

***SensaTRONICS***

ENVIRONMENTAL SENSING

***IT Temperature Monitor  
Device Manual***

**Model E Series**

The information contained in this manual is subject to change without notice. Sensatronics reserves the right to make changes to equipment design or program components, as progress in engineering, manufacturing methods, or other circumstances may warrant. No responsibility is assumed for the use of software or equipment that is not supplied by Sensatronics.

- IPSentry is a trademark of RGE, Inc.
- Nagios is a registered trademark of Ethan Galstad.
- Big Brother is a trademark of Quest Software, Inc.
- Microsoft and Windows are registered trademarks of Microsoft Corporation.
- Ethernet is a trademark of Xerox Corporation.
- TempElert is a trademark of ITWORKS.
- All other third-party trademarks and registered trademarks are the property of their respective owners.

### **How to Contact Sensatronics, LLC**

Address: 20A Dunklee Road, Bow, NH 03304  
Phone: (800) 633-1033, (603) 224-0167  
FAX: (603) 224-2401  
Email (sales): [sales@sensatronics.com](mailto:sales@sensatronics.com)  
Email (support): [support@sensatronics.com](mailto:support@sensatronics.com)  
Web site: [www.sensatronics.com](http://www.sensatronics.com)

Printed in U.S.A.  
V2.0

# **Regulatory Information**

## **U.S.A. Requirements**

### **FCC Radio Frequency Class A Notice for IT 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**

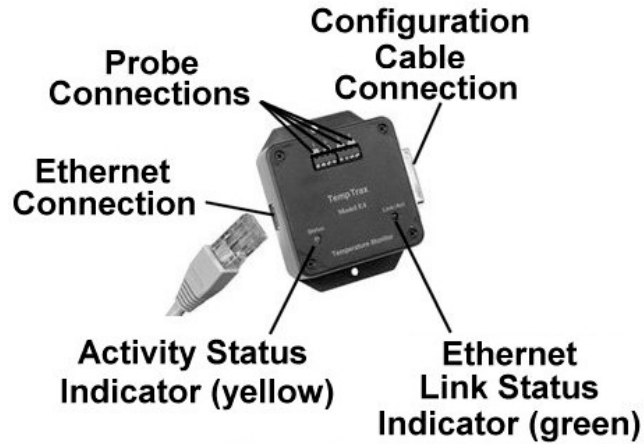
This equipment uses a power supply that has been listed by Underwriter Laboratories, Inc. for use in the U.S. and meets requirements of the Canadian Standards Association CAN/CSA.

# Contents

Regulatory Information.....	2
1 – Description .....	4
Versions.....	4
Mounting.....	4
Probes.....	5
Indicators.....	5
2 – Connecting the Device .....	6
Connecting the Configuration Cable.....	6
Connecting the Temperature Probes .....	6
Connecting the Power Supply .....	7
Connecting the Ethernet Cable.....	7
3 – Configuring the Device .....	8
4 – Software .....	11
EMS Software .....	11
TempAlert Software .....	12
Write Your Own Software .....	13
Network Management Software Plug-Ins.....	15
Plug-In FAQs .....	15
IPSentry Configuration .....	16
Appendix A – Troubleshooting.....	17
Appendix B - Hardware Specifications.....	18
Warranty.....	19
Index.....	21

# -1- Description

The IT Temperature Monitor 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, 24-gauge AWG cable, with the sensor housed in a small white nylon cap (0.325" diameter, 0.575" length) 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 (0.375" diameter, 1.50" length). It is well suited to withstand the elements of outdoor environments.

