



# ViewPoint® Essentials Sensor

## User Manual

# Revision History

This document is revision-controlled, and a formal revision history will be maintained herein.

All changes to the approved document must be dated, reviewed, and approved by designated representatives via Mesa Laboratories, Inc. (MLI) document and revision control system(s) and in accordance with all applicable Standard Operating Procedures (SOP).

Rev	Date	Change Summary	Author
A	July 12, 2024	Initial Release of DS-VP-ESS-S-MNL	Mesa Laboratories Inc.

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# Table of Contents

<b>01. Introduction</b>	04
<b>02. Regulatory Compliance</b>	04
2.1. United States Federal Communications Commission (FCC)	04
2.2. Industry Canada	05
<b>03. References</b>	05
<b>04. ViewPoint Essentials Sensor Models</b>	05
<b>05. Operational Requirements</b>	06
5.1. Compatible Software Applications	06
5.2. 900 MHz Access Point	06
5.3. Probe Types	06
5.4. Sensor Configuration	06
<b>06. Sensor Components</b>	06
6.1. ViewPoint Essentials Enclosure	07
6.1.1. Sensor identification	07
6.1.2. Enclosure Button and LED Indicator	07
6.1.2.1. Sensor Status	07
6.1.2.2. Sensor Operating Modes	08
6.1.3. Sensor Inputs	08
<b>07. Sensor Operating Modes</b>	08
7.1. Fast Transmit Mode	08
<b>08. Installation and Configuration</b>	09
8.1. Opening the Sensor Enclosure	09
8.2. Installing or Replacing Batteries	09
8.3. Sensor Installation	10
8.4. Sensor Startup	10
8.5. Manual Sensor Configuration	10
8.5.1. Wi-Fi Stereo Programming Cable	10
8.5.2. G3-G4 Configuration Cable	10
8.5.3. ViewPoint Sensor Configuration Utility	10
8.6. Shipping	10
8.7. Long Term Storage	10
<b>09. Specifications</b>	11
9.1. Operating Environment	11
9.2. Batteries and Battery Life	11
9.3. ViewPoint Essentials Compatible Probe Specifications	11
<b>10. Troubleshooting</b>	11
<b>11. Contact Information</b>	13

## 1.0 Introduction

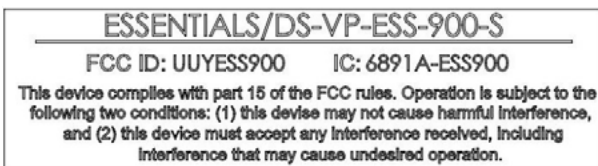
The ViewPoint® Essentials 900 MHz Sensor is a data-logging transmitter that can connect wirelessly to a ViewPoint® Continuous Monitoring System (CMS) designed to provide real-time monitoring of critical assets and areas, notification when excursions occur, and historical data reporting and graphing. The Essentials Sensor is compatible with and supported in ViewPoint Cloud (VPC CMS) and ViewPoint Pro On-Prem (VP Pro CMS) Continuous Monitoring Systems. The Essentials Sensors are used to monitor temperature, relative humidity and door opened / closed. ViewPoint Essentials 900 MHz Sensors operate in the 902 to 928 MHz frequency range and require a ViewPoint 900 MHz Access Point to securely transmit logged data to ViewPoint Cloud or ViewPoint Pro On-Prem software application.

The Essentials Sensors also supports the G4 legacy radio network protocol and can be used in G4 Mode with CheckPoint® 900 MHz Access Points to communicate only with ViewPoint Pro On-Prem systems. The ViewPoint Cloud CMS does not support the G4 radio protocol.

## 2.0 Regulatory Compliance

### 2.1. United State Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Regulations. Sensor operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



**Warning:** This unit is not explosion proof and is not rated for intrinsically safe installations.

### WARNING

**This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:**

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

**RF Exposure Notice:** To satisfy RF exposure requirements, this device and its antennas must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

## 2.2 Industry Canada

This device contains license-exempt transmitter(s)/ receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## 3.0 References

Document Number	Document
<b>DS-VP-S-UTIL-MNL</b>	VPx Sensor Configuration Utility User Manual
<b>DS-SW-VP-USRMNL</b>	ViewPoint Pro Continuous Monitoring System User Manual
<b>DS-SW-VPC-USRMNL</b>	ViewPoint Cloud Continuous Monitoring System User Manual
<b>DV3403</b>	ViewPoint System Configuration & Best Practices Guide
<b>DV1563</b>	VPx Access Point User Manual
<b>D1701</b>	Continuous Monitoring Probe Accuracy Data Sheet & Calibration Policy

