

WEB600

**USER'S MANUAL
VERSION 1.2.5**

SENSAPHONE®
REMOTE MONITORING SOLUTIONS

WEB600 User's Manual

Every effort has been made to ensure that the information in this document is complete, accurate and up-to-date. Sensaphone assumes no responsibility for the results of errors beyond its control. Sensaphone also cannot guarantee that changes in equipment made by other manufacturers, and referred to in this manual, will not affect the applicability of the information in this manual.

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Written and produced by SENSAPHONE®.

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Important Safety Instructions

Your Web600 has been carefully designed to give you years of safe, reliable performance. As with all electrical equipment, however, there are a few basic precautions you should take to avoid hurting yourself or damaging the unit:

- Read the installation and operating instructions in this manual carefully. Be sure to save it for future reference.
- Read and follow all warning and instruction labels on the product itself.
- To protect the Web600 from overheating, make sure all openings on the unit are not blocked. Do not place on or near a heat source, such as a radiator or heat register.
- Do not use your Web600 near water, or spill liquid of any kind into it.
- Be certain that your power source matches the rating in the specifications of this manual. If you're not sure of the type of power supply to your facility, consult your dealer or local power company.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords, as this can result in the risk of fire or electric shock.
- Never push objects of any kind into this product through ventilation holes as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.
- To reduce the risk of electric shock, do not disassemble this product, but return it to Sensaphone Customer Service, or another approved repair facility, when any service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the unit is subsequently used.
- If anything happens that indicates that your Web600 is not working properly or has been damaged, unplug it immediately and follow the procedures in the manual for having it serviced. Return the unit for servicing under the following conditions:
 1. The power cord or plug is frayed or damaged.
 2. Liquid has been spilled into the product or it has been exposed to water.
 3. The unit has been dropped, or the enclosure is damaged.
 4. The unit doesn't function normally when you're following the operating instructions.
- To reduce the risk of fire or injury to persons, read and follow these instructions:
 1. Use only the specified type and size battery.
 2. Do not dispose of the battery in a fire. The cell may explode. Check with local codes for possible special disposal instructions.
 3. Do not open or mutilate batteries. Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.
 4. Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.
 5. Remove main power connections before replacing the battery.

FCC Requirements

Part 15: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the 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 and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

1 YEAR LIMITED WARRANTY

PLEASE READ THIS WARRANTY CAREFULLY BEFORE USING THE PRODUCT.

THIS LIMITED WARRANTY CONTAINS SENSAPHONE'S STANDARD TERMS AND CONDITIONS. WHERE PERMITTED BY THE APPLICABLE LAW, BY KEEPING YOUR SENSAPHONE PRODUCT BEYOND THIRTY (30) DAYS AFTER THE DATE OF DELIVERY, YOU FULLY ACCEPT THE TERMS AND CONDITIONS SET FORTH IN THIS LIMITED WARRANTY.

IN ADDITION, WHERE PERMITTED BY THE APPLICABLE LAW, YOUR INSTALLATION AND/OR USE OF THE PRODUCT CONSTITUTES FULL ACCEPTANCE OF THE TERMS AND CONDITIONS OF THIS LIMITED WARRANTY (HEREINAFTER REFERRED TO AS "LIMITED WARRANTY OR WARRANTY"). IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS THIS WARRANTY, INCLUDING ANY LIMITATIONS OF WARRANTY, INDEMNIFICATION TERMS OR LIMITATION OF LIABILITY, THEN YOU SHOULD NOT USE THE PRODUCT AND SHOULD RETURN IT TO THE SELLER FOR A REFUND OF THE PURCHASE PRICE. THE LAW MAY VARY BY JURISDICTION AS TO THE APPLICABILITY OF YOUR INSTALLATION OR USE ACTUALLY CONSTITUTING ACCEPTANCE OF THE TERMS AND CONDITIONS HEREIN AND AS TO THE APPLICABILITY OF ANY LIMITATION OF WARRANTY, INDEMNIFICATION TERMS OR LIMITATIONS OF LIABILITY.

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- 2. ELEMENTS OF WARRANTY:** THIS PRODUCT IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIALS AND CRAFTSMANSHIP WITH ONLY THE LIMITATIONS AND EXCLUSIONS SET OUT BELOW.
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EXCLUSIVE WARRANTY: THE LIMITED WARRANTY OR WARRANTIES DESCRIBED HEREIN CONSTITUTE THE SOLE WARRANTY OR WARRANTIES TO THE PURCHASER. ALL IMPLIED WARRANTIES ARE EXPRESSLY DISCLAIMED, INCLUDING: THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR USE AND THE WARRANTY OF FITNESS FOR A

PARTICULAR PURPOSE AND THE WARRANTY OF NON-INFRINGEMENT AND/OR ANY WARRANTY ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IT MUST BE CLEAR THAT THE WARRANTORS ARE NOT INSURING YOUR PREMISES OR BUSINESS OR GUARANTEEING THAT THERE WILL NOT BE DAMAGE TO YOUR PERSON OR PROPERTY OR BUSINESS IF YOU USE THIS PRODUCT. YOU SHOULD MAINTAIN INSURANCE COVERAGE SUFFICIENT TO PROVIDE COMPENSATION FOR ANY LOSS, DAMAGE, OR EXPENSE THAT MAY ARISE IN CONNECTION WITH THE USE OF PRODUCTS OR SERVICES, EVEN IF CAUSED BY WARRANTORS' NEGLIGENCE. THE WARRANTORS ASSUME NO LIABILITY FOR INSTALLATION OF THE PRODUCT AND/OR INTERRUPTIONS OF THE SERVICE DUE TO STRIKES, RIOTS, FLOODS, FIRE, AND/OR ANY CAUSE BEYOND SELLER'S CONTROL, FURTHER SUBJECT TO THE LIMITATIONS EXPRESSED IN ANY LICENSE AGREEMENT OR OTHER AGREEMENT PROVIDED BY WARRANTORS TO PURCHASER.

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6. CHOICE OF FORUM AND CHOICE OF LAW: IN THE EVENT THAT A DISPUTE ARISES OUT OF OR IN CONNECTION WITH THIS LIMITED WARRANTY, THEN ANY CLAIMS OR SUITS OF ANY KIND CONCERNING SUCH DISPUTES SHALL ONLY AND EXCLUSIVELY BE BROUGHT IN EITHER THE COURT OF COMMON PLEAS OF DELAWARE COUNTY, PENNSYLVANIA OR THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF PENNSYLVANIA.

REGARDLESS OF THE PLACE OF CONTRACTING OR PERFORMANCE, THIS LIMITED WARRANTY AND ALL QUESTIONS RELATING TO ITS VALIDITY, INTERPRETATION, PERFORMANCE AND ENFORCEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF DELAWARE, WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW.

Effective date 05/01/2004

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CHAPTER 1: INSTALLATION

INTRODUCTION

Congratulations on your purchase of the Sensaphone Web600 Monitoring System. The system is designed to be an easy, cost-effective, network-based monitoring system to notify you when equipment or conditions go awry. The internet browser-based programming makes the device easy to use from any computer on your network. Monitored conditions can include temperature, humidity levels, line voltage, leak detection, UPS systems, and more. The system allows multiple users to be notified immediately of any detected problems. Notification can occur via e-mail, SMS (text message) or SNMP trap. An optional battery backup system (FGD-W610-B) insures that the unit will continue to run if main power fails.

FEATURES

The Web600 includes the following key features:

- Six sensor inputs to monitor environmental conditions and/or alarm contacts from other computer equipment such as UPS systems.
- 10/100BASE-T Ethernet port.
- Optional battery backup for uninterrupted performance.
- Compact design allows wall-mount or tabletop installation.
- Embedded web page to program and manage your Web600 system.
- Notification via e-mail, SMS (text message) or SNMP trap.

TECHNICAL SUPPORT

If any questions arise upon installation or operation of the Web600, please contact the Sensaphone Technical Service Department at 610.558.2700 and have the following information available:

- Date of purchase _____
- Serial number _____

Technical support is available from 8:00 AM to 5:00 PM, M-F, eastern time.

ABOUT THIS MANUAL

This manual comprises the instructions and commands necessary to install and program the Web600. Additional summary and application chapters are included to help you speed programming and to understand the Web600's features. You should thoroughly read this manual to establish a basic understanding of the system and keep it as a reference.

INSTALLATION AND CONFIGURATION

PHYSICAL DESCRIPTION

The Web600 is housed in a 5.5”w x 3.7”h x 1.4”d enclosure, which can be easily wall mounted.

LAYOUT

The Web600 has connections for six sensor inputs, an ethernet port, battery backup, and 5VDC power. See figure below:



Figure 1: Front Panel Layout of the Web600

- 1) 5V DC Power Jack
- 2) Battery Backup Connector
- 3) Ethernet Jack
- 4) Sensor Input Terminal Strip
- 5) Status LEDs

RJ-45 10/100BASE-T ETHERNET PORT

This jack is for connecting to your network so that the Web600 can send alarm messages and display its webpage. Two LEDs indicate when the Web600 has a valid link (green) and transmitted/received data (yellow).

SENSOR INPUTS

The sensor inputs labeled zones 1-6 are designed to interface with normally open/normally closed devices, 2.8K or 10K temperature sensors and 4-20mA transducers.

POWER ON LED (GREEN)

This light indicates that the Web600 unit is powered and operational.

ALARM LED (RED)

The Alarm LED is a visual indication that an alarm exists.

