RKI
INSTRUMENTS

AirLink 6940NXP
Operator's Manual

Part Number: 71-0591

Revision: P3

Released: 1/19/24

RKI Instruments, Inc.
www.rkiinstruments.com

WARNING

Read and understand this instruction manual before operating detector. Improper use of the detector could result in bodily harm or death.

Periodic calibration and maintenance of the detector is essential for proper operation and correct readings. Please calibrate and maintain this detector regularly! Frequency of calibration depends upon the type of use you have and the sensor types. For most applications, typical calibration frequencies are between 3 and 6 months but can be more often or less often based on your usage.

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. Examples of such items are:

- Absorbent cartridges
- Fuses
- Pump diaphragms and valves
- 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.

Caution Statements

WARNING: *EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1, or equivalent as stated in user manual.*

AVERTISSEMENT: *RISQUE D'EXPLOSION-LA SUBSTITUTION DE COMPOSANTS PEUT RENDURE CE MATERIEL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE I, DIVISION I.*

CAUTION: *For safety reasons, this equipment must be operated and serviced by qualified personnel only. Read and understand the instruction manual completely before operating or servicing.*

ATTENTION: POUR DES RAISONS DE SECURITE, CET ÉQUIPEMENT DOIT ETRE UTILISE ENTRETENU ET REPARER UNIQUEMENT PAR UN PERSONNEL QUALIFIE. ETUDIER LE MANUEL D' INSTRUCTIONS EN ENTIER AVANT D' UTILISER, D' ENTERETENIR OU DE RÉPARER L' ÉQUIPEMENT.

CAUTION: *THIS AREA MUST BE FREE OF FLAMMABLE GASES DURING CALIBRATION.*

ATTENTION: CETTE ZONE DOIT ETRE EXEMPTE DE GAZ INFLAMMABLES PENDANT L'ETALONNAGE.

CAUTION: *TO PREVENT IGNITION OF EXPLOSIVE ATMOSPHERES, remove from explosive atmosphere BEFORE SERVICING.*

WARNING: **A conduit seal must be used within 18 inches of the enclosure wall to comply with the hazardous location rating of this product.**

Danger Statements

DANGER: The RKI Instruments Inc. AirLink 6940NXP is an ambient air Hazardous gas sensor assembly and only monitors in the immediate vicinity of the sensor housing. A site survey is required in order to determine the best placement and quantity of sensor assemblies. Improper installation can lead to an undetectable gas leak which could result in personal injury or loss of life.

Table of Contents

Overview

The RKI Instruments, Inc. AirLink 6940NXP explosion-proof ambient air hazardous gas detector is designed to detect up to 4 different types of toxic gases in potentially hazardous environments.

In this manual, the instructions reference the use of push-buttons, located on the front panel of the device. In certain environments, the activation of the non-intrusive magnetic switches, through the use of the magnetic tool, will replace the directive of the button-press actions. To apply the magnetic tool, hold the tool to the side of the device enclosure adjacent to the push-button that you wish to activate. When the magnetic switch is toggled, an on-screen indicator will appear on the display screen, signifying that a connection was made.

The AirLink 6940NXP continuously monitors the gas level of the surrounding environment and reports once every minute. The reporting rate will increase to once every five seconds when the detected gas is above the Background Gas set-point. This set-point is adjustable (per sensor) to account for sites with a constant, low-level of gas, allowing the AirLink 6940NXP to maintain a long battery life (when not operating on AC power). When the gas level passes below or above (for O_2) every sensor's set-point, the reporting rate will return to once every minute. The AirLink 6940NXP display will always show the present concentration of gas being detected by the sensor assembly.

This document is an operation manual containing diagrams and step-by-step instructions for the proper and safe installation, start-up, configuration, normal operation, and product maintenance of the AirLink 6940NXP.

NOTE: This document should be read in its entirety before the initial operation of the product.

Specifications

Table 1 and Table 2 list detector and system specifications for the AirLink 6940NXP.

Table 1: Detector Specifications

Target Gas	Detection Range	Increment	Haz. Loc.	Alarm Points (1 / 2 / 3 / 4)*
Ammonia (NH_3)	0-100 ppm	1 ppm	Cl. 1 Div. 2	12 / 25 / 50 / 100 ppm
	0-1,000 ppm			35 / 300 / 300 / 1,000 ppm
Arsine (AsH_3)	0-1.00 ppm	0.01 ppm		0.2 / 0.5 / 1.0 / 1.0 ppm
Carbon Dioxide (CO_2)	0-5.0% volume	0.1% volume	Cl. 1 Div. 1	0.5 / 3.0 / 3.0 / 5.0 % volume
Carbon Monoxide (CO)	0-1,000 ppm	1 ppm		1,000 / 1,000 / 1,000 / 1,000 ppm
Chlorine (Cl_2)	0-10.0 ppm	0.1 ppm	Cl. 1 Div. 2	1 / 3 / 5 / 10 ppm
Chlorine Dioxide (ClO_2)	0-1.00 ppm	0.01 ppm		0.1 / 0.3 / 0.3 / 1.0 ppm
Combustible Gas	0-100% LEL	1% LEL	Cl. 1 Div. 1	10 / 20 / 50 / 100% LEL
Ethylene Oxide (EtO)	0-10.0 ppm	1.0 ppm	Cl. 1 Div. 2	1 / 3 / 5 / 10 ppm
Formaldehyde (CH_2O)	0-10.00 ppm	0.01 ppm		0.5 / 2 / 5 / 10 ppm
Hydrogen (H_2)	0 - 100% LEL	1% LEL	Cl. 1 Div. 1	10 / 20 / 50 / 100% LEL
Hydrogen Chloride (HCl)	0-20 ppm	1 ppm	Cl. 1 Div. 2	5 / 10 / 10 / 20 ppm
	0-100 ppm			5 / 10 / 30 / 100 ppm
Hydrogen Cyanide (HCN)	0-50 ppm		Cl. 1 Div. 1	5 / 10 / 15 / 50 ppm
Hydrogen Fluoride (HF)	0-10.0 ppm	0.1 ppm	Cl. 1 Div. 2	3 / 6 / 6 / 10 ppm
Hydrogen Sulfide (H_2S)	0-10.0 ppm	0.1 ppm	Cl. 1 Div. 1	1 / 5 / 10 / 10 ppm
	0-25 ppm	1 ppm		5 / 10 / 10 / 25 ppm
	0-50 ppm			5 / 10 / 10 / 50 ppm
	0-100 ppm			10 / 50 / 75 / 100 ppm
	0-500 ppm			100 / 200 / 200 / 500 ppm
	0-2,000 ppm			100 / 200 / 200 / 2,000 ppm
Nitric Oxide (NO)	0-250 ppm		Cl. 1 Div. 2	25 / 50 / 100 / 250 ppm
Nitrogen Dioxide (NO_2)	0-20.0 ppm	0.1 ppm		5 / 10 / 10 / 20 ppm
Oxygen (O_2)	0-25.0% volume	0.1% volume	Cl. 1 Div. 1	19.5% dec. / 23.5% inc. / 17.0% dec. / 25.0% inc.

