair cable) from the ERM network connector to an active 10BaseT hub port (see Figure 3 on page 6).
4. Verify that both DIP switches on the ERM are set to the 0 (off) position (see Figure 3 on page 6).
Setup the IP Address

To set up the IP address:

1. Verify that an active 10/100BaseT cable is connected to the ERM’s network connector.

2. If the IP address of the computer is on the same network with the ERM, you can run the Web browser directly; continue to the following section, “Configure the ERM.” Otherwise, continue to the following step.

   **NOTE** The default IP address of the ERM is 172.17.XXX.ZZZ where XXX and ZZZ is the last two pairs of the MAC address of the ERM in decimal.

3. If the IP address of the computer is not on the same network with the ERM, use a cross-over cable (not supplied) to set up the computer’s TCP/IP protocol parameters temporarily to the 172.17.XXX.(YYY+1) subnet.

   **NOTE** Refer to the operating system documentation for additional details on changing the computer’s IP address.

   **NOTE** The computer and the ERM must be on the same subnet for configuration. You can change the ERM’s IP address to match your local subnet during configuration.

Configure through a Web Browser

To configure the ERM through a Web browser:

1. Run the Web browser.

2. Enter the URL `http:\172.17.XXX.ZZZ` in the address box (where XXX and ZZZ is the last two pairs of the MAC address of the ERM in decimal). The ERM home page displays (see Figure 19).
Initial Configuration

1. Select Rack Monitor Setup from Management of the main menu to set up the network configuration parameters (see Figure 20).

2. Click the Become Administrator button at the bottom of the screen. Enter EATON as the login name and admin as the password.

3. Enter the ERM IP address.

4. Enter the ERM Gateway Address in the network.

5. Enter the ERM Subnet Mask of the network.

6. Select Set Value to save the settings.

7. Select Date and Time from Management of the main menu and enter the appropriate date and time information in the specified format.

8. Select Set Value to save the date and time settings.

9. Select Rack Monitor Control to enable or disable the network protocols (see Figure 21).

10. Select Apply to save the changes.

11. Select Restart Rack Monitor.
### Figure 20. Rack Monitor Configuration Screen

<table>
<thead>
<tr>
<th>Rack Monitor Configuration</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack Monitor P Address</td>
<td>192.168.0.90</td>
</tr>
<tr>
<td>Rack Monitor Listening Port</td>
<td>5632</td>
</tr>
<tr>
<td>Rack Monitor Carbon-13</td>
<td>296,205,205.9</td>
</tr>
<tr>
<td>Upper Limit</td>
<td>Rack Monitor</td>
</tr>
<tr>
<td>Lower Limit</td>
<td>Rack Monitor</td>
</tr>
<tr>
<td>System LCD</td>
<td>System LCD</td>
</tr>
<tr>
<td>Current LCD Time</td>
<td>Current LCD Time</td>
</tr>
<tr>
<td>Configuration Tag</td>
<td>Configuration Tag</td>
</tr>
<tr>
<td>Rack Monitor 1 P Address</td>
<td>Rack Monitor 1 P Address</td>
</tr>
</tbody>
</table>

### Figure 21. Rack Monitor Control Screen

<table>
<thead>
<tr>
<th>Rack Monitor Control</th>
<th>Function</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset Setup</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td>Area Clear</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td>Network Upgrade</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td>System Connect</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td>F1 F1 Connect</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td>F1 F1 Connect</td>
<td>Control</td>
<td></td>
</tr>
</tbody>
</table>

---

**EATON** Powerware® Environmental Rack Monitor (ERM) User’s Guide  •  164201673 Rev 1  

Page 25
Chapter 4  ERM Management

You can manage the ERM from a Web browser or from an SNMP network management system.

**NOTE**  The IP address of the PC must be entered in the ERM Access Control Table to prevent unauthorized users from configuring the ERM via HTTP or SNMP protocols.

**NOTE**  If you do not add the IP address of the workstation to the Access Control Table (via RS-232 or Telnet) or the SNMP/HTTP Access Control (via Web Browser) in the ERM, you can only view the in TH-Module status; it will not be able to perform any configuration on the ERM/TH-Module.

ERM Home Page

1. Start the Web Browser and enter the ERM IP address.
2. The ERM home page displays on the screen.
3. Click the Help button at the bottom of each page for a detailed description of each item.

ERM Monitoring

The main menu contains all the measurements and data read from the ERM.

All the sub-menus are read-only for all users; write-mode access is not allowed.
Comprehensive View

This page gives a snapshot of all the parameters of the ERM. The parameters are updated automatically every five seconds.