INSTALLATION

This section provides information on:

- Operating environment
- Installation
- Connecting sensors/Battery backup module
- Network Configuration

PARTS REQUIRED

- Phillips Screwdriver
- Cat 5 Patch Cable
- Network Hub, Switch, or Router that supports 10 or 100 BASE-T
- Computer w/Network Connection

OPERATING ENVIRONMENT

Before you install the Web600 be sure that your operating environment meets the physical requirements of the equipment.

Operating Temperature:	32° – 122° Fahrenheit (0° – 50° C)
Humidity:	5 – 90 %RH, non-condensing
Power:	115VAC 60 Hz outlet within 6'

WALL MOUNT INSTALLATION

The Web600 can be wall mounted using the included dry wall anchors and screws. Follow the steps below:

- 1) Install two drywall anchors (if necessary) 5” apart. Attach the Web600 using the two #6 tapping screws.
- 2) Attach sensors to the zone terminals.
- 3) Plug the power adaptor into a 115VAC 60Hz outlet.
- 4) Connect a CAT5 cable to the Ethernet port and connect to a 10/100 network hub, switch or router.

TABLETOP INSTALLATION

The Web600 can be installed on a tabletop or shelf. Follow the steps below:

- 1) Attach the four self-adhesive rubber feet to the four corners on the bottom of the Web600.
- 2) Place the unit on a tabletop or shelf.
- 3) Attach sensors to the input terminals.
- 4) Plug the power adaptor into a 115VAC 60Hz outlet.
- 5) Connect a CAT5 cable to the Ethernet port and connect to a 10/100 network hub, switch or router.

CONNECTING SENSORS

The Web600 is compatible with a wide variety of sensors including normally open/normally closed contacts, 2.8K and 10K temperature sensors, and 4–20mA current sources. Contact Sensaphone or your Sensaphone reseller for assistance in selecting sensors for your monitoring requirements. A list of sensors and accessories is shown in Appendix C. Follow the instructions below to properly wire and configure the inputs for each type of electrical signal.

Warning: The inputs are designed to work with low voltage signals. DO NOT connect voltages greater than 5V to the inputs. DO NOT connect 120VAC to the inputs.

GENERAL WIRING CONSIDERATIONS

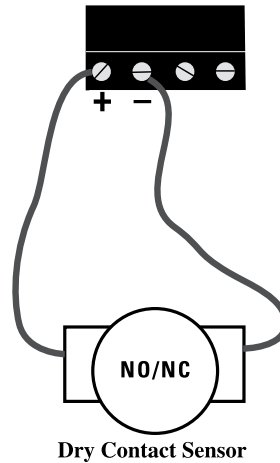
Most dry contact sensors can be connected to the Web600 using inexpensive 2-conductor twisted-pair cable as small as #24 AWG. For temperature and 4–20mA sensors, use the wire chart below as a reference for selecting the appropriate wire gauge. Note that if the sensor is located far from the unit or if you are running cable in an electrically noisy environment, you should seriously consider using twisted pair shielded cable. This will shield the signal from electrical interference, thereby preventing false readings and/or damage to the unit. For your convenience, Sensaphone has 22 gauge shielded cable available in 50' lengths (part number FGD-0010). To minimize electrical noise coupling between sensor wires and other wiring, follow the guidelines listed below:

- Route the power supply and network cables to the unit by a separate path than the wiring to the sensor inputs. Where paths must cross, their intersection should be perpendicular.
- Do not run sensor wiring and AC power in the same conduit.
- Segregate wiring by signal type. Bundle wiring with similar electrical characteristics together.
- If shielded cable is used tie the shield to the negative input terminal of the input.

<u>Wiring Distance</u>	<u>Minimum Wire Gauge</u>
700'	#24 AWG
1500'	#22 AWG
2500'	#20 AWG

NORMALLY OPEN / NORMALLY CLOSED DRY CONTACTS

Dry contact sources consist of alarm relays or switches that are isolated and have no external voltage applied. These devices can be connected directly to the zone terminals without regard for polarity. Choose a zone and connect the wires to the corresponding screw terminals for that zone. The following figure shows how to connect a dry contact sensor:



Wiring a Dry Contact Sensor

2.8K/10K TEMPERATURE SENSORS

The Web600 is compatible with 2.8K/10K temperature sensors that match the curve data listed in the tables in Appendix F. The monitoring temperature range of the 2.8K thermistor is -109 to 115°F (-85° to 57°C) and the 10K thermistor is -87° to 168°F (-66° to 76°C). Temperature sensors can be connected directly to the zone terminals without regard for polarity. Choose an input and connect the wires to the corresponding screw terminals for that zone. 2.8K and 10K temperature sensors are available from Sensaphone. See Appendix C for part numbers. The figure below shows how to connect a temperature sensor:



Wiring a Temperature Sensor

4-20mA CURRENT LOOP TRANSDUCERS

The inputs on the Web600 are compatible with transducers that produce an analog output current of 4 to 20mA. Such transducers are available to measure tank and well levels, extreme temperatures, air pressure, water pressure, flow, voltage, current, rotational speed, etc. Contact our technical support department for assistance regarding your monitoring requirements. Follow the wiring diagrams below for connecting a 4-20mA device:

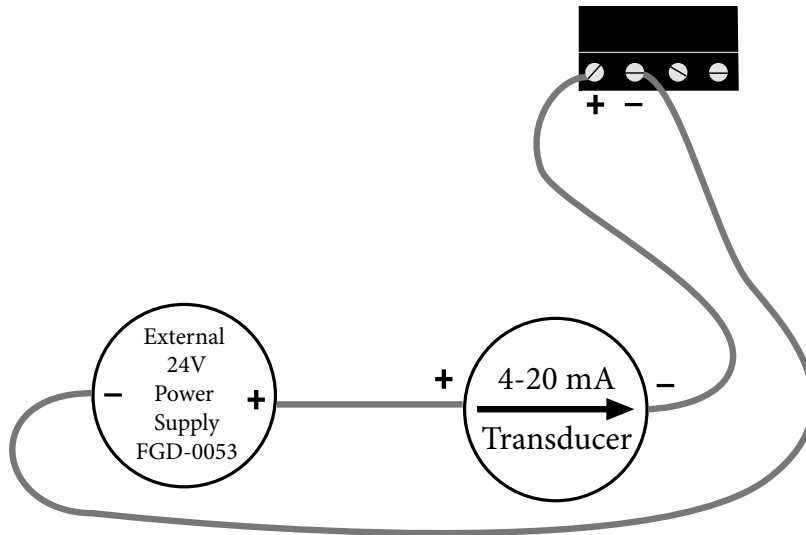


Figure 10: Wiring a 4-20mA device using an external 24 VDC supply.

BATTERY BACKUP (OPTIONAL)

The WEB600 has an optional rechargeable battery backup module available (part #FGD-W610-B) which can provide up to 2 hours of backup time in the event of a power failure. The battery module connects to the WEB600 using a short cable included with the battery module. Simply connect the cable to the Battery Backup connector on the WEB600. The unit will charge the battery and monitor its charge level. The percent charge can be viewed on the Summary screen. Note that upon initial connection it may take up to 5 minutes for the unit to discover that a battery has been connected. Once the WEB600 sees the battery it will enable the battery channel on the Battery programming screen (see Zones menu). To receive a low battery alarm you must enable Alarm Message Delivery and configure the Alarm Schedule accordingly. You must also set a Low Alarm Limit – a value not lower than 20% is suggested. Once the battery reaches this level it has very little capacity left and will shutdown the system within a short period of time. The battery module contains circuitry to protect the battery from deep discharge damage and will disconnect the load when all of its available energy has been expended.



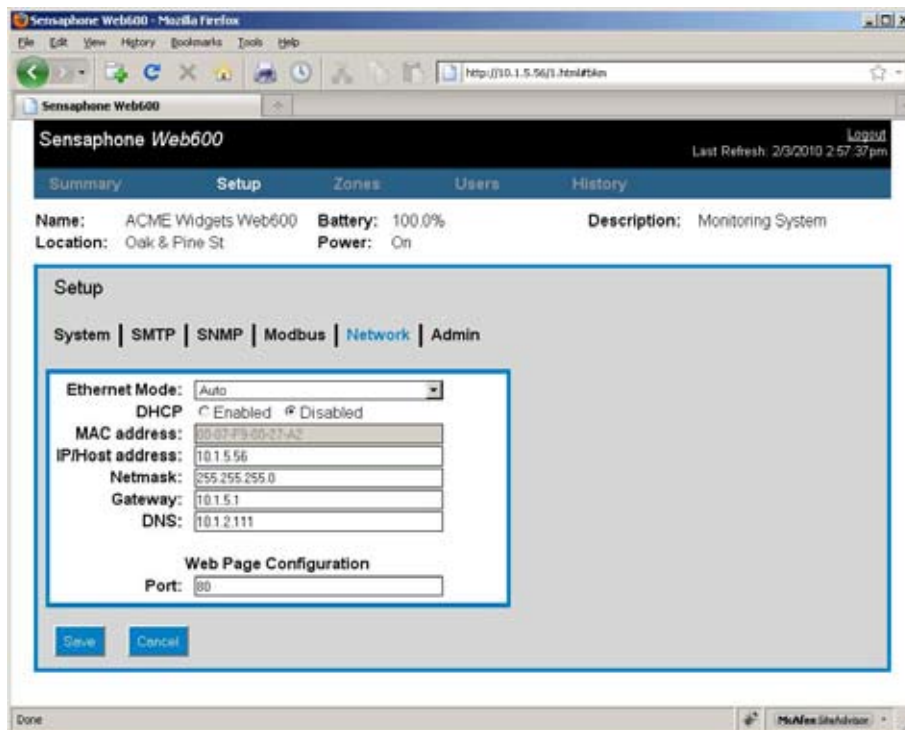
Battery back up module and WEB600

NETWORK CONFIGURATION

The Web600 is designed for installation on an Ethernet network. This involves assigning it an IP address. By default the Web600 will try to acquire an IP address automatically using DHCP. If it is successful you can then use the Sensaphone Locator program to find the Web600 on your network and then assign it a fixed IP address. The network configurations page can be found on the *Network* tab within the *Setup* page. If no DHCP server is found the unit will fallback to a fixed IP address of 192.168.1.250. Follow the instructions below depending on which scenario applies to your network:

Automatic Network Configuration Using DHCP:

If your network supports DHCP then simply plug the network jack into the Web600's Ethernet port and turn it on. Allow the unit to finish booting up (1-2 minutes). Next, install the Sensaphone Locator program on the included CDROM (or download it from www.sensaphone.com). After installation, run the Sensaphone Locator program and click the Search button. A list of detected Web600's will be displayed showing their IP address and MAC address (Web600 serial number). Click on the Web600 in the list and then click *Connect* and your browser will open to the WEB600 homepage. Click Setup, then Network to view the Network Configuration page.