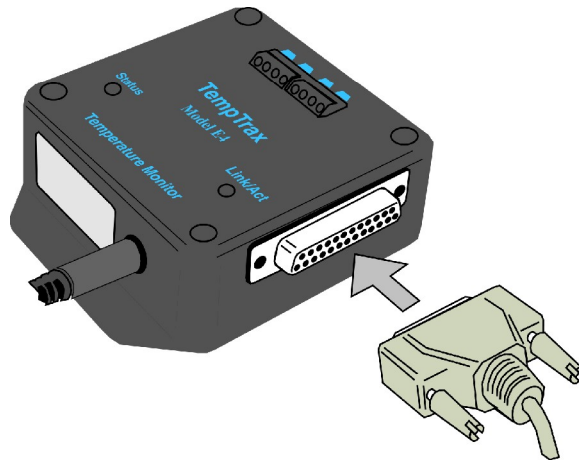
## Indicators

- 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

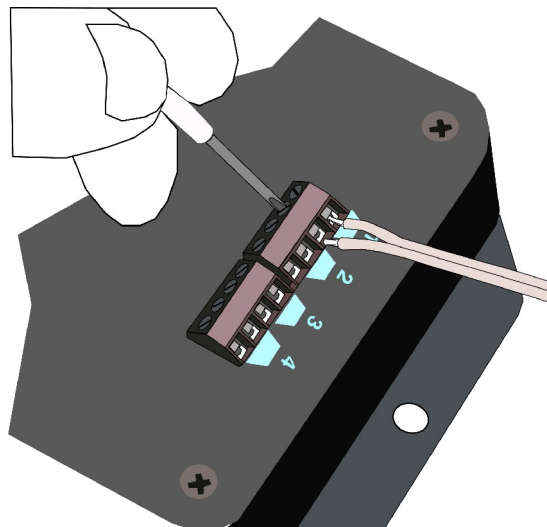
### Connecting the Configuration Cable

The configuration cable supplied with the IT Temperature Monitor 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.



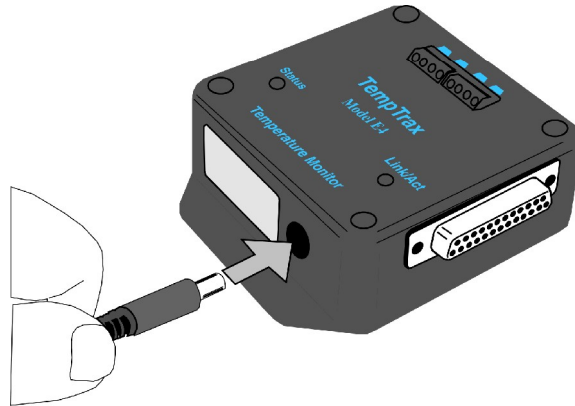
### Connecting the Temperature Probes

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.)



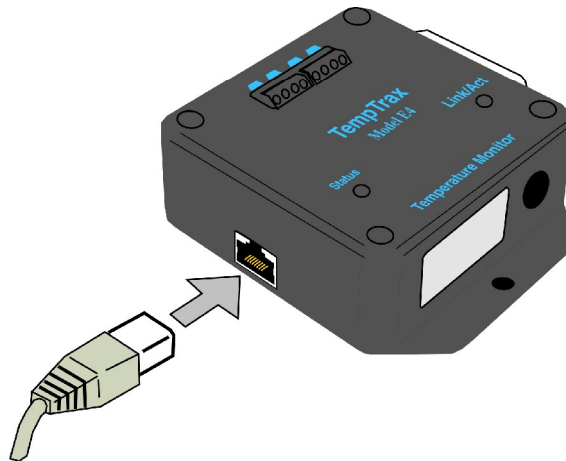
## Connecting the Power Supply

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

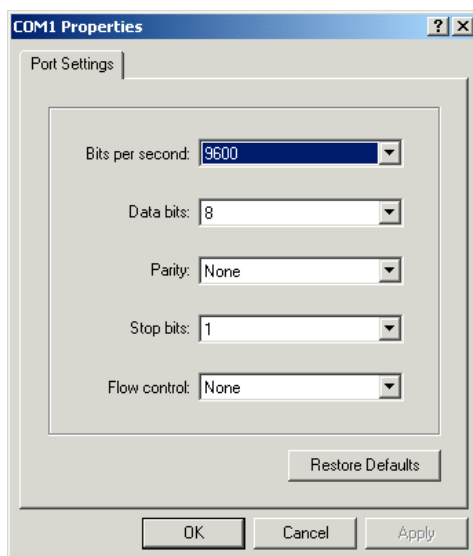
Before you can use the IT Temperature Monitor unit, you must configure its IP address and netmask. The default IP address is on a 192.168.2.0 subnet, and the default netmask is 255.255.255.0.