Target Gas	Detection Range	Increment	Haz. Loc.	Alarm Points (1 / 2 / 3 / 4)*
Ozone (O_3)	0-5.0 ppm	0.1 ppm	Cl. 1 Div. 2	1 / 3 / 5 / 5 ppm
	0-100 ppm	1 ppm		10 / 15 / 15 / 100 ppm
Phosphine (PH_3)	0-5.0 ppm	0.1 ppm	Cl. 1 Div. 1	0.3 / 1.0 / 1.0 / 5.0 ppm
Sulfur Dioxide (SO_2)	0-20 ppm	1 ppm		2 / 5 / 5 / 20 ppm
Volatile organic compounds (VOCs), benzene calibration standard	10.0 eV Lamp			
	0 - 10 ppm	0.01 ppm	Cl. 1 Div. 1	1 / 1.5 / 1.5 / 10 ppm
	0 - 20 ppm			2 / 3 / 3 / 20 ppm
	0 - 50 ppm			5 / 7.5 / 7.5 / 50 ppm
	0 - 100 ppm	1 ppm		10 / 15 / 15 / 100 ppm
Volatile organic compounds (VOCs), isobutylene calibration standard	Low Range 10.6 eV Lamp			
	0 - 10.00 ppm	0.01 ppm	Cl. 1 Div. 1	1 / 1.5 / 1.5 / 10 ppm
	0 - 20.00 ppm			2 / 3 / 3 / 20 ppm
	0 - 50.00 ppm			5 / 7.5 / 7.5 / 50 ppm
	High Range 10.6 eV Lamp			
	0 - 100 ppm	1 ppm	Cl. 1 Div. 1	10 / 15 / 15 / 100 ppm
	0 - 200 ppm			20 / 30 / 30 / 200 ppm
	0 - 500 ppm			50 / 75 / 75 / 500 ppm
	0 - 1,000 ppm			100 / 150 / 150 / 1,000 ppm
	0 - 2,000 ppm			200 / 300 / 300 / 2,000 ppm
	11.7 eV Lamp			
	0 - 100 ppm	0.01 ppm	Cl. 1 Div. 1	10 / 15 / 15 / 100 ppm

* *Alarms are only programmable at a controller and do not affect operation of the AirLink 6940NXP.*

Table 2: System Specifications

| Sampling Method	Diffusion
Zero Suppression	• O_2 channels: No zero suppression • PID channels: 0.1% of full scale • All other channels: 1% of full scale
Enclosure Ratings	• Explosion/Flame-Proof

Table 2: System Specifications

Power Source	• Primary - 115-220 VAC 0.35A • Backup - Lithium-thionyl (Li-SOCl2) battery pack, 3.6 VDC 76 Ah
Battery Life (when used as the primary power source)	6 months (45 days for versions with PID) *NOTE: When the battery indicator is blank, approximately 2 weeks of battery life remain.*
Operating Temperature Range	-40°C to +60°C (-40°F to +140°F)
Humidity Range	0 - 98% relative humidity, non-condensing
Radio Output	• 900 MHz - 52 networks, 255 sensors per network OR • 2.4 GHz - 78 networks, 255 sensors per network
RF Connection	N-female radio frequency (RF) connector
Display	Transreflective (sunlight-readable) 160 x 104 LCD screen LED back-light
Max Cable Length for Remote-Mounted Antenna	100 feet
Enclosure Material	Polycarbonate enclosure with clear lid
Sensor Housing Material	Black polypropylene plastic with SS mesh screen
Max Cable Length for Remote-Mounted Sensor Kit	• Electrochemical (EC): 250 feet • Infrared (IR): 40 feet • PID: 35 feet
Dimensions	7" D x 10" W x 20" H
Weight	5 lbs.

WARNING: **When using the AirLink 6940NXP, you must follow the instructions and warnings in this manual to assure proper and safe operation of the AirLink 6940NXP and to minimize the risk of personal injury. Be sure to maintain and periodically calibrate the AirLink 6940NXP as described in this manual.**

External Description
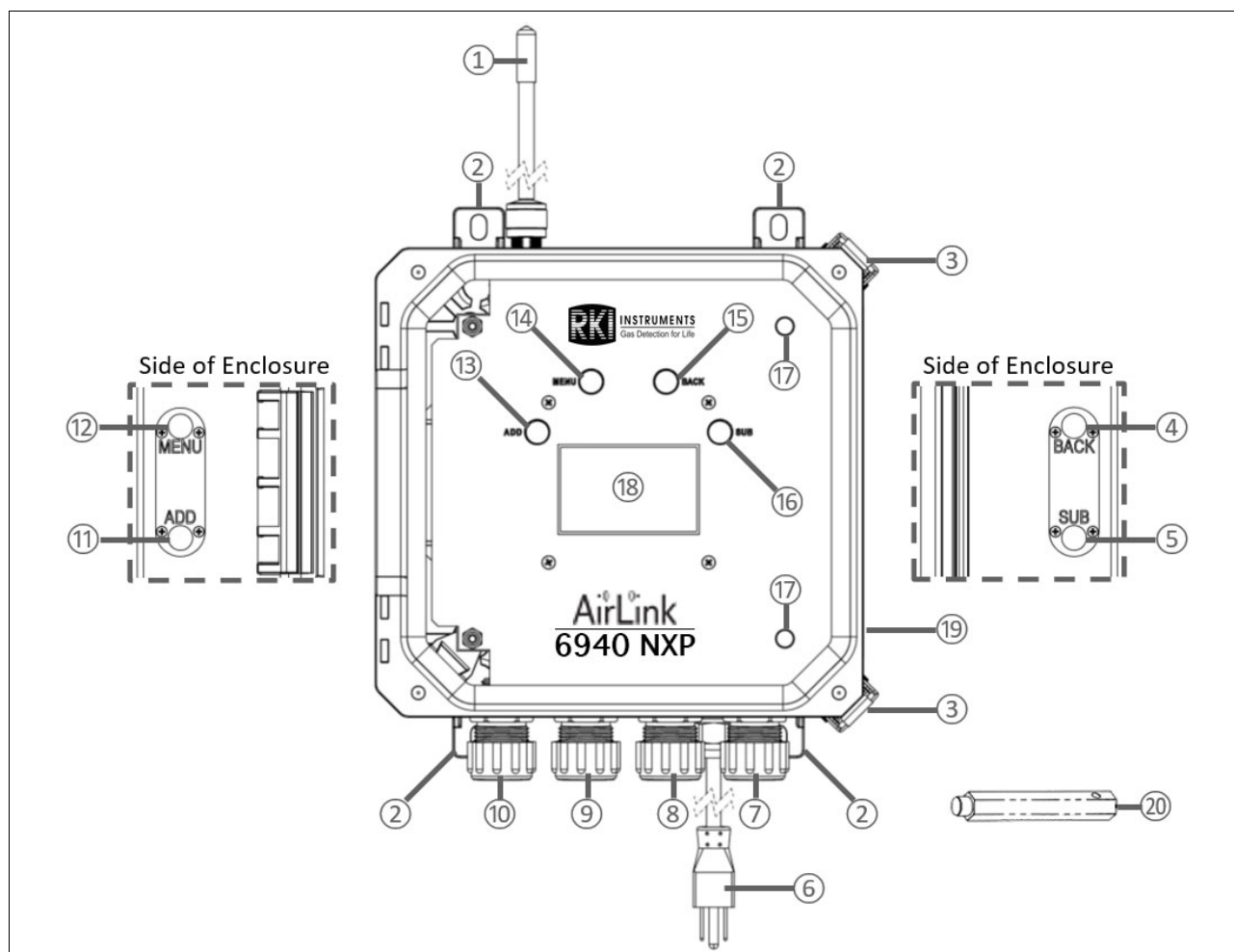
Figure 1: AirLink 6940NXP External Component Locations

1	Radio antenna - 900 MHz or 2.4 GHz		**11**	ADD magnet switch location
2	Mounting feet		**12**	MENU magnet switch location
3	Door latch		**13**	ADD push button
4	BACK magnet switch location		**14**	MENU push button
5	SUB magnet switch location		**15**	BACK push button
6	AC power cable		**16**	SUB push button
7	Sensor Housing Cap Number 4		**17**	Thumbscrews (2)
8	Sensor Housing Cap Number 3		**18**	Display screen
9	Sensor Housing Cap Number 2		**19**	Enclosure door
10	Sensor Housing Cap Number 1		**20**	Magnetic tool