Configuration page

Network Configuration using a Static IP Address:

If your network does not support DHCP then your Web600 will set its IP address to 192.168.1.250. This address should only be temporarily set. Leaving this address as the factory default could result in networking conflicts if another Web600 is added to your network.

If your network does not support DHCP then you will have to use one of the following methods to change the IP of the Web600 for the first time.

- 1) Using a standard RJ45 crossover cable (not included) connect your PC's network jack to the Web600 temporarily. Change the IP of your computer's network connection to something in 192.168.1.xxx that is not the same as the default IP of the Web600.

After navigating to the network configuration page, you should now be able to access the network configurations of your Web600, and set them accordingly.

NOTE: It is highly recommended that you consult all network configurations and settings changes with your Network Administrator.

2) Using a network hub connect only your PC and the Web600 to the hub. Change the IP of your network connection to something in 192.168.1.xxx that is not the same as the default IP of the Web600. After navigating to the network configuration page, you should now be able to access the network configurations of your Web600 and set them accordingly.

NOTE: It is highly recommended that you consult all network configurations and settings changes with your Network Administrator.

3) Using a network router that is configured for DHCP server connect both your Web600 and your computer to the router. Power cycle your Web600. Configure your computer's network connection for using DHCP. Once the Web600 has rebooted it should have acquired an IP from the router's DHCP server. Log into your router and see what IP the router gave to the Web600. After navigating to the network configuration page, you should now be able to access the network configurations of your Web600 and set them accordingly.

NOTE: It is highly recommended that you consult all network configurations and settings changes with your Network Administrator.

Once you have access to the Network Configuration page change the DHCP Status to Disabled and enter a permanent fixed IP address. Enter the other network settings also. Consult with your network administrator if your unsure of the proper settings. Click Save when done.

NETWORK PARAMETER DESCRIPTIONS

Ethernet Mode: This setting selects the network speed that the Web600 can communicate at. If set to "auto" the Web600 will determine and use the fastest speed that your network supports.

DHCP Status: Enabling this option means that the Web600 will automatically obtain an IP address on the network using Dynamic Host Configuration Protocol (DHCP). Disabling this option means that you will have to configure the network parameters manually.

MAC Address: This is the Media Access Control address which, in general terms, is the hardware address for the Web600 Ethernet port. There is a unique address for all network devices.

IP/Host: This is the entry field for manually configuring the IP address of the Web600 on your network. This address is provided by you or your network administrator. It is formatted as a standard dotted decimal number.

Netmask: This is the subnet mask which distinguishes the portion of the IP address that is the network ID from the portion that is the station ID.

Gateway: A TCP/IP network must have a gateway to communicate beyond the LAN identified by the network ID. A gateway is a computer or router that is connected to two different networks and can move TCP/IP data from one to the other. If your TCP/IP network has more than one LAN or if you are connecting to the Internet, you will need to know the IP address of the gateway that will transfer TCP/IP data in and out of your LAN. A single LAN that is not connected to other LANs does not require a gateway setting.

DNS: The DNS server is used to translate site names into actual numeric network addresses. Enter the IP address of the DNS server for your network.

Web Page Port Number: Allows selection of the port number that the webserver will use to host the web page. Default is 80. If changed from the default you must include the port number in your browser address (example: 192.168.1.250:85)

INSTALLING THE SENSAPHONE LOCATOR SOFTWARE

The Sensaphone Locator software is used to find your WEB600 on your network. This is convenient when your WEB600 was configured using DHCP since it will tell you the IP address that was assigned to your WEB600 and provide a Connect button to open a web browser window to the device's web page.

Installation Instructions

1. Insert the WEB600 CD into your computer.
2. Double click install_locator.exe

You will now see the Installation Options screen:



You will want to leave the Locator executable checked. To prevent the creation of a Start Menu or Desktop shortcut, simply uncheck the box next to the option.

When you are satisfied with the installation options, press the Next button.

You are now presented with the following dialog:



This dialog allows you to specify the location where the executable will be installed. When you are satisfied with this value, press the Install button.

The installation will be performed and a progress bar will be displayed to inform you of the application's progress. When the installation has been completed, you will see the following:



Press the OK button to continue. Then click Close. The Sensaphone Locator application is now installed.

USING THE SENSAPHONE LOCATOR SOFTWARE

Run the Sensaphone Locator application by double-clicking the Sensaphone Locator icon on your desktop, or selecting Start -> Programs -> Sensaphone Locator -> Sensaphone Locator. The Sensaphone Locator application will display a screen similar to the one below:



Pressing the Search button will rescan your network for any Sensaphone devices that may be connected. Your specific device can be identified by using the MAC Address field of the Sensaphone Locator, which will be identical to your serial number. Click on your device within the Sensaphone Locator application and click the Connect button. Your web browser will launch, taking you to the Web600's homepage. Your Web 600 is now ready for use. Be sure to read the Network Configuration section of the manual for further configuration options - such as configuring a static IP address.

RESETTING THE WEB600 TO FACTORY DEFAULT SETTINGS

In the event that you can no longer connect to your WEB600 or simply have forgotten the password, you can reset the unit to factory defaults. On the bottom of the enclosure is a small hole. Beneath the hole is a push button. Insert a paper clip or similar item into the hole and push the button for 5 seconds while the device is powered on. The WEB600 will erase all of its programming and then reboot automatically.

CHAPTER 2: SYSTEM CONFIGURATION

INTRODUCTION

The WEB600 is completely programmable from the internal webpage. This makes it easy to setup, program, and utilize the features of the device. The webpage can be accessed by opening your internet browser (Internet Explorer, Firefox, Safari, ...) and entering the IP address of your WEB600 (see the Network Configuration section in Chapter 1 for assistance). The menu items along the blue bar at the top of screen will help you locate specific programming parameters and features. The Summary screen is your main page to view the current status of all monitored conditions.



Summary Screen

SETUP MENU

The Setup screen provides access to several menus dealing with the configuration of the device. They are divided into the following areas: System, SMTP, SNMP, Modbus®, Network & Administration. A description of each area and the associated programming parameters are described below.

SYSTEM

The System settings are used to describe and configure general properties of the system. The information entered into the Unit Name, Description, and Location fields will appear at the top of the webpage and on e-mail alarm messages. The Unit Name will appear on SMS text messages. Use these to help identify the facility and/or location so that when alarms occur you'll know exactly where the trouble occurred.

This screen also provides an entry for a Time Server. This can be used to periodically synchronize the system clock to keep it accurate. Simply enter the address of a time server in this field and the WEB600 will automatically synchronize to it on a periodic basis. You can enter a host name or IP address in this field. The system supports TP (Time Protocol on port 37). To set the time, click the Change System Time box and enter the date and time, then click Save.

The Escalation Delay provides the ability to delay alarm delivery to selected users that may only be interested in receiving alarms if they persist for a particular length of time. Each user can have a programmable Escalation Priority from 1 to 8. When an alarm occurs the WEB600 will deliver alarm

messages to all users at priority level 1. Then it will wait the duration of the Escalation Delay and send messages to priority level 2, as long as the alarm still exists, and so on with priority 3, 4, 5,.... If the alarm no longer exists, those users who have higher escalation levels will **not** be contacted.

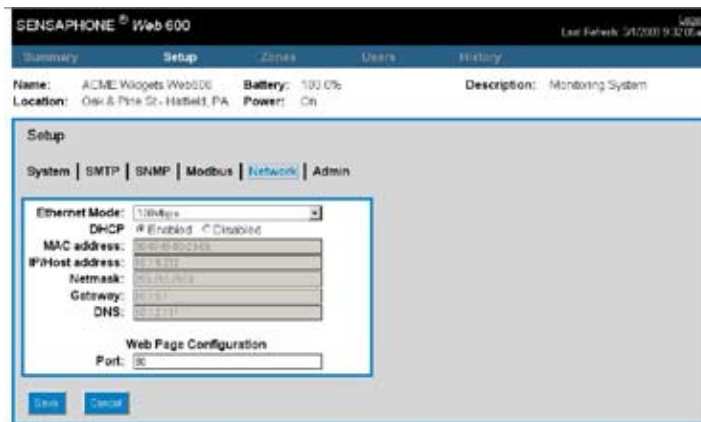
The Summary Mode lets you choose the way in which the bar graph on the summary page appears. There are two modes of operation: Arrow Mode and Bar Mode. The Arrow Mode displays an arrow next to the bar graph which corresponds to the current value. White lines are used to mark the minimum and maximum levels. The normal range will be displayed with a green background, alarm ranges will be displayed in red. The Bar Mode differs in that the value is indicated by the top of the colored bar. The bar will be green if the value is in the normal range. It will turn yellow if the value gets within 10% of the alarm limits and it will turn red when the value is beyond the alarm limits. The range of the bar gauge can be configured in the Zone programming screen.



