



# Senturion Environmental Monitor



## Device Manual

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

[www.sensatronics.com](http://www.sensatronics.com)

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How to contact Sensatronics, LLC

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

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## Definitions

### CAUTIONS



**CAUTION:** A CAUTION warns of a condition which may lead to data loss, property damage, personal injury or death.

### Operators

Operators are persons who use the equipment to gather environmental data. Operators may access the equipment via both the front panel display and push buttons, or by operating a computer which can connect to the unit via the Internet. Operators are never authorized to open the unit.

### Installers

Installers are persons who install the equipment and connect cables supplying power or Internet connectivity. Installers are never authorized to open the unit.

### Service Personnel

Service personnel are Sensatronics technicians authorized to perform repair on the equipment. Only service personnel are authorized to open the unit and effect repairs.

### Installation Category

This equipment is Installation Category 1.

## Regulatory Information

### U.S.A. Requirements

FCC Radio Frequency Class A Notice for Environmental 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.

### European Requirements



This equipment conforms to the requirements of <TBD: CE DIRECTIVE>.

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## **CAUTION: Safety Guidelines**

### ***Safety: General***

-  Do not open any covers of the unit. There are no user serviceable parts in the equipment. Opening the unit represents a shock hazard and voids your warranty. If the unit requires service, contact Sensatronics Customer Support.
-  Do not push any objects into the vent holes or other openings in the unit (except as needed for the Reset button). Doing so can cause a shock or fire hazard.
- Follow installation instructions closely.
- Use the equipment only in the manner specified.
- The equipment is intended for indoor use only.
- Do not block airflow of top and bottom vents.
- Place any cables to avoid their being stepped on or tripped over.
- Do not allow anything to be placed on or rolled over cables.
- Do not place unit near radiators or other heat sources.
- Do not place unit directly in the path of refrigeration equipment.
- Ensure that the unit is used in an environment within the specified operating temperature and humidity.
- Do not use the equipment in a wet environment, for example, near a sink or in a damp room.
- Do not spill liquids or food on the equipment.
- If your equipment issues unusual sounds or smells, unplug it immediately and contact Sensatronics Customer Support.
-  Disconnect device for this equipment is the AC power cord, located in the rear of the unit, on the right side when facing the unit.

### ***Safety: Power***

-  Never use a damaged power cable.
-  Never bypass the grounding feature of your power cable.
-  When disconnecting the power cable, grasp the plug. Do not pull on the cable.
- Before connecting power, check the voltage and frequency rating to insure it is compatible with the available power source.
-  **WARNING: Service Personnel:** Never open the unit without first disconnecting the unit from the power source.
-  All equipment and racks should be properly grounded to prevent shock hazards.

### ***Safety: Wet Equipment***

-   CAUTION: Refer to Safety: General and Safety: Power sections before proceeding with any of the procedures in this section.
-   CAUTION: Do not perform this procedure until you are sure it is safe to do so. Turn off the power at the circuit breaker before attempting to remove power cables from the electrical outlet. Use extreme caution when removing wet cables from a power source.
- Disconnect the power cable from the electrical outlet.
- Disconnect the power cable from the Senturion.
- Contact Sensatronics Customer Support.

### ***Safety: Dropped or Damaged Equipment***

 **CAUTION: Refer to Safety: General and Safety: Power sections before proceeding with any of the procedures in this section.**

- Inspect the unit for damage, smoke or unusual odors.
-  CAUTION: If internal components are visible, or if you detect smoke or unusual odors, disconnect the Senturion from the electrical outlet and contact Sensatronics Customer Support.
-  Disconnect the power cable from the electrical outlet.
-  Reconnect the power cable to the electrical outlet.
- If the Senturion fails to operate normally, or if you detect unusual odors or smoke, disconnect the power cable from the electrical outlet and contact Sensatronics Customer Support.