**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.*



1. Connect the power cord to the unit. Make sure the wall transformer is plugged into a powered outlet.
2. 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:
```



3. 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_
```

4. 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

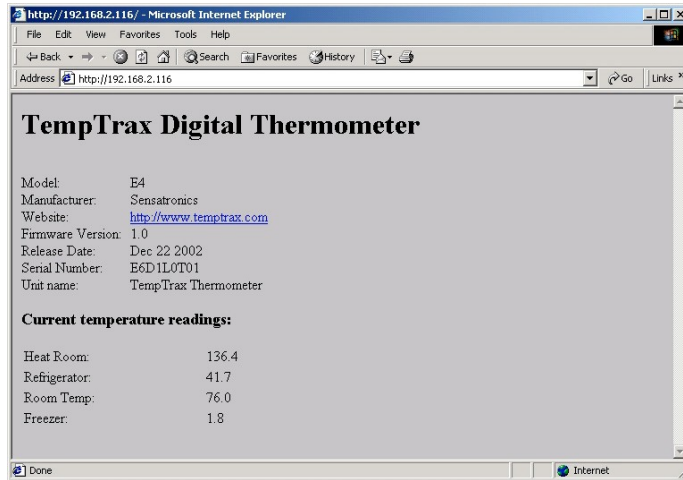
Enter choice:_
```

5. 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.**

6. Disconnect the RS-232 cable.
7. 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 IT Temperature Monitor 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.



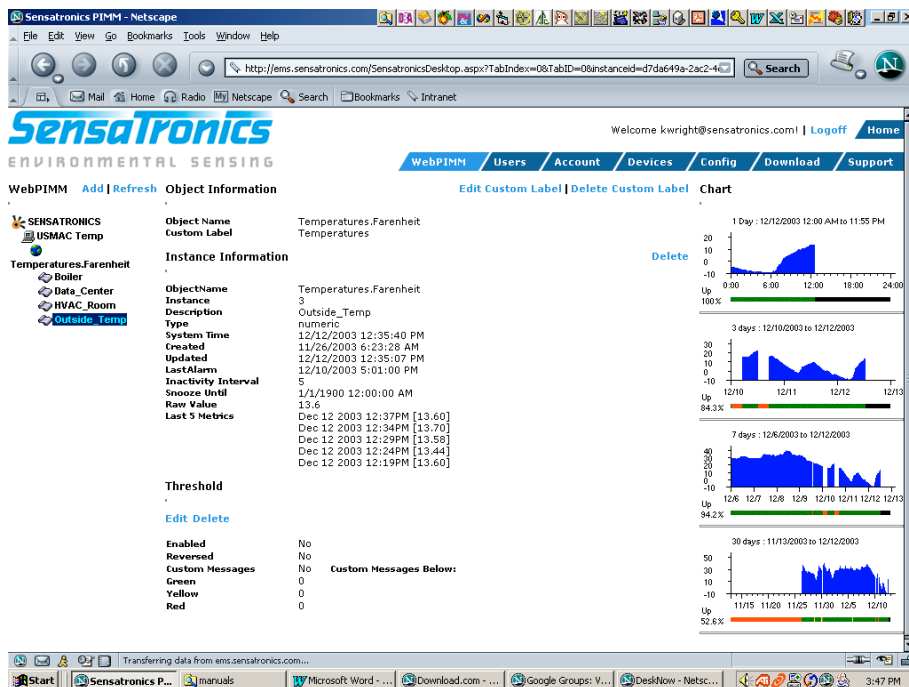
# 4 – Software

You can communicate with the IT Temperature Monitor using any of the following methods:

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

## EMS Software

Sensatronics' EMS (Environmental Management Software) is an ASP software offering used to monitor all your IT and temperature needs. Used in conjunction with the IT Temperature Monitor, EMS provides a graphical view of your entire organization and will alert you via your email, cell-phone or pager if preset threshold conditions are crossed.



## EMS Features:

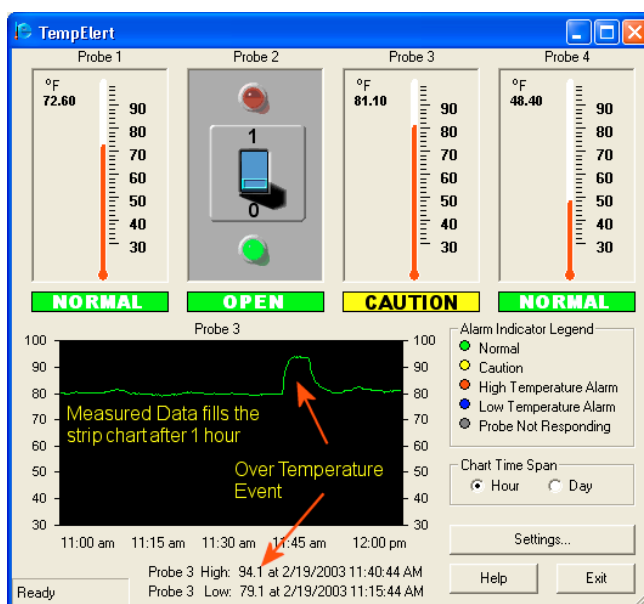
- Graphical user interface via the internet
- Multiple levels of user notification
- Monitor unlimited number of IT Temperature Monitors
- Monitor other IT needs
- Data accessible anytime, anywhere via the internet
- Receive pager/email/cell-phone alerts
- Minimal software installation

- Historical data available in Excel format
- Visual indications of warnings and alerts
- 30-day free trial (visit <http://ems.sensatronics.com>)
