INSTRUMENTS

AirLink 5950
Operator's Manual

Part Number: 71-0662

Revision: P1

Released: 2/2/24

RKI Instruments, Inc.
www.rkiinstruments.com

Product Warranty

RKI Instruments, Inc. warrants gas alarm equipment sold by us to be free from defects in materials, workmanship, and performance for a period of one year from date of shipment from RKI Instruments, Inc. Any parts found defective within that period will be repaired or replaced, at our option, free of charge. This warranty does not apply to those items which by their nature are subject to deterioration or consumption in normal service, and which must be cleaned, repaired, or replaced on a routine basis. The following are examples of such items:

- Absorbent cartridges
- Pump diaphragms and valves
- Fuses
- Batteries
- Filter elements

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repair procedures not in accordance with the operator's manual. This warranty indicates the full extent of our liability, and we are not responsible for removal or replacement costs, local repair costs, transportation costs, or contingent expenses incurred without our prior approval.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF RKI INSTRUMENTS, INC. INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RKI INSTRUMENTS, INC. BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND CONNECTED WITH THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.

This warranty covers instruments and parts sold to users by authorized distributors, dealers, and representatives as appointed by RKI Instruments, Inc.

We do not assume indemnification for any accident or damage caused by the operation of this gas monitor, and our warranty is limited to the replacement of parts or our complete goods.

Table of Contents

Overview

The AirLink 5950 is a WireFree Switch-State Transmitter for use in conjunction with a new or existing WireFree system.

The AirLink 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.

This document should be read before initial operation of the product.

NOTE: The figures and enclosure wording in this manual represent the AirLink 5950 XP; however, ***the AirLink 5950 NXP's internal components and operation are identical***.

About this Manual

The *AirLink 5950 Gas Monitor Operator's Manual* uses the following conventions for notes, cautions, and warnings:

NOTE: Describes additional or critical information.

CAUTION: *Describes potential damage to equipment.*

WARNING: ***Describes potential danger that can result in injury or death.***

CAUTION: *Refer to accompanying documentation.*

⎓ **VDC (DC voltage)**

Specifications

Table 1: Specifications

Battery Voltage	3.6 VDC
Battery Life	Up to 2 years (normal operation)
Operating Temperature	-40°F to 129°F (-40°C to 54°C)
Input Signal	1-52 Networks (1-78 for 2.4 GHz) 1-255 Addresses per Network
Output	Wireless radio
Dimensions (without antenna)	15.76 in. L x 5.11 in. W x 5.37 in. H (40 cm L x 13.0 cm W x 13.6 cm H)
Weight	6 lbs.
User Buttons and Magnetic Switches	MENU, ADD, SUB
Radio Options	2.4 GHz, ISM, 100 mW OR 900 MHz, 200 mW
Standard Accessory	• AirLink 5950 Operator's Manual (this document) • Magnetic Wand