## 4.0 ViewPoint Essentials Sensor Models

Part Number	Model	Input Type
<b>DS-VP-ESS-900-S-TEMP</b>	ViewPoint Essentials 900MHz Temperature Sensor	10K Ohm Thermistor Probe
		Binary Input (Normally Open / Normally Closed)
<b>DS-VP-ESS-900-S-HUMI</b>	ViewPoint Essentials 900MHz Humidity Sensor	I <sup>2</sup> C Temperature and Relative Humidity Probe
		Binary Input (Normally Open / Normally Closed)
<b>DS-VP-ESS-900-S-ULT</b>	ViewPoint Essentials 900MHz Ultra-Low Temperature Sensor	500 Ohm Thermistor Probe
		Binary Input (Normally Open / Normally Closed)

## 5.0 Operational Requirements

The ViewPoint Essentials 900 MHz Sensor requires radio-specific hardware and compatible software to operate within a 900 MHz continuous monitoring system.

### 5.1. Compatible Software Application

The Essentials 900 MHz Sensors are compatible with and require connection to ViewPoint Pro On-Prem and ViewPoint Cloud software applications for display, analysis and reporting of the logged and transmitted data points.

### 5.2. 900 MHz Access Point

The ViewPoint Essentials 900 MHz Sensor can communicate with 2 different types of access points based on the communication protocol utilized.

Standard ViewPoint G5 communication protocol uses:

- ViewPoint 900 MHz Access Point (part #CM-000250 or DS-VP-900-AP)

Legacy CheckPoint G4 communication protocol uses:

- G4 900 MHz Access Point (part #45010-V4)

### 5.3. Probe Types

The ViewPoint Essentials Sensor uses different probes based on the model.

ViewPoint Essentials 900MHz Temperature Sensor (DS-VP-ESS-900-S-TEMP) utilizes the following inputs:

- 3" Stainless Steel 10K Ohm Thermistor Temperature Probe (part #72105-12)
- 4" Stainless Steel 10K Ohm Thermistor Temperature Probe (part #72105-26)
- Air 10K Ohm Thermistor Probe (part #72107)
- Door Access / Motion Cable (part #43006)

ViewPoint Essentials 900MHz Humidity Sensor (part #DS-VP-ESS-900-S-HUMI) utilizes the following inputs:

- I<sup>2</sup>C SHT25 Temperature and Relative Humidity Probe (part #72112)
- G4 Door Access / Motion Cable (part #43006)

ViewPoint Essentials 900MHz Ultra-Low Sensor (part # DS-VP-ESS-900-S-ULT) utilizes the following inputs:

- 500 Ohm Thermistor Ultra-Low Temperature Probe (part #72109)
- Door Access / Motion Cable (part #43006)

### 5.4. Sensor Configuration

The configuration of a ViewPoint Essentials Sensor can be accessed to verify correct operation, update firmware, or troubleshoot issues with the sensor.

Manual changes to the sensor configuration and settings requires the use of the VPx Sensor Configuration Utility (SW00056) and a configuration cable.

Two different programming cable options can be utilized to manually configure the ViewPoint Essentials Sensor.

- Wi-Fi Stereo Programming Cable (part #166552)
  - plugs into the sensor via the mono jack port at the top of the ViewPoint Essentials Sensor and does not require opening the sensor to access the board.
- G3-G4 3-Pin Programming Cable (part #166563)
  - requires opening the ViewPoint Essentials Sensor enclosure to access and connect directly to the board.

# 6.0 Sensor Components

## 6.1. ViewPoint Essentials Sensor Enclosure

### 6.1.1. Sensor Identification

The 3 different models of the ViewPoint Essentials Sensor each have a unique label indicating the sensor type on the front of the enclosure.



