



# Websensor Add-on: ES11 Flood Sensor User Manual

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Esensors, Inc.  
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## **PRINTING HISTORY**

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## **WARRANTY**

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### **Warranty**

Esensors warrants the products to be substantially free of manufacturing defects for a period of 2 years after purchase during which time the product will be replaced without charge if defective.

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# **Instruction Manual for the ES11 Flood Sensor**

# CONTENTS

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Introduction to the ES11.....	1
Esbu Extension Cable.....	3
How the ES11 Works.....	4
Mounting the ES11 .....	5
ES11 Unique ID.....	5
Commands for the ES11.....	6
Calibrating the ES11.....	7
Reading the ES11 .....	8
Familiarization with the ES11.....	9
ES11 Latching Function.....	11
Troubleshooting the ES11 Flood Sensor.....	Appendix A1
Flood Sensor ES11 Plug-in's.....	Appendix B1
Websensor Options.....	Appendix C1
Service & Support.....	Appendix D1

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# **Instruction Manual for the ES11 Flood Sensor**

# INTRODUCTION

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The Websensor ES11 Flood Sensor is a device which will detect moisture when exposed to water such as in a flood situation. It communicates with the EM01B HVAC Websensor via the Edbus cable which connects the ES11 and EM01B.

Figure 1 depicts the functional block diagram.

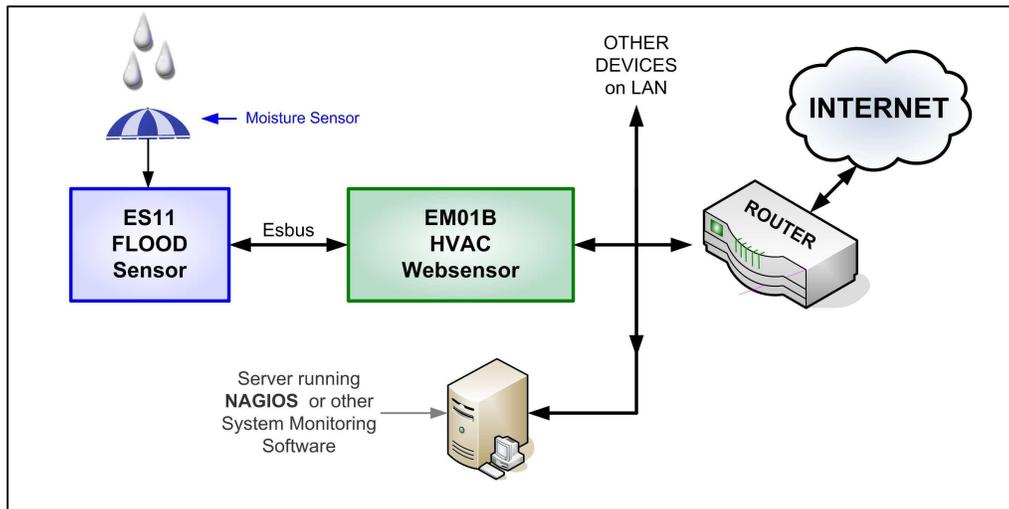


Fig. 1 – Functional block diagram of ES11 & EM01B

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Fig. 2 – Top view of ES11

Figure 2 (above) depicts the Top View of the ES11. Shown are two LEDs (green & yellow) and the label which contains the Unique Device I.D.

## INTRODUCTION

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Figure 3 depicts the BOTTOM view. The bottom of the felt side (blue square in this picture – color could vary) is positioned down such that it touches the floor – ready to absorb moisture should it appear.



Fig 3 –Bottom view of the ES11 Flood Sensor

The ES11 requires a Websensor EM01B HVAC Monitor to operate. The EM01B provides the IP stack and required communications via the Ebus in order to provide User access to the ES11 Flood Sensor. By itself, the ES11 does not generate any alerts. The ES11 is sent with a CD which contains the required Nagios plug-ins.

