Esensors

Websensor User Guide

EM32 Le, Xe Websensors
SM1 Le, Xe Soil Moisture sensors
AQUO Le, Xe Water sensors
PM01 Voltage/ Current Sensors
IOT Interfaces

Save trees. Print only when necessary

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CONTENTS

Websensor User Guide 1
1. Introduction 6
2. Getting Started 6
3. User Interface 8
4. Network Configuration 8
5. Sensor Settings 12
6. IOT Interface Configuration 13
7. Offset and slope calibration 15
8. Email Configuration 16
9. Cloud Push Setup 17
10. SNMP Configuration 17
11. Appendix 17

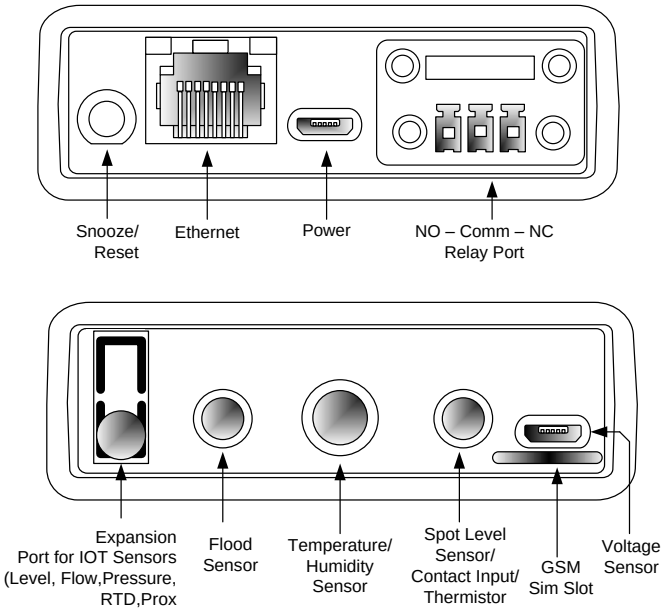
1. Introduction

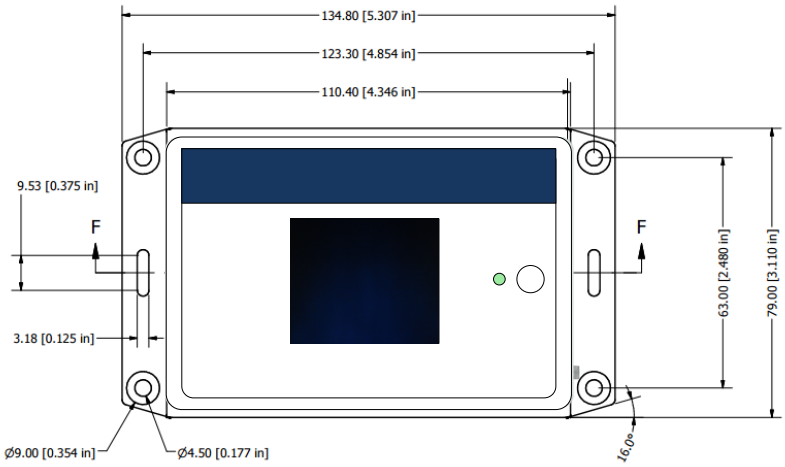
Congratulations on purchasing your Websensor. This user manual will get you started with the initial configuration and settings for your sensor unit.

- EM32 Le
- EM32 Xe
- AQUO Le
- AQUO Xe
- PM01
- PM01 Xe
- IOT Interfaces

2. Getting Started

A Quick look at your websensor.

