GEN^2

Model OI-5950 Switch-State Transmitter

Operation Manual

Revision 2.0w

OTIS
INSTRUMENTS INC.

Product Overview

The Otis Instruments, Inc. OI-5950 is a WireFree Switch-State Transmitter for use in conjunction with a new or existing WireFree system.

The OI-5950 receives signals from up to two individually addressable sensors (pressure switch, temperature sensor, flow sensor, tank level sensor, etc.), and then transmits the state of (and change of state of) that switch.

Table of Contents

Introduction

This document is an Operation Manual containing diagrams and step-by-step instruction for proper operation of the Otis Instruments, Inc. WireFree Model OI-5950 Switch-State Transmitter. <u>This document should be read before initial operation of the product.</u>

Should a question arise during the use of the product, this document will serve as a first reference for consultation. If further questions arise, or if the device is not working properly, please contact the sales representative of this product.

Complete System Diagram

The following diagrams should be consulted for identification of the system and all parts that may be referred to in this Operation Manual.

Complete System (External)
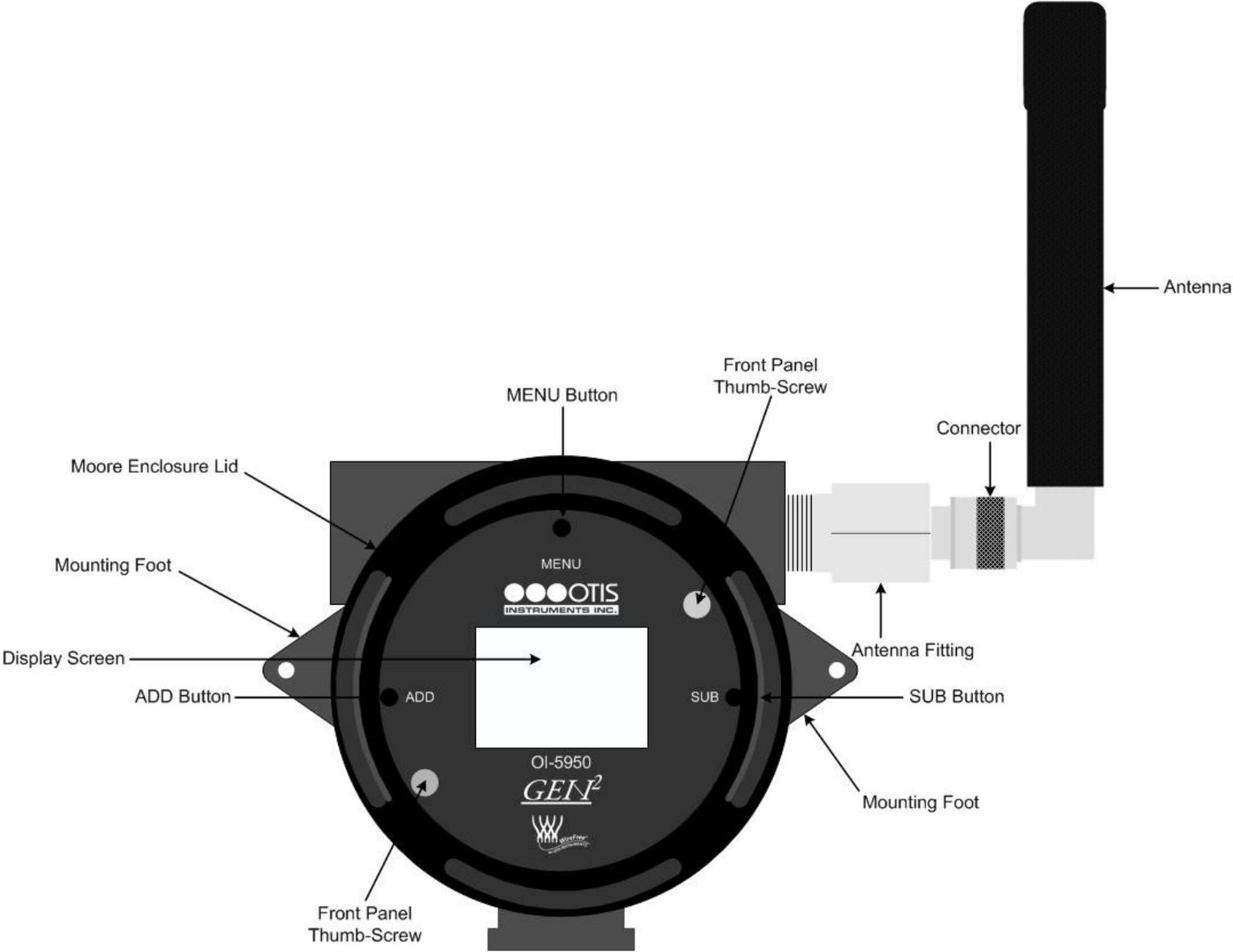
Complete System (Internal)

MENU Button

Mounting Post

Battery Mount

Size D Battery

Battery Mount

Radio

Battery-Wire Socket

Mounting Post

Sensor 2 Terminal Block

Sensor 1 Terminal Block

Antenna Connector

Battery Wires (red and black)
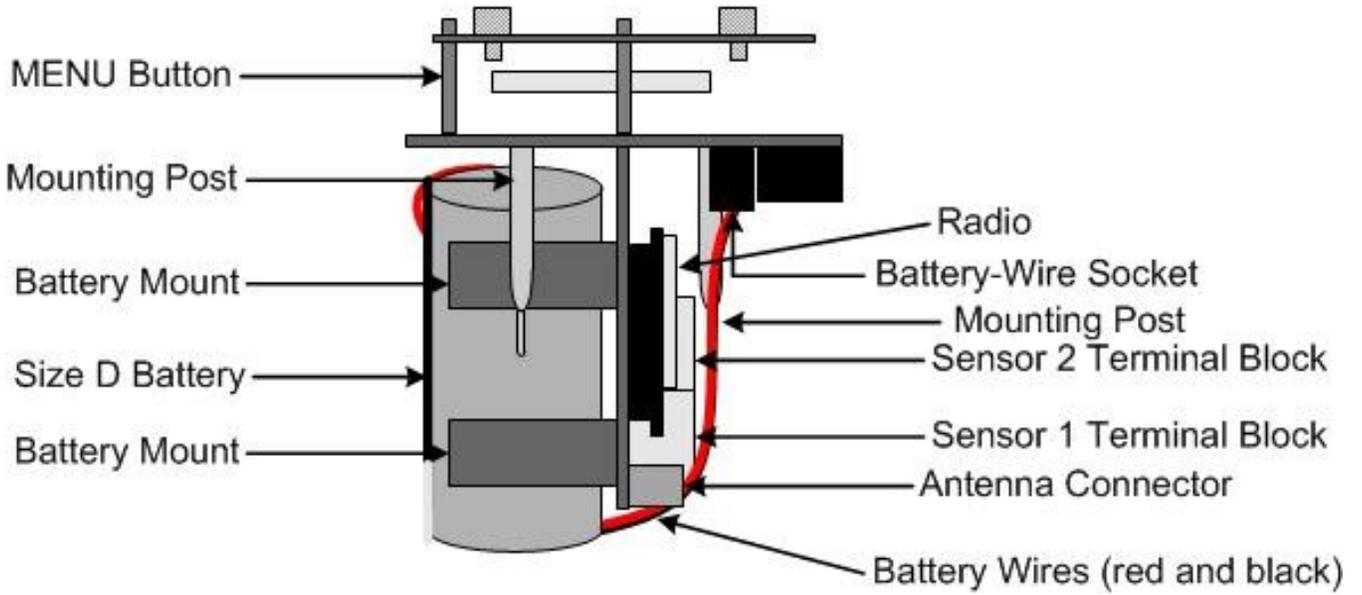
Wiring Configurations

The following instructions should be used to connect Sensor 1 (and Sensor 2, if applicable) to the OI-5950.

Connecting Sensor 1

NOTE: Although applications will vary, most switches use three wires: normally open (NO), common (COMM) and normally closed (NC). On the opposite side of the board from the terminals there are two switches which determine whether the NO or NC side of the connected switch is being monitored by the control board.

If the side being monitored is open, a "0" will appear on the screen and be transmitted. If the side being monitored is closed, a "1" will appear on the screen and be transmitted.

1. Power off the device by touching and holding an Otis Instruments, Inc. distributed magnet against the right side of the device for four seconds to activate *SUB*.

