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SensaTronics
ENVIRONMENTAL SENSING

Model E
Temperature Monitor



Device Manual

Sensatronics
20A Dunklee Road
Bow, NH 03304
(800) 633-1033

www.sensatronics.com

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V3.0

Regulatory Information

U.S.A. Requirements

FCC Radio Frequency Class A Notice for Temperature Monitor

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense. Do not attempt to repair or modify this equipment. All repairs must be performed by Sensatronics, or an authorized Sensatronics representative.

UL Listing - U.S. and Canada

This equipment uses a power supply that has been listed by Underwriter Laboratories, Inc. for use in the U.S. and meets requirements of the Canadian Standards Association CAN/CSA.

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Technical Support

Sensatronics never charges for customer support. Everything you need to get started and to keep your Sensatronics solution operating smoothly is included with the cost of your purchase.

Our highly skilled staff can answer your support questions and provide online training at your request – and you can share ideas with other Sensatronics customers through our online bulletin board.

You can reach our support team in any of the following ways:

✉ Email us at support@sensatronics.com

Instant message us with AOL Instant Messenger
Screen name: SensatronicsGuy

Access our Support Forum www.sensatronics.com/bboard/

☎ Call us at 1 (800) 633-1033

Product Overview

Monitor

The Model E Temperature Monitor is available with four or sixteen temperature sensor ports (E4/E16 models, respectively) and can be installed and running in minutes.



Designed with flanges for wall or rack mounting, the lightweight device measures a compact 4¼" x 3¼" x 1⅜" (10.8cm x 8.3cm x 3.49 cm) and weighs about 0.35 pounds.

Probes are available separately to allow you to purchase just what you need according to the number of units and/or locations that you are monitoring. The Model E device is designed to be used with our temperature probes which come in standard and heavy duty varieties of varying lengths. Custom lengths are also available.

Probes

The standard probe has a 50-foot, 24-gauge AWG cable with the sensor housed in a small, white nylon cap (0.325" diameter, 0.575" length). It is appropriate for most indoor applications.





The heavy-duty probe has a 75-foot, PVC-jacketed and shielded cable with the sensor housed in a stainless steel cylinder (0.375" diameter, 1.50" length). It is designed to withstand the harsher outdoor environments.

Software

Our open architecture allows our device to run on any operating system through a variety of vendor software programs making us adaptable to new or current customer environments. Visit our Web site (www.sensatronics.com/nms/listing.php) to review the latest list of compatible software applications.

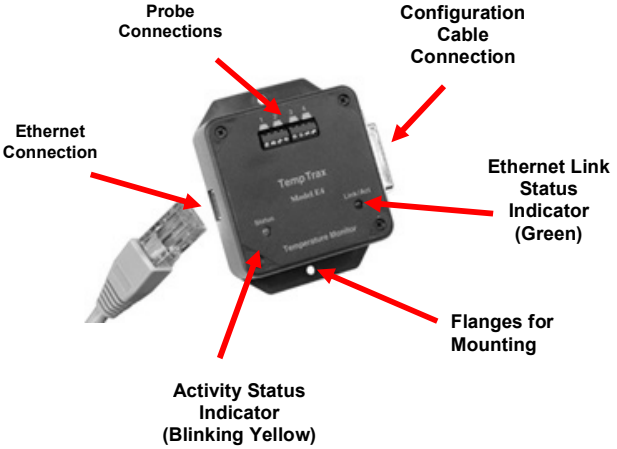
Technical Specifications

Standard Features

The Model E Temperature Monitor is equipped with the following:

- Range from -40°F to 140°F (-40°C to +60°C)
- Network connection via Ethernet hub or switch
- Internal Web server
- Average of 5-second measurement intervals
- Fahrenheit, Celsius, Kelvin or Rankine unit
- RS-232C (25-pin female D connector)
- Power supply of 9VDC@250mA
- Within 0.5F° accuracy
- Mounting flanges
- Light weight – about 0.35 lbs
- Compact size – 4 ¼" x 3 ¼" x 1⅜"

Detail Diagram

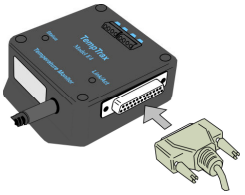


Connecting the Device

Step 1. Connect the Configuration Cable

A white configuration cable is supplied with the Model E Temperature Monitor and plugs directly into the device. (This cable is only connected during the configuration process and does not need to remain connected during normal operation.)