- Low-cost yearly subscription fee

For more information on the EMS software, visit the Sensatronics website at [www.sensatronics.com](http://www.sensatronics.com) .

## TempElert Software

Sensatronics has partnered with ItWorks to offer the TempElert Alerting and Monitoring Program for the IT Temperature Monitor 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.

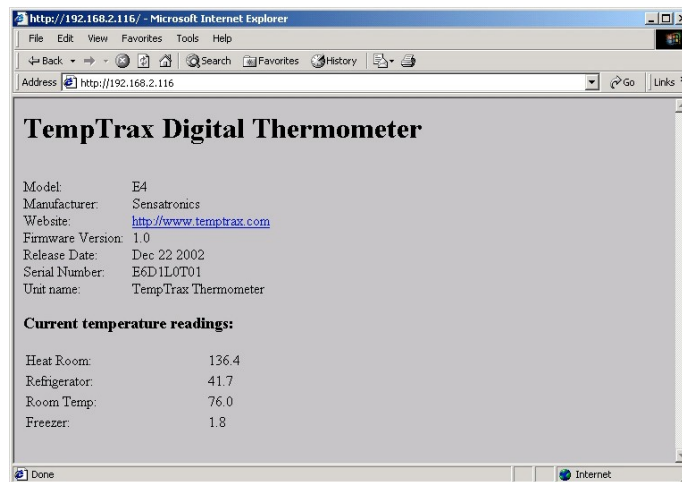
- A single unit can be monitored from multiple locations. Multiple iterations of the program can poll the IT Temperature Monitor Model E simultaneously.
- External windows programs (such as a PC power shutdown routine) can be run when alarms occur. Programs and batch file operations are supported.
- 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 IT Temperature Monitor Model F devices, or the 4-, 8-, or 16-probe Ethernet/Internet-ready IT Temperature Monitor Model E.

For more information or for technical support on the TempElert software, visit the TempElert website at [www.tempekert.com](http://www.tempekert.com).

## Write Your Own Software

The IT Temperature Monitor Model E Thermometer is running an internal web server, listening for TCP/IP HTTP /GET requests on Port 80. The IT Temperature Monitor 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 IT 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 OEM's who are packaging the IT Temperature Monitor 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 IT Temperature Monitor...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 IT 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 IT 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 <CR><LF><CR><LF>"
```