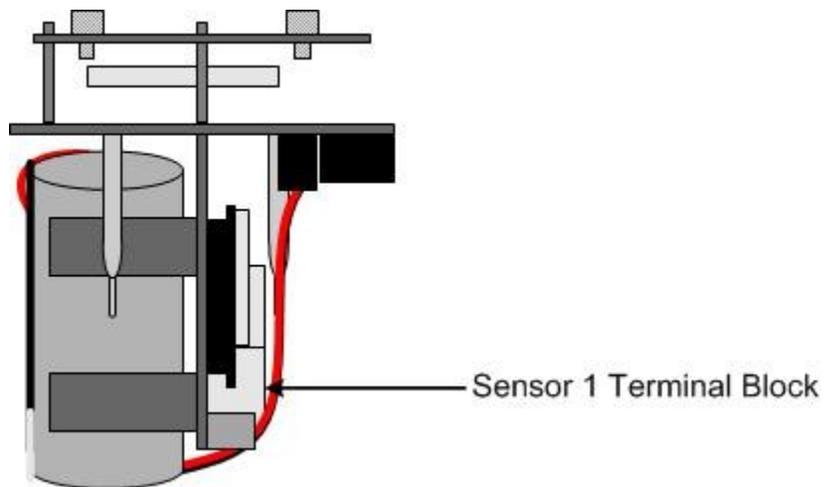2. Unscrew, remove, and set aside the Moore Enclosure lid.
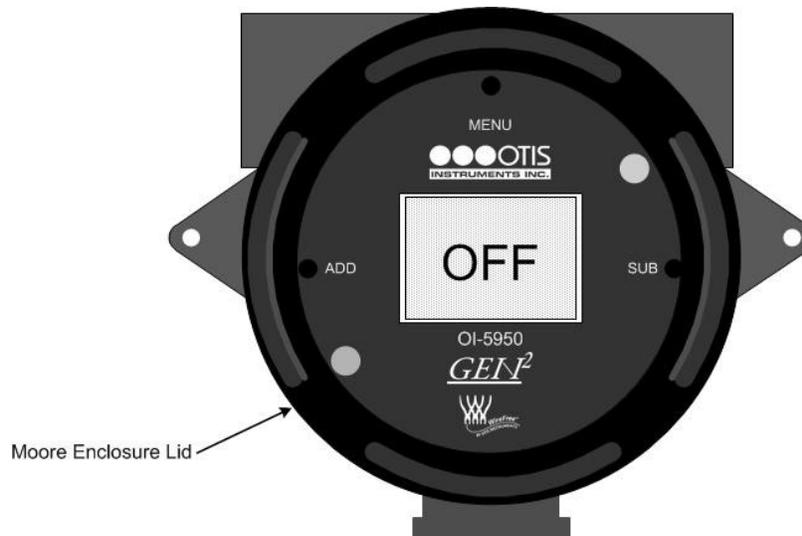
3. Using only your fingers, pull straight up on the Front Panel Thumb-Screws until the internal components are removed from the standing eyelets.

   *NOTE: Do not use any metal object to help remove the Front Panel.*

    NOTE: Do not remove any connecting wires.

4. Locate the Sensor 1 Terminal Block.

NOTE: The wire colors used for your application may be different than the ones shown here.

5. Connect a wire (red) from Sensor 1 to the terminal labeled "NO" on the Sensor 1 Terminal Block.
6. Connect a wire (black) from Sensor 1 to the terminal labeled "COMM" on the Sensor 1 Terminal block.
7. Connect a wire (green) from Sensor 1 to the terminal labeled "NC" on the Sensor 1 Terminal Block.
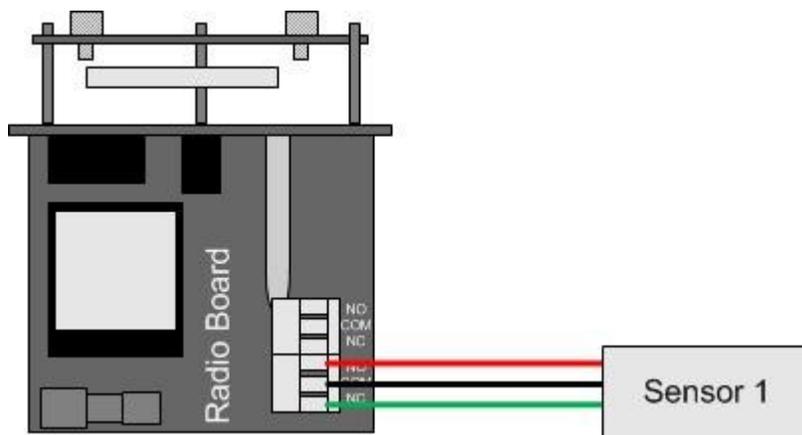
Connecting Sensor 2

1. Locate the Sensor 2 Terminal Block.
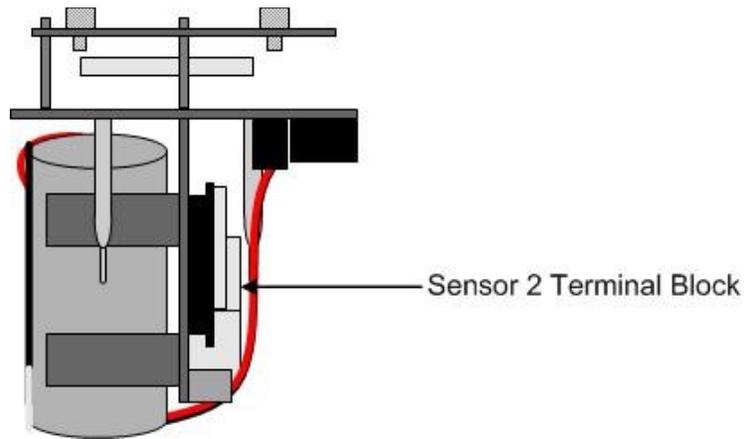

Sensor 2 Terminal Block

NOTE: The wire colors used for your application may be different than the ones shown here.

2. Connect a wire (red) from Sensor 2 to the terminal labeled "NO" on the Sensor 2 Terminal Block.

3. Connect a wire (black) from Sensor 2 to the terminal labeled "COM" on the Sensor 2 Terminal block.

4. Connect a wire (green) from Sensor 2 to the terminal labeled "NC" on the Sensor 2 Terminal Block.
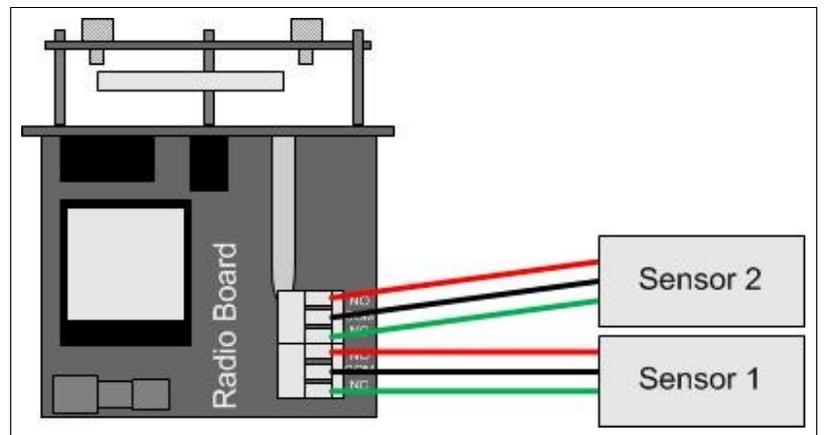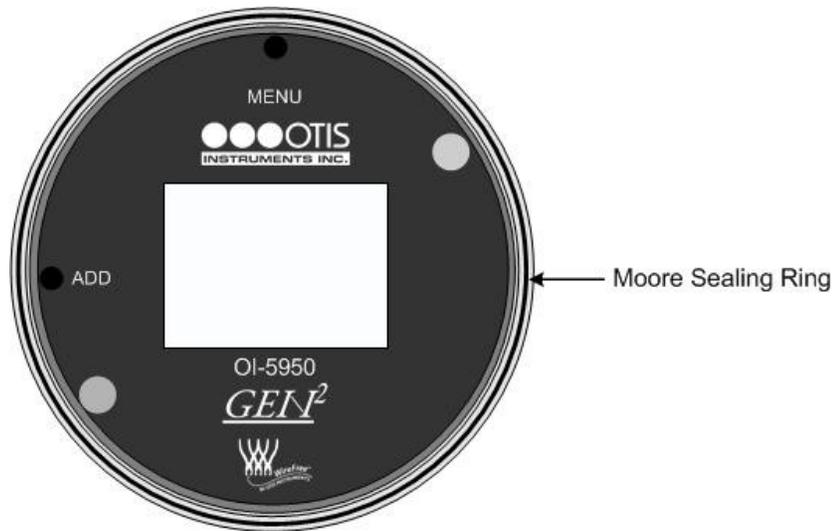

5. Replace the unit back in the Moore enclosure by matching each mounting post to its corresponding eyelet inside the enclosure.

