



**Esensors Inc.**

**Quick Start Guide/ User manual  
for**

*EM32 Le, Xe Websensors*

*SM1 Le, Xe Soil Moisture sensors*

*AQUO Le, Xe Water sensors*

*MoS Le, Xe, Motion Sensors*

**Version 5.3**

Save trees. Print only when necessary



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# 1. Introduction

Congratulations on purchasing your networked Web sensor product(s) from Esensors. This user manual will get you started with the initial configuration and network settings of your sensor.

## 2. Getting Started



**Power/ connectivity Interface**



**Addon Sensor inputs**

### Ethernet version

To configure and use your sensor with Ethernet connection, first it must be connected to a PC via an Ethernet cable.

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

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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..

## **WiFi version**

If your websensor is WiFi enabled, you can use your smartphone/ tablet or a wifi enabled PC/ Mac to first connect and configure your websensor.

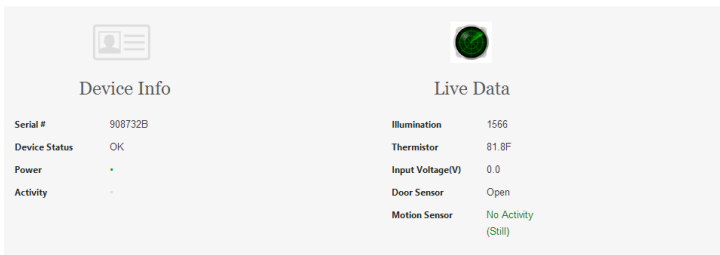
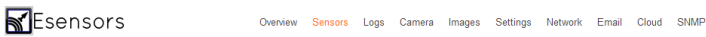
First, Power up your sensor unit. Connect your PC/ tablet to “EM32bWiFiSetup” Setup. There is no username and password. Once you are connected, you can access the device through a web browser

**http://192.168.254.1**

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## 3. User Interface

The Websensor provides a simple and easy to use user interface. Detailed sensor settings can be accessed under different tabs in the navigation menu. If you are using a tablet or a phone, the navigation switches to a drop down menu. Simply click on the tabs, and you can access, modify, and save settings to suit your requirements.



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

## 4. Network Configuration

The network configuration and other settings pages are password protected.

**Default username: *admin***

**Password: *password.***



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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.

**The easiest way to configure is to use DHCP, and assign a unique HOSTNAME.**

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 **HOSTNAME** (or the new IP address if you assigned one manually) 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, there

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are no accumulated time errors in this mode. 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; the time may have accumulated error in long running time.

## 5. Sensor Settings

This page holds the sensor thresholds for email alerts sent by device. The trip time is the time for which the sensor data has to violate the threshold to be considered as an alert. The Return time is the time interval after which the alert status returns back to normal if the measured a data returns back within the specified threshold. Alarm interval is the minimum interval after which the send alert for the sensor will be reported if the threshold conditions still remain violated. However if an alert occurs for a different sensor within the time interval would be reporter.

Settings options consists of

- 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.

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*Eg: For temperature sensor, if lower threshold is set to 65 °C, and trip time is 5 seconds, An alarm is triggered if temperature drops below 65 °C and stays below 65 °C 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 °C and an alarm is triggered, and if Alarm reset time is set to 60 seconds, the sensor must come back and stay above 65 °C for 60 seconds or more for the previous alarm to be reset.*

**Based on the sensors available on your device, options to change their configuration will automatically appear on the settings page.**

The settings for the sensor are self explanatory. If you have questions, there are notes/ hints provided on the beginning and/ or end of the web interface. If you still have questions about setting up the sensor in a particular configuration, we are here to help. Contact us at [support@eesensors.com](mailto:support@eesensors.com), or call us at 716.837.8719

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**Illumination Threshold, range: 0-3270 Lx**