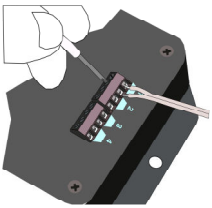
a. Connect the DB-25 male connector on the configuration cable to the RS-232 serial port on the right side of the temperature monitor.
b. Connect the other end of the configuration cable (DB-9 female connector) to the serial port of your PC.



Step 2. Connect the Temperature Probes

The Model E4 can connect to up to four temperature probes, and the Model E16 up to sixteen probes – each probe is comprised of a pair of wires – each wire must be connected to the device.

a. Using the screwdriver included with your device, connect the first pair of probe wires to the retainer labeled 1.
b. Slip each wire into the appropriate slot and tighten the coordinating screw. (Continue for all probes using the next respective retainer.)

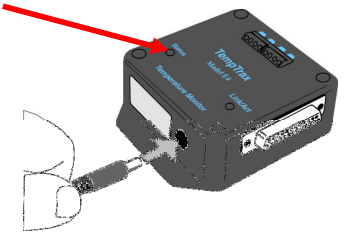


Step 3. Connect the Power Supply

A black power cord is supplied with each Model E Temperature Monitor.

a. Plug the round end of the cord into the jack on the side of the temperature monitor.
b. Plug the wall transformer into a powered outlet.
c. Verify that the yellow activity status indicator (Status) is blinking. (As long as the module has power, the yellow activity status indicator will blink eight times, pause briefly, and then repeat in a continuous cycle as it scans the probes for temperature readings .)

Activity Status Indicator

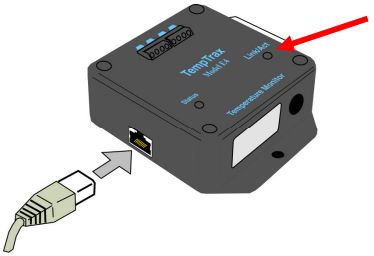


Step 4. Connect the Ethernet Cable

An Ethernet cable is supplied with the device.

a. Connect one end of the Ethernet cable to the connector on the side of your temperature monitor and the other end to your network hub or switch.
b. Verify that the green Ethernet link status indicator (Link/Act) is lit to indicate a good connection.

Ethernet Link Status Indicator



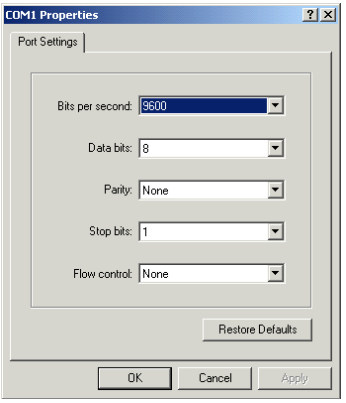
Configuring the Device

Before you can use the Model E Temperature Monitor, you must either determine a static IP address, network mask and gateway that is available on your network, or set the unit to DHCP mode.

Step 1. Configure the RS-232 ports

Start a terminal emulator program (such as HyperTerminal included with MS Windows).

a. Set the RS-232 port settings as shown:



Bits per second: **9600**

Data bits: **8**

Parity: **None**

Stop bits: **1**

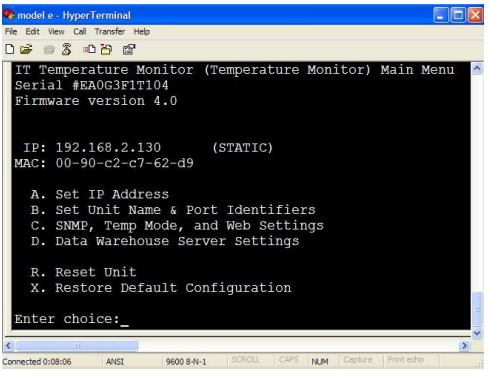
Flow control: **None**

Note: If the settings are incorrect, the device will not be able to communicate with your terminal emulator.