External Components

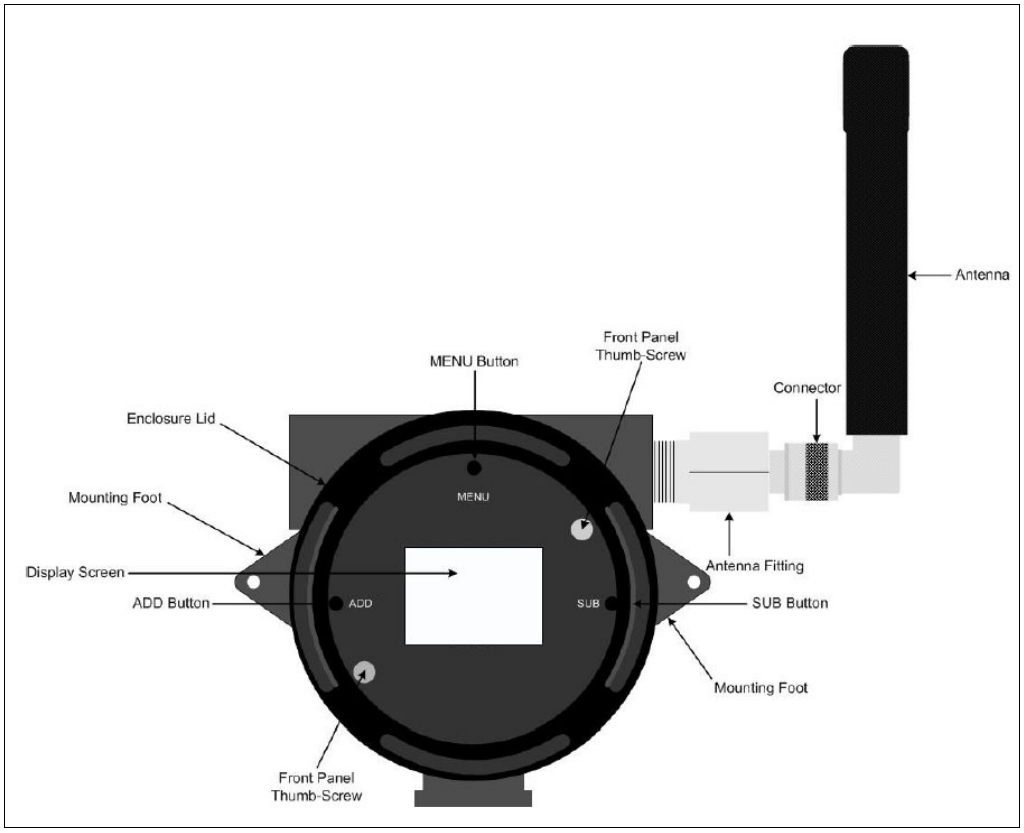


Figure 1: Component Location

Control Board

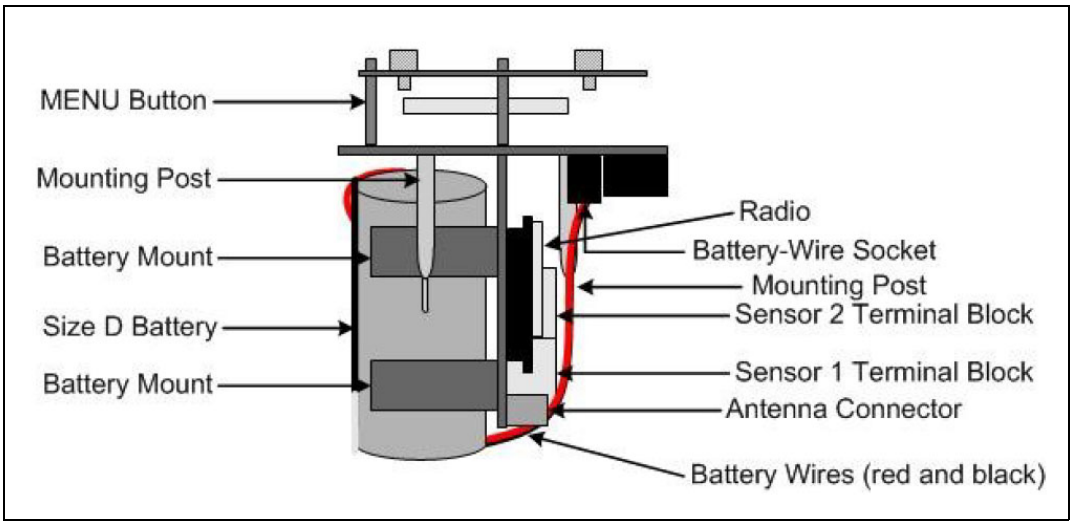


Figure 2: Control Board

Sensor Wiring Setup

NOTE: The figures and enclosure wording in this manual represent the AirLink 5950 XP; however, ***the AirLink 5950 NXP's internal components and operation are identical***.

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.

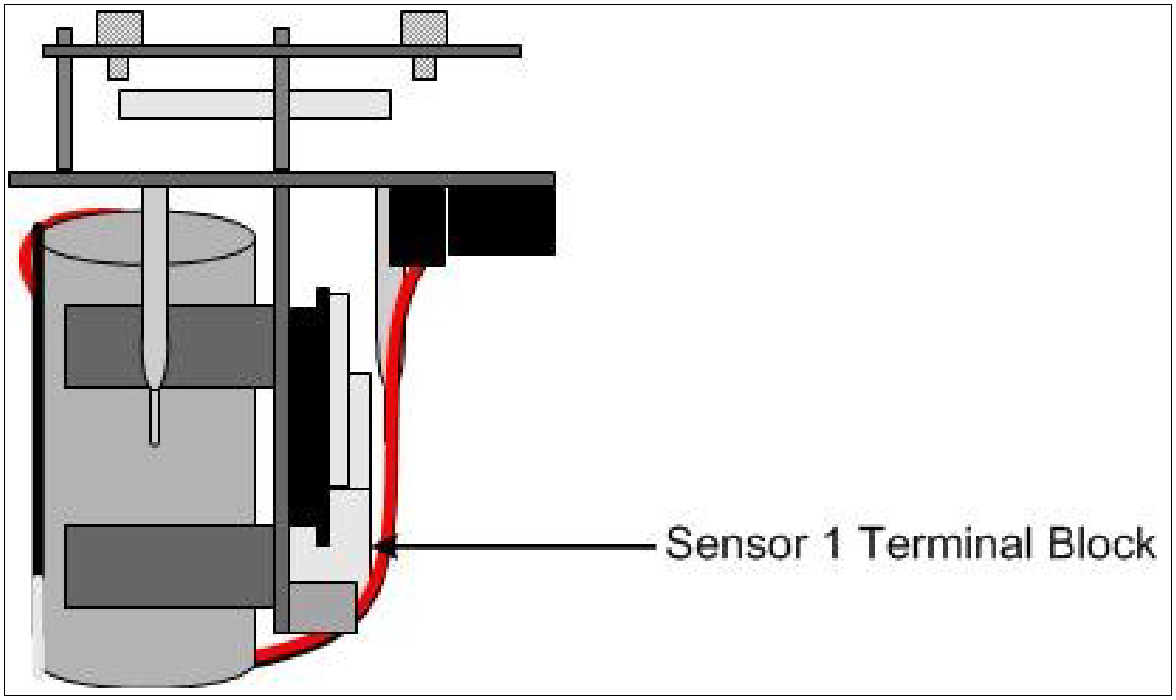
If the side being monitored is open, a "0" will appear on the screen and be transmitted. If the side being monitored is closed, a "1" will appear on the screen and be transmitted.

Wiring to Sensor 1

The AirLink 5950 is a wired transmitter that uses an external 4 - 20 mA sensor provided by the user. Refer to the following procedure when wiring the Sensor 1 to the transmitter.

1. Power off the device by touching and holding the magnetic wand against the right side of the device for four seconds to activate SUB.
2. Unscrew and remove the enclosure lid.
3. Grip the front panel thumbscrews and pull the front panel out of the enclosure.

CAUTION: *Do not use any metal object to help remove the front panel. Do not remove any connecting wires.*



4. Locate the Sensor 1 terminal block on the control board and rotate the board so that the terminal block is accessible for wiring.

CAUTION: *Use appropriate construction technique to maintain the explosion proof classification of the assembly.*

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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.