## 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:

-  Submit a ticket online at [support.sensatronics.com](http://support.sensatronics.com)
-  Access our Support Forum [www.sensatronics.com/bboard/](http://www.sensatronics.com/bboard/)
-  Call us at 1 (800) 633-1033 or (603) 224-0167

# Product Overview

## ***Monitor***

The Senturion Environmental Manager is a turnkey rack mountable unit designed to monitor temperature, relative humidity, light and noise level. The combination of on board sensors and robust internal webpage allows the unit to be installed and up and running in minutes.

Probes are available separately to allow you to purchase just what you need according to the number of units and/or conditions that you are monitoring.

## ***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](http://www.sensatronics.com)) to review the latest list of compatible software applications.

# Technical Specifications

## ***Standard Features***

The Senturion is equipped with the following:

- Support for standard, high temperature, cryogenic, wetness and door switch probes.
- Built-in local temperature, humidity and light sensors
- Flexible hardware interface that will support additional planned probe types such as air flow, pressure and fire/smoke detectors (visit <http://www.sensatronics.com> for availability)
- Configurable measurement intervals
- Configurable alert system, including visual audible and email alerts
- Event logging
- Network connection via Ethernet hub or switch
- Cable guides for neat probe cable management
- Internal Web server
- HTML and XML output pages
- Rack mounting flanges
- 1u rack footprint
- US and international AC power input
- Internet-upgradeable firmware



## Connecting the Device



The disconnect device for this equipment is the AC power cord, located in the rear of the unit, on the right side when facing the unit.

### **Step 1: Unpack the Senturion**

- a) Inspect the shipping packaging for any visible damage. If the package is damaged, contact the carrier's claims department; do not open the package.
- b) Remove the Senturion from the box. Inspect for signs of shipping damage.
- c) Allow the Senturion some time to acclimate to ambient conditions before use.



**CAUTION:** Do not attempt to install a damaged Senturion. Contact Sensatronics Customer Support as soon as possible.



Do not attempt to repair a Senturion. No user serviceable parts are contained within the device.

### **Step 2: Mount Unit in Rack**



**CAUTION:** Exercise care when installing this (or any) equipment into racks. Install equipment in a safe manner to avoid tipping, overloading or other unsafe conditions. Secure all equipment using the manufacturer's directions and specified hardware.

The Senturion is a 1U rack mountable device, designed for standard 19" racks. Included with your unit, you will find a set of hardware to assist with installing the Senturion.

Position the Senturion in the rack and secure it using the screws provided for your rack type.

### **Step 3: Connect Network Cable**

An Ethernet cable is supplied with the device.

Connect one end of the Ethernet cable to the connector on the rear of the Senturion and the other end to your network hub or switch.

### **Step 4: Connect the Power Cable**

The Senturion does not have an on/off switch.

- a) Plug the appropriate power cord for your locale's AC mains power into the IEC connector in the rear of the unit.

b) Insert the cord into the AC mains power outlet.

Once the unit is connected to a power supply, the front panel LED's will cycle from green to blue, during a brief self-test and initialization. When the front panel displays a steady blue light, the unit is active.

Power may be applied or removed with or without probes and Ethernet connections.

*NOTE: Do not disconnect power during a firmware upgrade, log erase or history clearing operation.*

### **Step 5: Connect the Temperature Probes**

Simply plug an acceptable probe into an open probe port. The Senturion will automatically sense the probe and configure a default alert range for it. Probes may be connected with the unit powered on or off.

Utilize the blue cable guides on the unit's wings to manage the cables, and place the probe tips at the location(s) you wish to monitor.

## Configuring the Device

Before you can use the Senturion Monitor, you must either determine a static IP address, network mask and gateway suitable for your network, or set the unit to DHCP mode.

### Step 1: User Setup

The Senturion comes configured with two user accounts, set for different privilege levels.