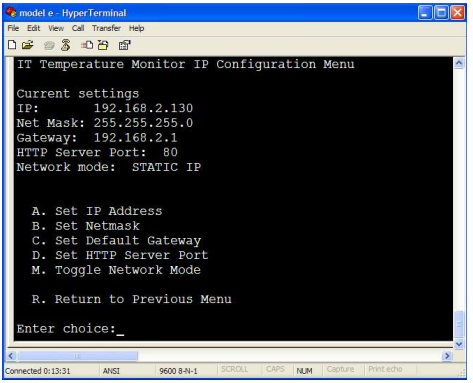
b. Ensure that the power cord jack is connected to the Model E Temperature Monitor and the wall transformer is plugged into a powered outlet.

Step 2. Configure the IP Address and Network Mask

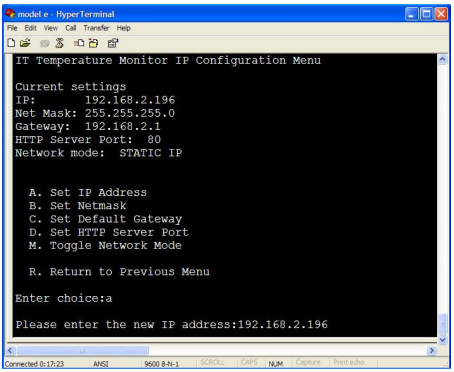
Press **Enter** to display the Main Menu and configure the unit:



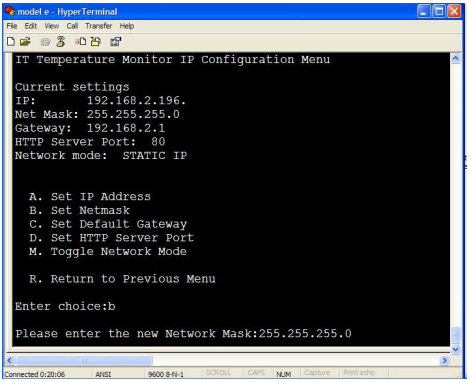
Press **A** to display the IP Configuration Menu:



Press **A** then type your new IP address and press **Enter**.

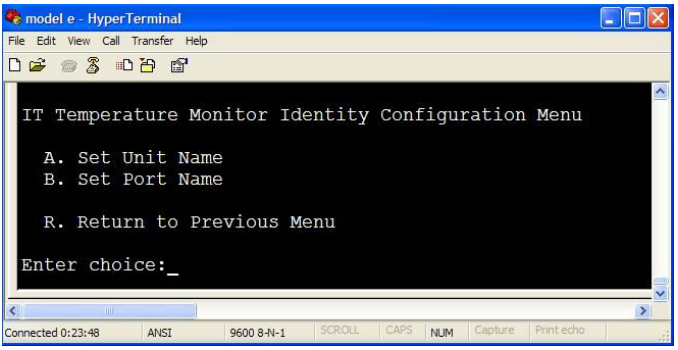


Press **B**, then type your new Network Mask and press **Enter**.



Step 3. Name the Device and the Probes

We suggest that you name the unit and its associated probes with logical names for convenience (the default probe names are Probe1, Probe2, etc…) From the Main Menu, press B



Step 4. Complete the Process

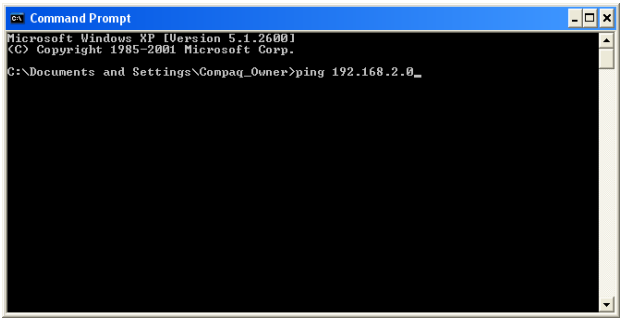
Return to the main menu to ensure that all settings take effect.
Note: There will be a short pause before the Main Menu displays.

a. Disconnect the RS-232 cable from the device and from your PC.
b. Connect one end of the Ethernet cable supplied with the Model E monitor to the device, and the other end of the cable to your network hub or switch.