Mounting Post
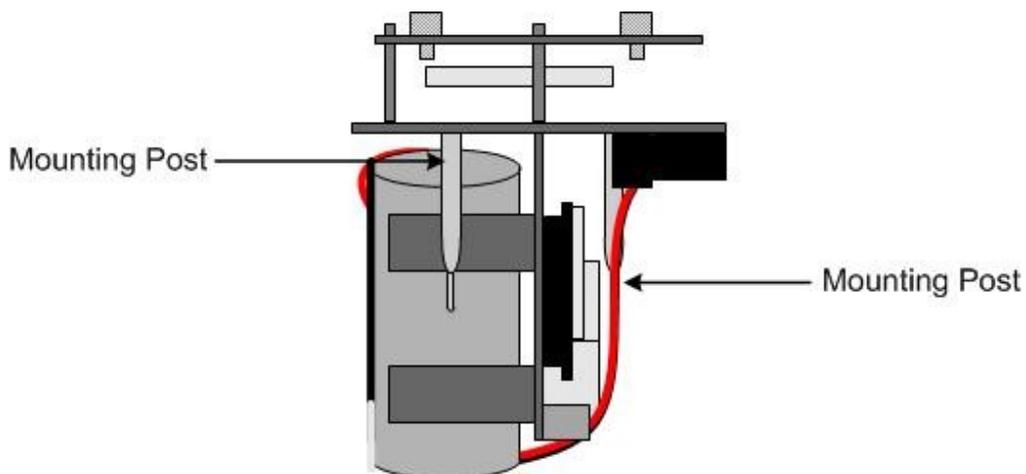
Mounting Post

6. Verify that each mounting post is properly fitted in its corresponding eyelet inside the Moore enclosure.

7. Verify that the sealing ring (located on the threads of the open Moore enclosure) is still in place.
8. Place the Moore enclosure lid on top of the Moore enclosure base.
9. Rotate the lid until it is tightly screwed in place (approximately 20 rotations).
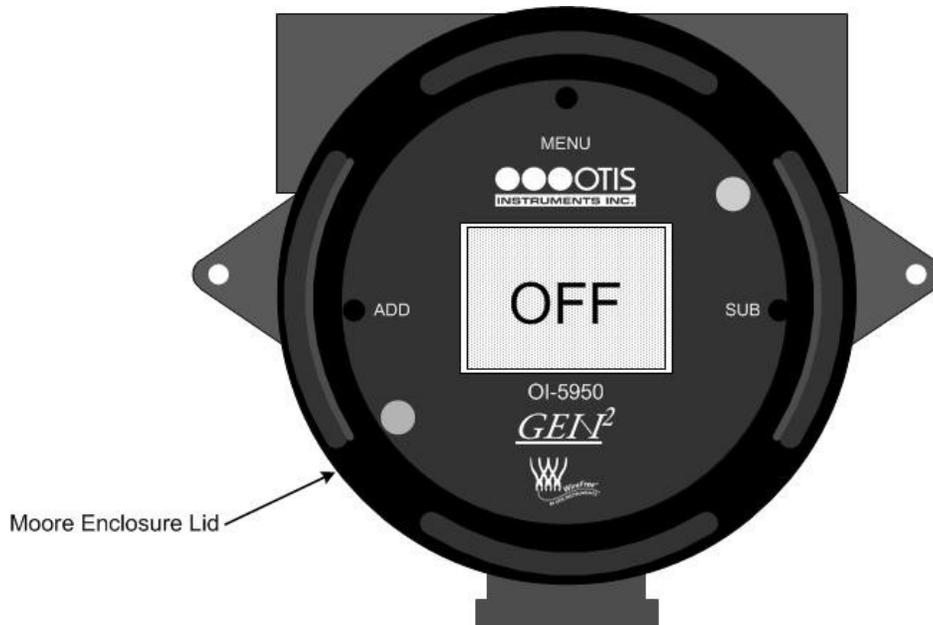
Power On (from Power Off Mode)

Powering on the device activates its functions. When powered on, the device is fully functional and access to system and settings menus is allowed.

1. Locate *ADD* on the Front Panel.
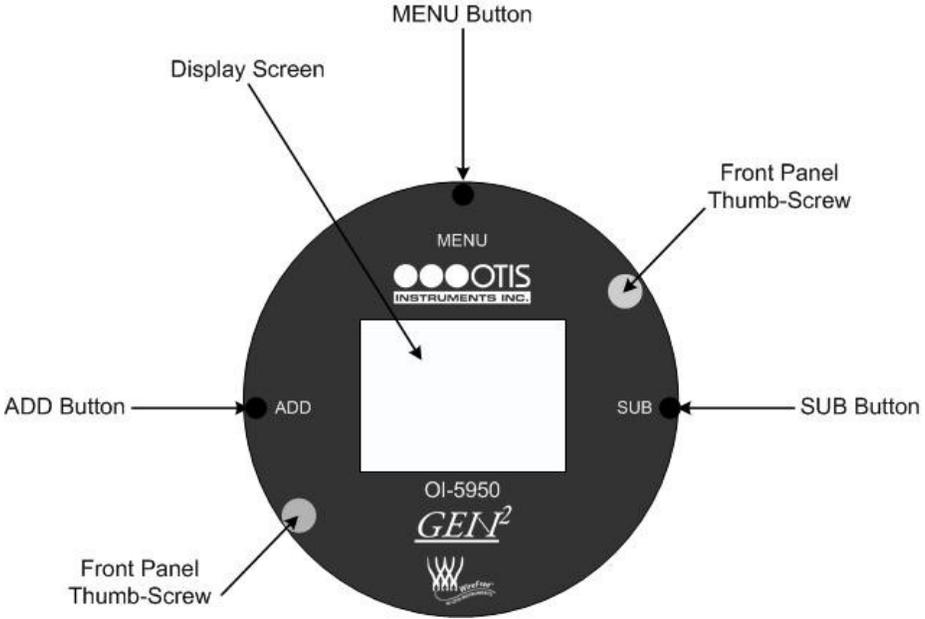
2. Touch an Otis Instruments, Inc. distributed magnet to the left side of the device to activate *ADD* (and turn on the device).

   NOTE: When the magnet touches the device and a connection has been made a trapezoid will appear.

3. The device will then count down from 60 to 0.

    ■   From 60 to 50, the Display Screen will show the Otis Instruments, Inc. logo.

    ■   From 50 to 25, the Display Screen should resemble the following illustration:

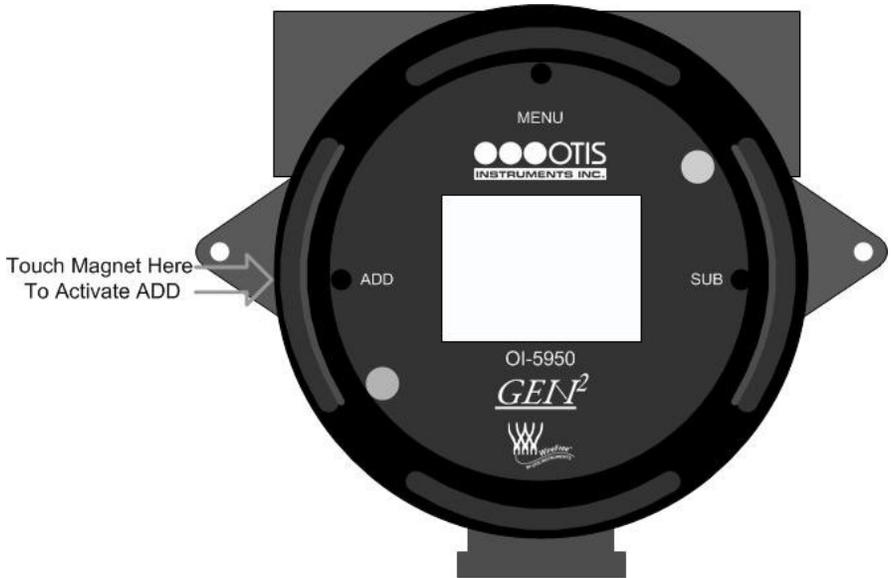   ■   From 25 to 0, the Display Screen will show the Model Number, Manufacture Date, Serial Number, Version, and Build.

4. When "0" is displayed, the device is in Normal Operating Mode and ready to operate.

NOTE: If the device is in Fault (in this example, Fault 14), the Display Screen will resemble the above illustrations.

For additional information regarding system faults, see the OI-5950 Troubleshooting Guide.

Power Off

Powering off the device shuts down the OI-5950.

1. Locate *SUB* on the Front Panel.
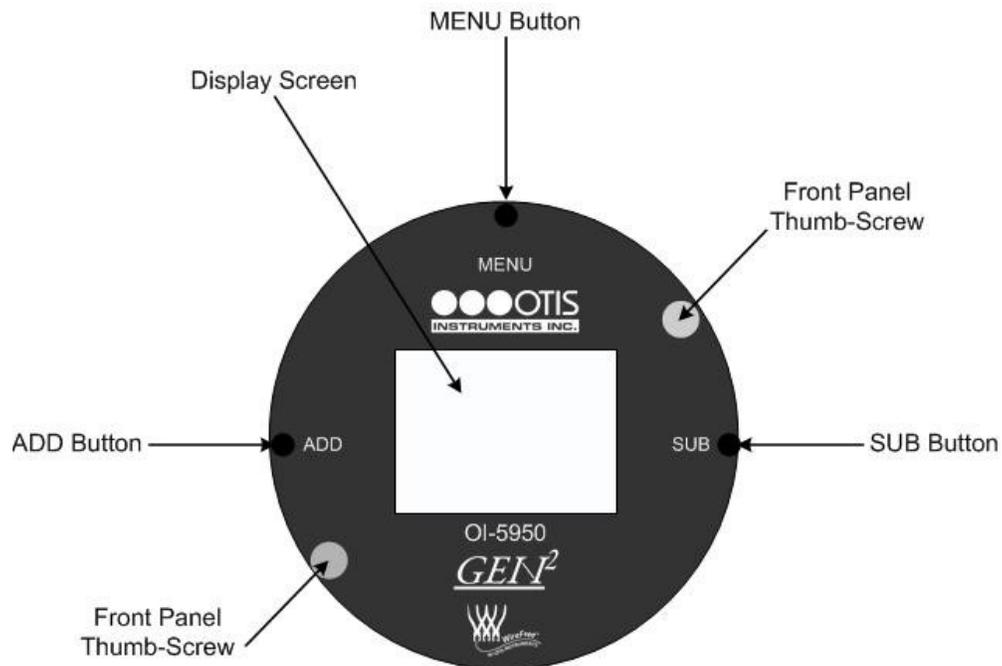
2. Touch and hold an Otis Instruments, Inc. distributed magnet against the right side of the device for four seconds to activate the *SUB* button (which turns the device off).