- admin (password: admin)
- op (password: op)

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ENVIRONMENTAL SENSING

Logged in as: admin

View Log Admin Support My Account Logout

Network **Users** Probes Alerts SNMP Misc Add User

Username	Phone	Privs	Edit	Delete
admin			Admin	<a href="#">Edit</a> <a href="#">Delete</a>
op			Ops	<a href="#">Edit</a> <a href="#">Delete</a>

Senturion Environmental Manager  
Firmware version 1.00

Figure 1: Default User Settings

It is recommended that the passwords for these accounts be changed when first configuring the units. **NOTE: The passwords, once changed, are not recoverable. Take care to record and secure your password.**

If the only admin password is lost, the system can be reset to restore the default password. See the Reset description for more details.

The Senturion supports up to 8 users. One of 3 privilege levels may be applied to a user.

- View – Limited to viewing the current and historical data
- Op – Has the abilities of the View user type, plus:
  - acknowledge alerts
  - make log entries
- Admin – Has the abilities of the Op and View user type plus:
  - can change any settings
  - able to manage other users

## Step 2: Configuring the Network Settings

The Senturion defaults to DHCP mode and will display the IP address that is assigned upon initialization. The user can, however, customize the network settings as needed.

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ENVIRONMENTAL SENSING

Logged in as: admin

View Log Admin Support My Account Logout

Network Users Probes Alerts SNMP Misc

Network mode:	<input checked="" type="radio"/> DHCP IP <input type="radio"/> Static IP
IP Address:	<input type="text" value="192.168.2.8"/>
Netmask:	<input type="text" value="255.255.0.0"/>
Gateway:	<input type="text" value="192.168.2.1"/>
Primary DNS:	<input type="text" value="192.168.2.1"/>
Backup DNS:	<input type="text" value="192.168.2.3"/>
Webserver port:	<input type="text" value="80"/>
SMTP Server:	<input type="text"/>
SMTP Username:	<input type="text"/>
SMTP Password:	<input type="password" value="••••••"/>
SMTP Subject:	<input type="text" value="Sensatronics monitoring: alert"/>
SMTP Return Address:	<input type="text"/>

Save

Cancel

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Firmware version 1.00

Figure 2: Default Network Settings

In order to change the default settings, follow these steps.

- 1) Click on the Admin tab, Network section
- 2) Set desired network settings, SMTP server address, return address, and SMTP user name and password (if needed).
- 3) Click . Once you save these settings, the unit will automatically reboot.
- 4) If you have changed the IP address of the unit, you will need to navigate to this new address through your web browser. In addition, the new IP will be displayed on the LCD once the unit reboots.

### Step 3: Configuring the Probes

When external probes are attached to the Senturion, the unit will automatically detect the probe type and set default values for the thresholds based upon the probe.

The probe settings can be configured to user specifications. Probe names, type, and thresholds can be changed via the Admin tab, under Probes and then Edit.