Step 5. Verify Proper Working Order

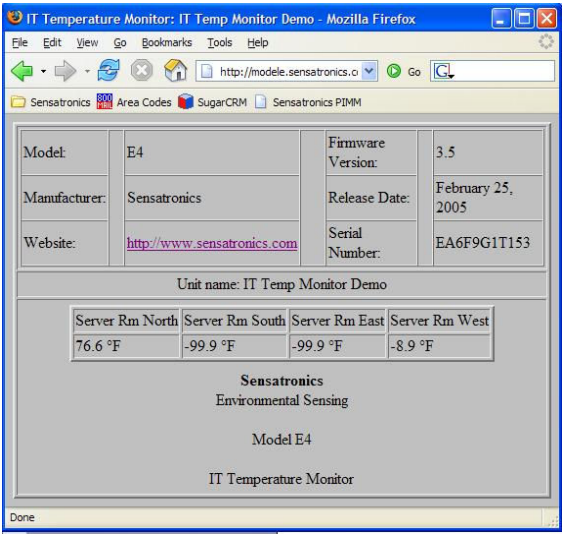
Verify that the device is functioning as expected.

a. At the Command Prompt, ping the device using the IP address that you assigned in Step 2.



b. Launch a Web browser using the IP address that you assigned in Step 2. Temperature data should display.

For example, if the unit IP is 192.168.2.201, enter http://192.168.2.201 in your Web browser's address bar.



Software Options

SEMS Solution

Sensatronics Environmental Management Solution (SEMS) is a comprehensive real-time, monitoring solution that allows you to view the overall stability and well-being of your temperature-controlled units from a single Web-based interface. Our subscription-based service, coupled with our high-quality monitoring devices provides you with a complete monitoring, notification and trending analysis solution without having to invest in a complex infrastructure.

SEMS is comprised of three basic components: the temperature monitoring devices and probes, which monitor activity from a particular unit and then send data to the SEMS server; the SEMS server which tracks utilization and compares the reported data against thresholds that you define, then broadcasts the status, including alerts and alarms; and desktop and web-based graphical user interfaces which display the results in an easy to read format that allows any (or all) of your staff to easily view the overall status of your environment – or even to receive immediate alerts to a pager, cell phone, or text messenger for catastrophic failures.

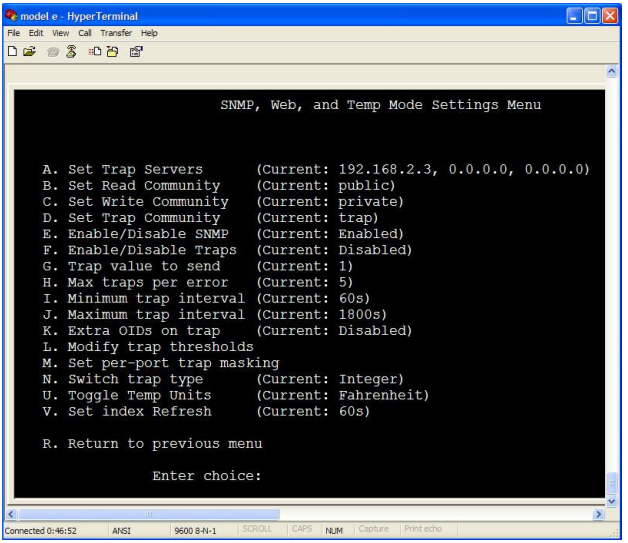
Contact us for a real-time, online demonstration. Call (800) 633-1033 to schedule an appointment with one of our SEMS Sales Managers.

SNMP

SNMP Version 1.0 is supported in the Model E series of temperature monitors. The latest MIB files are available via our Web site at:

http://www.sensatronics.com/downloads/snmp.