   NOTE: When the magnet touches the device and a connection is made, a trapezoid will appear on the display screen.

3. When powering off, the display screen will switch from showing "0" to "OFF". The display will continue to show "OFF" (when power is being supplied to the unit) until the device is powered on.

Basic Menu Mode

The Basic Menu Mode should be used to set the basic settings of the OI-5950 before initial use, and/or to adjust the basic settings to accommodate use. Basic Menu Mode options include: Sensor 2 On/Off, and Setting Radio Address.

Sensor 2 On/Off

If two sensors are to be detected, turn Sensor 2 "On".

1. Touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.
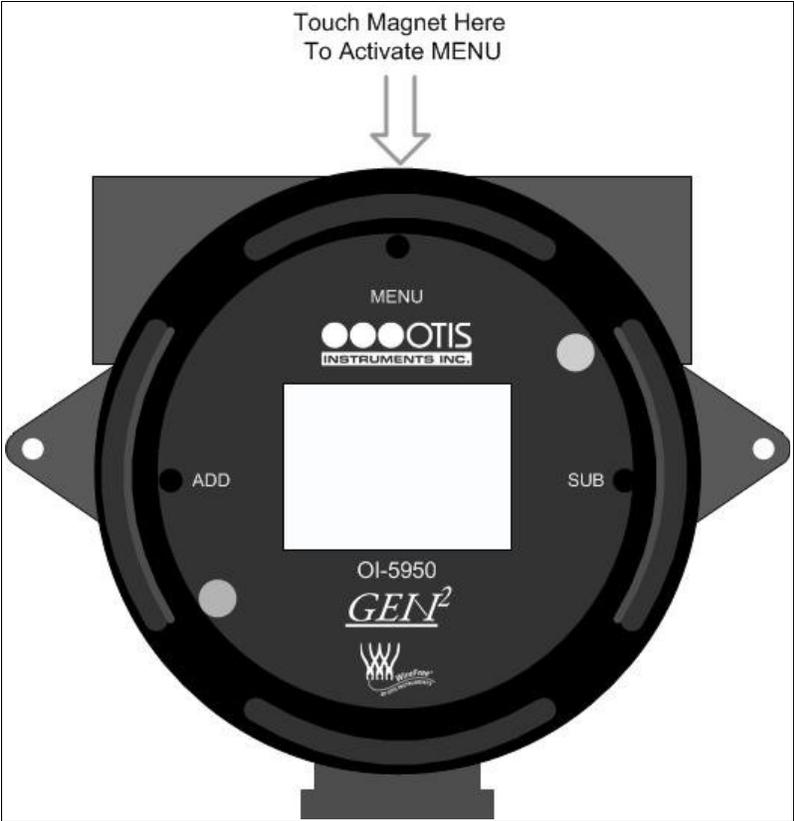
2. The display screen should resemble the following illustration:

3. Press *ADD* (or *SUB*) to manipulate the Sensor 2 On/Off setting.

4. Once the Sensor 2 On/Off selection is chosen, proceed to the next step.

Setting Radio Address

To ensure proper communication with the receiving monitor, set the Sensor Address to match the one assigned to the sensor assembly.

Sensor 1 Radio Address

1. After the Sensor 2 On/Off is chosen (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.
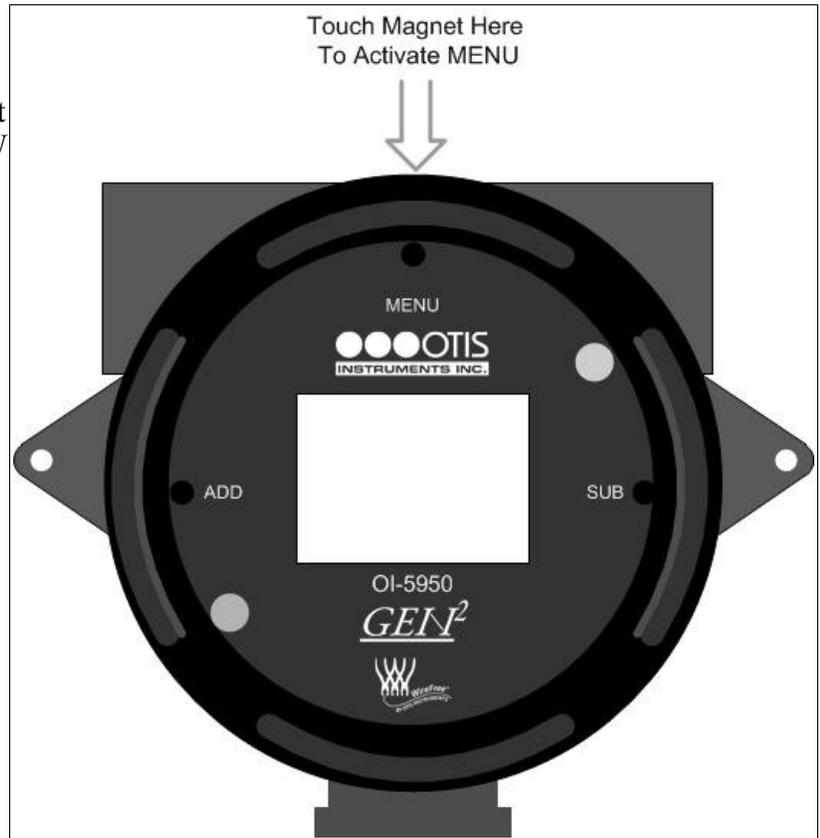
2. The display screen should resemble the following illustration:
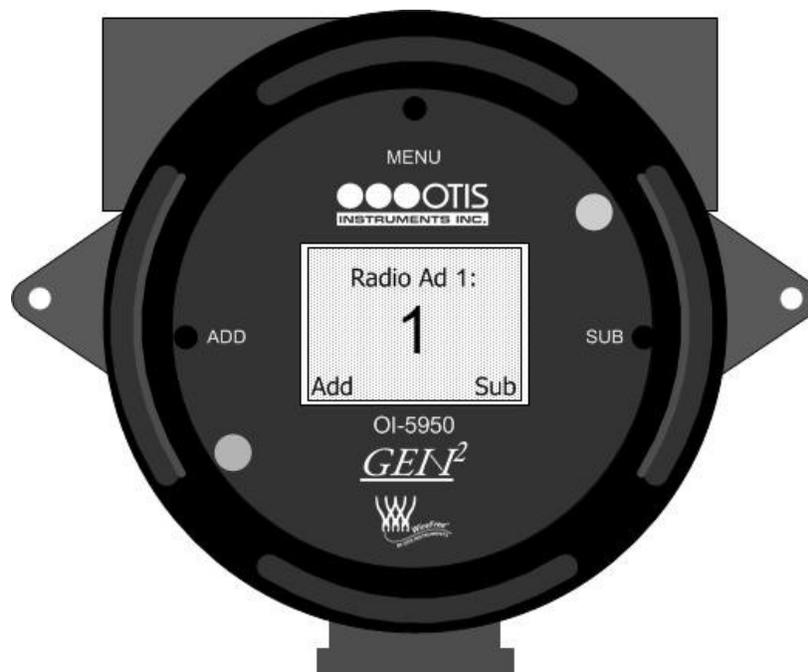
3. Press *ADD* to increase, or *SUB* to decrease, the Sensor 1 Radio Address setting.

4. Once the Sensor 1 Radio Address is set, proceed to the next step.

Sensor 2 Radio Address

NOTE: This page will only appear if Sensor 2 has been turn on.