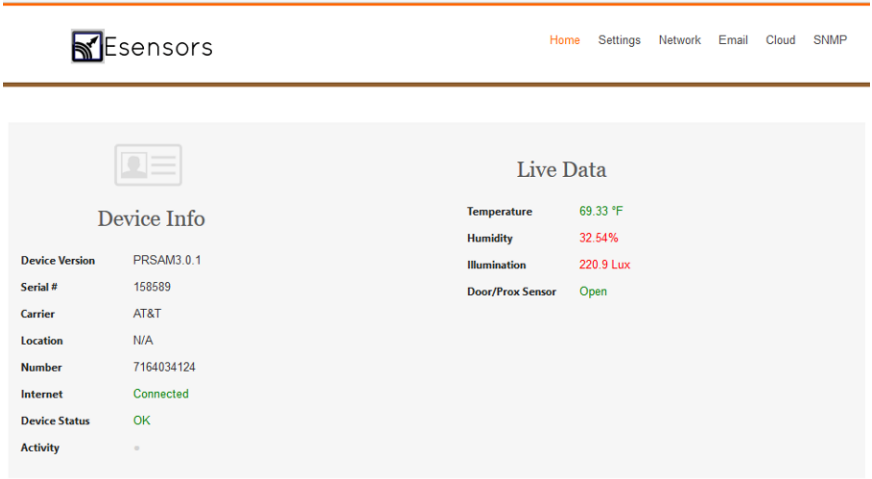




Features and available ports may vary depending on the model of websensor you have, and on your choice of sensors, connectivity options and peripherals. To learn which features are available on your device,check out the product page on our website. For models with GSM enabled, SIM card may not be included. Pick a service provider based on the location and availability of mobile service providers as fit for your application. Services that send or receive data over a cellular network may incur additional fees. Check with your carrier for information about your service plan and fees.

3. User Interface

The Websensor provides a simple and easy to use web interface. All settings on the sensor are accessible under different tabs in the navigation menu. If you are using a tablet of a phone, the navigation switches to a drop down menu. Simply click on the tabs, and you can access, modify, and save settings to match your requirements.



Note: Depending on the firmware version of your sensor, the user interface theme may vary.

4. Network Configuration

Your Websensor model may have Ethernet, and optionally WiFi, GSM or both. Ethernet interface is enabled by default. The network configuration and other settings pages are open by default, but can be password protected.

Configuring via Ethernet

To configure and use your sensor with Ethernet connection, connect the sensor to a PC, switch or router via an Ethernet cable. Then Power up your sensor with the micro USB cable and power adaptor included in the package.

By default, Websensor boots up in DHCP mode. When booting in DHCP mode, models with built-in LCD display will show the IP address on the top right part of the display. For models without display, you will need to check the DHCP client list to identify the IP Address.

Alternatively, If you prefer the sensor to boot up in static IP mode, then keep the reset button pressed before you power up the sensor. Now the sensor will boot in static IP mode.

In static IP mode, the default address for the Websensor is 192.168.254.102. This requires that the PC being used to configure the Websensor has its "network interface card" (NIC) set with the same subnet address: 192.168.254.***

This can be changed in the network and sharing center of your PC or Mac. Pick an IP that is different from that of the Websensor.

NOTE: Before you make any changes, please Note down your PC's original settings so that after the configuration is done, you can set your PC back to its original settings.

A sample setting you can temporarily assign your PC is given below.

IP address:	**192.168.254.110**
Subnet:	**255.255.255.0**
Router:	**192.168.254.1**
Primary DNS:	**192.168.254.1**

Once you have your PC on the same subnet as the Websensor, the Websensor is connected to it and powered via the supplied DC Wall Supply, the Websensor can be queried by typing the following command into the address line of a web browser.

http://192.168.254.102

Once the default IP address is entered, the browser screen should display the “Sensor Web Interface” page..

For models with WiFi

If your websensor is WiFi enabled, An access point network will be available for the first 30 minutes during power up. Using a laptop, tablet, or a similar wifi enabled device, search for “EsensorSetup-xxxxx” network where the xxxxxx represents the serial number of your device. Connect to this open network. Then, open a web browser and type in the default Access point IP of the device

http://192.168.4.1

Follow the instructions on the screen to connect your sensor to your home or office network. Once setup is finished, you can access the rest of the device settings.

From the NETWORK CONFIGURATION screen it is possible to change the various network settings involved in any IP addressable device, port number for the webpage, DNS, gateway, admin ID and password.

You can choose to enter the information manually, or you can enable DHCP which will automatically assign IP and other network parameters to the device.

Once changes are made, Click “Save” for the changes to take effect.

When you change the IP address though the webpage interface, the next page displayed is the

“**Reboot in Progress**”

page. Wait for the websensor to save the settings. This usually takes 10-30 seconds. Point your browser to the new IP address and you should see the home page.