Internal Description
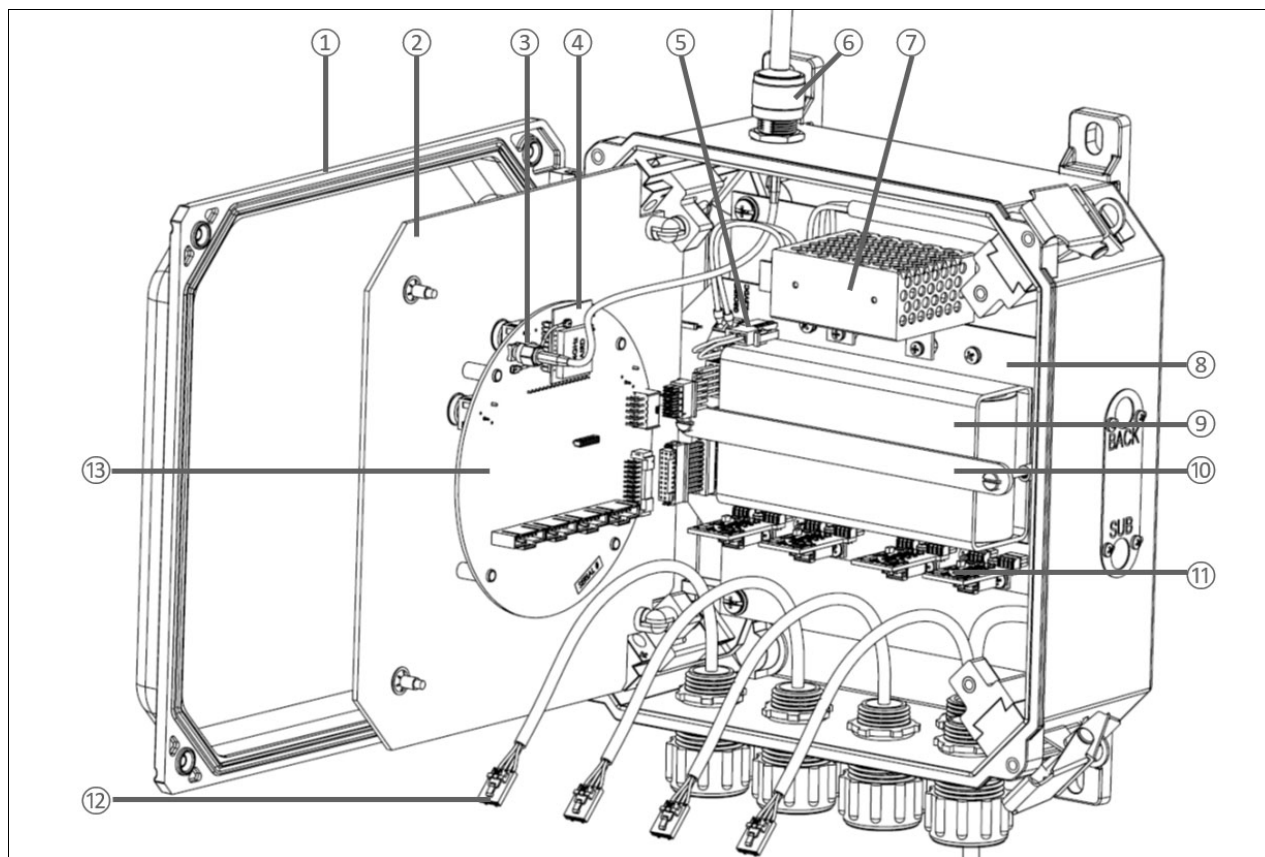
Figure 2: Internal Component Locations

1	Enclosure door		8	Terminal board assembly
2	Faceplate		9	Backup battery pack
3	Antenna fitting connector		10	Battery pack restraining strap
4	Radio module		11	Sensor connector (Up to 4)
5	Battery pack plug		12	Sensor connector cable (Up to 4)
6	Antenna fitting		13	Control board assembly
7	AC power supply			

Remote-Mounted Kit

A remote-mounted sensor kit can be ordered if the sensor needs to be somewhere that is not conveniently accessible for viewing the display screen.

The kit includes a second junction box on a cable with a cable bushing/cable gland. The cable can be ordered in 1-foot increments with maximum cable lengths listed below.

Sensor Type	Max Cable Length
Electrochemical (EC)	250 feet
Infrared (IR)	40 feet
PID	35 feet

Installation

This section describes procedures to mount the AirLink 6940NXP in the monitoring environment and wire the AirLink 6940NXP.

NOTE: Radio connections between AirLink sensors and monitors must either all be routed through a repeater or all go straight to the monitor.

Mounting the AirLink 6940NXP

1. Consider the following when you select the mounting location:
    - The unit should be placed greater than 6.5 feet/2 meters away from a monitor in order to ensure reliable communications.
    - Select a site where the AirLink 6940NXP is not likely to be bumped or disturbed. Make sure there is sufficient room to perform start-up, maintenance, and calibration procedures.
    - Select a site that is representative of the monitoring environment and where the target gas is likely to accumulate or where it is most likely to leak. The AirLink 6940NXP should not be installed near an entrance, air intake, or exhaust point.
    - When monitoring "light" hydrocarbons, such as methane, the unit should be placed near the ceiling or ceiling corner.
    - When monitoring "heavy" hydrocarbons, such as gasoline, the unit should be placed approximately 2 to 3 inches from the floor.
   - The sensor must point down.

- Avoid installing the AirLink 6940NXP in a location where airborne particles could cover or coat the sensor.

NOTE: These guidelines are **ONLY** intended as a general directive for the placement of the AirLink 6940NXP. This information should **NOT** serve as a complete list when considering all potential parameters for the proper location of the unit. It is **STRONGLY** advised that a third party Certified Industrial Hygienist, or other Certified Safety Professional, conduct a site survey and annotate the location and quantity of detection devices that should be installed for **EVERY** installation of **EVERY** site.