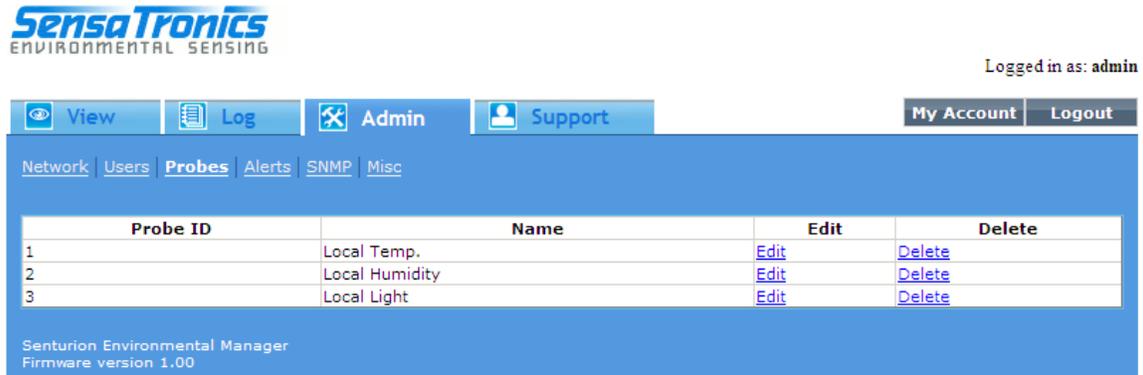


Figure 3: Default Probe Settings

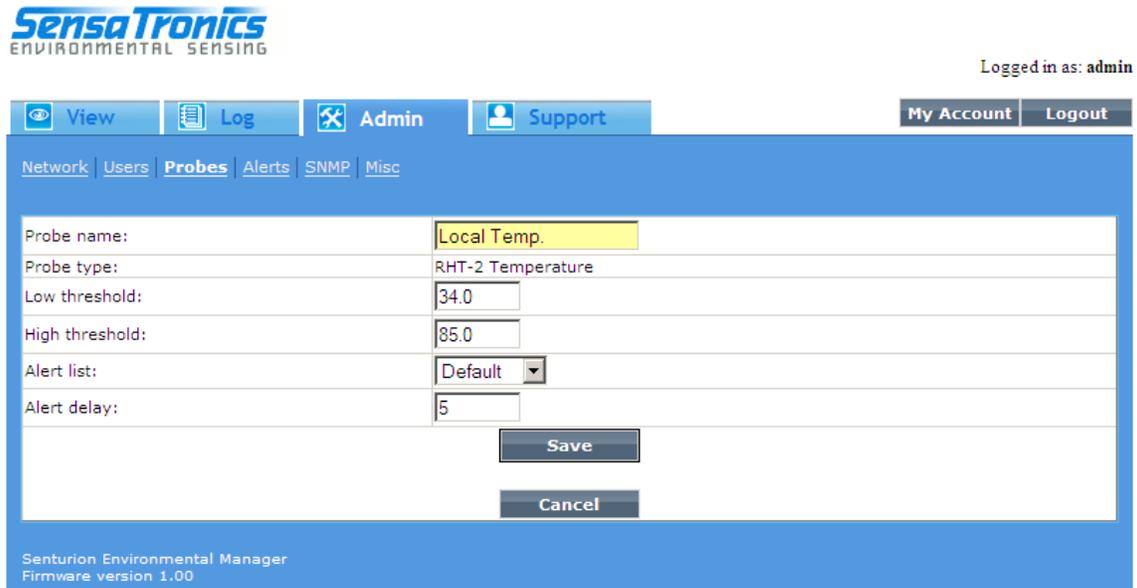


Figure 4: Default Probe Properties

#### Probe Name

We recommend setting meaningful probe names. For instance 'Server Room 4' conveys more information than 'Probe 100'.

## Low/High Thresholds

Readings outside of these ranges cause the device to accumulate an alert count for the probe.

## Alert List

A probe may be assigned an alert list. See the 'Alerts' section for more details.

### **Step 4: Setting Up Alerts**

Senturion supports up to 8 Alert Lists. An Alert List is a configurable script of actions the unit will execute as the alert count for the probe continues to increase. Typically, this is a script representing an escalating response as the probe's out-of-limit readings continue to be unacknowledged.

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ENVIRONMENTAL SENSING

Logged in as: admin

View Log Admin Support My Account Logout

Network Users Probes **Alerts** SNMP Misc

Alert list name	Edit	Delete
Default	<a href="#">Edit</a>	<a href="#">Delete</a>
	<a href="#">Edit</a>	<a href="#">Delete</a>

Senturion Environmental Manager  
Firmware version 1.00

**Figure 5: Default Alert Lists**

Local visual/audible alerts can be enabled under Admin -> Alerts. The Default alert list is applied to all probes unless changed by an administrator.

It is possible to add email addresses and/or set up more users. This can be accomplished by navigating to Admin -> Users -> Add User, then edit Alerts.