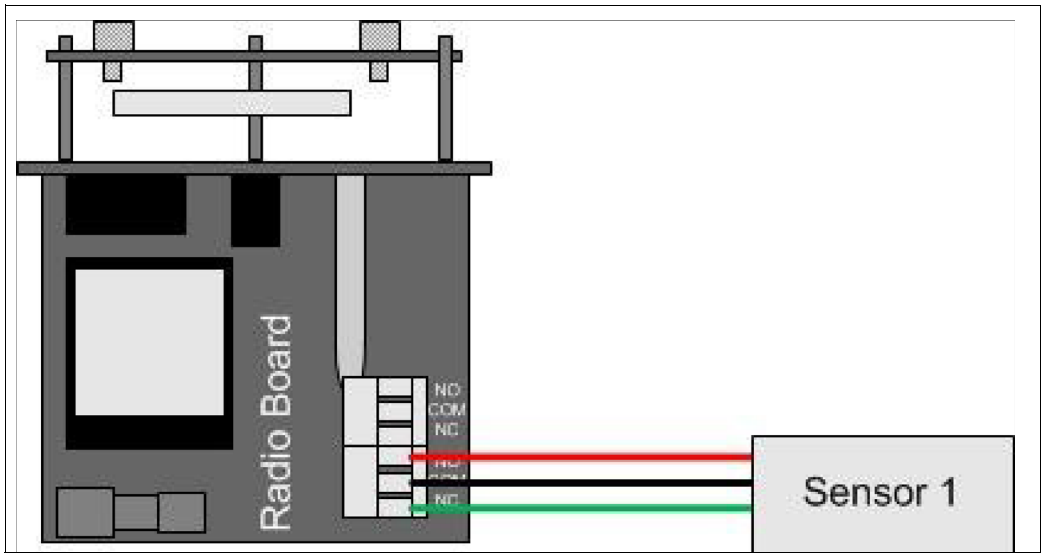
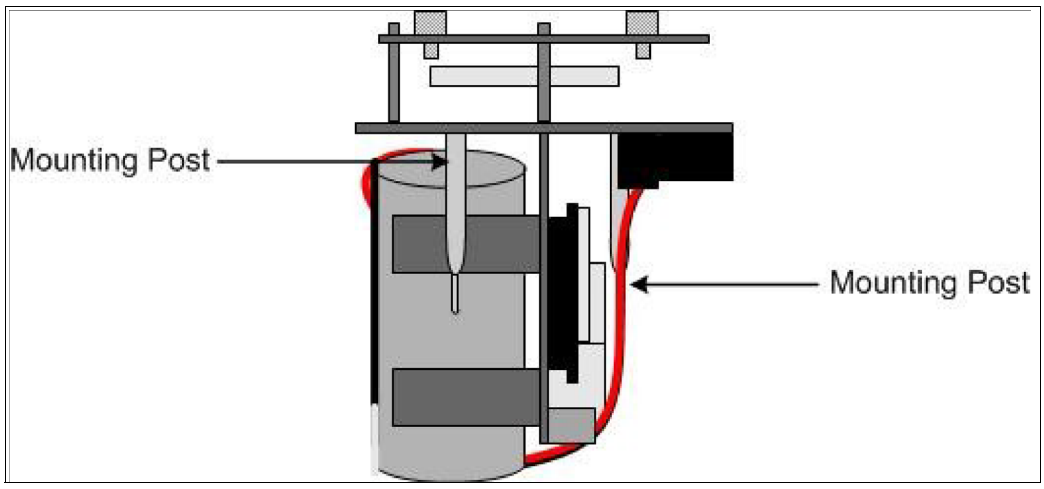


Figure 3: Sensor 1 Wiring

8. To wire in Sensor 2, proceed to the next section. To finish wiring Sensor 1, replace the unit back in the enclosure by matching each mounting post to its corresponding eyelet inside the enclosure.



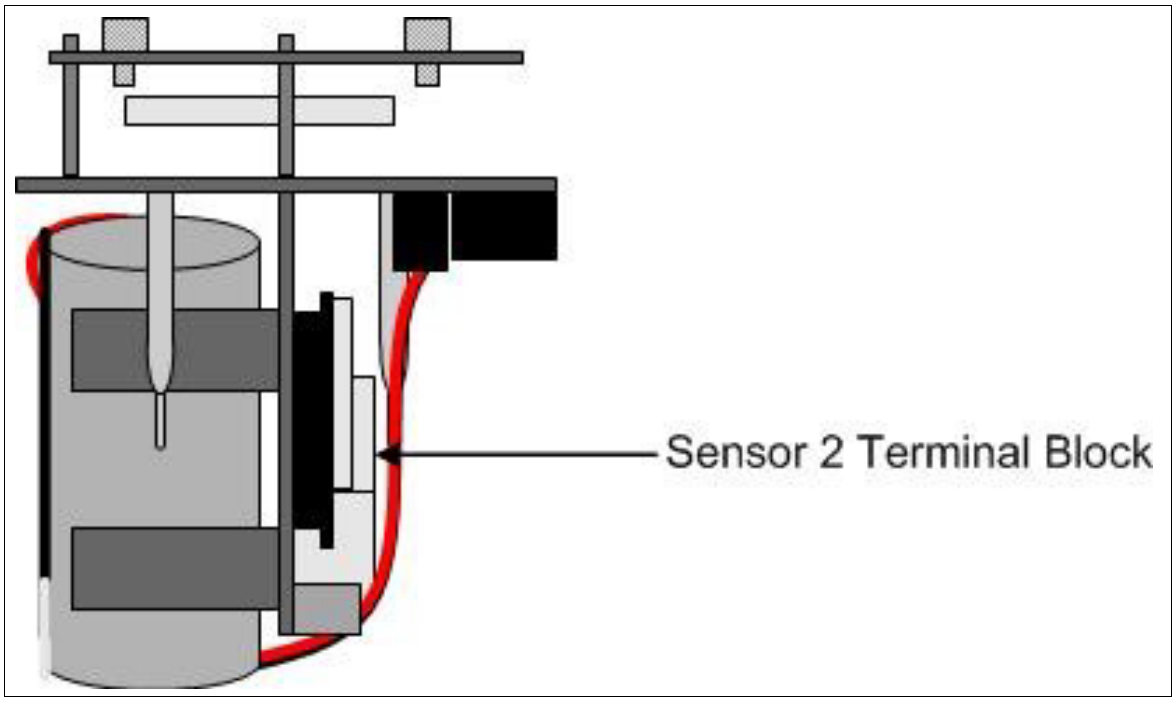
9. Verify that each mounting post is properly fitted in its corresponding eyelet inside the enclosure.
10. Verify that the sealing ring (located on the threads of the open enclosure) is still in place.
11. Place the enclosure lid on top of the enclosure base.
12. Rotate the lid until it is tightly screwed in place (approximately 20 rotations).

Wiring to Sensor 2

The AirLink 5950 is a wired transmitter that uses an external 4 - 20 mA sensor provided by the user. Refer to the following procedure when wiring Sensor 2 to the transmitter.