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2. Select a mounting location and installation hardware. Mounting to a concrete or steel structure is recommended to minimize vibration and moisture. Use a maximum 1/4" diameter bolt or screw, flat washers, Grade 5 material (minimum), and corrosion protection (paint, galvanization, or zinc plating).
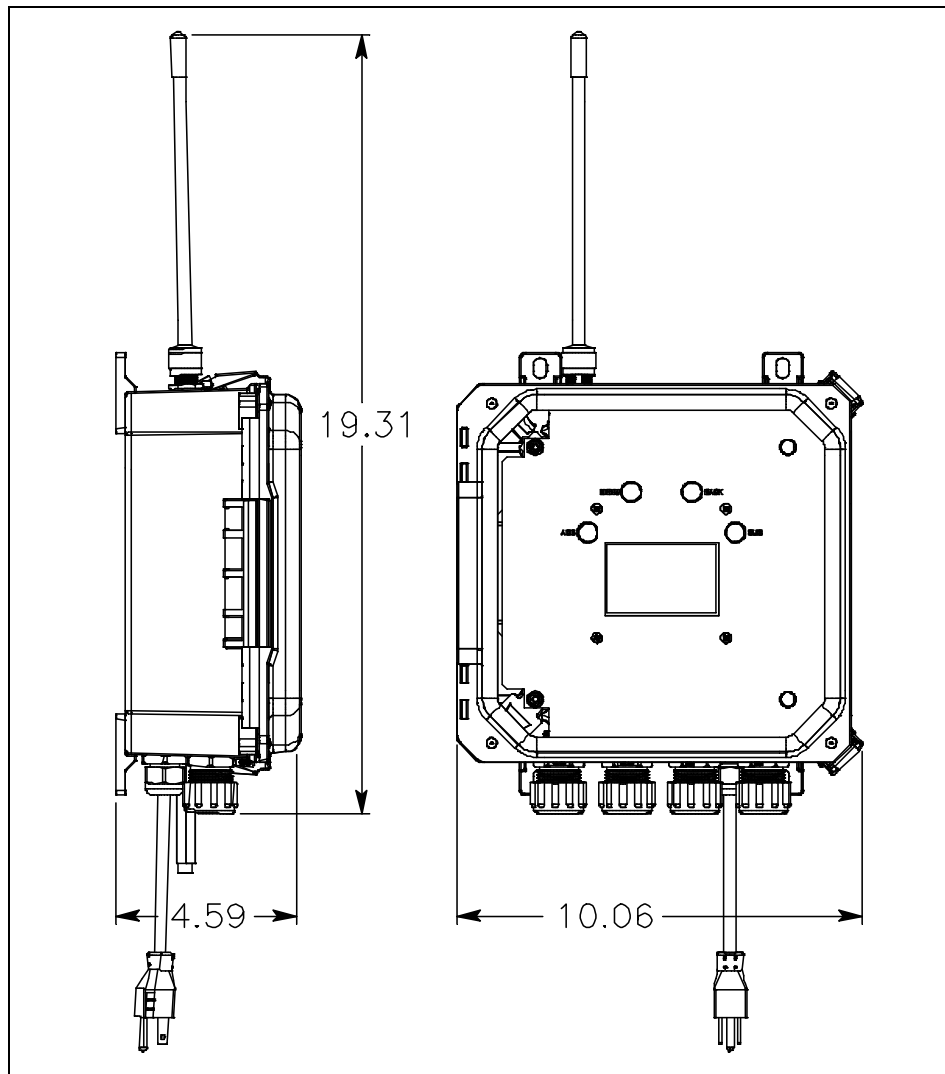
Figure 3: AirLink 6940NXP Dimensions

3. For a remote-mounted kit, install the detector junction box at the monitoring environment using techniques appropriate for the local electrical code.
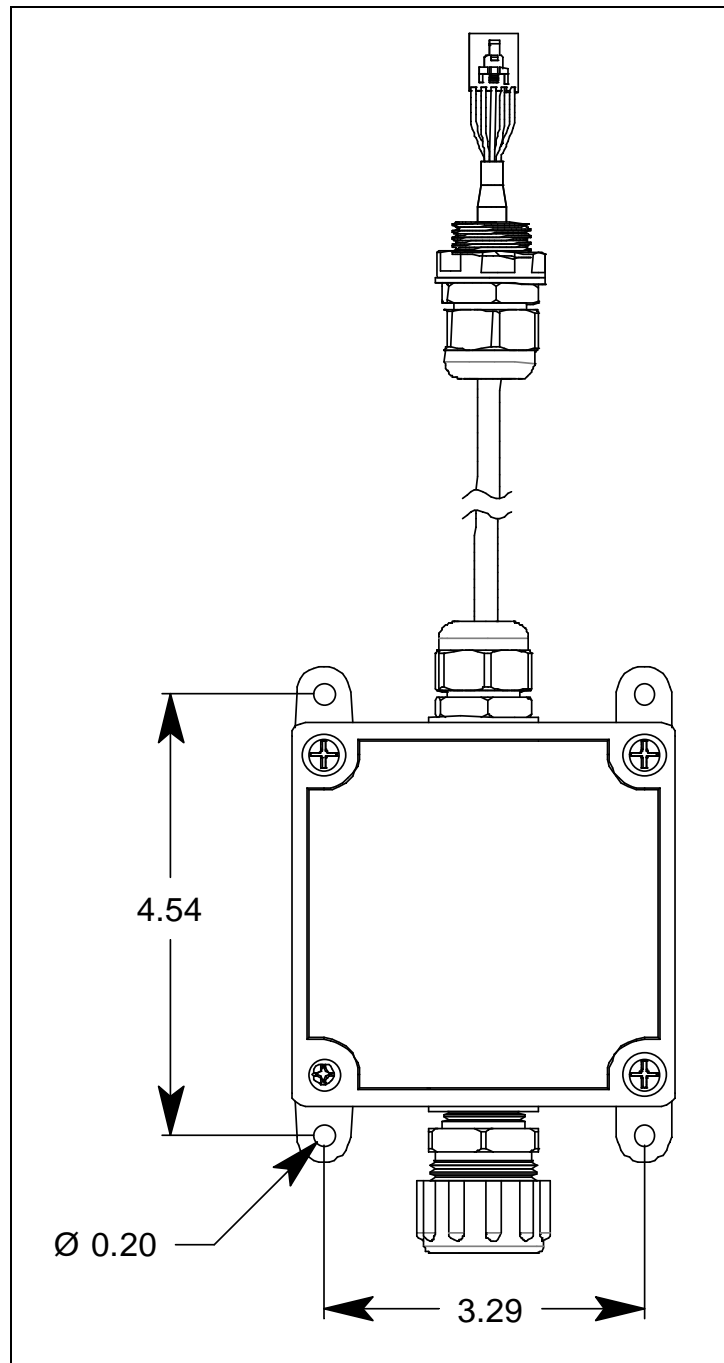
Figure 4: Remote-Mounted Kit's Detector Junction Box Dimensions

Remote-Mounted Kit Wiring

The remote-mounted kit generally comes prewired, but if it becomes disconnected, follow these steps to reconnect it.

CAUTION: *The internal components can be static sensitive. Use caution when opening the enclosure and handling internal components.*

CAUTION: *Make sure the power source is off before beginning the wiring procedure.*

1. Release the housing latches, open the housing door, and unscrew the thumbscrews to access the amplifier junction box's internal components.

2. Unscrew the captive screws from the detector junction box. Remove the enclosure lid and set it aside.

3. At the amplifier junction box, use the handles to gently lift the internal system out of the enclosure. It can rest on the edge of the enclosure.

4. One end of the cable has a connector and the other has ferruled wires.

5. Feed the connector end of the cable through a conduit hub at the amplifier junction box.

6. Plug the connector into the sensor connector socket at the amplifier junction box.

7. Feed the ferruled-wire end of the cable through a conduit hub at the detector junction box.

8. Connect the ferruled wires to the color-coded terminals in the detector junction box.

9. Reinstall the detector junction box's lid by tightly screwing the captive screws into the enclosure base.

10. To close the amplifier junction box, tighten the thumbscrews, close the housing door, and secure the latches.

Connecting AC Power

It is recommended that the AirLink 6940NXP be connected to AC Power (115-220 VAC 0.35A) as its primary power source.

Before using the instrument, ensure that the unit's AC power cord is securely plugged into the power source. If the unit's AC power is disrupted, the unit can also be powered by the internal backup battery pack.

Connecting the Battery

While the AirLink 6940NXP is primarily connected to AC Power, the instrument can also be powered by an internal 3.6V/76AH lithium-thionyl battery pack. This backup battery pack is already installed upon shipment but with the wiring disconnected.

CAUTION: *The internal components can be static sensitive. Use caution when opening the enclosure and handling internal components.*

CAUTION: *Use only RKI-supplied batteries.*

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1. Release the housing latches, and open the enclosure door.