**DS-VP-ESS-900-S-TEMP**  
ViewPoint Essentials  
900MHz Temperature Sensor Label



**DS-VP-ESS-900-S-HUMI**  
ViewPoint Essentials  
900MHz Humidity Sensor

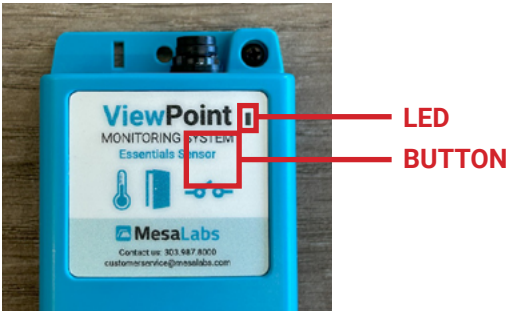


**DS-VP-ESS-900-S-ULT**  
ViewPoint Essentials  
900MHz Ultra-Low Sensor

### 6.1.2. Enclosure Button and LED Indicator

The ViewPoint Essentials Sensor enclosure has a LED indicator light which can be used to determine the operational state of the sensor and to change the operating mode of the sensor.

The button on the ViewPoint Essentials Sensor enclosure allows the user to query the sensor status or change the operating mode of the sensor.



#### 6.1.2.1. Sensor Status

Button Press	State	LED
<b>No button pressed</b>	Normal Run Mode (Sensor is connected to AP)	Not lit, flashes.
<b>One button press (held &lt; 3 seconds)</b>	Normal Run Mode query	LED is turned on for 10 seconds.
<b>No button pressed</b>	Firmware Fault condition or Unprogrammed/Configuration Error	LED blinks 2 times every second.
<b>One button press (held &lt; 3 seconds)</b>	Indication of Broken Radio Link state	LED is lit while button is pressed. When button is released, LED blinks once.
<b>One button press (held &lt; 3 seconds)</b>	Indication of Deep Sleep state	LED is lit while button is pressed. When button is released, LED blinks twice rapidly.

### 6.1.2.2. Sensor Operating Modes

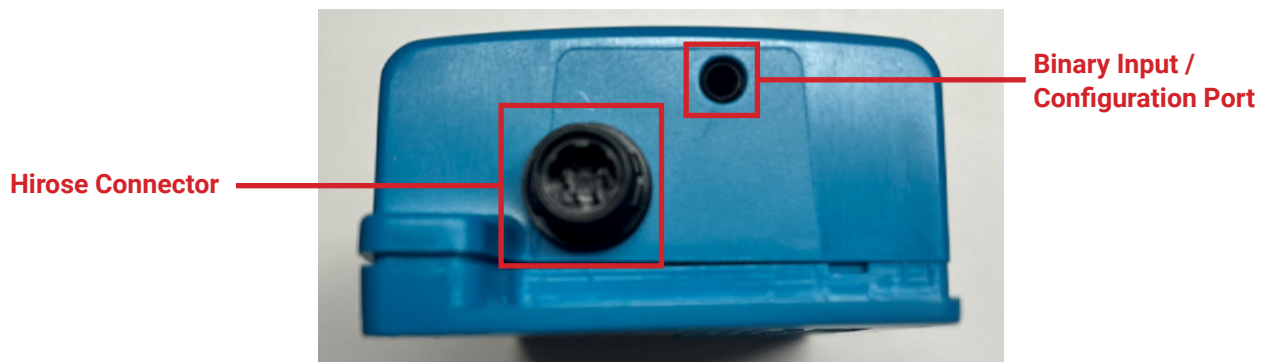
Button Press	State	LED
<b>2 button presses within 1 second</b>	Fast Transmit Mode	LED is turned on for 10 seconds.
<b>2 button presses within 1 second, when sensor is a Broken Radio Link State</b>	Resets Radio Link State	Quick blinking once a second at first until Link table built. The LED will blink 4 times in a second and then the LED stays on for 10 seconds at which point the sensor is linked with an Access Point.
<b>3 button presses within 5 seconds when sensor is in Deep Sleep.</b>	Wakes sensor from Deep Sleep	The LED is turned on for 3 seconds. The LED blinks and stays on for half a second. The LED turns off for 1 second and then blinks twice, half a second apart.
<b>Press the button for &gt; 7 seconds, but less than 11 seconds</b>	Resets Sensor Firmware	While the button is pressed, the LED stays lit for 2 seconds then blinks on and off for 1 second twice. When the button is released, LED quickly blinks 2 times.
<b>Press the button for &gt; 11 seconds</b>	Places Sensor in Deep Sleep	While the button is pressed, the LED stays lit for 3 seconds and then turns off. When the button is released, LED quickly blinks 2 times.

### 6.1.3. Sensor Inputs

The ViewPoint Essentials Sensor has two (2) input ports on the top of the enclosure.

The first is the 6-pin Hirose connector used to attach either a thermistor temperature or I<sup>2</sup>C temperature and relative humidity probes to the sensor. A thermistor temperature probe and I<sup>2</sup>C temperature / relative humidity probe cannot be used simultaneously.