System setup screen

NETWORK

The Network Settings page allows you to view and configure all parameters associated with accessing the device via the Ethernet port. (see Network Configuration in chapter 1 for details). This screen also displays the device MAC address and lets you configure the web page port number. Note that if you change the port number to anything other than 80 (default) you will be required to enter the port number as part of the device address in your browser (e.g xxx.xxx.xxx.xxx:### where x's represent the ip address and #'s represent the port number).



SMTP

The SMTP (Simple Mail Transfer Protocol) section is where you must configure your e-mail server settings. To have the unit send e-mail or SMS Text messages, you need to set the SMTP Server name and the Return e-mail Address. If your SMTP server requires authentication then check the Security Enabled box and fill-in the Username and Password (if required). The WEB600 also allows you to change the SMTP port number in the event that your internet service provider is using a nonstandard port. Port 25 is the standard port number but 587 is also becoming more common as well.

Note that the Web600 will not work with SMTP servers that require TLS or SSL encryption. As a result, it will not work with web-based e-mail providers such Gmail, Hotmail, Yahoo!Mail, or AOL. If you do not have a compatible SMTP server available to you then contact Sensaphone Technical support for other options.

SENSAPHONE[®] Web 600
Last Refresh: 3/1/2009 12:21:33 AM

Summary Setup Zones Users History

Name: ACME Widgets Web600 Battery: 100.0% Description: Monitoring System
Location: Oak & Pine St - Hatfield, PA Power: On

Setup

System | SMTP | SNMP | Modbus | Network | Admin

Server:
Return Address:
Port:
Security: Enabled Disabled
Username:
 Change Password
Password:
Verify Password:

SMTP screen

SNMP

The WEB600 contains an SNMP (Simple Network Management Protocol) feature that allows the device to be accessed from third party network management software. The unit supports versions v1 and v2c of the protocol, over both UDP and TCP transports. Read and write access to most of the WEB600 parameters is provided along with the ability to send traps when alarms occur. A complete SNMPv1 MIB is provided on the WEB600 CD.

SENSAPHONE[®] Web 600
Last Refresh: 3/1/2009 12:23:07 AM

Summary Setup Zones Users History

Name: ACME Widgets Web600 Battery: 100.0% Description: Monitoring System
Location: Oak & Pine St - Hatfield, PA Power: On

Setup

System | SMTP | SNMP | Modbus | Network | Admin

SNMP Settings
SNMP: Enabled Disabled
Read-Only String:
Read-Write String:

SNMP screen

OIDs for Input Values

Zone 1 Value .1.3.6.1.4.1.8338.1.1.4.1.1.1.1.48

Zone 2 Value .1.3.6.1.4.1.8338.1.1.4.1.1.1.2.48

Zone 3 Value .1.3.6.1.4.1.8338.1.1.4.1.1.1.3.48

Zone 4 Value .1.3.6.1.4.1.8338.1.1.4.1.1.1.4.48

Zone 5 Value .1.3.6.1.4.1.8338.1.1.4.1.1.1.5.48

Zone 6 Value .1.3.6.1.4.1.8338.1.1.4.1.1.1.6.48

MODBUS®

The WEB600 can be accessed via Modbus®TCP protocol and function as a slave device. To use this feature select the desired Modbus® Mode, Port number, and Bit Representation for your Modbus® network.

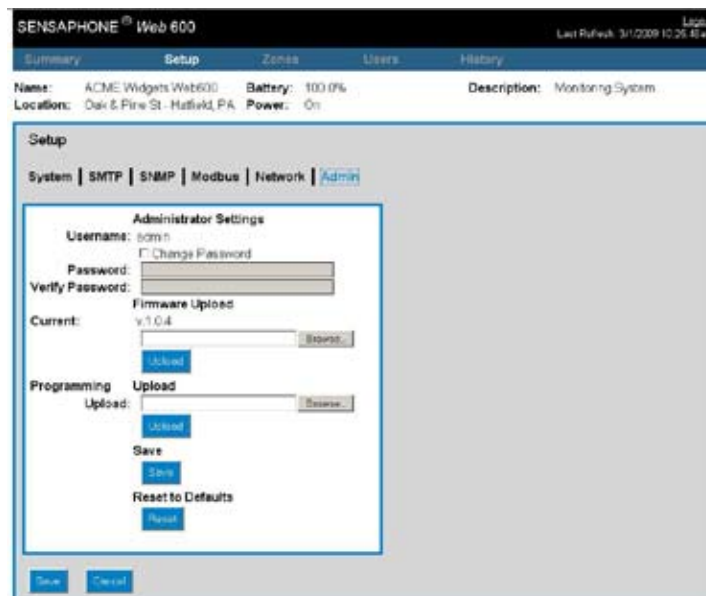


Modbus® screen

ADMIN

The Administration screen provides options to Save and Load your programming, update your WEB600 with new firmware and Reset to factory defaults. You can also choose to enable security for your WEB600. A System Administrator password must be created before any of your User Profile logins will become active. To create a System Administrator password check the Change Password box and enter a password. The username for the Administrator account is “admin”. To delete the administrator account (and disable user logins) simply delete the admin password and click Save.

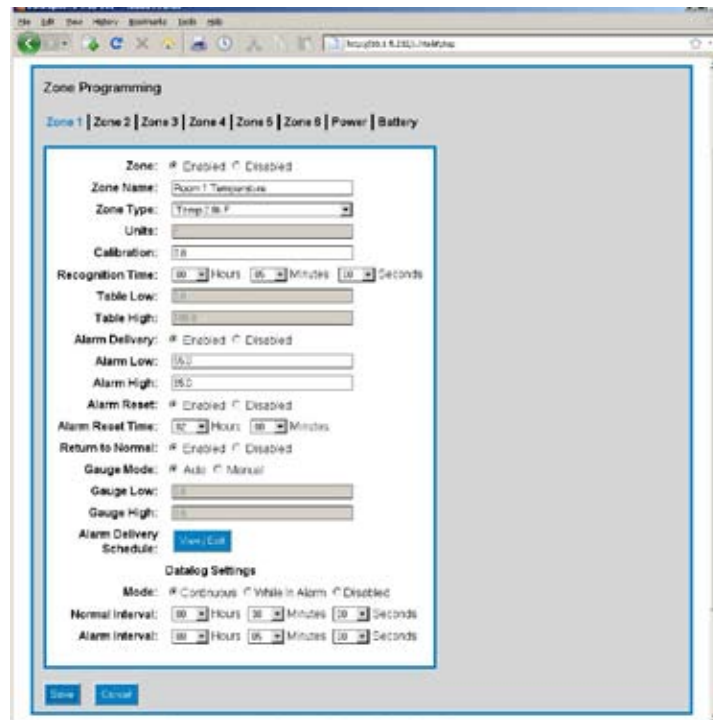
The Programming Save function will create a file that includes all programming except the Network settings and the Administration Password. Likewise when a file is loaded, the Network settings and the Administration password will be preserved. Note that Uploading a programming file will erase the contents of the Eventlog and Datalog.



Admin Screen

CHAPTER 3: ZONE PROGRAMMING

This chapter explains how to program the Zone Inputs for monitoring and alarming based on your requirements. The WEB600 features numerous settings for customizing the operation of the device. To begin, click on Zones from the menu bar. The following screen will appear:



Zones page

The Zone Programming page displays a link for each of the six Zones, as well as a link for Battery and Power monitoring. Note that the battery back-up option (FGD-W610-B) is required for power monitoring. A description of each parameter is described below.

Enable/Disable: This setting determines if the Zone is being used (Enabled) or not (Disabled). Selecting Disabled will remove the gauge from the Summary screen.

Name: Enter a name for the sensor you are monitoring which describes its purpose and/or location. The name will appear on the Summary screen as well as on alarm messages.

Type: Choose the type of sensor you are connecting to the Zone input. For temperature sensors choose either degrees F or C.

Units: The units field is only used when the Zone Type is 4-20mA. Enter a description which corresponds to the property you're monitoring (e.g. %RH, PSI, GPM, RPM,...)

Calibration: This field can be used to offset the Zone value either positive or negative if there is some error in the reading.

Recognition Time: This is the length of time that an alarm condition must be present before a valid alarm exists and message delivery is started.

Table Low: The Table Low value is used to define the lower range (4mA) of your 4-20mA sensor.

Table High: The Table High value is used to define the upper range (20mA) of your 4-20mA sensor.

Alarm Delivery Enable/Disable: When Enabled, alarm messages will be delivered, if set to Disabled alarm messages will not be delivered.

Alarm Low: This is used to determine the low level at which a temperature or 4–20mA Zone has reached the alarm threshold. The value must fall below the Alarm Limit to trip an alarm.

Alarm High: This is used to determine the high level at which a temperature or 4–20mA Zone has reached the alarm threshold. The value must exceed the Alarm Limit to trip an alarm.

Alarm Reset Enable/Disable: This setting enables or disables the Alarm Reset Feature. The Alarm Reset feature is used to re-send alarm messages in the event that a fault condition is not corrected in a timely fashion. If an alarm continues to exist for the duration of the programmed Reset Time (see below) the alarm will reset (reactivate) and the alarm message delivery process will begin all over again. This is an optional feature.

