

***TempTrax™
Device Manual***

Model E

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Regulatory Information

U.S.A. Requirements

FCC Radio Frequency Class A Notice for TempTrax

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

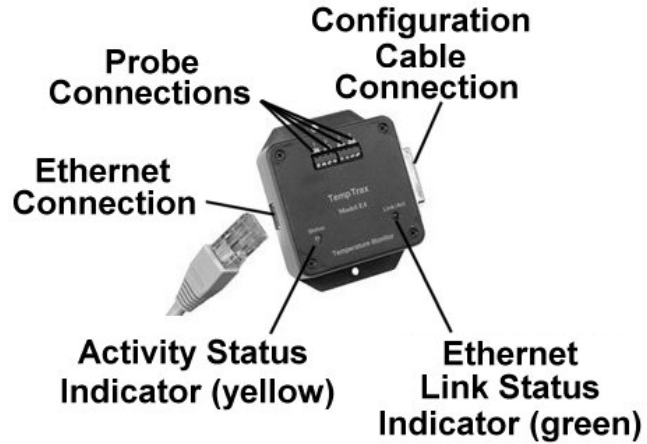
This equipment uses a power supply that has been listed by Underwriter Laboratories, Inc. for use in the U.S. and meets requirements of the Canadian Standards Association CAN/CSA.

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1 – Description

The TempTrax Model E module is an Ethernet device capable of providing temperature sensor information to network management software for environmental monitoring.



Versions

There are three versions of the Model E module, the E4, E8, and E16. The numbers indicate the number of temperature sensor ports on the module.



Mounting

Flanges for wall or rack mounting are provided.

Probes

Two types of probes are available:

- Standard
- Heavy-duty



The **standard** probe has a 50-foot gray 24-gauge AWG cable, with the sensor housed in a white nylon cap on one end. It is well suited for most indoor applications, where environmental conditions don't require a rugged probe. The standard probe should be fine for most applications.



The **heavy-duty** probe has a 75-foot PVC-jacketed and shielded cable, with the sensor housed in a stainless steel cylinder. It is well suited to withstand the elements of outdoor environments.

Indicators

The Model E has two indicators, green for Ethernet Link Status, and yellow for Activity Status.

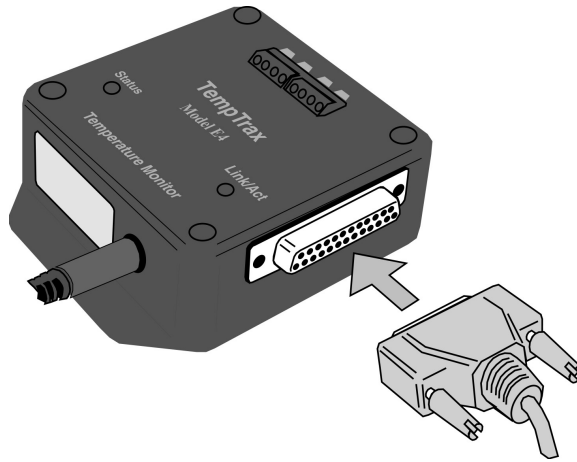
The green indicator will light to indicate that an Ethernet link is available.

The yellow indicator will flash eight times whenever the unit scans the temperature ports.

2 – Connecting the Device

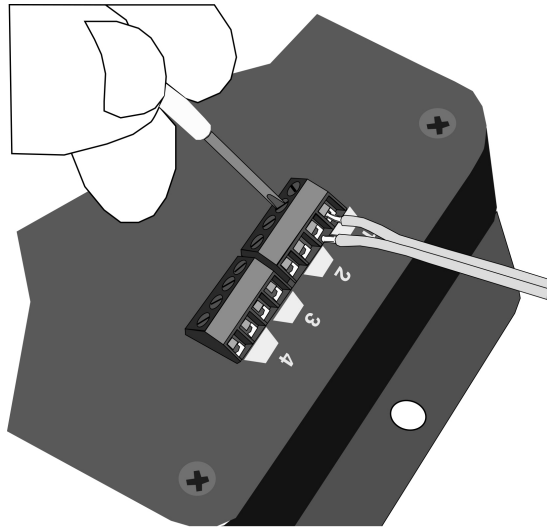
Connecting the Configuration Cable

The configuration cable supplied with the TempTrax plugs into the RS232 serial port on the right side of the unit. This is a simple, straight-through DB25 male to DB9 female. This cable is only connected for the configuration process, and should not be connected whenever the Ethernet cable is connected. The other end of the cable is connected to the serial port of a PC.