1. After the Sensor 1 Radio Address is set (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.
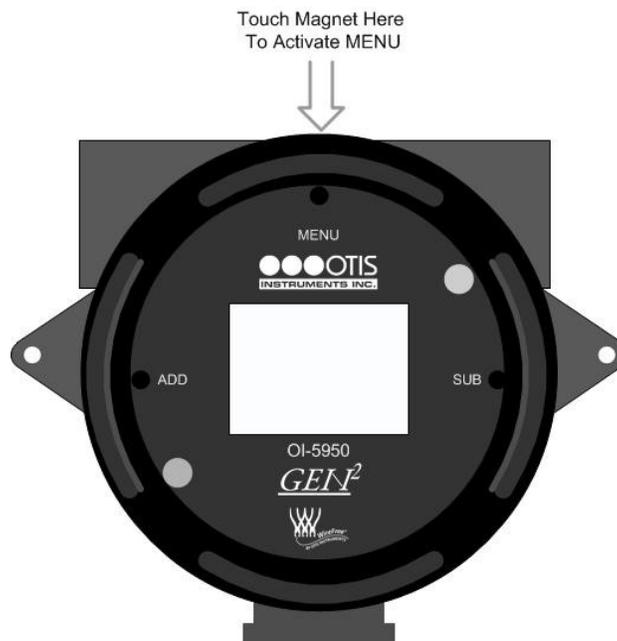
2. The display screen should resemble the following illustration:

3. Press *ADD* to increase, or *SUB* to decrease, the Sensor 2 Radio Address setting.

4. Once the Sensor 2 Radio Address is set, touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button (to exit Basic Menu Mode).

5. The device is now in Normal Operating Mode. The Display Screen should resemble the following illustration:

Advanced Menu Mode

The Advanced Menu Mode allows the user to: Test Relays/Alarms, set the Network ID, view Unit Info, Set Radio Times, Set LCD Contrast, and opt to (or not to) return the unit to Factory Default Settings.

Relays/Alarms Test

The relays/alarms test should be completed periodically to ensure full functionality of the relays/alarms, and accurate transmission of radio waves from the device to the transmission controller.

Relay Test 1

1. While the device is in Normal Operating Mode, Touch and hold an Otis Instruments, Inc. distributed magnet against the top side of the device for approximately six seconds to active *MENU* and enter the Advanced Menu Mode.
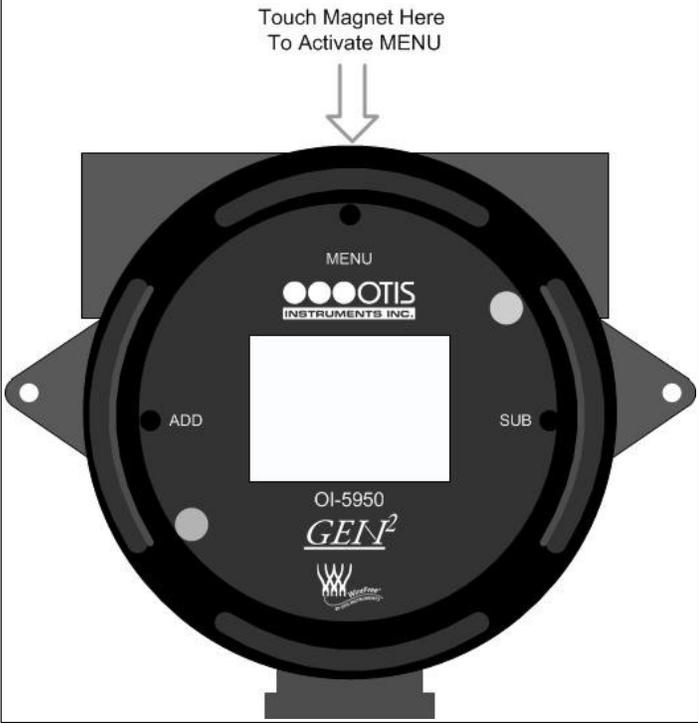
2. The Display Screen should resemble the following illustration:

3. Touch the magnet to *ADD* or *SUB* to toggle between "1" and "0", indicating a change of state for the relay.

4. Once Relay Test 1 is complete, continue to the next step.

Relay Test 2

NOTE: This page will only appear if Sensor 2 has been turn on.

1. After Relay Test 1 is complete (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.
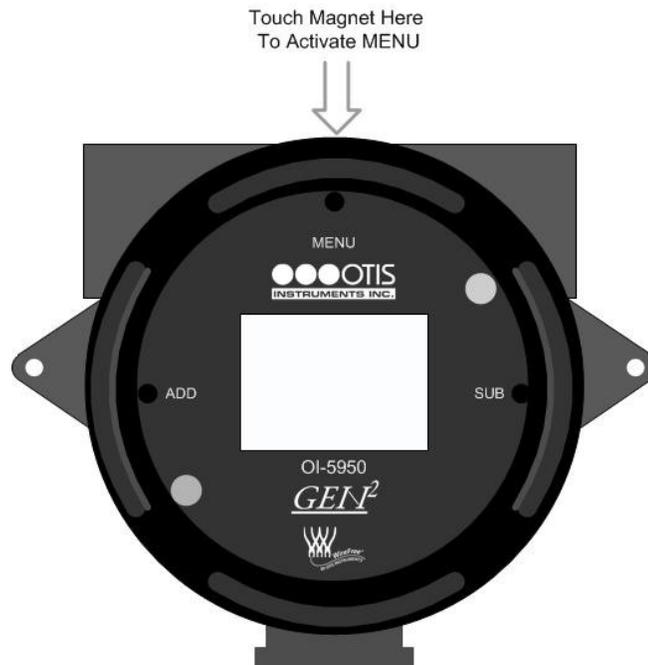
2. The Display Screen should resemble the following illustration:

3. Touch the magnet to *ADD* or *SUB* to toggle between "1" and "0", indicating a change of state for the relay.

4. Once Relay Test 2 is complete, continue to the next step.

Setting Network ID

To ensure proper communication with the receiving monitor, set the Network ID to match the one assigned to the monitor.

1. After the Relay/Alarms Test is complete (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.
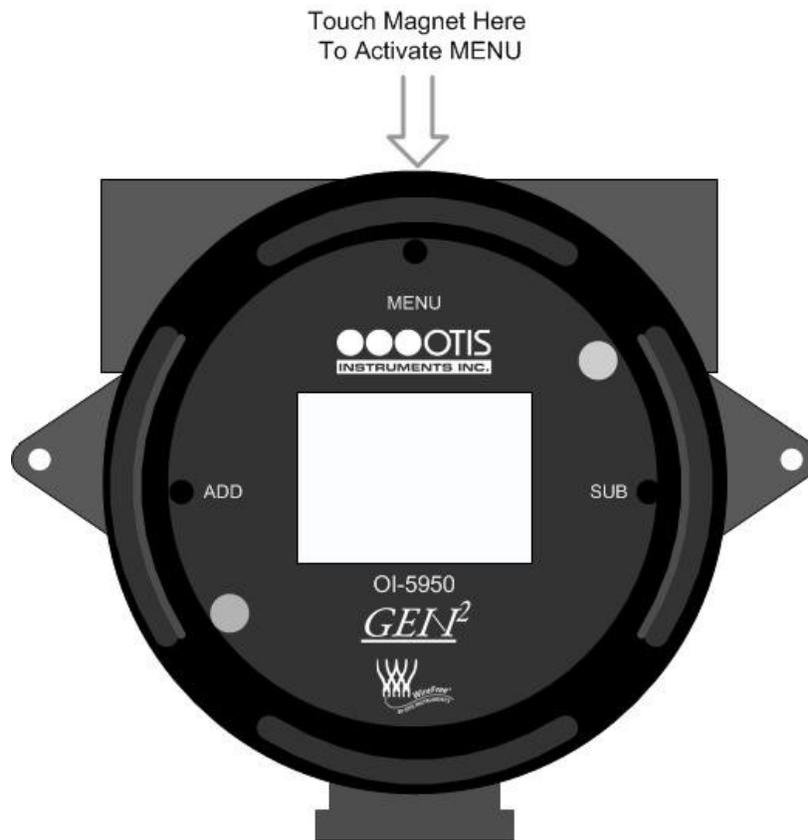
2. The display screen should resemble the following illustration:

3. Touch the magnet to *ADD* (increase) or *SUB* (decrease) until the desired Network ID is displayed—this value will be a number from 1-52 (1-78 for 2.4 GHz radios).

> *NOTE: To ensure proper communication with the receiving monitor, set the Network ID to match the one assigned to the monitor.*

4. Once the Network ID is set, continue to the next step.

Unit Info

The Unit Info screen allows the user to view the date and serial number of the unit.

1. After the Network ID has been setup (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.

2. The display screen should resemble this illustration:

3. Once the Unit Info has been viewed, continue to the next step.

Radio Time Setting

The Radio Time Setting for both radios is used to set the amount of time to elapse between radio transmissions from the OI-5950 (between 1-255 minutes) to the receiving Otis Instruments, Inc. monitor.