Alarm Reset Time: This is the time allowed for an alarm's fault condition to be corrected before the WEB600 resets (reactivates) the alarm and begins the message delivery process all over again. It is recommended that this be set to no lower than 30 minutes to prevent numerous messages from being sent.

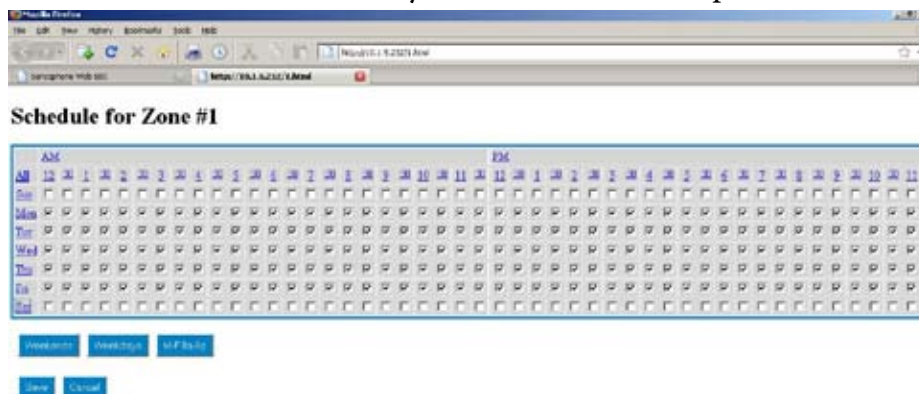
Return to Normal Enable/Disable: This feature instructs the WEB600 to send a message when a zone input has changed from an alarm condition back to a normal condition. Anyone who received the original alarm message will also be sent the Return-to-Normal message.

Gauge Mode: The gauge mode has 2 settings: Auto and Manual. When set in the Auto mode the top and bottom scale for the bar gauge on the Summary screen will be automatically computed based on the minimum and maximum values. When set to Manual mode you can configure the scale yourself using the Gauge Low and Gauge High settings below.

Gauge Low: This value sets the low scale on the bar gauge when configured for Manual mode.

Gauge High: This value sets the high scale on the bar gauge when configured for Manual mode.

Alarm Delivery Schedule: This weekly schedule sets the time period(s) when alarm delivery will be active for the selected zone. The schedule is divided into half-hour increments over the seven weekdays. A check mark indicates that alarm delivery is active for that time period.



Zone schedule

Datalogging Mode: The WEB600 has two modes of data logging for each zone: Continuous or While In Alarm. In Continuous mode the unit will log the value of the input on a fixed time interval all the time. The Normal Interval sets the logging rate while the value is within the normal range. The Alarm Interval sets the logging rate while the value is an alarm condition. By choosing the While In Alarm mode you can choose to have the unit only log values when it exceeds the alarm limits. This option minimizes the amount of data collected and maximizes the storage capacity inside the WEB600.

Normal Datalog Interval: This is the interval that data will be logged while the input is within the programmed alarm limits. To maximize the available memory for datalogging, set the Datalog Interval for each zone to multiples of each other. For example, Zone 1 can be set to 30 seconds, Zone 2 to 1 minute, Zone 3 to 5 minutes, etc...

Alarm Datalog Interval: This is the interval that data will be logged while the input is beyond the programmed alarm limits. (Note: this is regardless of the programmed Alarm Recognition Time).

Datalogging Capacity

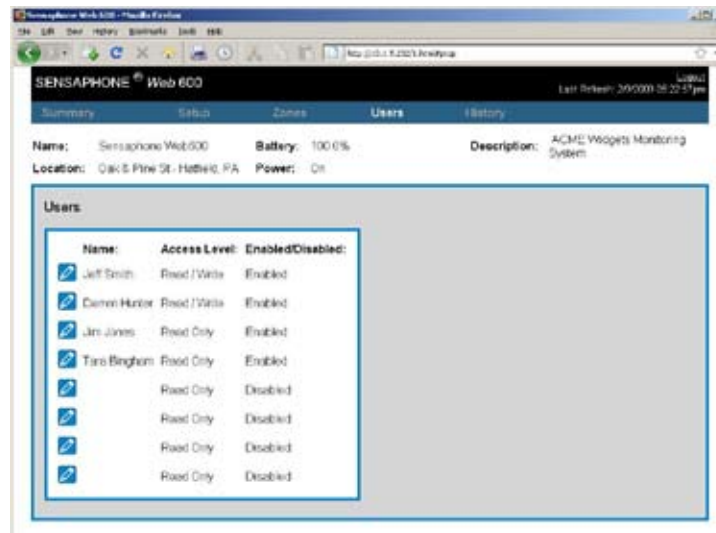
The datalogging capacity of the Web600 varies depending on how many zones you're logging and what the logging interval is for each. Memory is maximized if the logging interval for each zone is in multiples of each other. For example, if Zone 1 is set to 1 minute and Zone 2 is set to 5 minutes, you'll get better memory usage than if Zone 1 were set to 1 minute and Zone 2 was set to 2.5 minutes. Here are some typical results:

- If you only log 1 zone (at any interval), the Web600 will store a maximum of 115, 800 samples
- If you log 6 zones at the same interval, the Web600 will store 39,900 samples of each zone
- If you log all 8 zones at the same interval, the Web600 will store 35,900 samples of each zone

Once the datalogger is full it will start overwriting the oldest records.

CHAPTER 4: USER PROGRAMMING

This chapter explains how to setup User accounts including Username, Password, Access Level, Escalation Level, Schedules, and Contact methods. To begin, click on Users from the menu bar. The following screen will appear:



User Programming Screen

The WEB600 allows you to have up to 8 Users. Each User can have up to 4 contact (e-mail, SMS-Text Message, or SNMP trap). You can choose to have a secure system with separate Usernames and Passwords for each user, or you can choose to make the device accessible with no security (e.g. no login required). Note that to have a secure system using Usernames & Passwords you must first create an Admin password on the Admin Setup screen. Click on the Edit button next to each user to configure their settings.

A description of each parameter is described below.

Enable/Disable: An Enabled User can login to the system and alarm messages will be delivered. A Disabled User cannot login and no alarm messages will be delivered. This feature is useful to temporarily suspend access or alarm delivery without deleting all of the User's programming.

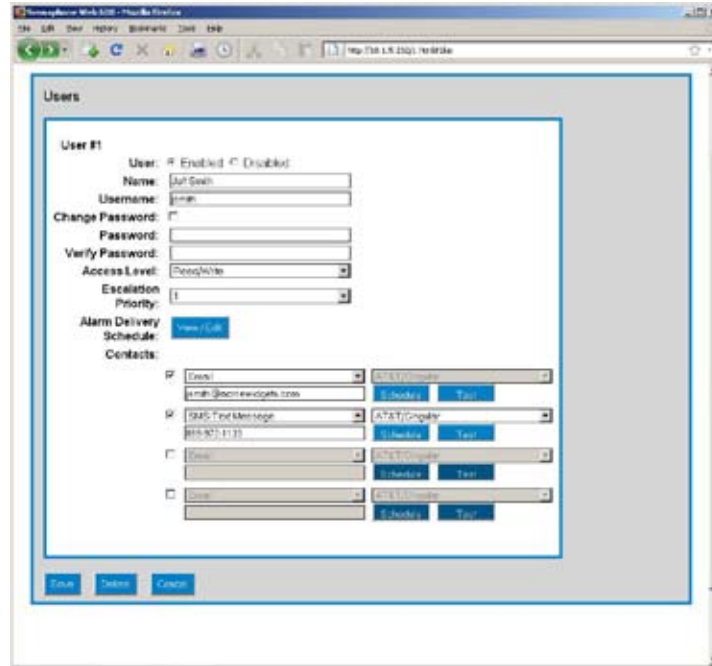
Name: Enter the User's name in this field.

Username: Enter a Username for login purposes (optional)

Password: Enter a Password for login purposes (optional)

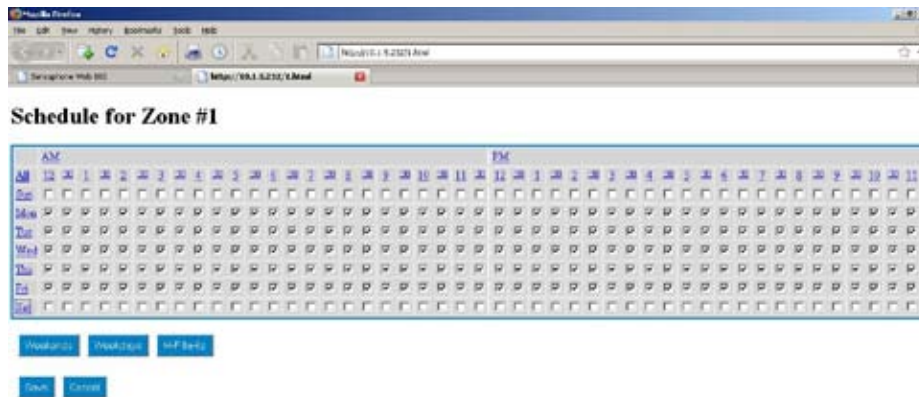
Access Level: If you are configuring a secure system then you must assign the User either Read Only access or Read/Write access. Read Only access means that this user can only view the Summary page and query the History logs. Read/Write access gives the user full programming privileges to the system except for the Network and Admin screens.

Escalation Priority: This can be set to any number between 1 and 8. Users set to escalation level 1 will immediately receive alarm messages. Those set to higher escalation levels will have their alarm messages delayed by the time entered for the Escalation Delay on the System Setup screen. If the alarm condition resets or corrects itself before the Escalation delay expires then no message(s) will be sent to those users with a higher escalation setting. This feature is useful for staggering alarm message delivery based on the duration of the alarm condition.