![Comprehensive View Screen](image)

Detail Data

This page gives the detail information of all parameters. This page refreshes automatically every five seconds.

![Detail Data Screen](image)
TH-Module-1 Setup
This page lets the user configure all necessary parameters of the TH-Module-1.

![TH-Module-1 Setup Screen](image1)

Figure 24. TH-Module-1 Setup Screen

TH-Module-2 Setup (optional)
This page lets the user configure all necessary parameters of the optional TH-Module-2.

![TH-Module-2 Setup Screen](image2)

Figure 25. TH-Module-2 Setup Screen
Rack Monitor Identification
This page lets you get all the ERM information.

Figure 26. Rack Monitor Identification Screen

Alarm Table
Select Alarm Table from Monitoring on the main menu to get a table of the TH-Module alarms present. This menu refreshes automatically.

Figure 27. Alarm Table Screen

ERM Management
This menu contains the control parameters of the TH-Module connected to the ERM.

All the sub-menus are available in read-only for all users. Only the administrator has access in read/write mode.
Date and Time
This page lets you manually set the ERM internal date and time.

ERM Configuration
This page lets the Administrator set the local network configuration parameters for the ERM.
ERM Control

This page lets you enable or disable the communication protocols available in the ERM and affect a restart and reset of the ERM internal parameters. Some of the items in this menu are visible only to those having read/write access rights.

![ERM Control Screen](image)

**Figure 30. ERM Control Screen**

Access Control

This page displays a list of the workstations enabled for read/write access to the ERM.

**NOTE** An administrator can customize this configuration to limit different workstations or subnets using different passwords with different Access Types. While different workstations or subnets use a password with Read/Write Access Type to login, only allowing modification of the ERM parameters and Access Type, to prevent someone arbitrarily from changing it unless they login with the Admin password.
Trap Receivers

This page can hold a maximum of four entries. It holds the list of the IP address of the Network Management Stations (NMS), which will receive the SNMP traps sent by the ERM.
Email Notification

This page describes the ERM email notification setting to allow the administrator to configure the mail server and mail receiver in order to receive notification or report from the ERM by email once the sensor event has occurred.

![Figure 33. Email Notification Screen](image)

External Links

This page describes the setting of external links. Up to five links can be set up by this page, each link can be configured to an external Web page that users can easily connect to related Web pages.

![Figure 34. External Links Screen](image)
ERM History

Through this menu you can view all types of TH-Module and ERM log messages displayed in chronological order, such as the History Log, Extended Log, Sensor Events Log, and ERM Events Log. These log messages can help you detect and diagnose problems with the ERM.

History Log

This page gives a snapshot of all the fundamental TH-Module parameters. The existing values are overwritten when the maximum number of entries (rows) has been reached. The Administrator has the access rights to delete the table entries.

**NOTE** To save the History Log to a file in Microsoft Excel format, go to the Clear/Save Log sub-menu and click on History Log under the Save Log Data title bar.

![Figure 35. History Log Data Screen](image-url)
Extended Log

This page gives a consolidated view of the TH-Module parameters taken over a period. For each of the TH-Module parameters, minimum, maximum, and average values are shown in each of the records.

**NOTE** The Administrator can change the consolidation interval by changing the value of the Extended Log Interval in the ERM Configuration page. The existing log is overwritten when the maximum numbers of entries are reached.

![Extended Log Data Screen](image)
Sensor Events

This page lists all the events that have occurred since the table was cleared. The existing values are overwritten when the maximum number of entries (rows) has been reached.

![Figure 37. Sensor Events Screen](image)

**Figure 37. Sensor Events Screen**
ERM Events

This page lists all the ERM events that have occurred since the table was cleared. The Administrator has the access rights to delete the entries of the table.

![Figure 38. ERM Events Screen](image)

Clear & Save Log Data

This page allows the Administrator to save ERM log data to a file in Microsoft Excel format. The Administrator is also able to clear specific log data or choose to clear the log data after saving the log data.

**NOTE** When you select any of the hyper-links here while the “Clear the corresponding log data as you click the hyper-link below” selection is set to “Yes”, the corresponding log data will be lost even if you cancel the operation.
Figure 39. Clear & Save Log Data Screen
Chapter 5  Monitoring

History Log Monitor

Select H/T Graph from History of the main menu to open a TH-Module History Log monitor in a separate window. This monitor displays the TH-Module History Log as a line graph. By default, all the TH-Module parameters display on the same graph. You can select any combination of the parameters to be displayed on the graph by selecting the check box beside each parameter on the monitor screen and click the Refresh button.