Radio Time 1

1. After the Unit Info has been viewed (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.
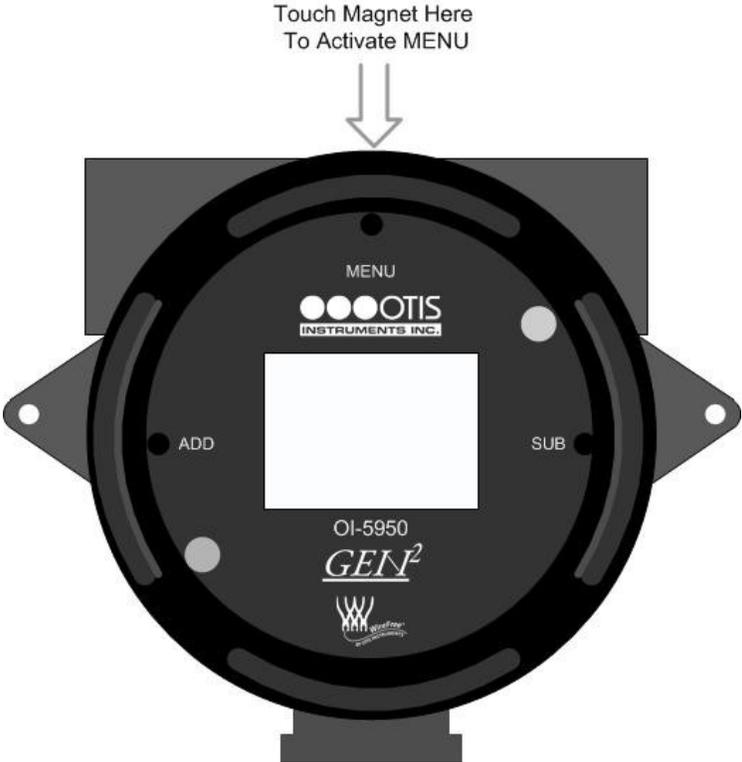
2. The Display Screen should resemble the following illustration:

3. Touch the magnet to *ADD* (increase) or *SUB* (decrease) to set the Radio Time 1 Setting between 1 and 255.

4. Once Radio Time 1 has been set, continue to the next step.

Radio Time 2

NOTE: This page will only appear if Sensor 2 has been turn on.

1. After Radio Time 1 has been set (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate the *MENU* button.

2. The Display Screen should resemble the following illustration:

3. Touch the magnet to *ADD* (increase) or *SUB* (decrease) to set the Radio Time 2 Setting between 1 and 255.
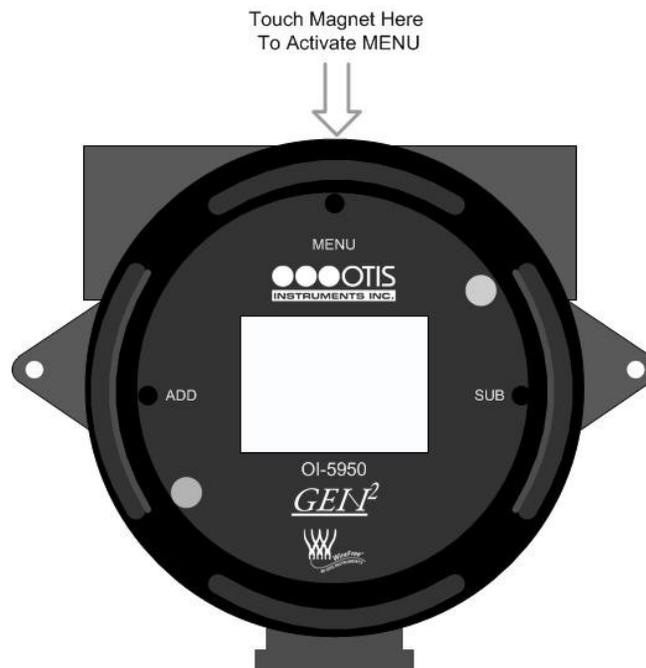

4. Once Radio Time 2 has been set, continue to the next step.

Setting LCD Contrast

1. After Radio Time 2 has been set (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate *MENU*.

2. The display screen should resemble the following illustration:

3. Touch the magnet to *ADD* (increase) or *SUB* (decrease) until the contrast is at the desired setting.

Once the Contrast has been set, continue to the next step.

Restore to Factory Default

1. After the Contrast has been set (see above), touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate *MENU*.

2. The display screen should resemble the following illustration:

3. Touch the magnet to *ADD* for "Yes" or *SUB* for "No". Factory Default Settings are:

- Network ID set at 5
- Sensor 1 is set to "On"
- Sensor 2 is set to "On"
- Radio Address 1 is set at 1
- Radio Address 2 is set at 2
- Radio Time 1 is set at 1
- Radio Time 2 is set at 1
- Contrast is set at 31

4. If "No" is selected, the device will return to Normal Operating Mode. If "Yes" is selected, the display screen should resemble the following illustration:

5. Touch the magnet to *ADD* for "Yes" or *SUB* for "No".

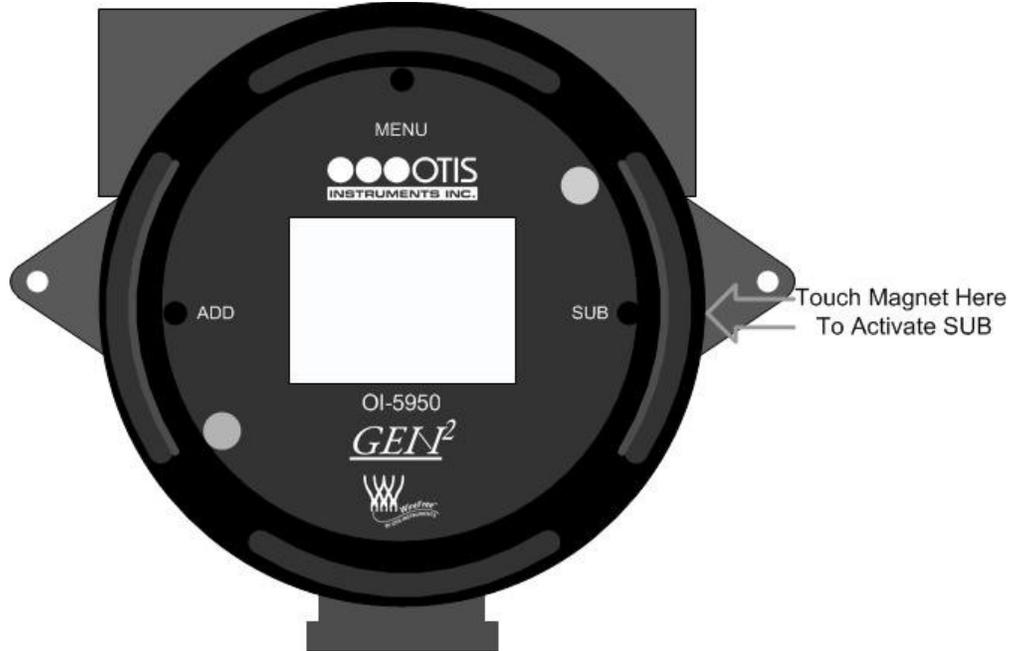6. The device is now in Normal Operating Mode.

Battery Replacement

To ensure full-functionality, the battery should be replaced if the voltage is less than 3.0. To check the battery voltage, refer to the Advanced Menu Section in this Operation Manual.

The device uses an Otis size "D" Lithium 19AH battery with connector. New batteries should only be obtained from Otis Instruments, Inc. or an affiliated distributor.

1. Power off the device by touching and holding an Otis Instruments, Inc. distributed magnet against the right side of the device for four seconds to activate *SUB*.

2. Unscrew, remove, and set aside the Moore Enclosure lid.

Battery Replacement cont...
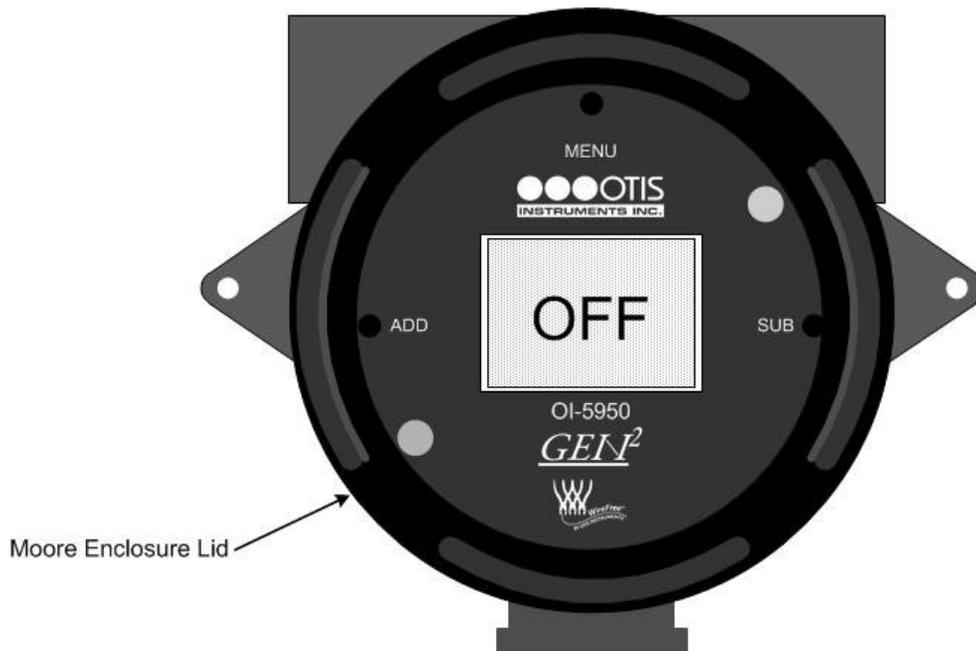
3. Using only your fingers, pull straight up on the Front Panel Thumb-Screws until the internal components are removed from the standing eyelets.