1. Power off the device by touching and holding the magnetic wand against the right side of the device for four seconds to activate SUB.
2. Unscrew and remove the enclosure lid.
3. Grip the front panel thumbscrews and pull the front panel out of the enclosure.

CAUTION: *Do not use any metal object to help remove the front panel. Do not remove any connecting wires.*



4. Locate the Sensor 2 terminal block on the control board and rotate the board so that the terminal block is accessible for wiring.

CAUTION: *Use appropriate construction technique to maintain the explosion proof classification of the assembly.*

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

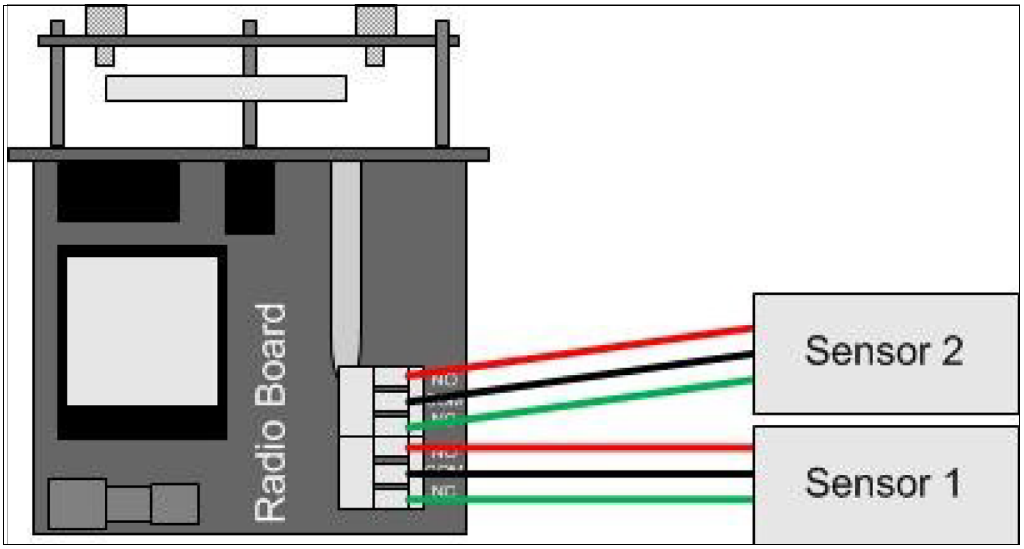
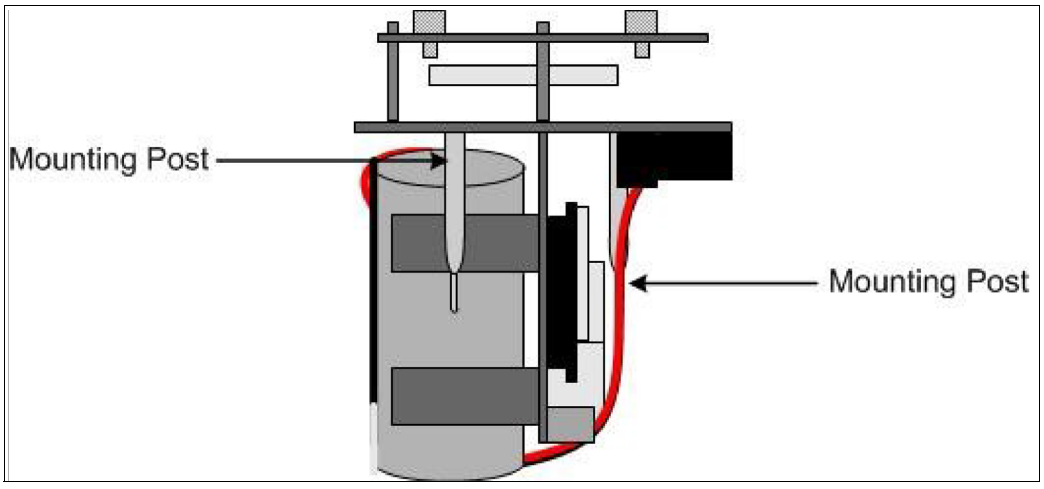


Figure 4: Sensor 2 Wiring

8. To finish wiring Sensor 2, replace the unit back in the enclosure by matching each mounting post to its corresponding eyelet inside the enclosure.



9. Verify that each mounting post is properly fitted in its corresponding eyelet inside the enclosure.
10. Verify that the sealing ring (located on the threads of the open enclosure) is still in place.
11. Place the enclosure lid on top of the enclosure base.

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

Operation

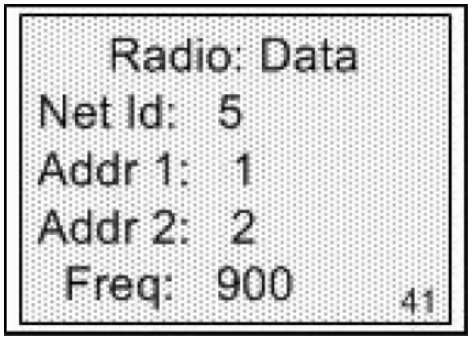
NOTE: The figures and enclosure wording in this manual represent the AirLink 5950 XP; however, ***the AirLink 5950 NXP's internal components and operation are identical***.

WARNING: ***Do not remove the enclosure lid while the circuits are energized unless the area is determined to be non-hazardous. Keep the enclosure lid tightly closed during operation.***

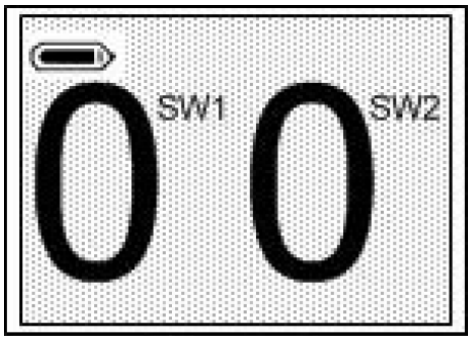
Start Up

This section describes procedures to start up the AirLink 5950 and place it into normal operation.