To set the SNMP community strings, use the serial port configuration menus from Step 2, and press C from the Main Menu.



Note: When configuring the SNMP community strings (read, read/write, and trap), be sure you do not leave any of them blank as they default to public, private and trap.

A graphical representation of the latest MIB format can be found at our Web site:

http://www.sensatronics.com/downloads/snmp/ittm-mibmap.png

CRON Log File Tool

Perl scripts are available for simple logging of unit data by Unix/Linux/Solaris/ and other similar systems.

Download the scripts from our Web site at:

http://sensatronics.com/downloads/plugins/cron/

This CRON script produces a CSV Log File with date and temperatures suitable for importing into most common spreadsheets. The script requires Netcat, a network utility, which can be found at the following URL. **(**This Netcat utility is **NOT** supported by Sensatronics.)

http://netcat.sourceforge.net/download.php

Note: The script is designed to be executed no more than once per minute. We do not recommend polling at more frequent intervals.

Write Your Own

The Model E Temperature monitor runs an internal Web server that listens for TCP/IP HTTP /GET requests on Port 80, and responds to three different URL requests – /index.html, /temp and /config.

/index.html: This is the main index page that returns an HTML-formatted Web containing the temperatures of all connected probes. This index page also provides details about the Temperature Monitor such as manufacturer, serial number, unit, and probe names.

/temp: This request will return an HTML-free Web page, consisting of a simple ASCII string of pipe-delimited data.

The data will be in the format of

"PROBE1_NAME|TEMP|PROBE2_NAME|TEMP…"

This URL is typically used by OEMs who are packaging the Temperature Monitor for use with their own software and need an easy and efficient way to get at the probe temperature data. This URL is also handy for those wishing to write their own software interface to simply and quickly obtain the temperatures and incorporate them into their existing Network Management Software.

Here's an example:

Probe 1| 74.5|Probe 2|35.5|Probe 3| 79.0|Probe 4| 54.4

/config: This request will return an HTML-free Web page, consisting of a simple ASCII string of pipe-delimited data. The information contained in this string of data will include configuration information about the Temperature Monitor such as serial number, unit and probe names, and model number.

Here's an example:

E6D2L0T01|ETemp|Model E4|4|1|Probe 1|2|Probe 2|3|Probe 3|4|Probe 4

To query the Temperature Monitor from within your own software, you will need an understanding of TCP/IP Sockets and the HTTP protocol. Consult the documentation of the specific programming language for details. After successfully initializing and opening up a TCP/IP socket to the Temperature Monitor, you will be able to communicate with it using the HTTP Protocol.

To request the /temp URL simply send the following string

"GET /temp HTTP/1.0 <CR><LF><CR><LF>"

Using the **Telnet** command is a convenient way of retrieving data from the Temperature Monitor. Open a telnet session to the Temperature Monitor unit's IP Address on Port 80.

For example, if the Temperature Monitor was configured on IP 192.168.2.101, you would send the following command:

telnet 192.168.2.101 80

If successful, you will be able to send command directly to the Temperature Monitor. Recall that one such command is **/temp:**

GET /temp HTTP/1.0

Followed by pressing **Enter** twice.

This will return a non-HTML ASCII, pipe-delimited string – just as it would if you were to open your Web browser and type the following in the URL address bar:

http://192.168.2.101/temp

Here's an example of a return string:

Probe 1| 71.3|Probe 2|34.5|Probe 3| 77.0|Probe 4| 52.3

Software Plug-Ins

A plug-in is a module that extends the capabilities of the network management software. Following are some of the available applications that are compatible with our devices. Refer to the vendors' specific sites for further information.