![Figure 40. TH-Module History Log Monitor](image)

Table 6. TH-Module History Log Monitor

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Point</td>
</tr>
<tr>
<td>Displays the log interval on the graph.</td>
</tr>
<tr>
<td>Refresh</td>
</tr>
<tr>
<td>Click the Refresh button after configuring any setting on the TH-Module History Log Monitor for the change to take effect.</td>
</tr>
<tr>
<td>Reload</td>
</tr>
<tr>
<td>Update the TH-Module History Log Monitor and reset the right display margin.</td>
</tr>
<tr>
<td>Exit</td>
</tr>
<tr>
<td>Close the TH-Module History Log Monitor window.</td>
</tr>
</tbody>
</table>
Extended History Log Monitor

Select Extended H/T Graph from History of the main menu to open a TH-Module Extended History Log monitor in a separate window. This monitor displays the TH-Module Extended History Log as a line graph. By default, all the TH-Module parameters display on the same graph. You can select any combination of the parameters to be displayed on the graph by selecting the check box beside each parameter on the monitor screen and click the Refresh button.

![TH-Module Extended History Log Monitor](image)

Figure 41. TH-Module Extended History Log Monitor

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Point</td>
<td>Displays the extended log interval on the graph.</td>
</tr>
<tr>
<td>Refresh</td>
<td>Click the Refresh button after configuring any setting on the TH-Module Extended History Log Monitor for the change to take effect.</td>
</tr>
<tr>
<td>Reload</td>
<td>Update the TH-Module Extended History Log Monitor and reset the right display margin.</td>
</tr>
<tr>
<td>Exit</td>
<td>Close the TH-Module Extended History Log Monitor window.</td>
</tr>
</tbody>
</table>
Chapter 6  Managing ERM via SNMP

If you intend to manage your ERM/TH-Module via SNMP Network Management Station (NMS), you may want to customize some of the SNMP settings (such as System Name, System Contact, and System Location).

**NOTE** Before using the ERM in an SNMP environment, the IP address, Gateway address, and other group parameters must be configured properly. See “Configuration” on page 5 for details.

### SNMP Access Control Setting

The ERM supports SNMP protocol. You can use SNMP NMS to manage the TH-Module through the network.

**NOTE** The IP address of the PC must be entered in the ERM Access Control Table to prevent unauthorized users from configuring the ERM via HTTP or SNMP protocols.

**NOTE** If you do not add the IP address of the workstation to the Access Control Table (via RS-232 or Telnet) or the SNMP/HTTP Access Control (via Web Browser) in the ERM, you can only view the TH-Module status; it will not be able to perform any configuration on the ERM/TH-Module.

### SNMP Trap Receivers Setting

See “Trap Receivers” on page 32 for details.

### Setup SNMP Manager Software

1. Add the ERM MIB file (included on the ERM CD) to the MIB database of the SNMP manager.
2. Search for the ERM in the network.
3. To access the ERM SNMP agent, use public for the GET community string and the read/write password (default is admin) for the SET community string.

   GET Community string: public
   SET Community string: admin

For more information, see the MIB file on the ERM CD.
Appendix

The appendix contains:

- The Environmental Rack Monitor (ERM) panel details (connections and LEDs)
- Technical specifications
- DIP switch settings
- Serial cable definition
- Upgrading the firmware
- External contact monitoring feature
- Configuration menu settings
- Secure Sockets Layer (SSL) certificate installation
- Secure Shell (SSH) Installation
- Service and support
- Warranty

ERM Panel Details

![ERM Panel Details Diagram](image)

Figure 42. ERM Panel Details
LED Description

The functions of the ERM are indicated by the Network, Status, and Power LEDs, as listed in Table 8 and Table 8.

Table 8. Network LEDs

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>ERM Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing</td>
<td>Off</td>
<td>Ethernet 100 traffic</td>
</tr>
<tr>
<td>Off</td>
<td>Flashing</td>
<td>Ethernet 10 traffic</td>
</tr>
<tr>
<td>Off</td>
<td>Flashing</td>
<td>Ethernet disconnected</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>Ethernet 100 ready</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>Ethernet 10 ready</td>
</tr>
</tbody>
</table>