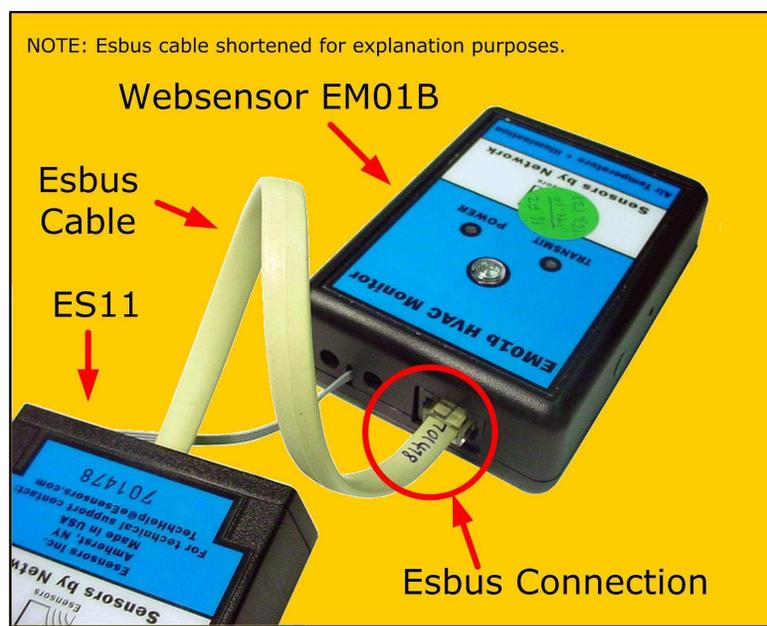


Fig 4 – ES11 connects to EM01 via Ebus port.

## **Esbus Extension Cable**

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### The Esbus Extension Cable.

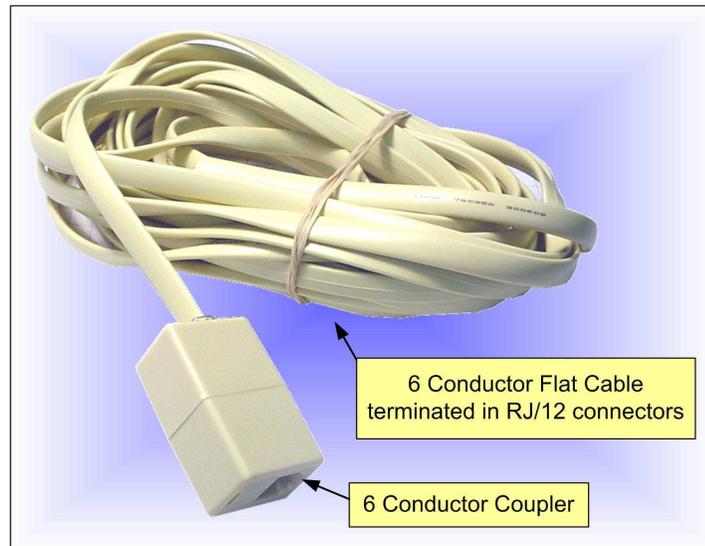


Fig 5 – Esbus Extension Cable & Coupler.

The ES11 Flood Sensor receives power and communicates via a six conductor type cable that is about 12 inches in length and terminates in a RJ12 connector. Provided with each ES11 is an Esbus Extension Cable and a 6 wire coupler. The supplied length is usually specified at the time of order and depends on where the ES11 is located in relation to the supporting EM01B. The 6-conductor-coupler is required to provide the pin-to-pin configuration required by the Esbus.

This type of cable and plug are very common and often sold as telephone extension accessories. Should a User wish to purchase a different length extension cable, contact Esensors' Technical Support to confirm proper pin-to-pin configuration.

**NOTE: An incorrect cable configuration could damage the ES11. Please contact Esensors for Technical Support.**

## **How the ES11 Works**

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### How the ES11 works.

Upon detecting moisture (water/wet conditions) the ES11 will store the status and report the information via the EM01B the next time it is POLLED by Nagios. Once moisture is detected, the information can be latched/stored in the ES11. Thus, if a moisture condition should trip the ES11 and then retract, the ES11 retains the fact that moisture was sufficient to be detected. This is important in marginal situations where moisture may just begin to appear and may be sufficient at one point to trigger the ES11 but not sustain the trigger. Should the moisture fall below the trigger point – it would be important to know that the event occurred and should be investigated prior to a significant and undesired accumulation of water/moisture.

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## Mounting the ES11

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### How to mount the ES11

The ES11 should be oriented such that the component side is “up”. It is very important that the ES11 Flood Sensor be positioned so that the bottom of the ES11 is flat against the floor surface. The Flood Sensor can be secured to the floor in its proper position using a piece of shipping or duct tape. The six conductor Ebus flat cable can be oriented to minimize the stress applied to the ES11.