View Log Admin Support My Account Logout

Network Users Probes Alerts SNMP Misc

Alert list name: Default

At count	1	Send email to:	admin
At count	5	No Action	admin
At count	10	No Action	admin
At count	15	No Action	admin
At count	20	No Action	admin
At count	25	No Action	admin
At count	30	No Action	admin
At count	35	No Action	admin

Save Cancel

Senturion Environmental Manager  
Firmware version 1.00

Figure 6: Alert List Edit Detail

### Step 5: Miscellaneous Settings

There are a number of settings which can be configured under the Admin > Misc section.

View Log Admin Support My Account Logout

Network Users Probes Alerts SNMP Misc Factory Reset

Unit name: Senturion 00:90:c2:cf:2b:90

MAC: 00:90:c2:cf:2b:90

Allow view without login:

Probe scan interval (seconds, min 3): 60

Default alert delay (0-255): 168

Time (YYYY/MM/DD HH:MM): 1980 01 01 19 20

Temperature scale: Fahrenheit

Save Cancel

Senturion Environmental Manager  
Firmware version 1.00

Figure 7: Miscellaneous Settings

### Set Date and Time

Configure the setting to the desired date and time.

### Allow view without login

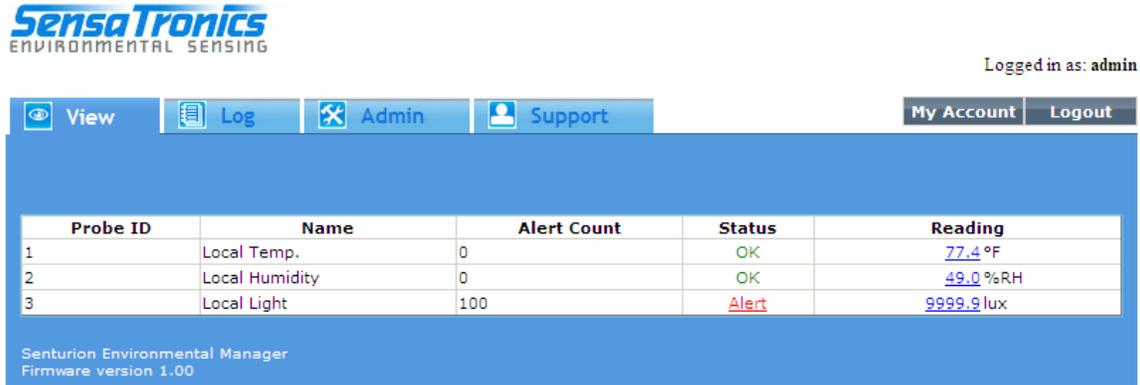
When checked, this setting will display the viewable data simply by navigating to the unit's IP address.

### Probe Scan Interval

The default interval (60 seconds) allows the unit to store probe history for approximately 30 days. Decreasing the scan interval provides more frequent readings, but reduces the overall time period which can be stored. Conversely, increasing the interval will allow for data storage over a greater time period. The minimum interval allowable is 5 seconds. **Note: The Probe Scan Interval setting is applied to all attached probes, and cannot be set individually.**

## Operation

To view monitored values, simply connect to the Senturion using any common web browser at the configured IP and port. Your view may have more or less probes, based upon the number connected.



The screenshot shows the SensaTronics Environmental Manager web interface. The top navigation bar includes 'View', 'Log', 'Admin', and 'Support' buttons, along with 'My Account' and 'Logout' links. The user is logged in as 'admin'. The main content area displays a table with the following data:

Probe ID	Name	Alert Count	Status	Reading
1	Local Temp.	0	OK	77.4 °F
2	Local Humidity	0	OK	49.0 %RH
3	Local Light	100	Alert	9999.9 lux