2. Unscrew the faceplate thumbscrews and pull open the faceplate to access the internal system.

3. Locate the battery terminal on the terminal board assembly. Plug the battery cable connector into the battery terminal.
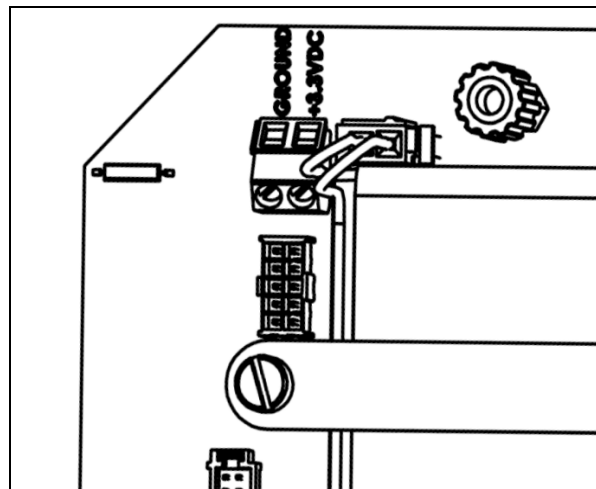

Figure 5: Battery Connection

4. Push the faceplate closed and screw the faceplate thumbscrews back into place.

5. Close and relatch the enclosure door.

6. The unit will start in OFF mode. Press and hold ADD to initiate the startup.
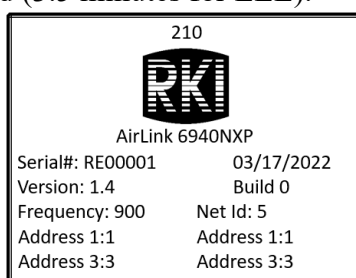
Closing the Enclosure

1. Push the faceplate closed and screw the faceplate thumbscrews back into place.

2. Close and relatch the enclosure door.

Start Up

This section describes procedures to start up the AirLink 6940NXP and place the device into normal operation.

1. Complete the installation procedures described earlier in this manual.

2. Verify that the battery connection is correct and secure and that the AC power cord is plugged in if desired.

3. Verify that the controller is on and operating properly. Refer to the controller operator's manual.

4. Press and hold ADD for approximately 6 seconds to turn the AirLink 6940NXP on. The unit enters a 1-minute startup period (3.5 minutes for LEL).

<div align="center">

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RKI

AirLink 6940NXP

Serial#: RE00001	03/17/2022
Version: 1.4	Build 0
Frequency: 900	Net Id: 5
Address 1:1	Address 1:1
Address 3:3	Address 3:3

</div>

5. At the end of the startup, the AirLink 6940NXP enters Normal Operating Mode.

6. Allow the installation to warm up for the appropriate amount of time as indicated in the table below. For units with multiple sensors, the warm up period is based on the installed sensors with the longest warm up time.

Detection Gas	Warm Up Time After an **Extended** Time Off Power	Warm Up Time After a **Short** Time Off Power
Ammonia (NH_3)	12 hours	4 hours
Arsine (AsH_3)	2 hours	10 minutes
Carbon Dioxide (CO_2)	10 minutes	
Carbon Monoxide (CO)	2 hours	
Chlorine (Cl_2)		
Chlorine Dioxide (ClO_2)		
Combustible Gas	10 minutes	

Detection Gas	Warm Up Time After an <u>Extended</u> Time Off Power	Warm Up Time After a <u>Short</u> Time Off Power
Ethylene Oxide (EtO)	48 hours	10 minutes
Formaldehyde (CH_2O)	10 minutes	
Hydrogen (H_2)	2 hours	
Hydrogen Chloride (HCl)	12 hours	
Hydrogen Cyanide (HCN)		
Hydrogen Fluoride (HF)	2 hours	
Hydrogen Sulfide (H_2S)		
Nitric Oxide (NO)	12 hours	
Nitrogen Dioxide (NO_2)	2 hours	
Oxygen (O_2)		
Ozone (O_3)		
Phosphine (PH_3)		
Sulfur Dioxide (SO_2)		
VOCs	10 minutes	

7. The AirLink 6940NXP is factory-calibrated before shipping from RKI. If a full calibration is desired at startup, see page 36.

> **NOTE:** The user interface will be slow to respond until the AirLink 6940NXP establishes a connection with the controller.

Operation

Normal Operating Mode

While in Normal Operating Mode, the AirLink 6940NXP continuously samples the air and updates the measured concentration of the target gas on the display screen. The display, when in Normal Operating Mode, appears as shown below.
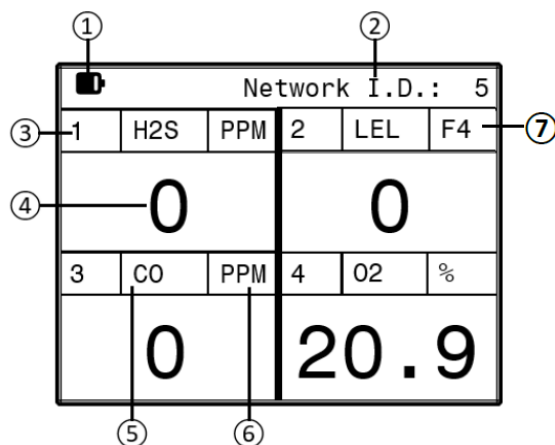
Table 3: Normal Mode Layout

1	Battery Level indicator (Only visible when back-light is off)		5	Sensor gas type
2	Network ID		6	Gas concentration unit
3	Sensor radio address		7	Fault indication
4	Sensor reading			

The gas reading is sent back to the controller in 1-minute intervals when the reading is below the background setting (page 45). When the reading surpasses the background setting, the reading is sent back to the controller in 5-second intervals.

NOTE: The user interface will be slow to respond until the AirLink 6940NXP establishes a connection with the controller.

Magnetic Buttons

Use the provided magnet tool to actuate the AirLink 6940NXP's buttons without having to open the enclosure door. Touch the magnet to the outer edge of the junction box in the spot indicated for the button you want to press. 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.
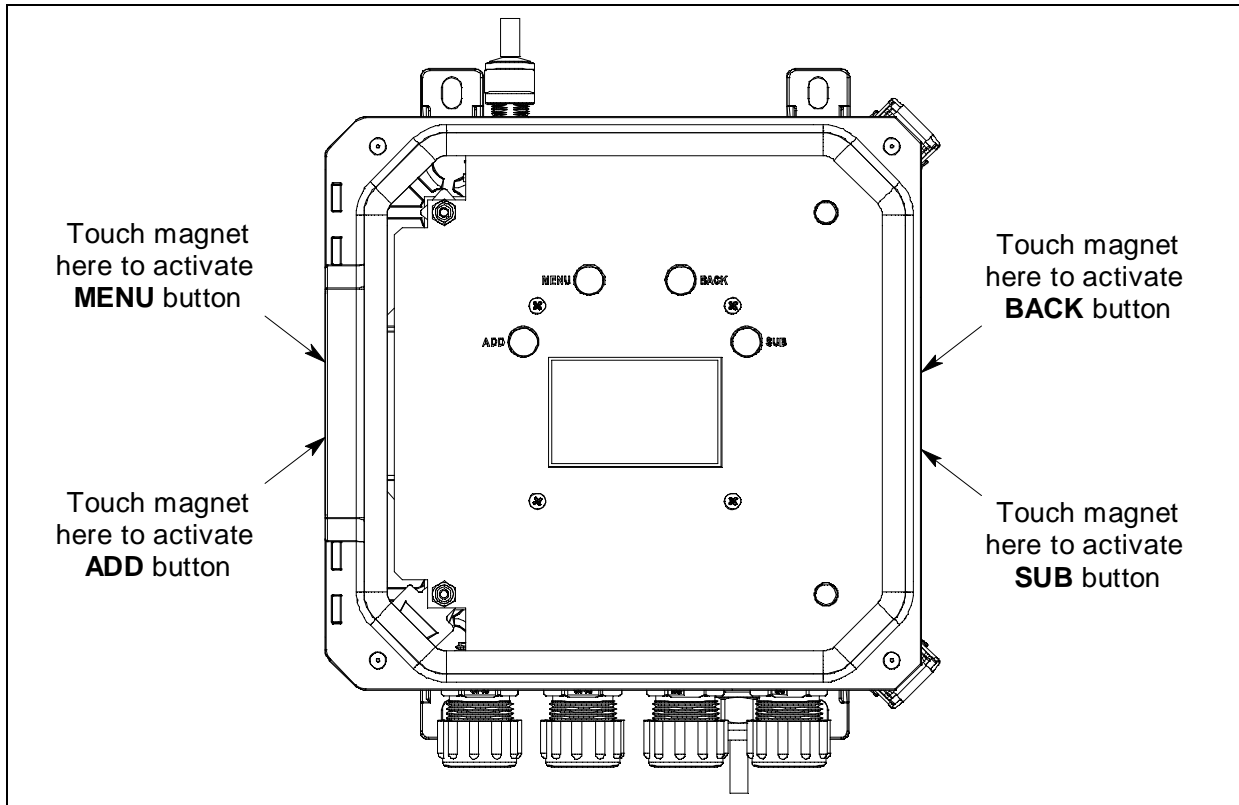
Powering the Device