1. Complete the installation procedures described earlier in this manual.
2. With the magnet, touch and hold **ADD** to turn the AirLink 5950 on. The RKI Instruments Inc. logo and a 60-second countdown appear on the display.
   - After five seconds, the following screen appears:



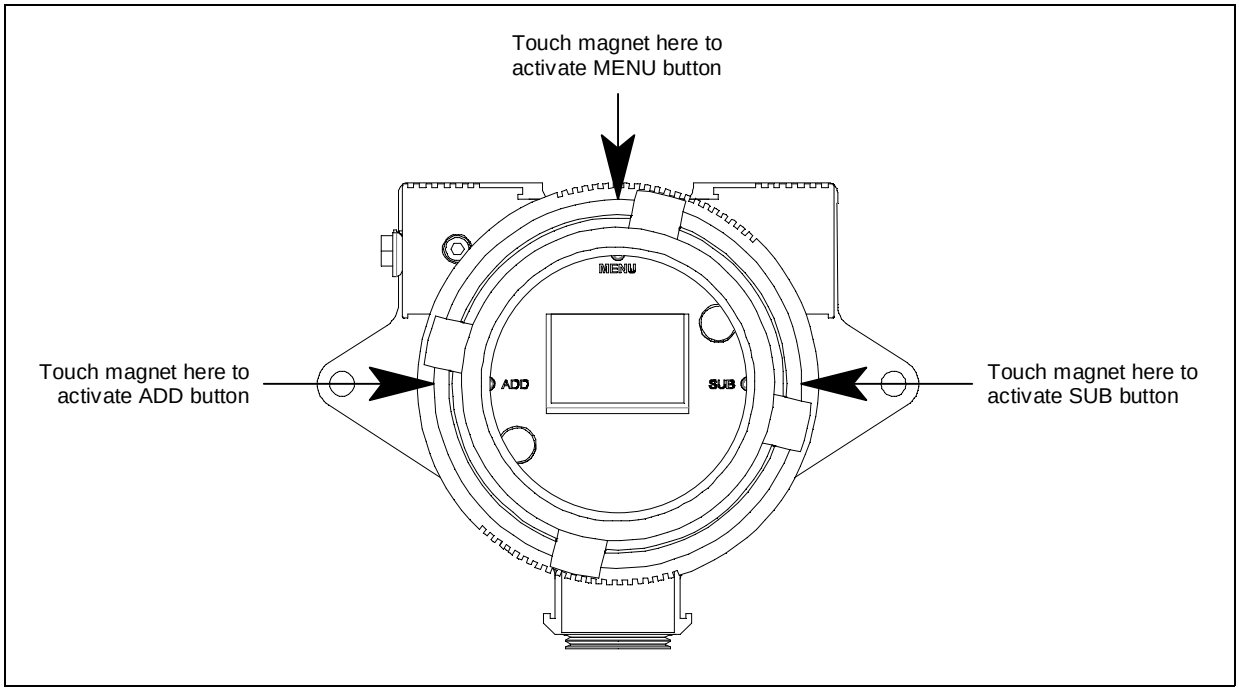
   - After 35 seconds, the display will show the Model Number, Manufacture Date, Serial Number, Version, and Build.
3. When the switch state screen appears, the AirLink 5950 is in Normal Operating Mode.



During Normal Operation, the screen displays the 4-20 mA reading(s) of the connected sensor(s).

Magnetic Buttons

Use the provided magnet to operate the AirLink 5950 without having to remove the junction box's lid. Touch the magnet to the outer edge of the junction box lid near the button you want to actuate. Tapping the junction box is the same as pressing and releasing the button. Holding the magnet against the junction box is the same as pressing and holding the button.



Turning Off the Device

1. Press and hold **SUB** for approximately 4 seconds to turn the AirLink 5950 off.

   The AirLink 5950's display will continue to read "OFF" until power is no longer supplied to the unit.

Faults

In the event of a failure, the device will show a fault code until the fault has been cleared or is corrected.

For a list of the fault codes, and their associated meaning, see page 22.

Using the Basic Configuration Menu

NOTE: The figures and enclosure wording in this manual represent the AirLink 5950 XP; however, ***the AirLink 5950 NXP's internal components and operation are identical***.

WARNING: ***Do not remove the enclosure lid while the circuits are energized unless the area is determined to be non-hazardous. Keep the enclosure lid tightly closed during operation.***

The AirLink 5950 has two menus for configuring the device and adjusting system settings: the Basic and Advanced Menu Modes.

The Basic Configuration Menu allows access to the following features:

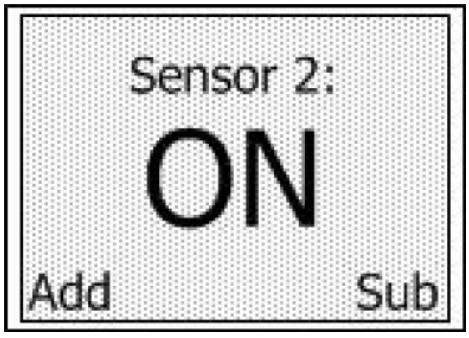
- Turning on Sensor 2 (page 13)
- Setting the Radio Address (page 14)

To enter the Basic Configuration Menu from Normal Operating Mode, press **MENU**.

Turning on Sensor 2

If the AirLink 5950 detects two sensors, Sensor 2 can be turned on and off using the Basic Configuration Menu.

1. Press **MENU** while in Normal Operating Mode to enter the Basic Configuration Menu. The following screen appears.



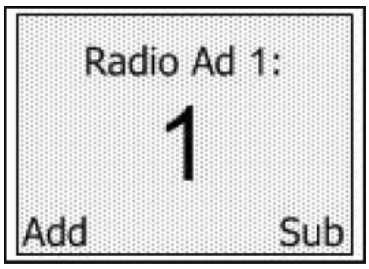
2. Press **ADD** or **SUB** to change the Sensor 2 On/Off setting.
3. To confirm the desired setting, press **MENU** to move to the next setting: Sensor 1 Radio Address.