Note: If you get the message “Error: Connection to the sensor was lost” this is because the browser still points to the old IP address. When the new IP address is entered into the address bar the screen will correctly display the Home Page.

Setting Device Time

There are two ways to set device's clock. One is to let device automatically synchronize its clock from Internet every day. The network configurations like gateway and DNS must be properly set for this feature since device need Internet access.

Another way is to set device's clock manually. This can be done by

click "*Set Device Clock*" button in *Network Configuration* webpage. Device does not need Internet access in this mode. The disadvantages are: the clock need to be set whenever device is re-powered since it can not save time when power lost.

5. Sensor Settings

This page holds the sensor thresholds and time settings for the various sensors supported on your device. For sensors with varying measurements (eg: Temperature), Settings options consists of the following minimum fields.

- Lower threshold: If the sensor reading is below this value, an alarm will be triggered.
- Upper threshold: If the sensor reading crosses above this value, an alarm will be triggered
- Trip time (Threshold is violated, and “Stays there for”): This is the time that the sensor must stay beyond the threshold for an alarm to be triggered.
  Eg: For temperature sensor, if lower threshold is set to 65 ºC, and trip time is 5 seconds, An alarm is triggered if temperature drops below 65 ºC and stays below 65 ºC for 5 seconds or more.
  Similarly with for upper thresholds.
  Same logic is applicable for other sensors unless otherwise specified.
- Alarm Return/ reset Time: This is the time that a sensor must stay in its normal range (after it returns from an alarm) for the alarm to be reset.
  Eg: if the temperature sensor is reading below 65 ºC and an alarm is triggered, and if Alarm reset time is set to 60 seconds, the sensor must come back and stay above 65 ºC for 60 seconds or more for the previous alarm to be reset.

Onboard LED Indicators

The websensor has two LED indicators, the Main LED Indicator on the front face and a flasher LED on the RESET button.
When the websensor is turned on, the Main LED turns RED while it waits for an IP address. If the sensor is configured to boot in DHCP mode, Main LED remains RED until the IP is received. At this point, it turns green. During this time, the flasher LED will be off.

Once the websensor is configured and running, If one or more of the sensors go to alarm mode, the Main LED will turn red and the flasher LED will start to flash. The flasher will continue to flash until the time set for ‘snooze buzzer’ on the settings page has expired. At that point, the flasher will stop blinking and remain solid red.

Once the sensor readings are back to normal, the Main LED will turn green, and the flasher LED will turn off.

6. IOT Interface Configuration

Due to the large number of sensor choices, most models under the IOT Interface category are shipped without stock sensors. The interface is designed such as to accommodate a wide range of sensors of your choice.

Physical Connection

IOT Interfaces are shipped with a 3 pin terminal block interface which intern connects to a 3 pin stereo input. The pinout for this interface is as follows.

Power pin can provide 3 different voltage levels which can be set on the settings page. This includes

- 3.3V (Default)
- 5V
- 12V

Your sensor may or may not need to use this power source. It is given only as an option.

CAUTION: Due to the present of a supply voltage available on the terminal, It is highly recommend while connecting or disconnecting the sensors, unplug the power to the sensor interface unit itself. After you complete the connections, you may power up the interface.

Signal Types

The signal pin can accept the following type of signals.

- Voltage (upto 5.5V)
- Current (4-20mA)
- RTD (PT100, PT1000)
- Resistance Input (eg: Level Sensors)
- Prox Switches

Each of these signals will be directed to different channels through a built-in multiplexer. You may select the type of signal on the sensor settings page based on your sensor specification.

Signal Limits/ Gradient Settings

Settings options are provided to enter the signal values at zero and full scale readings of the sensor. This is used to calculate the gradient/ slope for calculating the values.

Eg: A pressure sensor with 4-20mA type signal and a range of 0 to 20 PSI will have the following settings values

Current at zero (min reading): 0 mA
Current at full scale (max reading: 20mA.

It is recommended to leave the Gradient field blank for automatic calculation.

Data Units

Multiple data units are available for selection based on your sensor, and application. A percentage fullscale unit is also available for few select types.