Using the **Telnet** command is a convenient way of retrieving data from the IT Temperature Monitor. To do this, open a telnet session to the IT Temperature Monitor unit's IP Address on Port 80. For example, if the IT 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 IT Temperature Monitor. 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 [support@sensatronics.com](mailto:support@sensatronics.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](http://www.ipsentry.com))
- Nagios ([www.nagios.org](http://www.nagios.org))
- Big Brother ([www.bb4.com](http://www.bb4.com))
- Intellipool Network Monitor ([www.intellipool.com](http://www.intellipool.com))
- DotCom-Monitor ([www.dotcom-monitor.com](http://www.dotcom-monitor.com))

Be sure to visit [www.sensatronics.com](http://www.sensatronics.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 IT Temperature Monitor module.

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

Our website ([www.sensatronics.com](http://www.sensatronics.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?**

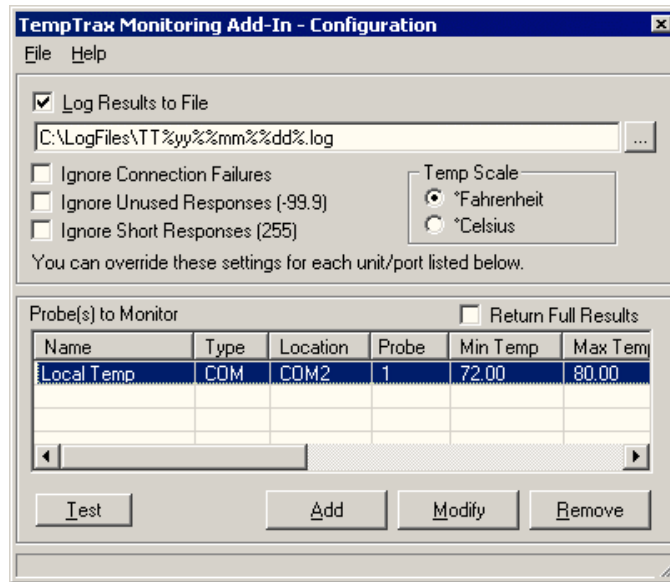
Plug-ins are installed or copied into specific folders. For IPSentry, use the Add-in manager to install the plug-in. For Nagios and Big Brother, refer to the readme file that comes in the plug-in.

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

Contact Sensatronics for help with using plug-ins. Visit our website at [www.sensatronics.com](http://www.sensatronics.com) or send e-mail to [support@sensatronics.com](mailto:support@sensatronics.com).

## IPSentry Configuration

Before using the IT Temperature Monitor with IPSentry, use the IPSentry Add-in Manager to install the IT Temperature Monitor add-in via the configuration tool:



For details on configuring the IPSentry add-in for the IT Temperature Monitor plug-in, visit their website at [www.ipsentry.com](http://www.ipsentry.com).



# Appendix A – Troubleshooting

**Question:** I can't ping the unit. Nor can I bring up its internal web page. What's wrong?

**Answer:** Double check the units IP Address and Netmask to be sure they are valid for your LAN/WAN. Also be sure to "Save Changes" from the main menu before powering down the unit.

The Ethernet chip is running at 10Mbps...check to be sure your switch or hub is properly configured to work with this data rate.

**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....that the two probe leads are touching each other. Check the line for damage.

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

**Answer:** Several problems could cause the unit to not work. Try these possible fixes:

- A. Check to make sure the wall transformer is securely plugged into the outlet, and that the transformer cord is securely connected to the unit.
- B. Check the outlet into which the transformer is plugged, to ensure it has power.
- C. Check probe line connections.
- D. 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 IT Temperature Monitor 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:** IT Temperature Monitor 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

## 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.

## LIMITATION OF LIABILITY

EXCEPT AS EXPRESSLY PROVIDED HEREIN, SENSATRONICS MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, WITH RESPECT TO ANY EQUIPMENT, PARTS OR SERVICES PROVIDED PURSUANT TO THIS AGREEMENT, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER SENSATRONICS NOR ITS DEALER SHALL BE LIABLE FOR ANY OTHER DAMAGES, INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION IN CONTRACT OR TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY), SUCH AS, BUT NOT LIMITED TO, LOSS OF ANTICIPATED PROFITS OR BENEFITS RESULTING FROM, OR ARISING OUT OF, OR IN CONNECTION WITH THE USE OF FURNISHING OF EQUIPMENT, PARTS OR SERVICES HEREUNDER OR THE PERFORMANCE, USE OR INABILITY TO USE THE SAME, EVEN IF SENSATRONICS OR ITS DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL SENSATRONICS OR ITS DEALERS TOTAL LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT.

The Limited Warranty does not apply to any software, even if packaged or sold with Sensatronics hardware. Non-Sensatronics manufacturers, suppliers, or publishers may provide their own warranties. Software distributed by Sensatronics under the Sensatronics brand name (including, but not limited to monitoring software) is not covered under this Limited Warranty. Refer to the individual Software License Agreements for more information.

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 warrants hardware Product for a period of one (1) year.

**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 Customers option, repair the Product using current SENSATRONICS standard rates for parts and labor, and return the Product using Ground Transportation at no charge in or out of warranty.

- Accuracy, 18
- Activity Status Indicator, 4, 5
- Big Brother, 15
- Configuring, 6, 8, 10
- Connecting, 6
- Description, 4
- Dimensions, 18
- Ethernet cable, 7
- Ethernet Link Status Indicator, 4, 5
- Hardware, 18
- HyperTerminal, 8
- IP address, 8
- Mounting, 4, 18
- netmask, 8
- Operating Systems, 18
- Plug-ins, 15
- Power, 7, 18
- Probes, 5, 6, 9
- Protocols, 18
- Resolution, 18
- Sensatronics, 2
- Specifications, 18
- TempElert, 11, 12
- Versions, 4
- Warranty, 19
- Weight, 18