**Lower limit:**  Lx

**Upper limit:**  Lx

**Illum Trip Time:**  Sec. Time tick is 1.5 Sec.

**Return Time:**  Sec.

**Temperature Threshold, range: -40-255 F**

**Lower limit:**  F or C, default is F

**Upper limit:**

**Temp Trip Time:**  Sec. Time tick is 1.5 Sec.

**Return Time:**  Sec.

**Relative Humidity Threshold, range: 0-100%**

**Lower limit:**  %

**Upper limit:**

**Humd Trip Time:**  Sec. Time tick is 1.5 Sec.

**Return Time:**  Sec.

Enable send alarm email, Note 1

**Alarm Interval:**  minutes, must be <1638 min.  
Note 2

email max/min values every day

## 6. Email Configuration

The Email Configuration is selected by clicking on the “email Configuration” button displayed in the menu as shown in Figure 15 below.

The basic setting only needs a “To” Email address. On advanced websensors, options to configure your SMTP server settings are provided. Enter the settings for the SMTP server and port number. If SSL is used enter the user id and password for the from email

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address that you have created for the device. Contact your email service provider to get information about your SMTP server and port number.

Enter the recipient email(s) separated by commas. The description is optional and can be customized by the user. See Figure 16 below.

The image shows a web-based form for configuring email settings. It includes the following fields and elements:

- SMTP Server:** A text input field.
- Port:** A text input field with the value "655" displayed.
- User Name:** A text input field.
- Password:** A text input field.
- From:** A text input field.
- To:** A text input field.
- CC:** A text input field.
- Device Description:** A text area with the placeholder text "Put device description here, like Web sensor in Main Building, Room 322." and a small icon in the bottom right corner.
- Save & Send Test email:** A button located at the bottom of the form.

**Trouble setting up Email? See Application Note**

If you have trouble setting up email, or if the email setup shows SMTP error messages, take a quick look at our Email setup guide on <http://eesensors.com/support/>

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## 7. Accessing the Sensor

The sensor data can be accessed in multiple ways.

### a. Sensor as a server

Your websensor has a built-in server which can be accessed through a browser to get the web interface. You can view data, change configurations, update settings, and set your preferences through this web interface. With proper network configuration and port assignment, you can access your websensor from anywhere on the internet.

### b. Sensor access through custom programs

Websensor can respond to simple and easy http requests with data alone. This includes XML and JSON data responses. For eg., to get data in xml format, issue the following http command.

<http://deviceIP:port#/status.xml>

To get data in JSON format, issue the following http command.

<http://deviceIP:port#/json.html>

### c. Sensor as a client/ push data to cloud

Websensor can work as a client node on your network and push data to a local or remote server. Basic instructions are provided on the Cloud tab web page itself.

### Sensor-side settings for client mode

Advanced Websensor (XE version) allows you to push data remotely to multiple servers. Simply provide the server configuration information, Save the settings. After saving, click the

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“Push Data” button to test the setup.

## Server-side settings for client mode

On the server side, include a script (the path to 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.

See appendix for XML tag information

## 8. SNMP Configuration

Advanced (XE) versions support SNMP (v2c) feature. OID list for all sensors, as well as a sample mib file is available for download.