Setting the Radio Address

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

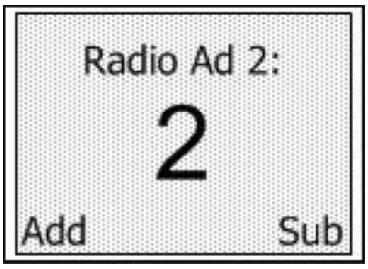
To set the Radio Address, perform the following:

1. After the Sensor 2 On/Off setting has been selected, press **MENU** while in Normal Operating Mode to enter the Basic Configuration Menu. The following screen appears:



2. Press **ADD** or **SUB** to increase or decrease the Sensor 1 Radio Address setting.
3. Press **MENU** to proceed to Sensor 2 Radio Address if Sensor 2 is turned on. Repeat Step 2.

NOTE: The Radio Ad 2 screen is only available if the Sensor 2 setting is turned on (see page 13). If Sensor 2 is turned off, the AirLink 5950 returns to Normal Operation.



4. After setting both Radio Addresses, press **MENU** to confirm Radio Address 2 and return to Normal Operation. Configuration is now complete.
5. Continue to "Using the Advanced Menu Mode" on page 15 for procedures on adjusting and viewing system settings.

Using the Advanced Menu Mode

NOTE: The figures and enclosure wording in this manual represent the AirLink 5950 XP; however, ***the AirLink 5950 NXP's internal components and operation are identical***.

The AirLink 5950 has two menus for configuring the device and adjusting system settings: the Basic and Advanced Menu Modes.

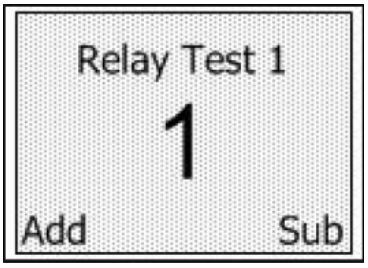
The Advanced Menu Mode allows access to the following features:

- Testing Relay 1 and Relay 2 (page 15)
- Setting the Network I.D. (page 16)
- Viewing the Unit Info (page 16)
- Setting the LCD Contrast (page 18)
- Restoring the Factory Default (page 18)

Testing Relay 1 and Relay 2

Use the Relay Test screen(s) to periodically test the monitor's alarm configuration and the detector connection(s) to the AirLink 5950.

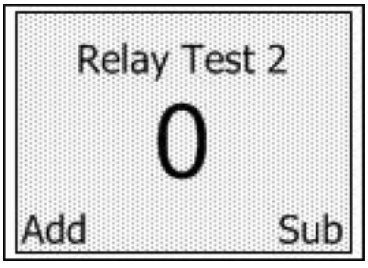
1. Enter the Advanced Menu Mode by pressing and holding **MENU** for 6 seconds while in Normal Operating Mode. The following screen appears.



2. Press **ADD** or **SUB** to toggle the on-screen reading between 0 and 1.

3. Press **MENU** to proceed to Relay Test 2 if Sensor 2 is turned on. Repeat Step 2.

NOTE: The Relay Test 2 screen is only available if the Sensor 2 setting is turned on (see page 13). If Sensor 2 is turned off, the AirLink 5950 proceeds to the next menu item: Network I.D.

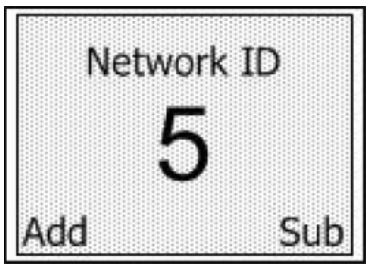


4. After testing the relay(s), press **MENU** to move to the next menu item: Network I.D.

Setting the Network I.D.

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

1. If necessary, enter the Advanced Menu Mode by pressing and holding **MENU** for 6 seconds while in Normal Operating Mode.
2. After testing the relay(s), press **MENU** to view the Network ID screen. The following screen appears.



3. Press **ADD** or **SUB** to change the on-screen Network I.D. to the desired value.
4. After the desired setting is displayed, press **MENU** to set the Network ID and move to the next menu item: Unit Info.

Viewing the Unit Info

Use the Unit Info screen to view the unit's battery voltage, radio miss, manufacture date, and serial number.

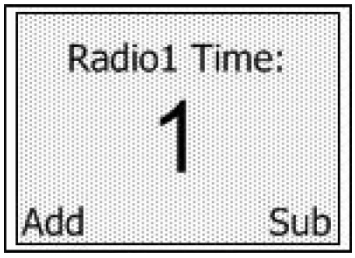
1. If necessary, enter the Advanced Menu Mode by pressing and holding **MENU** for 6 seconds while in Normal Operating Mode.
2. After the setting the Network ID, press **MENU** to view the Unit Info screen. The following screen appears.

3. After viewing the Unit Info, press **MENU** to move to the next menu item: Radio Time.

Selecting the 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 AirLink 5950 (between 1-255 minutes) to the receiving AirLink monitor.

1. If necessary, enter the Advanced Menu Mode by pressing and holding **MENU** for 6 seconds while in Normal Operating Mode.
2. After the viewing the Unit Info screen, press **MENU**. The following screen appears.



3. Press **ADD** or **SUB** to select the Radio Time 1 setting (between 1 and 255).
4. Press **MENU** to proceed to Radio Time 2 if Sensor 2 is turned on. Repeat Step 3.

NOTE: The Relay Time 2 screen is only available if the Sensor 2 setting is turned on (see page 13). If Sensor 2 is turned off, the AirLink 5950 proceeds to the next menu item: LCD Contrast

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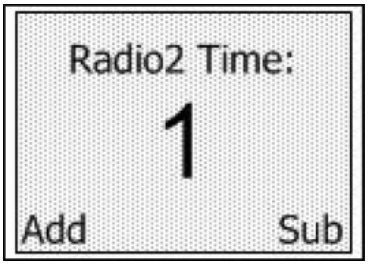
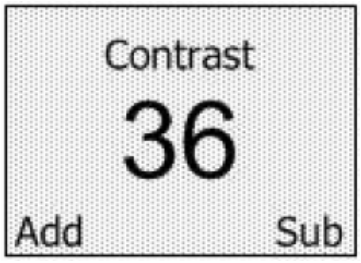


5. After selecting the radio time(s), press **MENU** to move to the next menu item: LCD Contrast.

Setting the LCD Contrast

Use this menu item to set the LCD's contrast value.