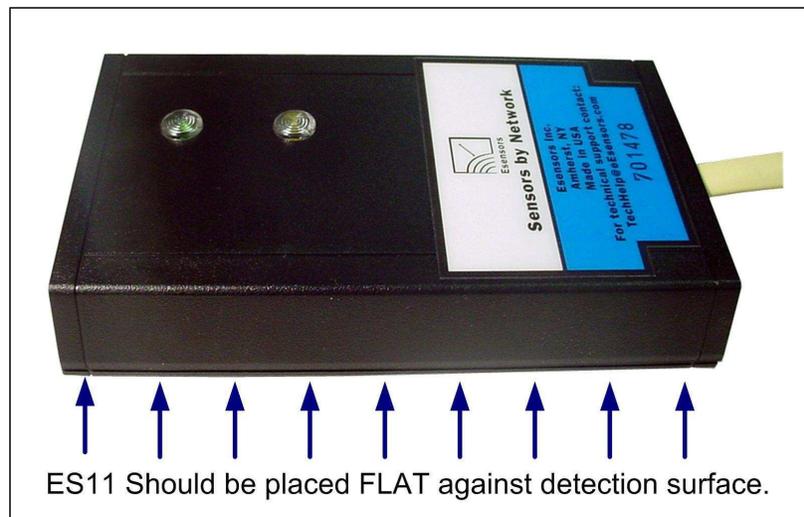


Fig 6 – ES11 Proper placement.

### The ES11 UNIQUE DEVICE ID

The EM01B HVAC Websensor is capable of supporting multiple Ebus devices. For example: multiple ES11s, ES02 (Digital Power Meter), ES06 (High Level Digital Input/Output Websensor), ES01 Two Line Display, or some combination of these devices. The Unique Device ID is necessary to know so that it can be included in the HTTP request to the Websensor when information is desired.

## Commands for the ES11

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NOTE: Assume 192.168.254.102 as the Websensors IP address and a DEVICE ID of 300198 for these examples. (Be sure to use a CROSS-OVER cable if you wish to connect the EM01B/ES11 directly to your laptop/desktop.)

### COMMANDS for the ES11

READ the ES11	<a href="http://192.168.254.102/index.html?em300198">http://192.168.254.102/index.html?em300198</a>
CALIBRATE DRY	<a href="http://192.168.254.102/index.html?em300198ED">http://192.168.254.102/index.html?em300198ED</a>
LATCHING "ENABLED"	<a href="http://192.168.254.102/index.html?em300198EL">http://192.168.254.102/index.html?em300198EL</a>
LATCHING "DISABLED"	<a href="http://192.168.254.102/index.html?em300198EU">http://192.168.254.102/index.html?em300198EU</a>
RESET LATCH	<a href="http://192.168.254.102/index.html?em300198ER">http://192.168.254.102/index.html?em300198ER</a>

TABLE 1 - ES11 Commands

### CALIBRATING the ES11 with the "ED" command

Before the ES11 can be set into service, it is necessary to calibrate the device. This is a very simple one command activity establishing what constitutes a DRY CONDITION. The ES11 must be secured in its operating position prior to calibrating the device (See Figure 5). The reason behind this is that a wood floor has a different dielectric constant than concrete.

The command:

<http://192.168.254.102/index.html?em300198ED> will set the DRY point and only needs to be performed at the time the ES11 is installed.

## CALIBRATING the ES11

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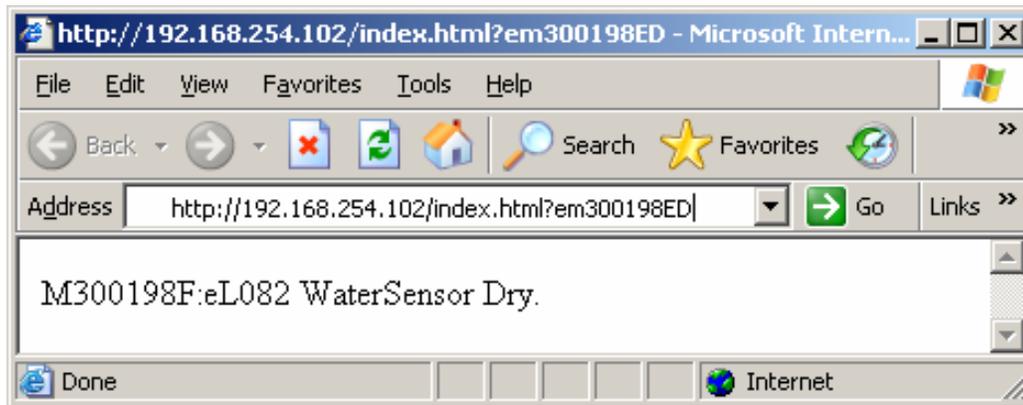