The second input port is the binary port used to connect a door or dry contact probe to the sensor. The binary port is also used to connect the Wi-Fi Stereo Programming Cable (part #166552) to the sensor for configuration.



## 7.0 Sensor Operating Modes

### 7.1. Fast Transmit Mode

When a ViewPoint Essentials Sensor is placed in Fast Transmit Mode, it will transmit once per minute for 15 minutes. After 15 minutes the sensor will go back to the configured transmission interval.

To place the sensor in Fast Transmit Mode, press the push button twice within one second. The LED will illuminate and stay on for 10 seconds.

If the push button is pressed twice within one second while the sensor is in Fast Transmit Mode, the sensor will continue in Fast Transmit Mode for another 15 minutes.



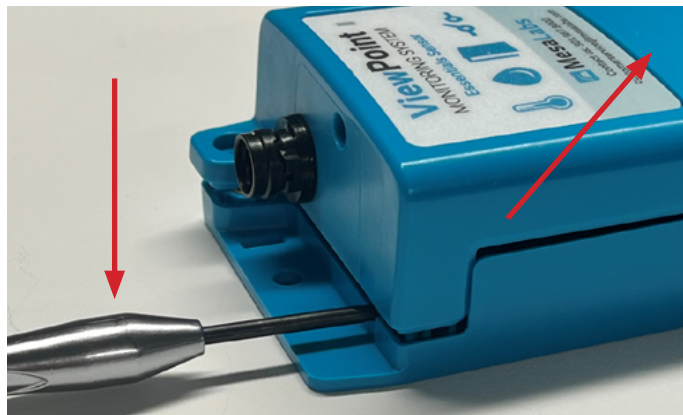
## 8.0 Installation and Configuration

### 8.1. Opening the Sensor Enclosure

To open and disassemble the ViewPoint Essentials Sensor enclosure, remove the enclosure screw with a Phillips screwdriver, then take a small standard screwdriver and insert it into the pry slot.



Gently apply pressure down on the screwdriver to pry apart the top and bottom enclosure pieces and remove the top piece.



To reassemble the ViewPoint Essentials Sensor enclosure, line up the clips of the top enclosure piece with the slots on the bottom enclosure piece. Ensure the top and bottom pieces snap together cleanly and replace the enclosure screw to secure the top and bottom pieces together.

### 8.2. Installing or Replacing Batteries

Follow the instruction in Section 8.1 to open the ViewPoint Essentials Sensor enclosure.

Install two (2) AA alkaline batteries into the clips, using the polarity markers on the board to install the batteries in the correct orientation.



The sensor will detect the new batteries and automatically reset the battery life meter.

After the new batteries have been installed or replaced, follow the instructions in Section 8.1 to close the ViewPoint Essentials Sensor enclosure.

### 8.3 Sensor Installation

The ViewPoint Essentials Sensor can be mounted using double-sided tape, hook-and-loop Velcro strips, cable ties, or screws.

When placing and installing a ViewPoint Essentials Temperature or Ultra-Low Temperature Sensor, take into careful consideration the placement of the probe, and therefore the length of the probe and the probe cable in relation to the sensor placement. Place the sensor such that the probe can reach the necessary location for taking measurements and account for whether the probe will need to be threaded inside an instrument through a port or door. Also consider optimal placement such that probes and batteries can quickly and easily be replaced with new ones during regularly scheduled calibration and maintenance cycles.

### 8.4 Sensor Startup

The ViewPoint Essentials Sensor comes from the factory in a deep sleep state. To wake the sensor up, press the button 3 times within 5 seconds. Refer to Table 6.1.2.2 Operating Modes for additional details on waking a ViewPoint Essentials Sensor from deep sleep.

### 8.5 Manual Sensor Configuration Using a Cable

#### 8.5.1. Wi-Fi Stereo Programming Cable

Insert the USB connector of the Wi-Fi Stereo Programming Cable (part #166552) into the USB port of a computer equipped with the ViewPoint Configuration Utility Software. Connect the Wi-Fi Stereo Programming Cable to the sensor's configuration port, shown in the picture above in Section 6.1.3 Sensor Inputs.

Note: the same port is used for the binary input and may have a Door Access / Motion Cable attached. Remove this Door Access / Motion Cable before connecting the Wi-Fi Stereo Programming Cable.