1. If necessary, enter the Advanced Menu Mode by pressing and holding **MENU** for 5 seconds while in Normal Operating Mode.
2. After the selecting the Radio Time setting(s), press and release **MENU** until the following screen appears.



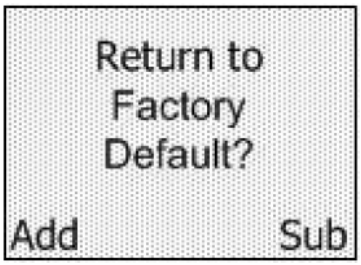
3. Press **ADD** or **SUB** to change the on-screen value to the desired Contrast value.
4. After the desired setting is displayed, press **MENU** to confirm the setting and move to the next menu item: Return to Factory Default.

Restoring the Factory Default

Use this menu item to restore the AirLink 5950 to the following factory default settings:

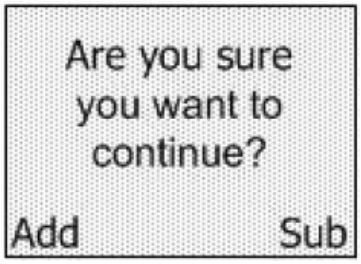
- Network ID set at 5
- Sensor 1 is set to "On"
- Sensor 2 is set to "On"
- Radio Address 1 is set at 1
- Radio Address 2 is set at 2
- Radio Time 1 is set at 1
- Radio Time 2 is set at 1
- Contrast is set at 31

1. If necessary, enter the Advanced Menu Mode by pressing and holding **MENU** for 5 seconds while in Normal Operating Mode.
2. Press and release **MENU** until the following screen appears.



3. Press **ADD** to proceed with restoring the factory default settings or **SUB** to return to Normal Operating Mode.

4. If **ADD** was pressed, the following screen appears:



Press **ADD** to proceed with restoring the factory default settings or **SUB** to return to Normal Operating Mode.

Maintenance

NOTE: The figures and enclosure wording in this manual represent the AirLink 5950 XP; however, ***the AirLink 5950 NXP's internal components and operation are identical***.

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 Viewing the Unit Info section this manual.

The device uses a "D" Lithium 19AH battery with connector. New batteries should only be obtained from RKI Instruments, Inc.

WARNING: ***Only use RKI-supplied replacement batteries. Do not mix old and new batteries. Do NOT charge battery packs.***

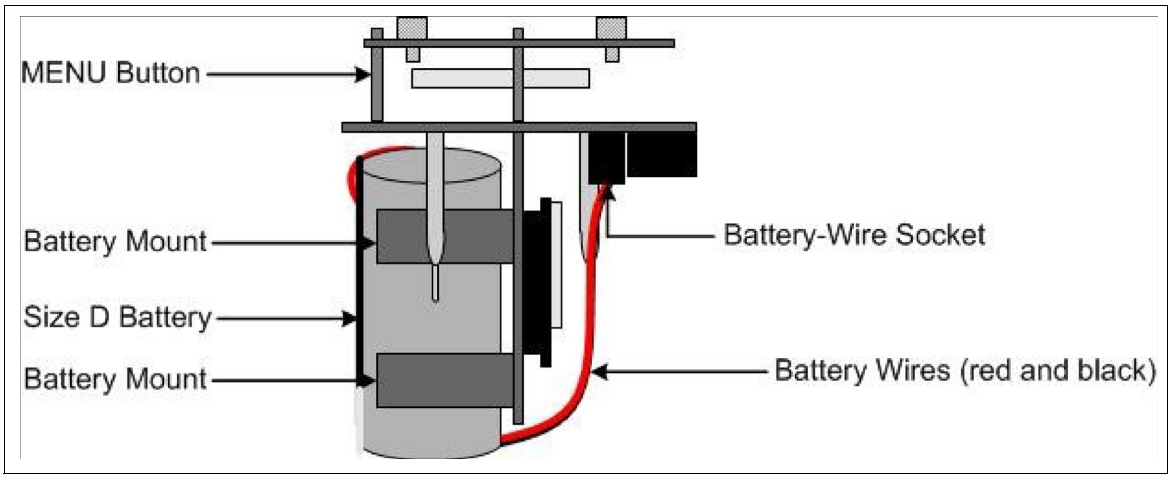
CAUTION: *The internal components can be static sensitive. Use caution when opening the enclosure and handling internal components. DO NOT use any metal objects or tools to remove the batteries.*

1. Press and hold the **SUB** button for approximately 4 seconds, until "OFF" shows on the display screen.

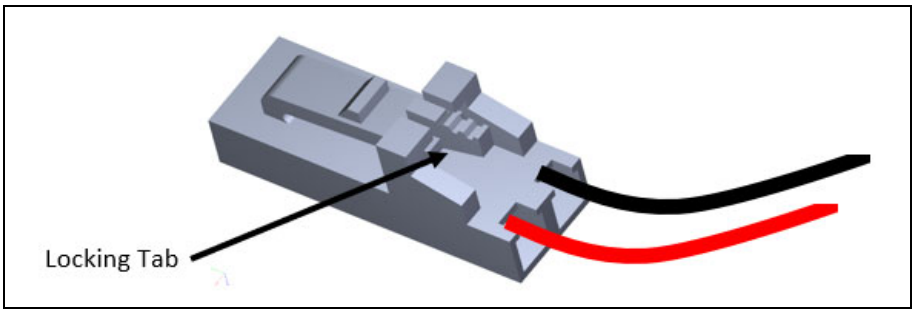
2. Unscrew the enclosure lid and set it aside.

3. Pull straight up on the Front Panel Thumb-Screws until the internal components are removed from the standing eyelets.

CAUTION: *Do not use any metal object to help remove the front panel. Do not remove any connecting wires.*



4. Locate the battery connectors on the terminal board assembly. Squeeze the locking tab on one battery plug and gently pull it straight out of the battery connector. Repeat this step for the second battery plug and connector.