NOTE: Based on the type of unit you select, make sure that all the appropriate values are entered based on this unit.

7. Offset and slope calibration

To correct for offsets, and gradient slopes, a calibration interface is available on the settings page. For some sensors, a basic offset

calibration is provided. For IOT interfaces, offset adjustments as well as an advanced 2 point slope calibration option is available.

2 Point Curve Correction

For the 2 point curve correction method, a live feed of raw data is provided right below the input fields. First set the sensor to the zero level, and observe the raw value. Enter this value in the minimum measured value field. Now, set the sensor to the max value, and observe the raw reading. Enter this value in the max value field.

Click to save calibration settings. Check the home page to see corrected values. If needed, perform calibration again.

You can choose between offset correction and curve correction based on the observed reading. If the offset is fixed, then a simple offset correction may be sufficient.

It may be noted that Slope correction is done to the raw input signal, where as offset is applied to the final result.

8. Email Configuration

The Email Configuration can be accessed by clicking on the “email” tab of the navigation menu.

The basic setting only needs a “To” Email address. On advanced settings, options to configure your SMTP server settings are provided. Enter the settings for the SMTP server and port number. Contact your email service provider to get information about your SMTP server and port number.

Enter the recipient email(s) separated by commas.

9. Cloud Push Setup

Basic instructions are provided on the Cloud tab web page itself.

Sensor-side settings

Advanced Websensor/ IOT Interfaces (XE versions) allows you to push data to remote servers. Simply provide the server configuration information, Save the settings

Server-side settings

On the server side, include a script (which is what you provide on the sensor-side as the target file) which contains the necessary script to parse XML. You can save the data in any format you choose, or you can enter them into databases for further processing.

10. SNMP Configuration

SNMP v2c is available on all models. Advanced (XE) versions support SNMP V3. MIB file is available for download on the SNMP page of the web interface.

11. Appendix

Data output

Data from the sensor can be accessed via the following methods

a. Http web interface: This is the simplest way of accessing data. Simply type in the IP address of the device onto any standard web browser, and the device returns sensor data through an elegant web interface

b. XML Interface: More friendly towards machine-to-machine interfaces, the XML output provides all sensor data with tags that can be parsed for further processing. A sample looks like below.

c. JSON interface. Same data, in JSON format.

d. Push Method: See section 7

e. SNMP: See section 8

Basic Troubleshooting Instructions

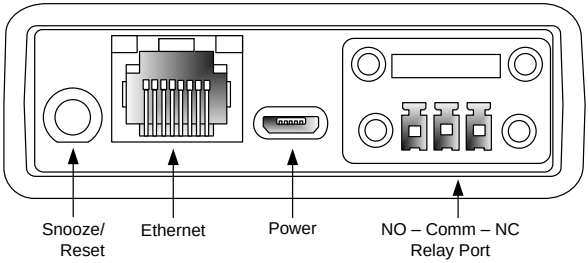
1. **Did you change the IP address?**
   The DHCP server probably assigned the device a new IP address, but your computer's network cache has saved the wrong address. From the command prompt in Windows, enter "nbtstat -R" or "arp -d" to clear old values and try again. Make sure you launch the command prompt as administrator.

2. **Did you try the IP address?**
   Try accessing the device directly at the IP address you entered if DHCP was turned off. (Example: if you entered 192.168.5.23 as the IP, enter "http://192.168.5.23/" into your browser). If this fails, then the IP address you used is not reachable. Accessing device via IP address is more reliable than using host name since some networks may have troubles dealing with host name. If you forgot the IP address and the host name of EM32 device, try Step 3 below.

3. **Settings not saved, Sensor reboots by itself or when trying to update settings?**

   Try clearing the cache on your browser. Trying a different browser can also help in some cases. If these do not help, a device reset is recommended.

4. **Still not working? Device Reset**
   You can restore the factory default settings by erasing the device's flash ROM.



Resetting your sensor unit

- Simply Press and hold the Snooze/ Reset button for about 5-6 seconds until you hear a long beep.

Got questions? Write to us: support@eesensors.com

We prefer email, but you can call us too.
+1.716.837.8719

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