When the AirLink 6940NXP's batteries are connected or the instrument is first plugged into AC power, the unit does not automatically power on. The directions below describe how to power on and power off the AirLink 6940NXP once power has been applied.

Powering On

Powering on the device begins the operation of the unit, automatically initiating the system start-up cycle and 1-minute warm up period (3.5 minutes for LEL versions). The AirLink 6940NXP will be in Normal Operating Mode at the completion of the system start-up.

To turn the AirLink 6940NXP on, press and hold ADD for approximately 6 seconds.

Powering Off

Powering off the device stops the operation of the unit. The Product and Sensor settings, as well as the operation settings, including the zero and calibration of the sensor, will be unaffected.

1. Press and hold SUB for approximately 6 seconds until "OFF" shows on the display screen.
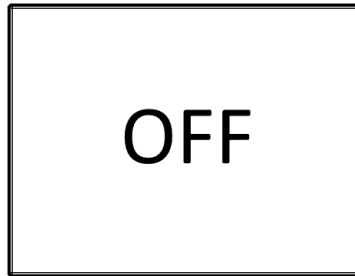
2. The display screen will continue to show "OFF" for the duration of time that the unit is powered off, as long as uninterrupted power is supplied to the unit.

Faults

In the event of a device failure, a fault code will replace the units of the affected channel. When the fault is corrected, the device returns to Normal Operating Mode and the affected channel's units reappear.
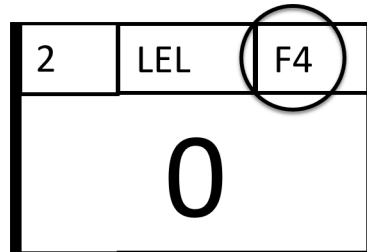
For a list of the fault codes and warning symbols of the AirLink 6940NXP and their associated meanings, see page 52.

Above Background Display Behavior

When any sensor has a reading above its configured background gas level (below for O_2 sensors), the screen changes to show the reading for that sensor. The AirLink 6940NXP will return to Normal Operating Mode once the background gas is no longer above (below for O_2 sensors) the configured limit.
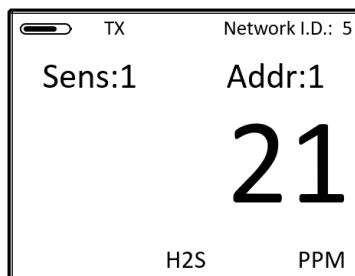
Accessing the Settings Menus

The Global and Sensor Settings menus are all accessible from Normal Operating Mode. To access these menus, press and hold **MENU** until the Product Settings and Configuration menu screen appears on the display.

```
┌─────────────────────────┐
│  SELECT     BACK        │
│                         │
│     MENU                │
│                         │
│    Global Settings      │
│                         │
│   NEXT      PREV        │
└─────────────────────────┘
```
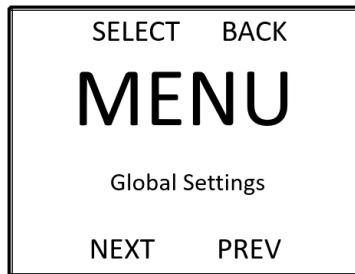
To select Global Settings, press MENU. To scroll through all four Sensor Setting menus, press and release either ADD or SUB until the desired sensor setting menu is displayed. The names of these menus correspond to the Sensor housing numbers indicated in Figure 1 on page 12.

NOTE: After 5 minutes of no interaction with the device, the unit will automatically return to Normal Operating Mode.

Global Settings and Configuration

The AirLink 6940NXP's settings allow the end-user to tailor the device settings to meet their required specifications and/or site conditions.

To access the instrument's Product Settings and Configuration Menus, press and hold **MENU** for approximately 6 seconds.

```
SELECT    BACK

   MENU

  Global Settings

 NEXT     PREV
```

NOTE: While in the Product Settings and Configuration menu, the AirLink 6940NXP continues monitoring.

Global Settings Options

The Global Settings menu is the first menu item on screen when the device displays the Product Settings and Configuration menu. Global settings affect all aspects of the AirLink 6940NXP.

Press and release ADD or SUB to move through the settings listed below:

- Network I.D. (see page 26)
- Unit Information (see page 27)
- Display Screen Contrast Settings (see page 28)
- Return to Factory Default Settings (see page 29)
- Back Screen (see page 31)

Network ID

The Network ID is used to synchronize the communication between a wireless controller and the AirLink 6940NXP:

- There are 52 networks available with the 900 MHz radio.
- There are 78 networks available with the 2.4 GHz radio.

The controller and AirLink 6940NXP <u>must</u> have the same Network ID in order to communicate.

NOTE: Radio connections between AirLink sensors and monitors must either all be routed through a repeater or all go straight to the monitor.

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1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for 6 seconds.

   Press MENU to select the Global Settings menu from the Product Settings and Configuration menu.

   ```
   SELECT    BACK

   GLOBAL
   Network I.D.

   NEXT      PREV
   ```
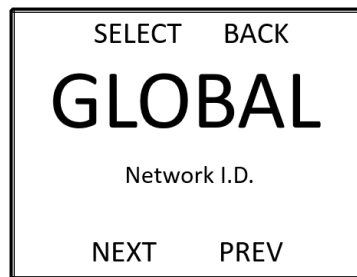
2. Press MENU to enter the Network I.D. screen.

3. Press and release ADD or SUB until the Network ID matches the value being used on the Primary Monitor.

   ```
   BACK      BACK
   Network I.D.

   5
   ADD       SUB
   ```

4. Press MENU or BACK to save the Network I.D. setting and return to the Global Settings menu options.

Unit Information

The unit information screen allows the end-user to view the following information:

- The radio link status to the primary monitor
- The radio In Range Status
- The number of missed radio transmissions to the controller
- The battery voltage of the AirLink 6940NXP
- The date of manufacture of the sensor assembly
- The serial number of the sensor assembly
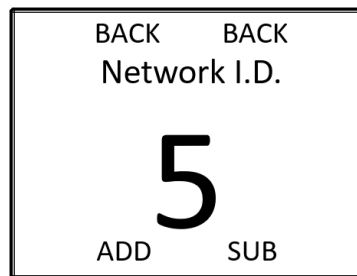
This screen is for informational purposes only.

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for 6 seconds.

   Press MENU to select the Global Settings menu from the Product Settings and Configuration menu.