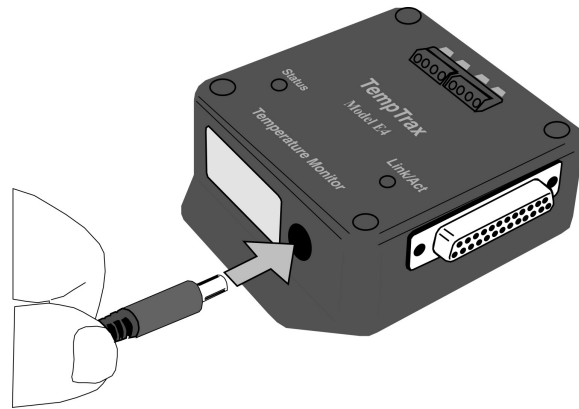
Connecting the Temperature Probes

The Model E4 can connect to up to four temperature probes, the Model E8 up to eight probes, and the Model E16, up to sixteen probes. Connect the first pair of probe wires to the retainers marked “1”, the second pair to “2”, and so on. (See next page.)



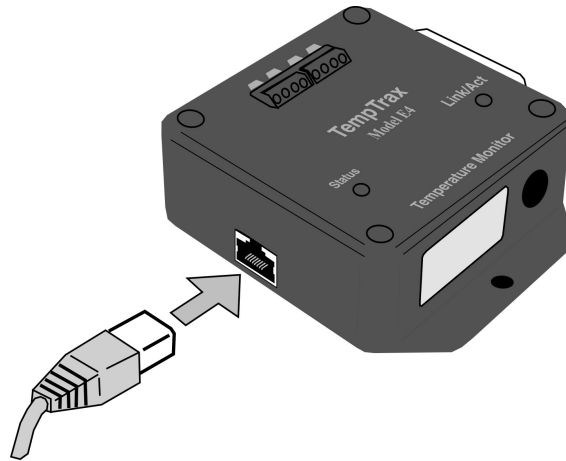
Connecting the Power Supply

The power supply cord should be the last connection made at this time. Plug the cord from the wall transformer into a powered outlet and the jack on the side of the module. The yellow Status indicator will blink when the connection is made. As long as the module has power, the yellow Status indicator will blink eight times, pause for five seconds, and then repeat.



Connecting the Ethernet Cable

The Ethernet cable is connected *only after configuration is complete*. Connect the Ethernet cable to the connector on the side of the module. The green Link/Act indicator will light to indicate a good connection.



3 – Configuring the Device

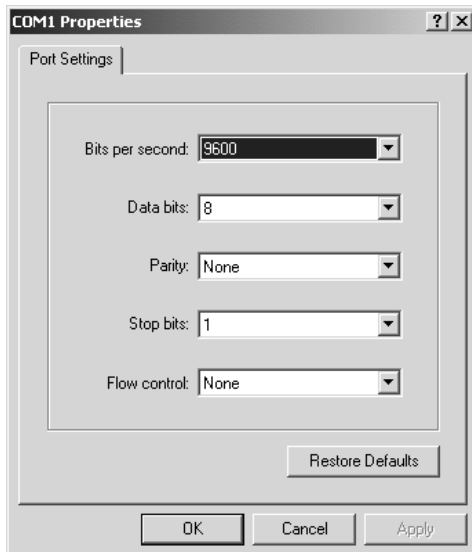
Before you can use the TempTrax unit, you must configure its IP address and netmask. The default IP address is 192.168.2.101, and the default netmask is 255.255.255.0.

NOTE: *If communicating outside your LAN, the gateway will also need to be configured. See your network administrator.*

To configure the unit:

1. Determine a static IP and netmask that is available on your network.
2. Connect the unit to a PC's serial port, using the supplied RS-232 cable.
3. Start a terminal emulator program. (One emulator program, HyperTerminal, is included with Microsoft Windows.)
4. Set the RS-232 port settings to 9600,8,N,1 (no flow control).