Figure 7 – Dry calibration command in a Web browser

When installing the ES11, make sure it is positioned flat against the floor/surface. The cable we provided may present a bit of a challenge. We would encourage that initially you stage the ES11 Flood Sensor on your desktop/table top so that you can simulate a flood/high-moisture condition in order to become familiar with the operation and response.

The ES11 connects to the EM01 via the Ebus connector located on the top side of the Websensor - use the Ebus cable provided. Kindly reference Figure 4 for connection information.

## How to READ the ES11

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### READING the ES11

To read the ES11, Wet-Dry status, issue the following command:

<http://192.168.254.102/index.html?em300198>

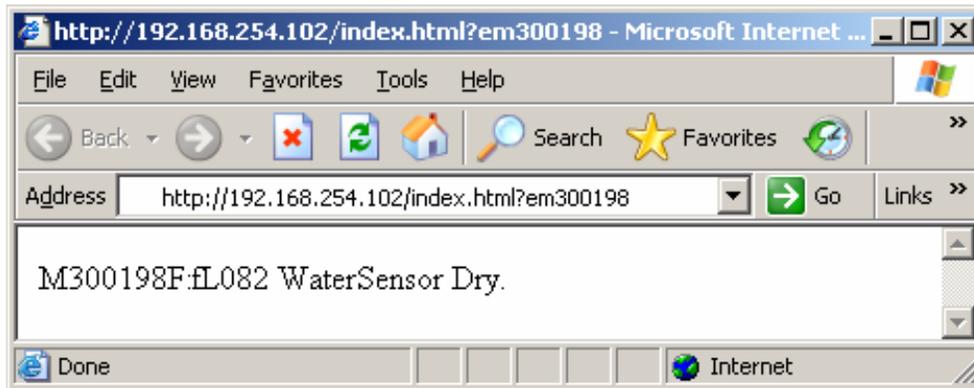


Figure 8 – Retrieve ES11 Status command in a Web browser

This should provide a DRY indication. The ES11 tests conditions about every six (6) seconds. If you look at the LEDs on top of the ES11 you should notice the GREEN LED flashes occasionally- this indicates that the ES11 is communicating with the Websensor

A WET condition is indicated by the YELLOW LED. For DRY conditions, the YELLOW LED should be OFF

(See Figure 9 on the following page.)

## FAMILIARIZATION with the ES11

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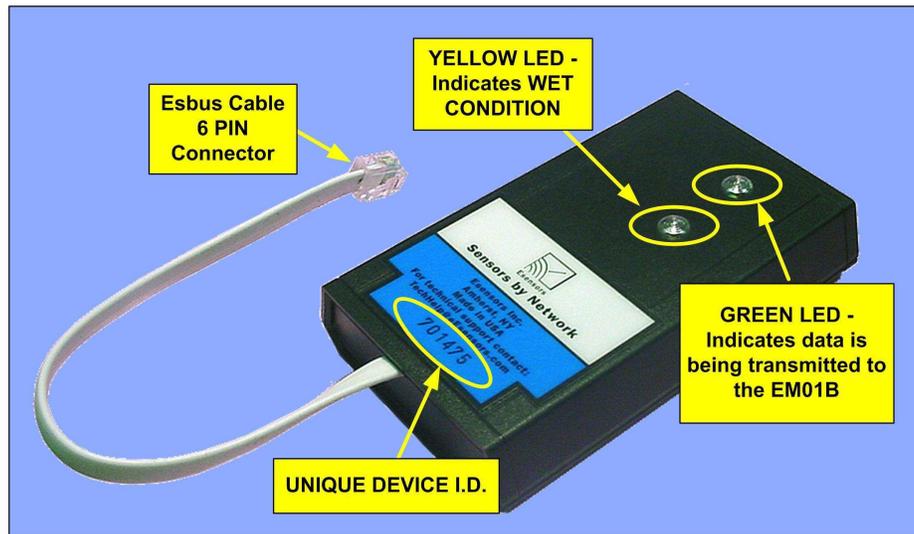