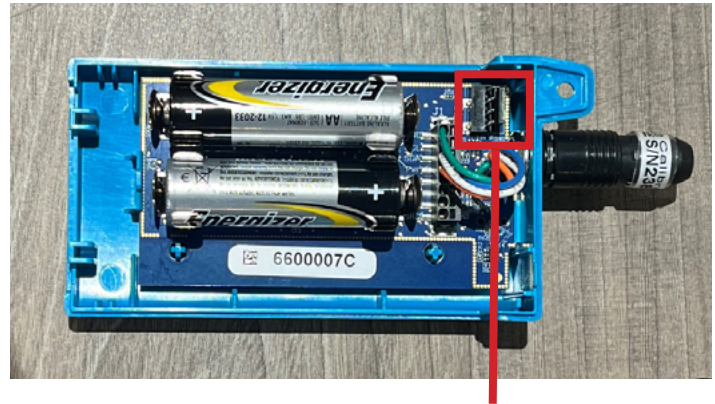
#### 8.5.2. G3-G4 Configuration Cable

Another method of connecting the ViewPoint Essentials Sensor to a computer used for configuration is to use a 3-Pin G3-G4 Configuration Cable (part #166563).

To use the 3-Pin G3-G4 Configuration Cable, the ViewPoint Essentials Sensor enclosure must be opened. Refer to section 8.1 Opening the Sensor Enclosure for instructions on how to correctly open the enclosure.

Connect the G3-G4 Configuration Cable to the 3-pin connector in the upper right corner of the sensor board labeled TC1, making sure that the cable is seated on all pins.

**Note:** the TC1 connector is oriented such that the cable seats correctly only in one direction.



3-Pin Connector

#### 8.5.3. ViewPoint Sensor Configuration Utility

The ViewPoint Sensor Configuration Utility is a software application required to configure or change sensor settings utilizing either the Wi-Fi Stereo Programming Cable or the 3-Pin G3-G4 Configuration Cable. Refer to the ViewPoint Configuration Utility User Manual, DS-VP-S-UTIL-MNL, for instructions on how to manually configure a ViewPoint Essentials Sensor.

### 8.6. Shipping

If a ViewPoint Essentials Sensor needs to be shipped, the sensor should be placed in Deep Sleep Mode before shipping to conserve battery life.

Refer to the Table 6.1.2.2 Sensor Operating Modes above for how to place a ViewPoint Essentials Sensor in Deep Sleep Mode.

### 8.7. Long Term Storage

If a ViewPoint Essentials Sensor is not going to be used for an extended period, the batteries should be removed to prevent damage to the sensor.

## 9.0 Specifications

### 9.1. Operating Environment

The operating range of the ViewPoint Essentials Sensor is +15°C to +40°C and 0 to 90% relative humidity (RH) non-condensing.

### 9.2. Batteries and Battery Life

The ViewPoint Essentials Sensor only utilizes two AA alkaline batteries and will not turn on or function if lithium or other chemistry batteries are inserted into the sensor. The ViewPoint Essentials Sensor can operate continuously for at least one year (up to 2 years) at a 5 minute transmit interval using 1 minute sampling rates and up to 2 to 3 years with 15 minute transmit and sample rates in Battery Saver Mode.

**Note:** Battery life is dependent upon configuration mode (G4 or G5), programmed sampling and transmit rates, time spent in alarm state, frequency of Fast Transmit Mode usage, reliability of network and network quality, bandwidth availability, frequency of power outages and/or brown outs, battery quality and self-discharge rates, environmental conditions, and many other variables that will impact overall life. Mesa Labs recommends annual battery replacement to coincide with preventative maintenance or regularly scheduled calibration cycles to ensure continuous operation and data fidelity.

### 9.3. ViewPoint Essentials Compatible Probe Specifications

Probe Type	Mesa Part #	G5 Mode Range	G5 Mode Accuracy	G4 Mode Range	G4 Mode Accuracy
<b>10K Ohm Thermistor Air Probe</b>	72107	-30°C to 60°C	± 0.5°C	-30°C to 60°C	± 0.5°C
<b>10K Ohm Thermistor 3" Stainless Steel Probe</b>	72105-12	-50°C to 60°C	± 0.5°C	-30°C to 60°C	± 0.5°C
<b>10K Ohm Thermistor 4" Stainless Steel Probe</b>	72105-36	-50°C to 60°C	± 0.5°C	-30°C to 60°C	± 0.5°C
<b>500 Ohm Thermistor Ultra-Low Probe</b>	72109	-90°C to 0°C	± 0.5°C	-90°C to 0°C	± 0.5°C
<b>I2C Temperature and Relative Humidity</b>	72112	10°C to 40°C 10% RH to 90% RH	± 0.4°C ± 2.0% RH	10°C to 40°C 10% RH to 90% RH	± 0.4°C ± 2.0% RH