IMPORTANT: *Make sure that the settings include "No Flow Control". If this setting is incorrect, the unit will be unable to communicate with your terminal emulator.*



5. Connect the power cord to the unit. Make sure the wall transformer is plugged into a powered outlet.
6. Press Return to reach the main window.

```
TempTrax/E4 (TempTrax Thermometer) Main Menu
A. Set IP address
B. Set Unit name & port identifiers

R. Reset unit
X. Restore default configuration
```

Enter choice:

7. Select the menu items for configuring the unit, and for setting the IP address and netmask.

```
TempTrax IP configuration menu
```

```
Current settings
IP: 192.168.2.100
Net Mask: 255.255.255.0
Gateway:
```

```
A. Set IP address
B. Set Netmask
C. Set default gateway

R. Return to previous menu
```

Enter choice:A

Please enter the new IP address:192.168.2.1

```
TempTrax IP configuration menu
Current settings
IP: 192.168.2.1
Net Mask: 255.255.255.0
Gateway:

A. Set IP address
B. Set Netmask
C. Set default gateway

R. Return to previous menu
Enter choice:B
Please enter the new Network Mask:255.255.255.0_
```

8. If desired, return to the Main Menu and name the unit and probes for convenience. Default probe names are, “Probe1”, “Probe2”, and so on.

```
Current settings
IP: 192.168.2.1
Net Mask: 255.255.255.0
Gateway:

A. Set IP address
B. Set Netmask
C. Set default gateway

R. Return to previous menu
Enter choice:r

TempTrax/E4 (TempTrax Thermometer) Main Menu
A. Set IP address
B. Set Unit name & port identifiers

R. Reset unit
X. Restore default configuration

Enter choice:B

TempTrax Identity configuration menu

A. Set unit name
B. Set port name

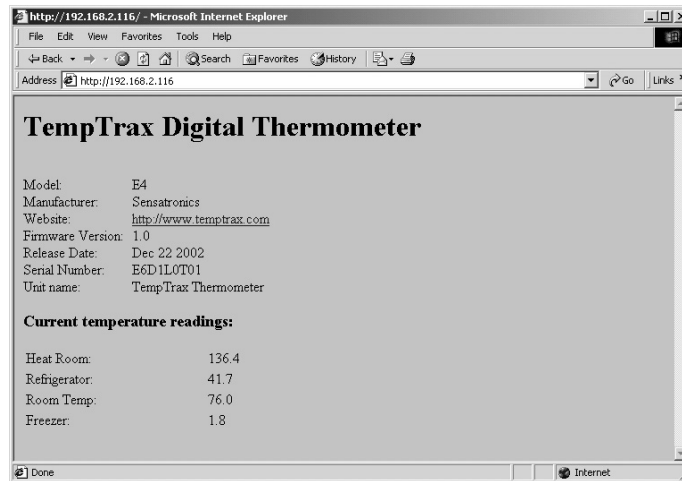
R. Return to previous menu
Enter choice:_
```

9. Return to the main menu for the settings to take effect.

IMPORTANT: *There will be a short pause before the Main Menu reappears. This is normal.*

10. Disconnect the RS-232 cable.
11. Connect the supplied Ethernet cable to the unit; making sure the other end of the cable is connected to your network through a hub or switch.

You should now be able to ping the TempTrax unit, using the IP address you assigned. You should also be able to get temperature data through your web browser. Use the IP address you assigned.



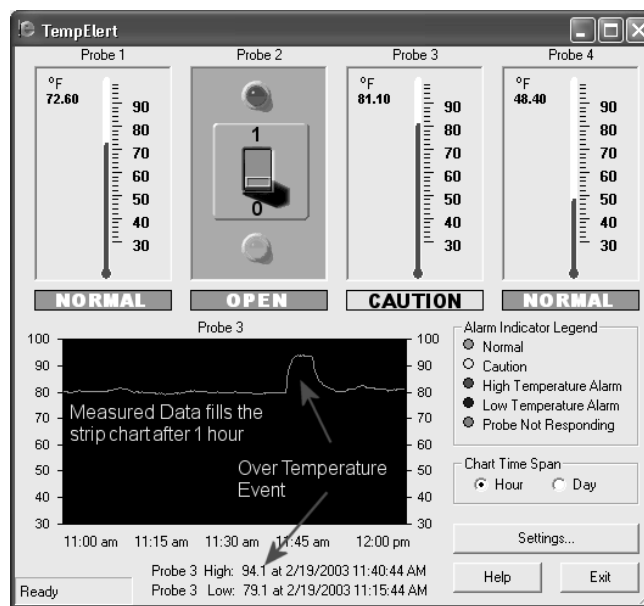
4 – Software

You can communicate with the TempTrax using any of the following methods:

- Network Management Software plug-ins (currently for users of IPSentry, Nagios, and Big Brother)
- TempElert software
- Write your own software

TempElert Software

Sensatronics has partnered with ItWorks to offer the TempElert Alerting and Monitoring Program for the TempTrax Model E and Model F modules. The TempElert Program notifies you through e-mail or a page whenever temperatures reach values that you set.