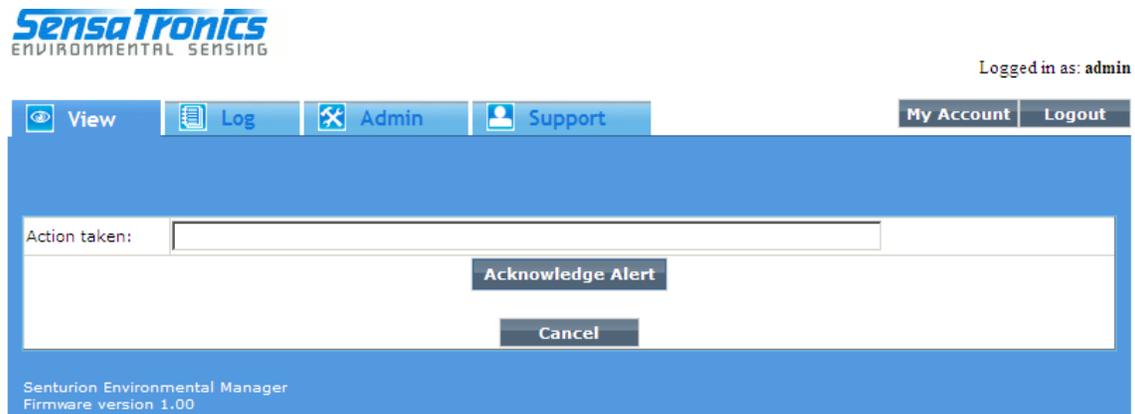
At the bottom of the interface, it states 'Senturion Environmental Manager Firmware version 1.00'.

Figure 8: Typical View Screen

Users should log into the unit with their own unique username and password. Once logged into the unit, there are several activities which can be performed.

### Acknowledge an Alert

Depending on your user privileges, you can acknowledge an alert by clicking on the alert link (i.e. 'Alert') for the relevant probe. This takes you to the Acknowledge screen, where you can make a log entry as part of the acknowledge action.



The screenshot shows the 'Acknowledge an Alert' dialog box in the SensaTronics Environmental Manager web interface. The dialog box has a text input field labeled 'Action taken:' and two buttons: 'Acknowledge Alert' and 'Cancel'. The user is logged in as 'admin'. At the bottom of the interface, it states 'Senturion Environmental Manager Firmware version 1.00'.

Figure 9: Acknowledge an Alert

## View Probe History

By clicking on the “Reading” link next to the desired probe, you will be able to view the recent history. The timeframe for the history is determined by the scan interval (configured in the Admin > Misc area).

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Logged in as: admin

View Log Admin Support My Account Logout

Probe 1 (Local Temp.) history

Time	Temperature
1980-01-01 19:24	77.4
1980-01-01 19:23	77.4
1980-01-01 19:22	77.4
1980-01-01 19:21	77.4
1980-01-01 19:20	77.4
1980-01-01 19:19	77.4
1980-01-01 19:18	77.4
1980-01-01 19:17	77.4
1980-01-01 19:16	77.4
1980-01-01 19:15	77.2
1980-01-01 19:14	77.2
1980-01-01 19:13	77.2
1980-01-01 19:12	77.2
1980-01-01 19:11	77.2
1980-01-01 19:10	77.2
1980-01-01 19:09	77.2
1980-01-01 19:08	77.2
1980-01-01 19:07	77.2
1980-01-01 19:06	77.2

Clear History

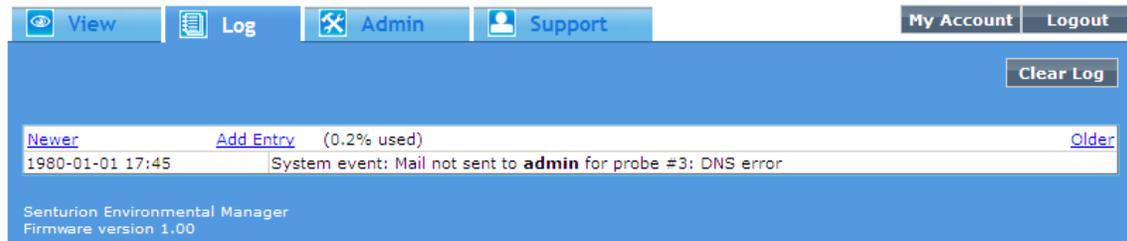
Cancel

Senturion Environmental Manager  
Firmware version 1.00

Figure 10: Probe History

## View Log

The Log tab allows the user to scroll through the log, add a textual entry, or clear the log completely. The log is stored indefinitely and is only deleted at the user's request.