    NOTE: Do not use any metal object to help remove the Front Panel.

    NOTE: Do not remove any connecting wires.

4. Remove the battery from the two Battery Mounts.
5. Locate the Battery-Wire Socket.
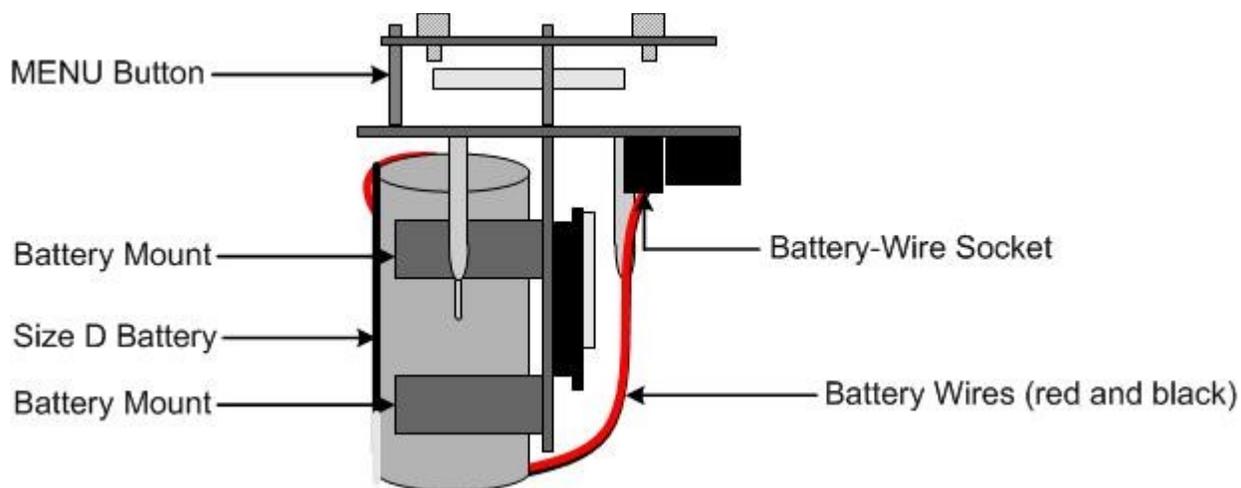
6. Squeeze the top and bottom of the Battery-Wire Plug, located in the Battery-Wire Socket on the Circuit Board.
7. Pull the Battery-Wire Plug straight out of the Battery-Wire Socket.
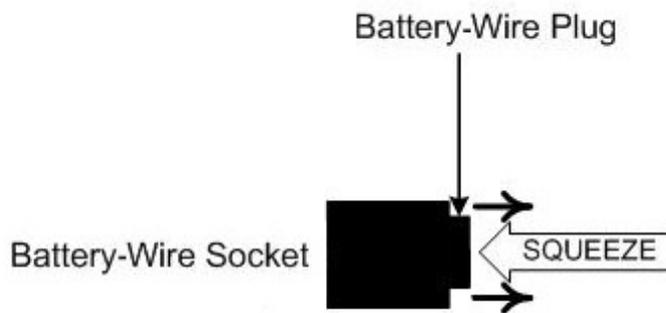
8. Place the new battery's plug in the socket.
9. Slide the new battery into the Battery Mounts.

10. Replace the unit back in the Moore enclosure by matching each mounting post to its corresponding eyelet inside the enclosure.
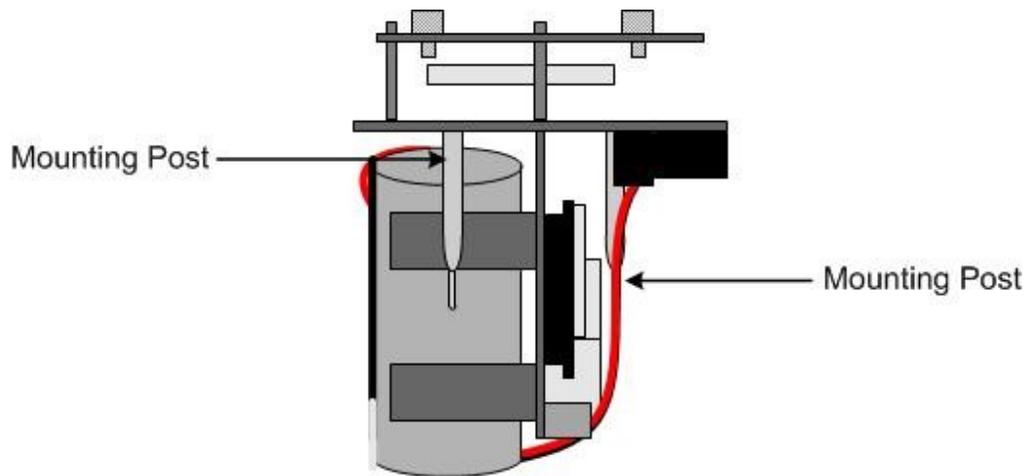
11. Verify that each mounting post is properly fitted in its corresponding eyelet inside the Moore enclosure.

12. Verify that the sealing ring (located on the threads of the open Moore enclosure) is still in place.
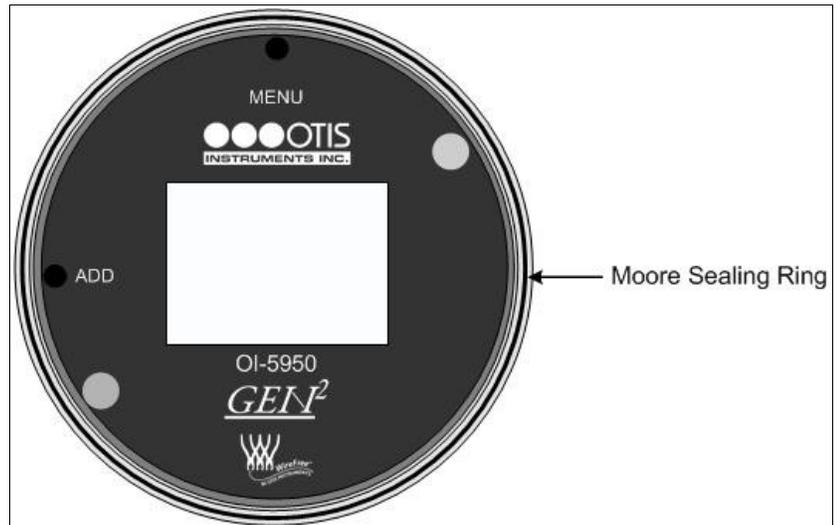
13. Place the Moore enclosure lid on top of the Moore enclosure base.

14. Rotate the lid until it is tightly screwed in place (approximately 20 rotations).

15. Power on the device and check the battery voltage to ensure that the new battery is fully functional and at 3.6 volts. For instructions on how to check the battery voltage, see the Advanced Menu Section in this Operation Manual.

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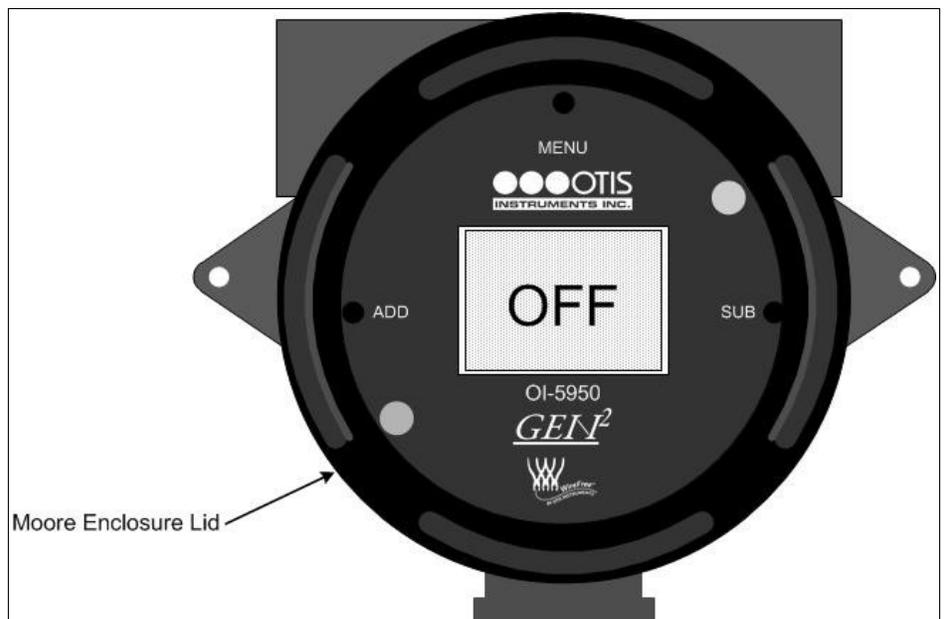
Antenna Replacement

The antenna is used to aid in sending clear and reliable radio signals to the transmission controller. If necessary, the current antenna can be replaced by an appropriate Otis Instruments, Inc. approved 2.4 GHz or 900 MHz antenna.