TempElert features:

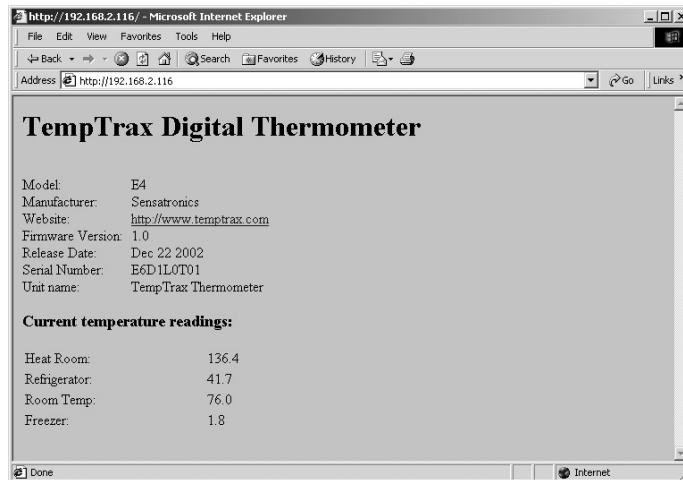
- Data is displayed as visual thermometer indicators.
- Probes can be either thermometers or switches, enabling simultaneous monitoring of temperature and door/window switches, limit switches or burglar alarm relays.
- Probes and switches can be named to match locations.
- Both Normally Open (N.O.) switches and Normally Closed (N.C.) switches are supported.
- An at-a-glance visual annunciator shows alarm status on-screen.
- Alarms and Cautions upper and lower limits can be set.
- Built-in error checking and recovery, and daily data logging to disk (plain text) are included.
- Audible alarms can be turned on or off, and different alarm sounds are selectable.
- A customizable Alarm or Switch Status Box allows you to use your own image and wording in the alarm indicator box.
- Temperatures can be displayed in either Fahrenheit or Celsius degrees.
- A single unit can be monitored from multiple locations. Multiple iterations of the program can poll the TempTrax Model E simultaneously.
- External windows programs (such as a PC power shutdown routine) can be run when alarms occur. Programs and batch file operations are supported.
- Remote and local operation, and dial-up Internet connections are supported.
- TempElert contains fully configurable SMTP mail server settings, including authentication, if needed. It can monitor 1- or 2-probe serial RS232 TempTrax Model F devices, or the 4-, 8-, or 16-probe Ethernet/Internet-ready TempTrax Model E.

For more information on TempElert software, visit the TempElert website at www.tempelert.com .

Write Your Own Software

The TempTrax Model E Thermometer is running an internal web server, listening for TCP/IP HTTP /GET requests on Port 80. The TempTrax responds to three different URL requests:

/index.html: This is the main index page that returns an HTML-formatted web page that contains the temperatures of all connected probes. This index page also details information about the TempTrax...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 OEM's who are packaging the TempTrax for use with their 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 TempTrax...such as serial number, unit & 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 TempTrax 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 TempTrax, you will be able to communicate with it using the HTTP Protocol. To request the /temp URL simply send the following string

```
"GET /temp <CR><LF><CR><LF>"
```

Using the **Telnet** command is a convenient way of retrieving data from the TempTrax. To do this, open a telnet session to the TempTrax unit's IP Address on Port 80. For example, if the TempTrax 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 TempTrax. Recall that one such command is **/temp:**

```
GET /temp HTTP/1.0
```

...followed by the ENTER key 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

```
http://192.168.2.101/temp
```

in the URL box.

Here's an example of a return string:

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

If you are having difficulties or need further help, send an email to help@temptrax.com. Be sure to include your phone number in case a technician needs to call you.

Network Management Software Plug-Ins

The following plug-ins are currently available:

- IPSentry (www.ipsentry.com)
- Nagios (www.nagios.org)
- Big Brother (www.bb4.com)

Be sure to visit www.temptrax.com for the latest list of available plug-ins.

Plug-In FAQs

- **What is a plug-in?**

A plug-in is a software module that can be added to the network management software to extend its capability to include communication with the TempTrax module.

- **How do I get the plug-in I need?**

The TempTrax website (www.temptrax.com) always contains information on how and where to obtain the latest software plug-ins. Please note that IPSentry uses the term “add-in components” for plug-ins. They are the same thing.