## 9. 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.

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```
<response>
  <dvc>268437504</dvc> //digital encoded sensor info
  <sht>none</sht> //Temp/ humidity presence
  <ilum>none</ilum> //Light sensor presence
  <evin>none</evin> //AC Voltage presence
  <ethm>none</ethm> //Thermistor presence
  <ecin>none</ecin> //Door/ contact sensor presence
  <efld>none</efld> //Water sensor presence
  <epir>inline</epir> //Motion sensor presence
  <egas>none</egas> //Gas sensor presence
  <eDL>none</eDL> //Dali support
  <ecam>none</ecam> //Camera presence
  <ephc>none</ephc> //Cam photocell presence
  <sid0>847554B</sid0> //Device ID
  <stu0>OK</stu0> //Device Status
  <tm0>32.0</tm0> //Temperature data
  <hu0>.0</hu0> //Humidity data
  <i10>.0</i10> //Light data
  <pot0/> //Unused
  <tun0>F</tun0> //Temperature Unit (F/C)
  <thm>32.0</thm> //Thermistor temperature data
  <vin>0.0</vin> //AC Voltage data
  <cin>0</cin> //Contact/ door sensor data
  <fin>0</fin> //Flood sensor data
  <pin>0</pin> //Motion sensor data
  <Gsn0>0</Gsn0> //Gas sensor name
  <Gpn0>0</Gpn0> //Gas sensor data
  <led0>1</led0> //Power LED indicator status
  <led1>1</led1> //Activity LED indicator status
  <btn0>up</btn0> //Test switch status
</response>
```



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- c. JSON Interface: while push method currently only supports XML format, sensor can be polled to get data in json format. See section 7
  - d. Push Method: See section 7
  - e. SNMP: See section 8

## Basic Troubleshooting Instructions

### 1. **Did you change the IP address?**

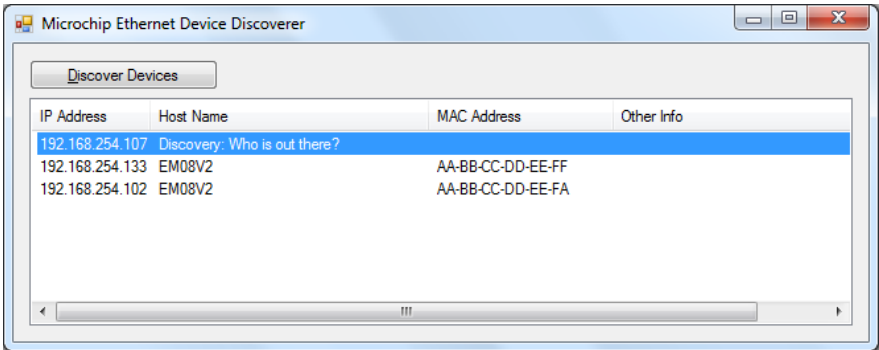
The DHCP server probably assigned the device a new IP address, but your computer's network cache has saved the wrong address. From the command prompt in Windows, enter "nbtstat -R" or "arp -d" to clear old values and try again. Make sure you launch the command prompt as administrator.

### 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. **Use Ethernet Discoverer to locate sensor devices**

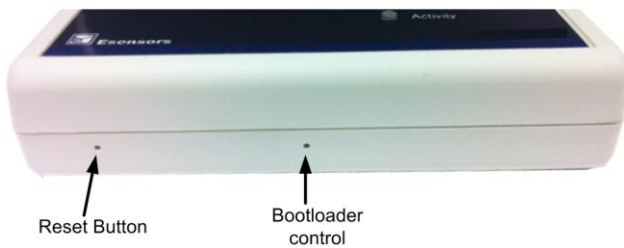
You can download the Discoverer from our website. This is a very handy tool that lists all sensors on the same subnet. Double click *Microchip Ethernet Discoverer.exe*, Click "Discover Devices" button, the IP address, Host name and MAC address of all EM32 devices will be listed. It is also helpful to check IP addresses when it is automatically assigned by DHCP server.



Microchip Ethernet Device Discover screen

#### 4. **Still not working? Device Reset**

You can restore the factory default settings by erasing the device's flash ROM.



#### Resetting your sensor unit

- Hold the button by inserting a paper clip into the small hole on the left side panel of the device and then re-power the device.

- The device enters boot loading state which will last for four seconds, both Power LED and Activity LED are extinguished in this state, then they will flash for three times and enter startup state.
- Continue holding the button, the device will enter restoration state, In this state you will notice the Power LED and Activity LED are solid ON in this state.
- You should not release the button until both LEDs are extinguished, which means restoration is done.
- The whole procedure takes about eight to ten seconds. The factory default IP address is “192.168.254.102”.

Got questions? Write to us: [support@eesensors.com](mailto:support@eesensors.com)

We prefer email, but you can call us too.

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