Product	URL
ActiveXperts	www.activexperts.com
Advanced Host Monitor	www.ks-soft.com
Big Brother	www.bb4.com
Bizwatch	www.bizwatch.com
DotCom-Monitor	www.dotcom-monitor.com
HP Openview	www.hp.com
Intellipool Network Monitor	www.intellipool.com
IPSentry	www.ipsentry.com
MRTG	www.mrtg.org
N-Able	www.n-able.com
Nagios	www.nagios.org
Overseer Network Monitor	www.sensiblesoftware.com
Server Nanny	www.servernanny.com
Servers Alive	www.woodstone.nu
SNMPc	www.castlerock.com
Tembria Network Monitor	www.tembria.com
TempElert	www.tempelert.com
Visualware	www.visualware.com
WhatsUp	www.ipswitch.com

Trouble Shooting

Problem	Solution
The unit does not work – what is wrong?	Several problems could be responsible for the unit not working properly. Try the following: - Verify that the wall transformer is securely plugged into the outlet and that the power cord jack is securely connected to the device. - Verify that the outlet into which the transformer is plugged has power. - Check probe line connections. - If the unit was recently installed, verify that it was properly configured. Note the Flow Control Setting must be set to *None*. Try reconfiguring the device.
I can neither ping the unit nor display its internal Web page.	- Verify the unit's IP address and network mask to ensure that they are valid for your LAN/WAN. - Ensure that once you have entered your IP address and network mask settings that you return to the main menu before powering down the device. - Verify that your switch or hub is properly configured to work with the 10Mbps data rate at which the Ethernet interface is running.
I can display the Temperature Monitor's main/index page, but I cannot get to its other URLs (i.e., /temp, /config).	This may be due to a proxy server. - Try bypassing the proxy or - Configure the proxy to allow this traffic.

Problem	Solution
I get a temperature reading of -99.9°.	This temperature reading indicates that the probe for that position is not connected. - Check the line to ensure you have a solid connection to the device. - Verify that the line between the probe and the device has not been cut.
I get a temperature reading of 255.0°.	This temperature reading indicates that there is a short in the line, typically caused by the two probe leads touching each other. - Check the line for damage.
Where can I find the latest software plug-ins?	If you cannot find the latest plug-ins at the software publisher's Web site, check our plug-in listing at http://sensatronics.com/downloads/plugins

Warranty

GENERAL WARRANTY POLICY

Sensatronics, LLC (hereinafter referred to as SENSATRONICS) warrants that the Product shall conform to and perform in accordance with published technical specifications and the accompanying written materials, and shall be free of defects in materials and workmanship, for the period of time herein indicated, such warranty period commencing upon receipt of the Product. This Limited Warranty applies only to hardware products manufactured by or for SENSATRONICS that can be identified by the Sensatronics trademark, trade name, or logo affixed to them. The Limited Warranty does not apply to any non-Sensatronics hardware products or any software, even if packaged or sold with Sensatronics hardware.

This warranty is limited to the repair and/or replacement, at SENSATRONICS discretion, of defective or non-conforming Product, and SENSATRONICS shall not be responsible for the failure of the Product to perform specified functions, or any other non-conformance caused by or attributable to: (a) any misapplication or misuse of the Product; (b) failure of Customer to adhere to any of SENSATRONICS specifications or instructions; (c) neglect of, abuse of, or accident to, the Product; or (d) any associated or complementary equipment or software not furnished by SENSATRONICS.

Limited warranty service may be obtained by delivering the Product to SENSATRONICS in the US or to the international distributor it was purchased through and providing proof of purchase or receipt date. Customer agrees to insure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to SENSATRONICS, and to use the original shipping container or equivalent.

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Where dictated by Country or State Law, some of the above exclusions or limitations may not be applicable in some countries or states. This warranty provides specific legal rights; other rights that vary from country to country or state to state may also exist. This warranty shall not be applicable to the extent that any Federal,

State or Municipal Law that cannot be preempted prohibits any provision of this warranty.

HARDWARE PRODUCT WARRANTY DETAILS

WARRANTY PERIOD: SENSATRONICS warranties hardware Product for a period of Two (2) Years.

WARRANTY PROCEDURE: Upon return of the hardware Product SENSATRONICS will, at its option, repair or replace Product at no additional charge, freight prepaid, except as set forth below. Repair parts and replacement Product will be furnished on an exchange basis and will be either reconditioned or new. All replaced Product and parts become the property of SENSATRONICS. If SENSATRONICS determines that the Product is not under warranty, it will, at the Customer's option, repair the Product using current SENSATRONICS standard rates for parts and labor.

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