- **How do I install the plug-in?**

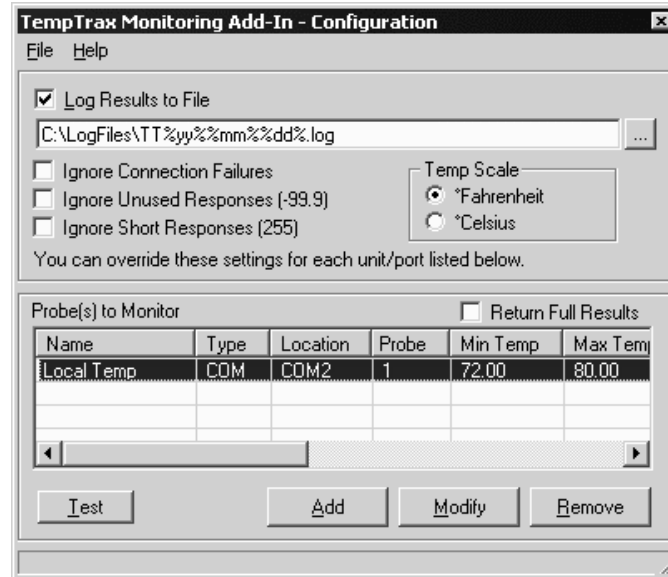
Plug-ins are installed or copied into specific folders. For IPSentry, use the Add-in manager to install the plug-in. For Nagios and Big Brother, refer to the readme file that comes in the plug-in.

- **Where can I get more help?**

Contact Sensatronics for help with using plug-ins. Visit our website at www.temptrax.com or send e-mail to help@temptrax.com.

IPSentry Configuration

Before using TempTrax with IPSentry, use the IPSentry Add-in Manager to install the TempTrax plug-in, then the TempTrax configuration screen:



For details on configuring the IPSentry Temptrax plug-in, visit their website at <http://www.ipsentry.com>.

Appendix A – Troubleshooting

Temperature Readings

Question: I get a temperature of “-99.9”. What’s wrong?

Answer: This temperature reading indicates that the probe for that position is not connected. One possible cause is if the line had been cut between the probe and the unit. Check the line, and make sure you have a good connection to the unit.

Question: I get a temperature of 255.0. What’s wrong?

Answer: This temperature reading indicates that there is a short in the line. Check the line for damage.

General

Question: The unit doesn’t work. What’s wrong?

Answer: Several problems could cause the unit to not work.

Try these possible fixes:

1. Check to make sure the wall transformer is securely plugged into the outlet, and that the transformer cord is securely connected to the unit.
2. Check the outlet into which the transformer is plugged, to ensure it has power.
3. Check probe line connections.
4. If the unit was recently installed, ensure it was properly configured. Especially note the Flow Control setting, which must be “None”. Try reconfiguring the device (Chapters 2 and 3).

Appendix B - Hardware Specifications

Number of Ports: 4, 8, or 16

Accuracy:

0.5°F from -20°F (-29°C) to +120°F (49°C)

1.5 °F from -40°F (-40°C) to +140°F (60°C)

Resolution: 0.1°

Units: Fahrenheit, Celsius

Interface: Ethernet, RS232 (straight-through)

Protocols: TCP/IP HTTP on port 80

Power Source: 9 VDC @ 500mA (wall transformer),
2.5mm plug, center positive



Note: The TempTrax can be supplied by any 9-15 VDC power supply capable of supplying 200mA, with proper polarity, making it useable for vehicles, boats, and solar power.

Current Drain: 175mA maximum, 150mA typical

Dimensions: 4.25" x 3.25" (108mm x 83mm)

Weight: 0.8 ounce (23g)

- Mounting:** flanges for wall or rack mounting
- Cable Length:** 50 feet for the standard probe, or 75 feet for the heavy-duty probe. Longer lengths are available on request. You can use a maximum of 2000 feet for each probe. The standard probe uses 24 gauge (AWG) wires.
- Operating Systems:** TempTrax will communicate with any PC running any operating system that supports Ethernet connectivity and the ability to point a web browser to an IP address on your LAN, WAN, or Internet. All HTML browsers are supported, including Microsoft, Netscape, and many others.

Warranty

Sensatronics, of 41 Terrill Park Drive, Concord, New Hampshire, grants the purchaser of its TempTrax™ Thermometer a one-year limited warranty against defects in material and workmanship. This warranty does not cover damages due to improper use or unauthorized service. In no event shall Sensatronics be liable for incidental or consequential damages resulting from installation or use of the instrument. Any defective TempTrax™ that is returned to Sensatronics during the warranty period will be repaired or replaced at the option of Sensatronics, free of charge.

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