User Programming Screen

Alarm Delivery Schedule: This weekly schedule sets the time period(s) when alarm delivery will be active for the selected User. The schedule is divided into half-hour increments over the seven weekdays. A check mark indicates that alarm delivery is active for that time period.



Pic of Schedule

CONTACT PROGRAMMING

The WEB600 allows you to program up to 4 Contacts per User. The Contacts can be either: E-mail, SMS-Text Message, or SNMP Trap. Each contact can have a programmable Schedule so that you only receive messages when your Contact schedule is enabled. A Test button is also provided to check your programming. When you click the Test button a test message will be sent to verify that everything is working properly. Note: the Test button will not work until you have saved your programming.

E-MAIL PROGRAMMING

To configure an e-mail address choose E-mail from the drop-down list and enter your e-mail address in the field below. Configure the Contact Schedule if desired.

SMS-TEXT MESSAGE PROGRAMMING

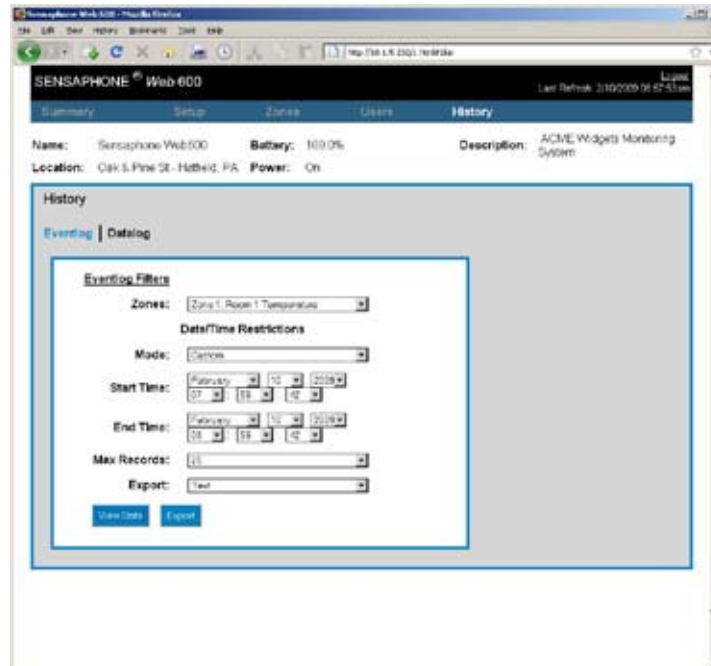
To configure a SMS-Text Message choose SMS-Text Message from the drop-down list and enter your telephone number in the field below. Choose your wireless provider from the drop-down list. Configure the Contact Schedule if desired.

SNMP TRAP

To configure an SNMP Trap choose SNMP Trap from the drop-down list and enter your SNMP Server Name or IP address in the field below. Configure the Contact Schedule if desired.

CHAPTER 5: HISTORY

This chapter explains how to query the Event and Data Log History. The Event Log is a time-stamped list of system events such as System Startup, Alarm Detection, Message Delivery, ... The Data Log contains time stamped records of the input values. The logging rate is configured on the Zone programming screen for each input. The query results can be viewed on screen within your browser or they can be exported to other file formats (TXT, CSV, XML) for use within other programs, such as Excel. To begin, click on History from the menu bar. The following screen will appear:



History Screen

EVENT LOG QUERY

Select Event Log from the top of the screen. Select a particular Zone to narrow your query results to events associated with a particular Zone or choose All to see all event types in the Event Log. You can narrow the results from a particular time period by selecting the Mode drop-down. This gives you options to choose events from the *Previous 24 Hours*, the *Last 7 days*, the *Current Month* or you can select a *Custom* time period. When you choose Custom the Start Time and End Time fields will become active. Enter the start and end times for your query. Next, choose the maximum number of records you want returned for your query, the choices are 25, 50, 100 and All. Finally, click the View Data button to display the results. Alternatively you can Export the results to a file for viewing in another program. Choose the Export file format from the drop-down list (XML, CSV, TXT) and click the Export button to create a file.

DATALOG QUERY

Select Data Log from the top of the screen. Select a particular Zone to narrow your query results to a particular Zone or choose All to see samples from all Zones. Next, choose whether you'd like to view All samples, all Normal samples, or specifically samples that exceeded the alarm limits. You can narrow the results from a particular time period by selecting the Mode drop-down. This gives you options to choose events from the *Previous 24 Hours*, the *Last 7 days*, the *Current Month* or you can select a *Custom* time period. When you choose Custom the Start Time and End Time fields will become active. Enter the start and end times for your query. Next, choose the maximum number of records you want returned for

your query, the choices are 25, 50, 100 and All. Finally, click the View Data button to display the results. Alternatively you can Export the results to a file for viewing in another program. Choose the Export file format from the drop-down list (XML, CSV, TXT) and click the Export button to create a file.

The screenshot shows a web interface for data logging. At the top, there are tabs for 'History' and 'Datalog'. Below this is a 'Datalog Filters' section with several controls: 'Zones' set to 'Zone 1 Room 1 Temperature', 'Records' set to 'All', 'Mode' set to 'Custom', 'Start Time' set to 'February 10, 2009 at 06:00am', 'End Time' set to 'February 10, 2009 at 06:15:00am', 'Max Records' set to '25', and 'Export' set to 'CSV'. There are 'View Data' and 'Export' buttons. Below the filters is a table with three columns: 'Date', 'Value', and 'Data'. The table contains seven rows of data.

Date	Value	Data
Tuesday, February 10, 2009 at 06:00:00am	72.2	Room 1 Temperature
Tuesday, February 10, 2009 at 06:10:00am	72.2	Room 1 Temperature
Tuesday, February 10, 2009 at 07:00:00am	72.1	Room 1 Temperature
Tuesday, February 10, 2009 at 07:10:00am	72.2	Room 1 Temperature
Tuesday, February 10, 2009 at 06:40:00am	72.2	Room 1 Temperature
Tuesday, February 10, 2009 at 06:15:00am	72.2	Room 1 Temperature

Datalog screen

CHAPTER 6: OPERATION

Once you have finished installing and programming the WEB600 the unit is fully operational. Be sure to test each sensor to make sure your alarm messages will be delivered as expected. Below is a description of how the internal logic handles alarm message delivery for enabled inputs.

ALARM PROCESSING

When a zone exceeds the programmed alarm limit (or if a contact changes state) the WEB600 will start its alarm recognition timer and the Status on the Summary screen will change from OK to Waiting, to indicate that the zone may become an alarm if the fault condition exceeds the programmed recognition time. If Zone Alarm Delivery is disabled, the zone status will immediately change to *Alarm*. If the fault becomes an alarm, the WEB600 will display the Status as either High, Low or Alarm, in red, to indicate that an alarm exists and the Last Alarm time-stamp will update to reflect the time of the alarm. Note that if Zone Alarm Delivery is disabled while an alarm condition exists, no messages will be delivered and any existing alarm message processing will be cancelled.

Once an alarm meets the recognition time, the WEB600 will check to see if the Zone Alarm Delivery Schedule is enabled. If it is, then alarm processing continues. If the Zone Alarm Delivery Schedule is or becomes disabled, alarm processing will be cancelled.

Next, the unit will check the programmed Users and corresponding Contacts to see if alarm messages should be delivered. First, the unit will locate all Users set to Escalation Priority 1. Then it will check to see if the User is Enabled. Any Users that are not Enabled will immediately be discarded from receiving the alarm message. Next the unit will check the User Alarm Delivery Schedule. If the User Alarm Delivery Schedule is enabled then alarm processing continues, if not, alarm processing to this User will be suspended until either the Alarm Delivery Schedule becomes enabled or the alarm condition clears. If the Alarm Delivery Schedule becomes enabled the Web600 will proceed to check the Contact programming to see if alarm messages should be sent. Note that if a User is Disabled while the alarm condition still exists, then alarm message processing will be canceled for that User.

The Web600 will now check to see if any Contacts are enabled. Any Contacts that are not Enabled will immediately be discarded from receiving the alarm message. Next, the unit will check the Contact Alarm Delivery Schedule. If the Contact Alarm Delivery Schedule is enabled then the alarm message will be sent, if not, alarm processing to this Contact will be suspended until either the Alarm Delivery Schedule becomes enabled or the alarm condition clears. If the Contact Alarm Delivery Schedule becomes enabled the Web600 will proceed to send the alarm message. Note that if a Contact is Disabled while the alarm condition still exists, then alarm message processing will be canceled to that Contact.

Alarm delivery continues until there are no more users to contact or the alarm no longer exists.

Notes on Alarm Escalation

If no alarm message(s) can be delivered to an Escalation Priority 1 User due to a disabled status, the WEB600 will proceed to Escalation Priority 2 Users, and so on, until it can immediately deliver its alarm message. If any Users below the current Escalation Level become enabled at a later time as the result of a schedule change, and the alarm still exists, then those Users/Contacts will receive the alarm message at that time. Users with Escalation Priorities above the current Escalation level will not be sent the alarm message until the Escalation Delay time activates their respective Escalation Priority level.

Notes on Alarm Reset

If the alarm reset feature is enabled and an alarm is reset, then the previous alarm will be cancelled and a new alarm will be processed from the beginning. Any users that were not yet contacted due to call escalation delay, being unscheduled, or network error will not be contacted about the cancelled alarm. The reset time must be set high enough to allow all enabled escalation levels to be notified about an alarm before it is reset.