**Figure 11: Log**

### Audible Alerts

The audible alert can be silenced either by acknowledging the alert as described above using a browser, or by pressing the -> button on the front panel.

### Reset

A reset function is provided via an access hole in the front panel of the unit. The reset button can be activated by a thin actuator such as a straightened paper clip inserted into the access hole.

A very brief momentary press of the button will cause the unit to reboot, but without resetting to its factory defaults.

Pressing and holding the button through a boot sequence - evidenced by the front panel cycling through its colors - will result in the "admin" and "op" user passwords and the IP address being set to their factory defaults.

## **Advanced Operation**

The Senturion Environmental Manager allows for a number of advanced operations to provide the highest level of value to our customers. Through the features available in Senturion, you will have the ability to quickly and easily connect with our support department, receive upgrades, and otherwise improve your user experience.

### Support and Firmware Updates

Senturion contains hardware to implement many planned features in the future. These features will be provided from time to time as downloads from the Sensatronics website.

Use the Support tab to check for important announcements, to check for the availability of firmware upgrades, and to load new firmware versions when they are available.

**Figure 12: Support Page**

### Writing Software

Sensatronics has adopted an “open source” concept for all of our products. As such, we do not restrict customers to our software for use with our monitors. Although we do have software options available on our website and Senturion is fully equipped to handle all monitoring activities, some customers like to create their own UI. The following information will aide users seeking to create their own software application(s).

The Senturion monitor runs an internal Web server that listens for TCP/IP HTTP /GET requests on the configured port, and responds to three different URL requests – /index.html, /xmldata and /xmlconfig.

**/index.html** is the main index page that opens the Senturion's HTML interface.

**/xmldata** returns unit and probe data in XML format. This URL provides an efficient interface to quickly obtain available data.

**/xmlconfig** returns an XML page containing configuration information such as serial number, unit and probe ids, and firmware version.

## Programmatic access using TCP/IP Sockets

To query the Senturion 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 a TCP/IP socket to the Senturion, you will be able to communicate with it using the HTTP Protocol.

To request the /xmldata URL simply send the following string

```
"GET /xmldata HTTP/1.0 <CR><LF><CR><LF>"
```

## Command line access using Telnet

Using the **Telnet** command is a convenient way of retrieving data from the Senturion. Open a telnet session to the Senturion unit's IP Address on the configured port.

For example, if the Senturion were configured on IP 192.168.2.101, port 85 you would send the following command:

```
telnet 192.168.2.101 85
```

If successful, you will be able to send commands directly to the Senturion. Recall that one such command is **/xmldata**:

```
GET /xmldata HTTP/1.0
```

Followed by pressing <enter> twice. This will return an XML page – just as it would if you were to open your Web browser and type the following in the URL address bar:

```
http://192.168.2.101:85/xmldata
```

## Troubleshooting

The following table contains common troubleshooting issues and their resolution. To get the most up to date information on the Senturion, please visit our support site at:

<https://secure.sensatronics.com/support/index.php>

Problem	Solution
The unit does not work – what is wrong?	If the front panel is not lit, verify power is reaching 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 have saved them. 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 Senturion’s main/index page, but I cannot get to its other URLs (e.g., /xmldata).	This may be due to a proxy server. Try bypassing the proxy or Configure the proxy to allow this traffic.
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.

## **Warranty**

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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