2. Press and release ADD until the Info Screen option appears.

```
 SELECT    BACK

 GLOBAL

   Info Screen

  NEXT     PREV
```
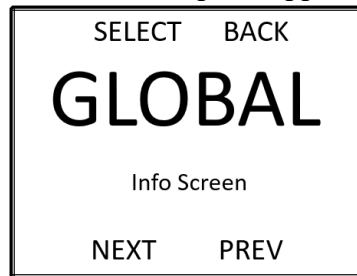
3. Press MENU to view the Unit Information screen and review the information displayed.

```
 BACK      BACK
   INFO SCREEN
Radio: Link
In Range: Yes
Radio Missed: 0
Battery: 3.2v
Date:12/06/2017
Serial #: U98765
```

4. Press MENU or BACK to return to the Global Settings menu options.

Display Screen Contrast Setting

The display screen contrast is the difference in luminance or color that makes the displayed images distinguishable. Due to varying external elements, such as extreme sunlight, the brightness of the display screen may need to be adjusted for optimum viewing.

The contrast setting on the AirLink 6940NXP ranges from 0 to 255. The instrument's factory default setting is 150, approximately 58% of the contrast scale.

NOTE: Setting the contrast too low will cause the display image to become faint or indistinguishable, especially when the unit is located in areas with full-sun. The resulting field of view could be misinterpreted as an error within the device. Be sure to verify that the selected contract is within an appropriate range of viewing.
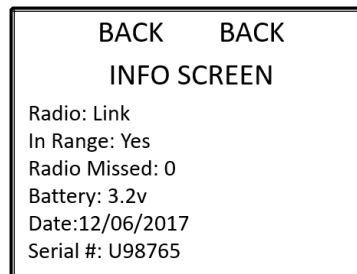
---

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for 6 seconds.

   Press MENU to select the Global Settings menu from the Product Settings and Configuration menu.

2. Press and release ADD until the Contrast option appears.

```
 SELECT      BACK

 GLOBAL

     Contrast

  NEXT       PREV
```

3. Press MENU to view the current contrast setting.

```
  BACK        BACK
     Contrast

    150
  ADD          SUB
```

4. Press and release ADD or SUB until the desire.

5. Press MENU or BACK to confirm the Contrast value and return to the Global Settings menu.

Return to Factory Default Settings

Returning the AirLink 6940NXP to its factory default settings will reset all customization of the device, including the zero and calibration settings of the sensor element. A factory default does <u>not</u> change the gas type.

Table 4: AirLink 6940NXP Product and Configuration Factory Default Settings

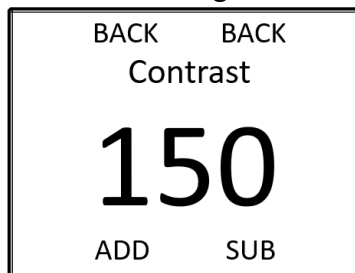| Configuration	Setting
Network I.D.	5
Zero/Cal Timer	All Cleared
Sensor Background Setting	4
Sensor Calibration Method (non-LEL versions only)	Manual
Sensor On/Off	All On
Sensor Zero	*Cleared*
Sensor Cal	*Cleared*
Sensor Radio Address	1, 2, 3, 4

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for 6 seconds.

   Press MENU to select the Global Settings menu from the Product Settings and Configuration menu.

2. Press and release ADD until the Return to Factory Default option appears.

```
  SELECT    BACK

   GLOBAL

  Return Default

   NEXT     PREV
```

3. Press MENU to view the Return to Factory Default option screen.

```
   BACK      BACK

   Return Unit
    To Factory
    Default?

    YES       NO
```
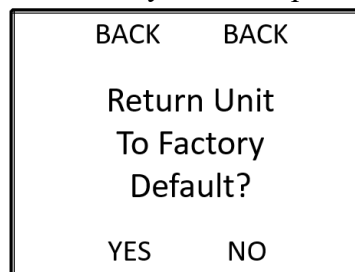
4. Press ADD to proceed to the Return to Factory Default confirmation screen.

    If you do not wish to return the device to its factory default settings, press SUB to return to the Global Settings menu. Pressing MENU or BACK will also return the instrument to the Global Settings menu.

5. The instrument prompts a final confirmation. Press ADD to return the device to its factory default settings.

```
┌─────────────────────────┐
│  BACK        BACK       │
│                         │
│                         │
│       Are you sure?     │
│                         │
│                         │
│                         │
│   YES         NO        │
└─────────────────────────┘
```

    If you do not wish to return the device to its factory default settings, press SUB to return to the Global Settings menu. Pressing MENU or BACK will also return the instrument to the Global Settings menu.

6. If "Yes" is selected, the screen will indicate the AirLink 6940NXP's completion of the reset to factory default settings.

    Press MENU or BACK to return to the Global Settings menu.

```
┌─────────────────────────┐
│  BACK        BACK       │
│                         │
│                         │
│                         │
│      Resetting Done     │
│                         │
│                         │
│                         │
└─────────────────────────┘
```

NOTE: If the AirLink 6940NXP is reset to the factory default settings, ALL configuration steps MUST be repeated and the device MUST then be zeroed and calibrated for proper operation of the device.

Back Screen

The Back Screen allows you to exit the Global Settings menu and return to the Product Settings and Configuration menu. While in the Global Settings menu, press and release ADD or SUB until the screen displays the Back Screen.
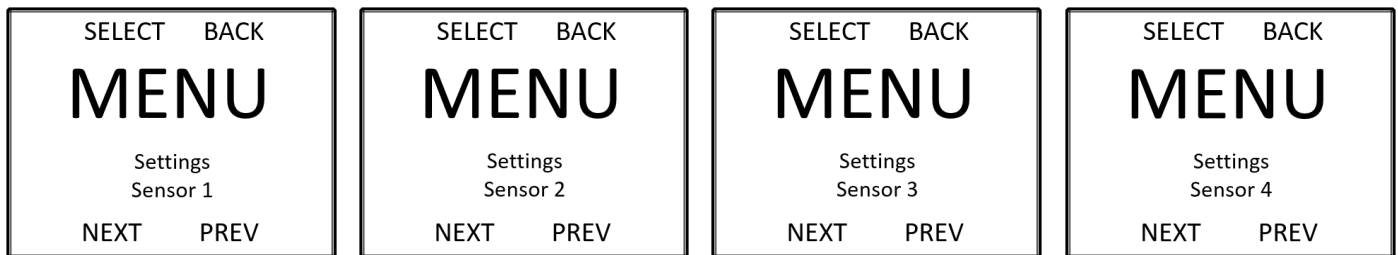
```
SELECT    BACK

GLOBAL

      BACK

NEXT      PREV
```

Press MENU to return to the Product Settings and Configuration menu.

Sensor Settings and Calibration

The AirLink 6940NXP's sensor settings allows the four sensors to independently calibrated and adjusted.

To access these menus, press and hold MENU until the Product Settings and Configuration menu screen appears on the display. Press ADD or SUB to switch between Global Settings and all four sensor setting menus. The on-screen Sensor numbers correspond to the Sensor Housing numbers listed in Table 1.

SELECT   BACK
MENU
Settings
Sensor 1
NEXT   PREV

SELECT   BACK
MENU
Settings
Sensor 2
NEXT   PREV

SELECT   BACK
MENU
Settings
Sensor 3
NEXT   PREV

SELECT   BACK
MENU
Settings
Sensor 4
NEXT   PREV

Press MENU to select the desired sensor settings menu, making sure the sensor number corresponds with the sensor that you want to adjust.

NOTE: While this manual only uses the Sensor 1 setting menu for its figures, Sensors 2, 3, and 4 all have identical menu options.

While in the Product Settings and Configuration menu, the AirLink 6940NXP continues monitoring.