Sample Alarm Message – (E-mail format):

From:

Sensaphone WEB600

ACME Widgets Monitoring System

Oak & Pine St - Hatfield, PA

High Alarm detected on Zone 1: Server Room Temp

Alarm occurred on Sunday, February 8, 2009 at 9:18:27pm

It is now 87.1F

Level crossed limit of 85.0F

RETURN-TO-NORMAL ALARM MESSAGES

If a zone is programmed with the Return-to-Normal option enabled, then a message will be sent to those Users/Contacts that were sent the original alarm message, informing them that the condition has gone back to a normal condition. Those Users/Contacts that did not receive the original alarm message due to Scheduling, Escalation or Network Service Disruption will not receive the Return-to-Normal message.

NETWORK SERVICE DISRUPTION

In the event that the Ethernet network (or e-mail server) becomes unavailable due to a service disruption or power failure, the WEB600 will hold the current alarm messages until service is restored, however, if both power and battery fail or the alarm no longer exists before the network services are restored then the alarm messages will be lost.

APPENDIX A: WEEKLY TESTING PROCEDURE

We recommend that you test your Sensaphone weekly to be sure it is functioning properly. This will ensure that when a problem arises the Sensaphone will be ready to alert the appropriate personnel.

There are several tests that can be performed:

1.) Create an alarm on each zone by tripping all connected sensors.

Temperature sensors: Heat or cool the sensor.

Motion sensors: Have someone walk in front of the sensor.

Door/window sensors: open the door/window.

Water sensors: Apply a small amount of water beneath the sensor or use a wet towel and touch it to the sensor probes.

Humidity sensors: Raise the humidity around the sensor by holding a cup of very hot water beneath the sensor.

2.) Allow the unit to contact all programmed users. This will make sure that the Sensaphone is programmed properly. It will also prepare personnel to respond appropriately when they receive a message from the Sensaphone.

3.) Test the battery (if installed) by unplugging the AC adapter and making sure that the Sensaphone continues to function. Keep the AC adapter unplugged so that a Power Failure alarm occurs. Plug in the AC adapter after the unit has finished.

4.) Keep a log of your tests, noting the date and whether the Web600 passed in each category tested. An example of such a log is shown below. (See “Test Log” at the end of this manual.)

WEB600 Test Log							
Date	Inputs		Alarm		Battery		
	Pass	Fail	Pass	Fail	Pass	Fail	
07/19/09	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bob H
08/20/09	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alex G.
09/19/09	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bob H.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

If you require assistance, call Sensaphone Technical Support at 610-558-2700.

APPENDIX B: ACCESSORIES

The sensors listed below are available from Sensaphone, and represent the most commonly used zone devices. Other dry contact sensors, designed for more specialized applications, may also be used. Commercial or industrial electrical supply houses can provide devices to monitor virtually any condition. For further information, contact Sensaphone Customer Service at 610-558-2700.

PART # SENSOR / SWITCH

FGD-W610-B WEB600 Battery Backup
 FGD-0006 Magnetic Reed Switch
 FGD-0007 Passive Infra-Red Detector
 FGD-0010 50' two-conductor #22AWG shielded Cable
 FGD-0013 Spot Water Detector
 FGD-0022 Temp° Alert
 FGD-0027 Humidistat
 FGD-0049 Smoke Detector with Built-in Relay
 FGD-0052 Humidity 4-20mA Transmitter
 FGD-0053 24VDC Power Supply
 FGD-0054 Power-Out Alert™
 FGD-0056 Zone Water Detector w/Water Rope
 FGD-0063 Additional 10' Water Rope for FGD-0056
 FGD-0065 Carbon Monoxide Sensor
 FGD-0066 Air Quality Sensor
 FGD-0067 Surge Suppressor
 FGD-0100 2.8k Remote Temperature Sensor
 FGD-0101 2.8k Weatherproof Temperature Probe
 FGD-0102 10k Weatherproof Temperature Probe
 FGD-0103 10k Indoor Decorator
 FGD-0104 10k Outdoor Air Weatherproof
 FGD-0205 Multi-Point Wireless I/O System

APPENDIX C: MODBUS® SPECIFICATIONS

Inputs	TYPE	VALID RANGE	BASE	OFFSET
Input Calibration (fixed-point integer)	sint16	±300.00	4x10496	169
Normal Logging Frequency (max 31 days)	uint32	0 - 2678400 s.	4x10500	
Alarm Logging Frequency (max 31 days)	uint32	0 - 2678400 s.	4x10502	
Alarm low limits	float	±80000.00	4x10583	
Alarm high limits	float	±80000.00	4x10585	
Low table limit (4-20mA)	float	±80000.00	4x10587	
High table limit (4-20mA)	float	±80000.00	4x10589	
Summary Page Gauge Low Limit	float	±80000.00	4x10591	
Summary Page Gauge High Limit	float	±80000.00	4x10593	
Name	string	0 - 32 characters	4x10595	
Recognition Time	uint16	0 - 28800 s.	4x10627	
Alarm reset time (seconds) (max 8 hours)	uint16	0 - 28800 s.	4x10629	
Input Type	uint8	0x00 - 0xFF	4x10631	
Custom Units of Measure	string	0 - 16 characters	4x10632	
Type of Units	uint8	0x00 - 0xFF	4x10648	
Arbitrary ordering number for this I/O point	uint8	0x00 - 0xFF	4x10649	
Minimum value	float	±80000.00	3x01536	42
Minimum value (fixed-point integer)	sint32	±80000.00	3x01538	
Maximum value	float	±80000.00	3x01540	
Maximum value (fixed-point integer)	sint32	±80000.00	3x01542	
Last alarm (timestamp)	uint32	Any Value	3x01546	
Real value (floating-point)	float	±80000.00	3x01550	
Real value + units (string)	string	Any Non-Null	3x01552	
Real value (fixed-point integer)	sint32	±80000.00	3x01576	
Enables/Disables the entire I/O point.	bit	TRUE or FALSE	0x01536	32
Enables/Disables Alarming	bit	TRUE or FALSE	0x01537	
Enables/Disables Alarm on return-to-normal	bit	TRUE or FALSE	0x01540	
Reset the Minimum	bit	TRUE	0x01552	
Reset the Maximum	bit	TRUE	0x01553	
Alarm Condition	uint8	0x00 - 0xFF	1x00256	42
Realtime state, ignoring recognition time.	uint8	0x00 - 0xFF	1x00270	
USER PROFILES	TYPE	VALID RANGE	BASE	OFFSET
Access level	uint8		4x00768	86
Call escalation priority level	uint8	0x00 - 0xFE	4x00769	
The user's full name	string	0 - 32 characters	4x00772	
Username for login	string	0 - 16 characters	4x00796	
Password for login	string	0 - 16 characters	4x00812	

Profile Schedule	42-byte array	Any Value	4x00828	
Enable/Disable Profile	bit	TRUE or FALSE	0x00512	10
CONTACTS				
	TYPE	VALID RANGE	BASE	OFFSET
e-mail address	string	0 - 64 characters	4x02144	87
Type of communication (voice, e-mail, SMS)	uint8	0 - 5	4x02180	
Contact Schedule	42-byte array	Any Value	4x02206	
Enable/Disable Contact	bit	TRUE or FALSE	0x00768	8

NETWORK	TYPE	VALID RANGE	BASE
DNS Server IP Address	uint32	Any Value	3x00000
Gateway IP Address	uint32	Any Value	3x00002
IP Address	uint32	Any Value	3x00004
Netmask	uint32	Any Value	3x00006
HTTP Port	uint16	1..65535	3x00008
SMTP Port	uint16	1..65535	4x00000
SMTP e-mail server name	string	0 - 32 characters	4x00001
Return address for outgoing e-mails	string	0 - 32 characters	4x00037
SMTP-AUTH user name	string	0 - 32 characters	4x00073
SMTP-AUTH password	string	0 - 32 characters	4x00089
SNMP Read-Only/Public String	string	0 - 16 characters	4x00256
SNMP Read-Write/Private String	string	0 - 16 characters	4x00272
SNMP Manager Server (host or IP)	string	0 - 32 characters	4x00288
Time Synchronization Server (host or IP)	string	0 - 32 characters	4x00324
Enable/Disable DHCP	bit	TRUE or FALSE	1x00000
SMTP-AUTH security enable	bit	TRUE or FALSE	1x00001
Enable/Disable SNMP agent	bit	TRUE or FALSE	1x00003

SYSTEM	TYPE	VALID RANGE	BASE
Name for unit	string	0 - 32 characters	4x00512
Description for the unit	string	0 - 32 characters	4x00552
Location for the unit	string	0 - 32 characters	4x00592
System time	uint32	Any Time >= 2009	4x00632
Call escalation delay (minutes)	uint8	Any Value	4x00637
Modbus®/TCP Operating Mode	uint8		4x00640
Modbus®/TCP Byte Order (Slave Mode)	uint8		4x00641
Modbus®/TCP Port (Slave Mode)	uint8		4x00642
Summary Web Page Display Mode	uint8	0 or 1	4x00649
Automatic daylight saving time adjustment	bit	TRUE or FALSE	0x00256
Reset the datalogger	bit	TRUE	0x00257
Reset the eventlogger	bit	TRUE	0x00258
System time (string)	string	Any Time >= 2009	3x00256

MODBUS® NOTES

MODBUS® ADDRESSES

Address Ranges

The Modbus® address ranges are laid out according to the following color-coded table. The format below is TxDDDDDD where “T” is the address type (bit/word, read-write/read-only) and DDDDD is a 5 digit decimal base number from 0 to 65535.