5. Gently remove the batteries from the battery spring clips.
6. Gently slide the new batteries into the spring clips in the same orientation as the old batteries.
7. Plug the battery on the bottom of the radio board into the closer battery terminal.
8. Plug the battery on the top of the radio board into the other available battery terminal.
9. Place the internal system back into the enclosure, matching each mounting post to its corresponding eyelet anchored within the base of the enclosure.
10. Using the thumbscrews, gently push to seat the internal system into the mounting posts.
11. Verify that the sealing ring, seated at the threaded opening of the device enclosure, is correctly in place.
12. Secure the enclosure lid back onto the enclosure.

WARNING: ***When securing the lid onto the device, tighten the enclosure lid by hand ONLY. Overtightening of the lid by use of hand-tools could result in damage to the O-ring, potentially compromising the moisture seal, resulting in an unsafe environment.***

13. Press the ADD button to initiate the 1-minute startup. Power on the device and check the battery voltage to ensure that the new battery is fully functional and at 3.6 volts.

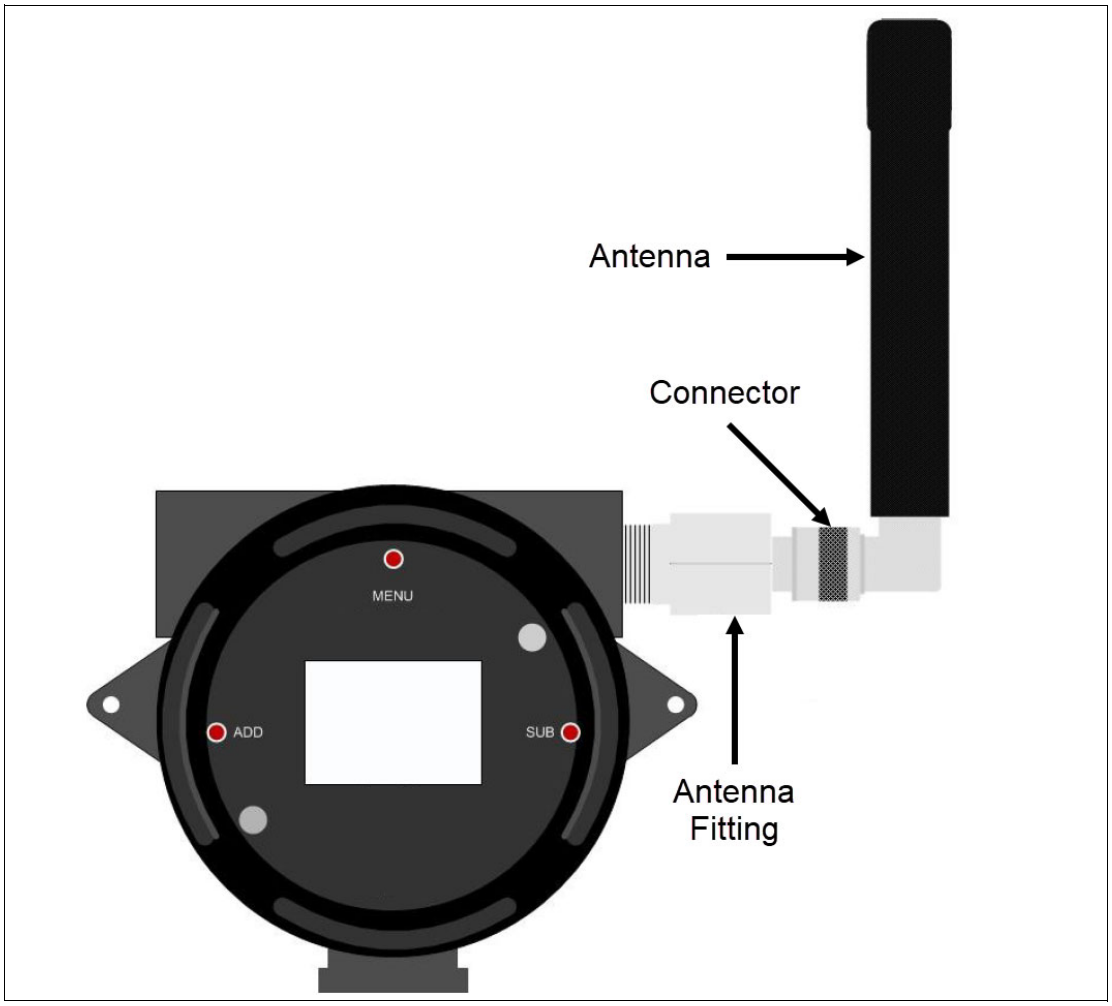
    For instructions on how to check the battery voltage, refer to the Using the Advanced Menu Mode section this manual.

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 RKI Instruments, Inc.-approved 2.4 GHz or 900 MHz antenna.

To replace the antenna, perform the following:

1. Power off the device by pressing and holding **SUB** for 4 seconds.



2. Unscrew the antenna's connector from its fitting.
3. Screw the replacement antenna onto the fitting.
4. Power on the device by pressing **ADD**.

Troubleshooting

The troubleshooting guide describes symptoms, probable causes, and recommended action for problems you may encounter with the AirLink 5950.

NOTE: This troubleshooting guide describes AirLink 5950 problems only. See the controller operator's manual for problems you may encounter with the controller.

AirLink 5950 Fault Codes		
Problem	Cause(s)	Solution(s)
F1	The control board has lost communication with the 4-20mA device.	1. Check the connection between the 4-20 mA device and the AirLink 5950.
F14	The AirLink 5950 cannot identify a primary controller.	1. Ensure the AirLink 5950's Radio Address matches the sensor assembly's address is correct and unique. 2. Ensure the AirLink 5950's Network ID matches the primary controller's Network ID.
* *System faults will activate the fault terminal.*		

Parts List

Table 2 lists replacement parts and accessories for the AirLink 5950.

Table 2: Parts List

Part Number	Description
47-5111-XX	Cable with connectors for remote-mounted antenna (specify length in 1-foot increment when ordering; maximum length is 100 feet)
71-0662	AirLink 5950 Operator's Manual (this document)
82-0101RK	Magnetic wand