Figure 9 – ES11 LED positions

## BECOMING FAMILIAR with the ES11

TEST the ES11 by simulating a WET condition. Place the ES11 on a paper plate or something else (non-metallic) where you can add a few tablespoons of water to the ES11 moisture sensor area. Initially the ES11 should be calibrated as described on Page 6. Add a small amount of water to the FELT on the moisture sensor end of the ES11; that would be the area located beneath the printed circuit board foil as shown on the left side of Figure 3. NOTE: it may take a few seconds for the FELT to absorb enough water to trip the ES11. Once the WET condition is sensed (indicated by the YELLOW LED), you can issue the following command from a browser:

<http://192.168.254.102/index.html?em300198>

You should get a response which indicates WET conditions. A paper towel can be used to extract the water from the FELT to return the ES11 to DRY conditions - again it may take a moment or two for the water to evaporate so that the ES11 can return to a DRY status.

## FAMILIARIZATION with the ES11

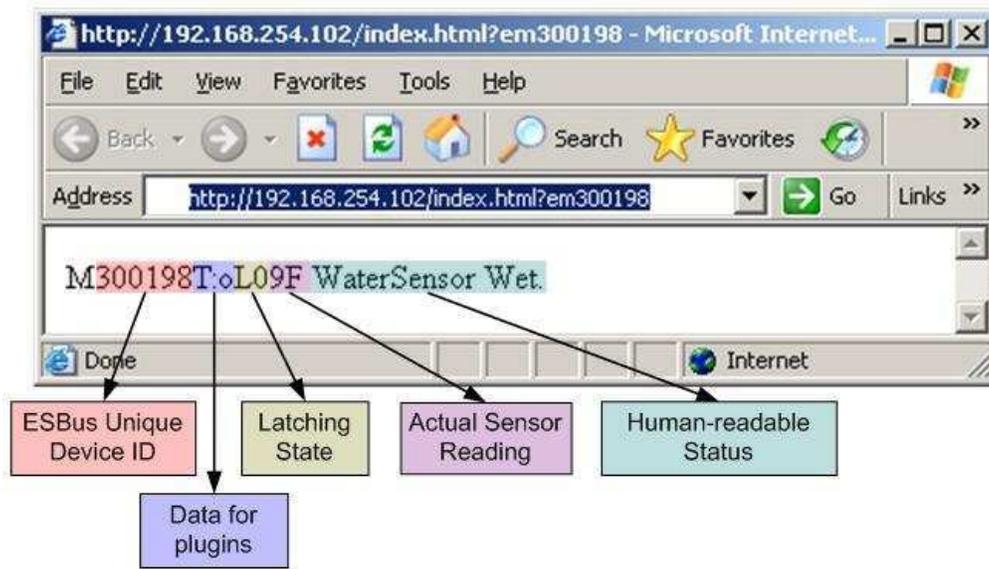


Figure 10 – ES11 response fields

A typical ES11 web browser response is shown in Figure 10 (in this case, it is showing WET status). You should take note of the Latching State, which shows you whether the ES11 is currently using its latching feature or not. The following table shows the codes and its meaning.

L0	Latching is turned OFF.
L1	Latching is turned ON and currently DRY status.
L2	Latching is turned ON and WET status is latched.

Table 2 – Latching States Code

To simply check for temperature/RH/illumination, use the regular command:

<http://192.168.254.102/index.html?em>

## **ES11 LATCHING FUNCTION**

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### **LATCHING ONTO WET CONDITIONS**

We have incorporated a LATCHING feature into the ES11, so that once it detects WET conditions; it will hold that reading even if the ES11 is removed from the moisture. The idea behind the LATCH command is to latch onto seemingly marginal wet/moist conditions which could revert back to DRY between polls.

Commands pertaining to latching:

#### **EL – Enable Latching**

This command will enable the latching function on the ES11. Whenever a WET status is detected, it will remain in WET status until a LATCH RESET command is issued to the ES11. The “L1” readout (Figure 11 – following page) indicates that latching is enabled.