Table 9. Status and Power LEDs

<table>
<thead>
<tr>
<th>Status LED</th>
<th>Power LED</th>
<th>ERM Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>On</td>
<td>Power on</td>
</tr>
<tr>
<td>Flashing</td>
<td>—</td>
<td>TH-Module activity</td>
</tr>
<tr>
<td>Flashing</td>
<td>Off</td>
<td>Serial upgrade mode</td>
</tr>
<tr>
<td>Two LEDs Cross Flashing</td>
<td>Two LEDs Cross Flashing</td>
<td>Auto diagnostic mode</td>
</tr>
<tr>
<td>On</td>
<td>On</td>
<td>Hardware error</td>
</tr>
</tbody>
</table>
## Technical Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>16-bit micro control</td>
</tr>
<tr>
<td>Memory</td>
<td>2 Mb Static RAM</td>
</tr>
<tr>
<td></td>
<td>2 Mb Flash ROM</td>
</tr>
<tr>
<td>Serial Communication</td>
<td>Two asynchronous serial ports</td>
</tr>
<tr>
<td>LAN Chip</td>
<td>Auto-Sense 10/100 Mbps Fast Ethernet controller</td>
</tr>
<tr>
<td>Network Connection</td>
<td>10/100 TX RJ-45 jack connector</td>
</tr>
<tr>
<td>Network Protocol</td>
<td>SNMP over UDP/IP</td>
</tr>
<tr>
<td></td>
<td>HTTP over TCP/IP</td>
</tr>
<tr>
<td></td>
<td>ARP, TFTP, and ICMP</td>
</tr>
<tr>
<td>Supported MIB</td>
<td>Environmental Rack Monitor (ERM) MIB</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0–40°C (32–104°F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>10–80%, noncondensing</td>
</tr>
<tr>
<td>Power Input</td>
<td>12 Vdc unregulated</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>3.0 Watts Maximum</td>
</tr>
<tr>
<td>Size (L x W x H)</td>
<td>13.4 cm x 8.6 cm x 2.7 cm (5.3” x 3.4” x 1.1”)</td>
</tr>
<tr>
<td>Weight</td>
<td>170 gm (6 oz)</td>
</tr>
</tbody>
</table>

### EMC Statements

Class B: FCC Part 15, ICES-003, CE

### DIP Switch Description

DIP switch definitions for the ERM are listed in Table 11.

<table>
<thead>
<tr>
<th>SW1</th>
<th>SW2</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>On</td>
<td>Manufacture diagnostic mode</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>Serial upgrade mode</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>Reserved</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>Operating mode</td>
</tr>
</tbody>
</table>
Serial Cable Definition

Straight-Through CAT5 Network Cable

NOTE Cable length not to exceed 20m/65.6 ft.

Table 12. Cable for the ERM TH-Module-1 Port

<table>
<thead>
<tr>
<th>RJ-45</th>
<th>RJ-45</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>White/Orange</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>White/Green</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>White/Blue</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>White/Brown</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>Brown</td>
</tr>
</tbody>
</table>

PC Cable

NOTE Pins 2 and 7 of the RJ-45 connector are connected internally.

Table 13. Cable for the ERM TH-Module-2 Port

<table>
<thead>
<tr>
<th>RJ-45</th>
<th>DB-9 Female</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>—</td>
<td>Not connected</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Received data from PC</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>Signal ground</td>
</tr>
<tr>
<td>5</td>
<td>Case GND</td>
<td>Chassis ground</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>Transmitted data to PC</td>
</tr>
<tr>
<td>8</td>
<td>—</td>
<td>Not connected</td>
</tr>
</tbody>
</table>
Upgrading the ERM Firmware

To perform firmware upgrading, the ERM must be connected to the same network as the PC from which the file is to be sent.

In the ERM Control menu, check that Network Upgrade is enabled and that you have the login string information and the community read/write password.

Updating ERM Firmware from Windows

To upgrade the firmware, use the ERMupgrade.exe program (included on the ERM CD). This program is compatible with Windows 95/98/Me, Windows NT 3.51/4.0/2000/XP and higher.

NOTE: You can simultaneously upgrade up to four ERMs on the network using the EMPupgrade.exe program.

Figure 43. Upgrade Utility Screen
Table 14. Upgrade Utility Screen

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device List</td>
<td>Displays the addresses of the ERMs present in the local network.</td>
</tr>
<tr>
<td>Discover</td>
<td>Search for the ERM on the local network.</td>
</tr>
<tr>
<td>Add</td>
<td>Lets you add the IP address of the ERM to the UPS List manually.</td>
</tr>
<tr>
<td>Modify</td>
<td>Lets you modify the parameters of the ERM selected in the ERM List.</td>
</tr>
<tr>
<td>Remove</td>
<td>Removes the selected ERM from the ERM List.</td>
</tr>
<tr>
<td>Upgrade</td>
<td>Sends the program loaded with the Open button to the selected ERM of the ERM List.</td>
</tr>
<tr>
<td>Open</td>
<td>Open and load the new image file for upgrade.</td>
</tr>
<tr>
<td>Quit</td>
<td>Exit the program.</td>
</tr>
</tbody>
</table>