1. Power off the device by touching and holding an Otis Instruments, Inc. distributed magnet against the right side of the device for four seconds to activate *SUB* (which turns off device).


2. Locate the Antenna, Connector, and Antenna Fitting.

3. Unscrew the current Antenna's Connector from the Antenna Fitting.

4. Screw the new Antenna onto the Antenna Fitting.
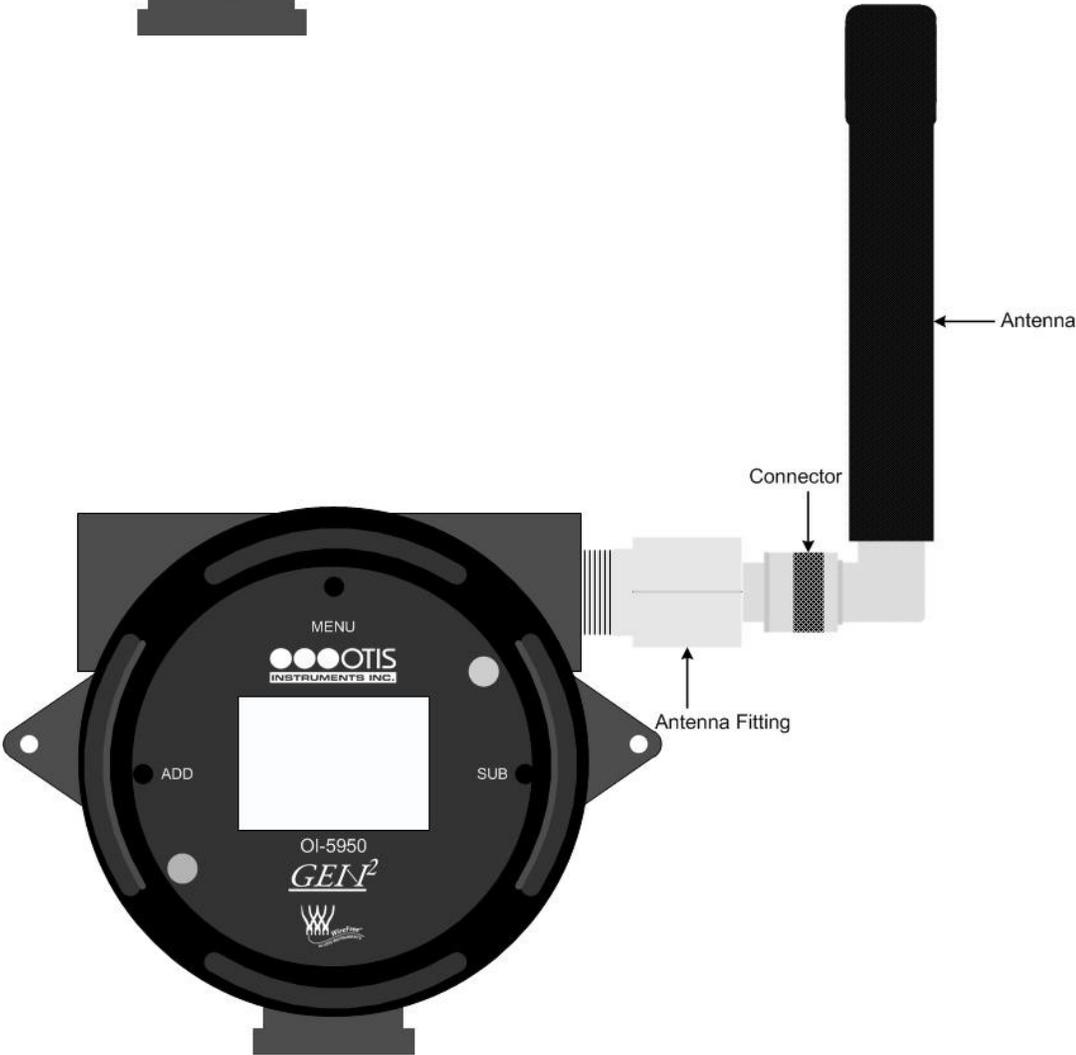
5. Power on the device by touching the magnet to *ADD*.
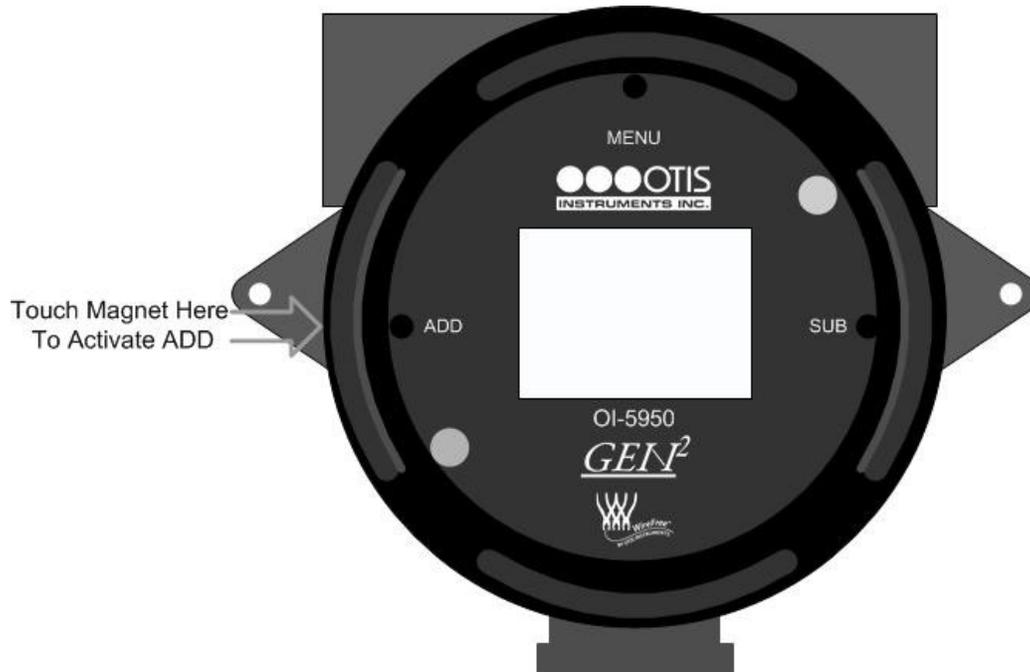
NOTE: When the magnet touches the device and a connection has been made a trapezoid will appear.

Appendix A: OI-5950 Troubleshooting Guide

- Fault 14

  Indication: Check Radio

  Reason: No primary monitor

  Solution: Ensure that a monitor is on. Ensure that the sensor assembly and switch-state transmitter are set to the same radio address and Network ID.

  Applies to: Setups that use GenII sensor assemblies

Specifications

Battery Type: 19 AH

Battery Voltage: 3.6 VDC

Battery Life: up to 2 years (normal operation)

Unit Address: 1 -52 Networks (1-78 for 2.4 GHz);

                               1-255 Addresses per Network

Display: Graphical LCD (102x64), transflective, sunlight readable,

                               LED backlight

Radio Options: · 2.4 GHz ISM, 100mW
                               · 900 MHz, 200mW

Radio Transmission: Every 1 minute with no change from the sensor (adjustable)
                               Every 5 seconds with change from the sensor

Interface: Three push buttons (*MENU*, *ADD*, *SUB*);

                               three corresponding magnetic,

                               non-intrusive switches; non-intrusive calibration

Enclosure: Otis-Blue explosion/flame-proof

Certifications: CSA certified, Class 1, Div I, Groups C and D

                               Ex d IIB, Zone 1 Aex d IIb

Warranty: Hardware: One year (limited)

                               Battery: 90 days from ship date

Warranty Statement for **WireFree Model OI-5950**

Hardware

Otis Instruments, Inc. (Manufacturer) warrants its products to be free of defects in workmanship and materials—under normal use and service—from the date of purchase from the manufacturer or from the product's authorized reseller. The hardware for this device is under a one-year limited warranty.

The manufacturer is not liable (under this warranty) if its testing and examination disclose that the alleged defect in the product does not exist or was caused by the purchaser's (or any third party's) misuse, neglect, or improper installation, testing or calibrations. Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightening, water damage or other hazard, voids liability of the manufacturer.

In the event that a product should fail to perform up to manufacturer specifications during the applicable warranty period, contact the product's authorized reseller or return the product directly to the manufacturer with a Return Material Authorization (RMA). This number will be assigned upon contacting customer service at 979.776.7700 or Otis@otisinstruments.com. The manufacturer will--at its option and expense--repair or replace the product, or deliver an equivalent product or part to the purchaser at no additional charge.

Any replaced or repaired product or part has either a 90-day warranty or the remainder of the initial warranty period (whichever is longer).

Sensor

The sensor contained in the device is covered under a one-year limited warranty.

Battery

All batteries supplied by Otis Instruments, Inc. are covered, from ship date, under a 90-day warranty.

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