Figure 11 – ES11 showing the Latching function is activated

#### **EU – Disable Latching**

The EU command will disable the latching function on the ES11. The ES11 default configuration is already in the Latching state DISABLED. If a WET status is shown, it is the current condition currently being detected by the ES11. It will not be latched when it returns to a DRY state. When

the latch is disabled, you will observe “L0” in the latch state position (indicated by the red circle in Figure 12 depicted below).

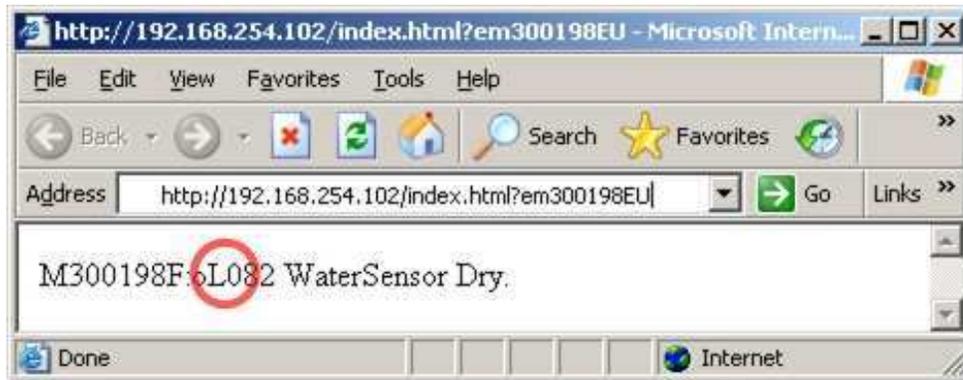


Figure 12 – ES11 showing the Latching function is deactivated (factory default)

### **ER - Reset Latch after ES-11 has detected WET condition. (Latching only)**

The ER command will reset the Latch to DRY if the ES11 was previously in a latched WET state. If the ES11 is DRY and this command is sent, it will do nothing.



Figure 13 – ES11 showing a reset of the latch

## Troubleshooting the ES11

1. **The ES11 returns garbage data and does not show a readout similar to the screenshots in the manual.**

Try resetting the ES11 by unplugging the Ebus cable and then re-plugging it back in. Wait for about 30 seconds; then send the command to obtain the ES11 status again.

2. **ES11 always shows WET condition on the web browser, even after I hit refresh.**

Remove your browser's cache and cookies. Then retry the command to obtain the ES11 status.

3. **ES11 still shows WET condition on the web browser.**

Let the ES11 dry out and then run through the steps to calibrate the ES11 again (refer to the “Calibrating the ES11” section in this manual).

4. **I have re-calibrated but ES11 still shows WET condition on the web browser.**

You may have turned on the Latching Function on the ES11. Try giving it a Latch Reset command (refer to the “Commands for the ES11” section in this manual).

5. **The YELLOW LED never turns on.**

In DRY conditions, the ES11 turns off the YELLOW LED. All you should see is the GREEN LED blinking occasionally; about every 5 seconds.

6. **ES11 shows WET but the YELLOW LED is still not turned on.**

If Latching is *enabled* and a WET condition was detected, the ES11 will return WET in the browser even though it is now detecting DRY. The YELLOW LED indicates the current condition so the YELLOW LED should be off since it is now detecting DRY.

## **Appendix B – FLOOD SENSOR ES11 Plug-in**

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The ES11 Plug-in is written in the C languages and is provided on the CD shipped with the SK-2 Websensor Starter Kit.

Latest versions can also be obtained by contacting Esensors, Inc. at [TechHelp@eEsensors.com](mailto:TechHelp@eEsensors.com) .

Nagios versions of the Websensor are available from <http://www.Nagios.org> .



## Appendix C – Websensor Options

### ES02 Digital Power Meter



- Monitors voltage & current
- Measures power
- Connects to EM01 via Ebus

### ES06 High Level – Input/Output Interface



- 2 Dry relay contacts
- 120 VAC detect
- Contact closure detection



## **Appendix D - SERVICE and SUPPORT**

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**For configuration support contact:**

**[TechHelp@eEsensors.com](mailto:TechHelp@eEsensors.com),**

**or call 716-837-8719**  
(from 9 AM to 4 PM Eastern time.)

**Also, reference the Esensors website:**

**<http://www.eEsensors.com>.**

An FAQ section is currently being developed for the Esensors, Inc. website.

Please check the Esensors website periodically for posting of the FAQs and application note information.

## **Configuration Notes**

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