## 10.0 Troubleshooting

Issue	Action
<b>No LED Response</b>	<ol style="list-style-type: none"><li><b>1. Check the sensor batteries.</b><ol style="list-style-type: none"><li>a. Check if batteries are aligned in the right direction.</li><li>b. Confirm that 2 AA Alkaline batteries are being used.</li><li>c. Verify that the battery voltage is at least 1.4V using a multi-meter.</li><li>d. If required replace with fresh, new batteries.</li></ol></li></ol>
	<ol style="list-style-type: none"><li><b>2. Check if the sensor is in deep sleep.</b><p>Quickly press and release the button on the front of the sensor. If the sensor is in deep sleep, the LED will be lit while the button is pressed and when button is released. LED will then turn off and quickly blink twice after one second.</p></li></ol>

Issue	Action
<p>The Continuous Monitoring System (VP CMS or VPC CMS) is not receiving data from the ViewPoint Essentials Sensor or is receiving intermittent data (large delays between updated data or last received data time stamps).</p>	<ol style="list-style-type: none"> <li>1. <b>Press and hold button on the front of the sensor for &lt; 3 seconds.</b> <ol style="list-style-type: none"> <li>a. If the LED stays lit for 10 seconds after the button is released, the sensor is operating normally.</li> <li>b. If the LED does not stay lit for 10 seconds, and instead turns off after the button is released followed by rapid blinks, refer to section 6.1.2.2 and follow the instructions for Resetting the Radio Link State.</li> </ol> </li> <li>2. <b>Use the ViewPoint Configuration Utility to have the sensor reconnect to the Access Point by clicking the Apply Radio + Flexband Config button on the Wi-Fi/Radio tab.</b></li> <li>3. <b>Check the Access Point.</b> <ol style="list-style-type: none"> <li>a. Is the Access Point powered on?</li> <li>b. Is the Service Link Status LED solid green?</li> <li>c. Are other sensors connected to the AP also offline?</li> <li>d. Is the antenna firmly attached to the Access Point and oriented correctly?</li> </ol> </li> <li>4. <b>Check the following conditions.</b> <ol style="list-style-type: none"> <li>a. Was the sensor recently moved to a new location?</li> <li>b. Were there any recent changes in the area being monitored by the sensor, such as structural changes to the building or facilities, equipment being moved or added, new potential sources of interference such as electric motors, microwave ovens, moving of the Access Point?</li> <li>c. Can the sensor be relocated closer to the Access Point or away from possible sources of interference?</li> </ol> </li> </ol>
<p>A Probe Unplugged alarm in the VP CMS is active or readings of -9999°C for 10K Ohm Thermistor Temperature Sensors, -9998°C and -9998% RH for Temperature and Relative Humidity Sensors, or 9999°C for 500 Ohm Thermistor Ultra-Low Temperature Sensors is displayed in the VPC CMS.</p>	<p><b>Sensor Probe is disconnected.</b></p> <ol style="list-style-type: none"> <li>1. Reconnect probe.</li> <li>2. Check that the probe or wires are not damaged.</li> <li>3. Check if the probe is being used within the operational range for the probe type.</li> <li>4. Replace probe as required.</li> </ol>

Issue	Action
<p><b>Incorrect data values are displayed in the VP CMS or VPC CMS.</b></p>	<ol style="list-style-type: none"> <li>1. Check that the probe is fully connected to the sensor.</li> <li>2. Check that the probe or wires are not damaged.</li> <li>3. If an extension cable was used for the probe, verify with Mesa Laboratories Technical Support that the extension does not exceed the maximum length.</li> <li>4. Verify that the sensor or probe are not near any potential interference sources.</li> </ol>
<p><b>Sensor LED quickly blinks twice every second.</b></p>	<p>The sensor may have a faulty configuration or firmware may be corrupted. Contact Mesa Labs Technical Support.</p>

## 11.0 Contact Information

**Mesa Laboratories Inc. Technical Support can be reached at:**

Tel: **1-800-451-1707** (USA)

[techsupport@mesalabs.com](mailto:techsupport@mesalabs.com)

Tel: **866-421-8637** (Canada)

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