Modbus® Mode	Modbus® Address Range
bit, read-write	0x00000 - 0x65535
bit, read-only	1x00000 - 1x65535
word, read-only	3x00000 - 3x65535
word, read-write	4x00000 - 4x65535

The memory types map to the Modbus® commands as shown in the following table. The Web600 supports Modbus® conformance classes 0 and 1.

Address Type	Modbus® Commands
0	1, 5, 15
1	2
3	4
4	3, 6, 16

Address Calculation

Modbus® Address calculations are performed according to the following table:

Type	Calculation	Notes
Inputs	$\text{BASE} + (\text{OFFSET} * \text{INPUT_NUMBER})$	The input number is as follows: Zone 1 = 0 Zone 2 = 1 Zone 3 = 2 Zone 4 = 3 Zone 5 = 4 Zone 6 = 5 Power = 7 Battery = 8
Profiles	$\text{BASE} + (\text{OFFSET} * \text{PROFILE_NUMBER})$	The profile number is as follows: Profile 1 = 0 Profile 2 = 1 Profile 3 = 2 Profile 4 = 3 Profile 5 = 4 Profile 6 = 5 Profile 7 = 6 Profile 8 = 7
Contacts	$\text{BASE} + (\text{OFFSET} * ((\text{PROFILE_NUMBER} * 6) + \text{CONTACT_NUMBER}))$	The contact number is as follows: Contact 1 = 0 Contact 2 = 1 Contact 3 = 2 Contact 4 = 3
Network	BASE	
System	BASE	

Quick Access Table

The following is a quick access table to retrieve the word-access, read-only current input values as human-readable ASCII strings. Use the Modbus® command “4” to access the data.

Address	Description
3x01552	Zone 1
3x01594	Zone 2
3x01636	Zone 3
3x01678	Zone 4
3x01720	Zone 5
3x01762	Zone 6
3x01846	Power
3x01888	Battery

MODBUS® DATA FORMATS**Bit-Representation**

The Modbus® interface supports a programmable bit ordering. Both the byte- and word-orders may be individually programmed to either little- or big-endian formats. The default is big-endian byte-order and little-endian word-order. This only applies to numeric values. Array, string and bit types are always given in the same format.

Bit

Bit values are boolean values where 1 is “true” and 0 is “false”.

uint8, sint16, uint32, sint32

These are integer data formats. The “u” stands for “unsigned”, the “s” stands for “signed”. The number indicates the number of bits used to represent the data: 8, 16, or 32 corresponding to 1, 2, or 4 bytes respectively. 1 and 2 byte integers are stored in one Modbus® register while 4-byte integers are stored in two consecutive Modbus® registers. The byte- and word-orders are programmable.

The integer types may be either fixed-point format or the standard straight integer format. Fixed-point integer formats are offset by “100”, so divide the straight binary value by “100” to get the real value. This provides 2 decimal places of precision for a maximum range of ± 80000.00 .

Float

This is a standard IEEE 754 32-bit floating-point number. All floating-point numbers will be in this format and span 2 consecutive Modbus® registers according to the programmed byte- and word-orders.

String and array

Strings and arrays are strings of 0 or more characters/bytes. They are always returned first-byte first and last-byte last. Strings are null-terminated with a binary 0 only if they are smaller than their maximum size. For example, a “name” string may be up to 32-characters long. A value of “John Doe” would be terminated by a “0” because it is less than 32-characters long, but not a name that is 32-characters long. Arrays are never terminated.

NON-GENERIC DATA

Timestamps

Timestamps can be decoded using the following equations. “div” means integer division where the remainder is dropped. “mod” means the “modulus” or “remainder”. All values start at “0”. For example, Day 0 is the first day of the month and Month 0 is January. The year is offset by -2000, so that a value of 9 indicates 2009.

$$\begin{aligned} \text{Seconds} &= (\text{Value div } 1) \text{ mod } 60 \\ \text{Minutes} &= (\text{Value div } 60) \text{ mod } 60 \\ \text{Hours} &= (\text{Value div } 3600) \text{ mod } 24 \\ \text{Day} &= (\text{Value div } 86400) \text{ mod } 31 \\ \text{Month} &= (\text{Value div } 2678400) \text{ mod } 12 \\ \text{Year} &= (\text{Value div } 32140800) \end{aligned}$$

Timestamps are encoded in the reverse:

$$\begin{aligned} \text{Timestamp} &= (\text{Seconds} * 1) + \\ &\quad (\text{Minutes} * 60) + \\ &\quad (\text{Hours} * 3600) + \\ &\quad (\text{Day} * 86400) + \\ &\quad (\text{Month} * 2678400) + \\ &\quad (\text{Year} * 32140800) \end{aligned}$$

42-byte Arrays (Schedules)

The 42-byte arrays are bitmapped boolean schedule data, where the first bit of the first byte indicates the first 30-minute block on Sunday morning (12:00:00am to 12:29:59am) and the last bit of the last byte indicates the last 30-minute block on Saturday evening (11:30:00pm to 11:59:59pm).

Input Types:

Input Type	Description
0	Normally Open
1	Normally Closed
2	2.8k Thermistor °F
3	2.8k Thermistor °C
4	10k Thermistor °F
5	10k Thermistor °C
6	4-20mA
12	Battery (Internal)
13	Power (Internal)

Alarm Condition and Realtime State:

State	Description
0	OK (No Alarm)
1	Low Limit Alarm or Closed Dry Contact Alarm
2	High Limit Alarm or Open Dry Contact Alarm

Access Level:

Access Level	Description
0	Access Disabled
1	Read-Only
2	Read-Write

Contact Types:

Contact Type	Description
3	Email or SMS
9	SNMP Trap

Modbus® Configuration:

Operating Mode	Description
0	Modbus® Disabled
1	Read-Only
2	Read-Write

Bit Representation	Description
0	Big-Endian Byte Order Little-Endian Word Order (Modbus® Default)
1	Big-Endian Byte Order Big-Endian Word Order (Network Byte Order)
2	Little-Endian Byte Order Little-Endian Word Order (Intel Byte Order)

Summary Web Page Display Mode

Gauge Mode	Description
0	Arrow Mode
1	Bar Mode

APPENDIX D: SPECIFICATIONS

ALERT ZONES

Number of Zones: 6

Zone Connector: terminal block

Zone Types: N.O./N.C. contact, 2.8K Thermistor (-109° to 115°F, -85° to 57°C) And 10K Thermistor (-87° to 168°F; -66° to 76°C), and 4-20mA (-80,000.0 to 80,000.0

Zone Characteristics: 28.7K Ω to 3.3V (temperature/contact) or 250 Ohms to ground (4-20mA)

A/D Converter Resolution: 12 bits \pm 2 LSB

Zone Protection: 5.5VDC Metal Oxide Varistor with fast acting diode clamps.

DATA LOGGING

32,000 Samples (all samples include data date and time)

1 second to 1 month sampling rate

User programmable channel selection

Zones 1 – 6

Battery

Input Power

LED INDICATORS

Power On: On steady when the unit is powered on.

Alarm: Off when no alarm exists.

Ethernet Link and Activity LEDs

COMMUNICATION TYPES:

E-Mail – SMTP

Text Messages

Web page – Supported formats HTTP, PDA, WAP, and XML

SNMP – MIB with Traps, GET, GETNEXT, and SET

MODBUS®/TCP Slave Conformance Class 0 and 1

POWER SUPPLY

Power Supply: 120VAC/5VDC 50/60Hz 6W wall plug-in transformer w/6' cord.

Power Consumption: 2 Watts

Power Protection: Metal Oxide Varistor

Battery Backup: Optional 2hr battery backup module (Part #FGD-W610-B).

ENVIRONMENTAL

Operating Temperature: 32–122° F (0–50° C)

Operating Humidity: 0–90% RH non-condensing

Storage Temperature: 32°–140° F (0–60° C)

PHYSICAL

Dimensions: 1.4”h x 5.5”w x 3.7”d

Weight: 1.5 lbs.

Enclosure: Indoor-rated plastic housing suitable for wall or desktop installation.

APPENDIX E: THERMISTORS

2.8K THERMISTOR DATA

Degrees Celsius	Resistance (Ohms)
-50	187,625
-40	94,206
-30	49,549
-20	27,180
-10	15,491
0	9,142
10	5,572
20	3,498
30	2,256
40	1,491
50	1,009
60	697
70	490
80	351

10K THERMISTOR DATA

Degrees Celsius	Resistance (Ohms)
-50	441.3K
-40	239.8K
-30	135.2K
-20	78.91K
-10	47.54K
0	29.49K
10	18.79K
20	12.25K
30	8,194K
40	5,592
50	3,893
60	2,760
70	1,990
80	1,458
90	1,084
100	816.8
120	481.8
130	376.4
140	297.2
150	237.0

APPENDIX F: RETURNING THE UNIT FOR REPAIR

In the event that the WEB600 does not function properly, we suggest that you do the following:

- 1) Record your observations regarding the WEB600's malfunction.
- 2) Call the Technical Service Department at 610-558-2700 prior to sending the unit to Sensaphone for repair.

If the unit must be sent to Sensaphone for Servicing, please do the following:

- 1) Unplug the AC power supply from the wall outlet, remove the batteries, and disconnect all sensors from the alert zones.
- 2) Carefully pack the unit to avoid damage in transit. Use the original container (if available) or a sturdy shipping box.
- 3) You must include the following information to avoid shipping delays:
 - a) Your name, address and telephone number.
 - b) A note explaining the problem.

- 4) Ship your package to the address below:

SERVICE DEPARTMENT

SENSAPHONE

901 Tryens Road

Aston, PA 19014

- 5) Ship prepaid and insured via UPS or US Mail to ensure a traceable shipment with recourse for damage or replacement.