Sensor Settings Options

The Sensor Settings menus allow you to configure and calibrate each sensor individually. Press and release ADD or SUB to move through the settings outlined below:

- Turning the Sensor On and Off (page 33)
- Zeroing the Sensor (page 34)
- Manual Calibration (page 36)
- Auto Calibration (page 39)
- Sensor Radio Address (page 43)
- Sensor Alarm Test (page 44)
- Sensor Background Setting (page 45)
- Calibration Method (page 47)
- Sensor Information (page 48)
- Last Zero/Cal Times (page 49)
- Reset Sensor Zero/Cal (page 50)
- Back (page 51)

Turning the Sensor On and Off

This sensor setting allows each sensor to be switched on or off and should only need to be configured in the field if a Return to Factory Defaults occurs.

However, a sensor can be switched off if its gas type is not needed for a particular location or a replacement sensor element is not yet available.
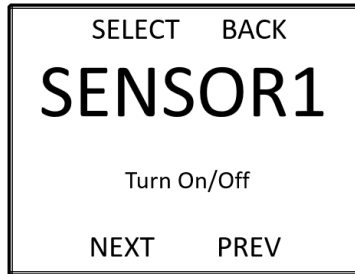
The AirLink 6940NXP is shipped with the sensors configured as below:

- 2 Gas AirLink 6940NXP – Sensors 1 and 2 turned ON, Sensors 3 and 4 turned OFF
- 3 Gas AirLink 6940NXP – Sensors 1, 2, and 3 turned ON, Sensor 4 turned OFF
- 4 Gas AirLink 6940NXP – Sensors 1, 2, 3, and 4 turned ON, No sensors turned OFF
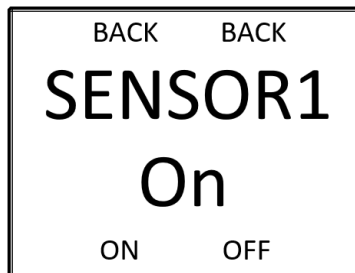
1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

    Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the "Turn On/Off" menu item appears.

```
┌─────────────────────────┐
│  SELECT      BACK        │
│                          │
│    SENSOR1               │
│                          │
│     Turn On/Off          │
│                          │
│   NEXT       PREV        │
└─────────────────────────┘
```

3. Press MENU to select the "Turn On/Off" menu item.

```
┌─────────────────────────┐
│   BACK       BACK        │
│                          │
│    SENSOR1               │
│      On                  │
│   ON         OFF         │
└─────────────────────────┘
```

4. Press ADD to turn on a sensor that was set to "Off", and press SUB to turn off a sensor that was set to "On".

5. Press MENU or BACK to return to the Sensor Settings menu.

Zeroing the Sensor (20.9% for O$_2$ Sensor)

The first step of calibration is zeroing (20.9% for O$_2$ sensor). The zeroing (20.9% for O$_2$ sensor) process MUST be performed in known clean air, with no contaminants or hazardous gases present. If air quality cannot be guaranteed, a cylinder of zero air will be required to properly zero the sensor.

Materials

- 0.5 LPM fixed flow regulator with knob
- calibration cup
- calibration tubing
- zero air cylinder (if not in a fresh air environment)
- 100% N$_2$ cylinder (if zeroing a CO$_2$ sensor)

NOTE: Since there is a background of CO$_2$ in air, it is necessary to use a CO$_2$-free cylinder when zeroing a CO$_2$ sensor.
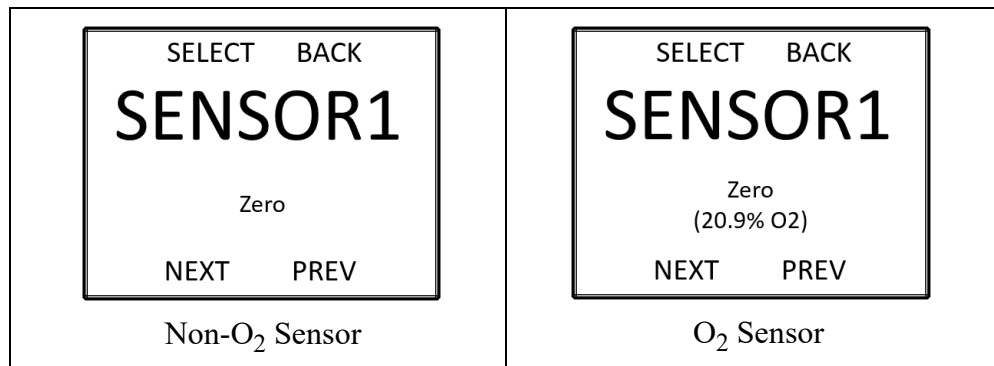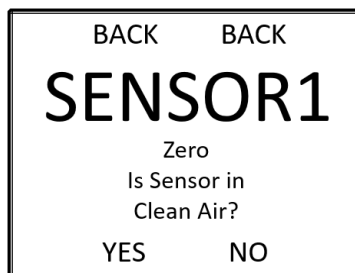
Procedure

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

   Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the Zero menu item appears.

SELECT BACK	SELECT BACK
SENSOR1	**SENSOR1**
Zero	Zero (20.9% O2)
NEXT PREV	NEXT PREV
Non-O$_2$ Sensor	O$_2$ Sensor

3. Press MENU to select the menu item.

BACK   BACK
SENSOR1
Zero
Is Sensor in
Clean Air?
YES   NO

4. Press **ADD** to begin the zero process.

5. If the sensor is in clean air, press ADD to select "Yes" and continue to Step 7.

   If the sensor is a CO_2 sensor, the sensor is not in clean air, or you do not wish to zero the sensor, press SUB to select "No" and return to the Sensor Settings menu. Pressing MENU or BACK will also return the instrument to the Sensor Settings menu.

6. For CO_2 sensors or if the sensor is not in clear air, perform the following:
   a. Unscrew and remove the sensor housing cap.
   b. Install the calibration cup to the AirLink 6940NXP's sensor housing base.
   c. Screw the regulator into the zero air calibration cylinder (100% N_2 cylinder if zeroing a CO_2 sensor).
   d. Use the sample tubing to connect the regulator to the calibration cup.
   e. Turn the regulator knob counterclockwise to open the regulator.
   f. Allow the gas to flow for 1 minute.
   g. Press MENU to select the Zero menu item.
   h. Press ADD to select "Yes".

7. The unit will automatically begin the 12-second zero process. The display will show a countdown of the time remaining until the process is complete.

NOTE: The zero process cannot be stopped without disconnecting the power from the unit.

---
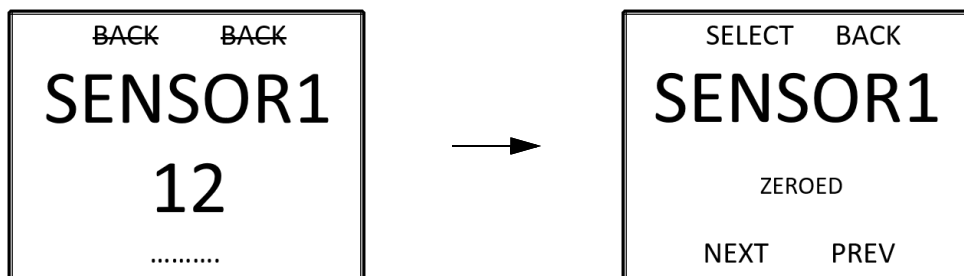
8. When the zero process is complete, press MENU or BACK to return to the Sensor Settings menu.

9. If a zero air calibration cylinder (or 100% N_2 cylinder for CO_2 sensors) was used, turn the regulator knob clockwise to close the regulator.

   Remove the regulator from the zero air cylinder.

Calibrating the Sensor (Manual Cal)

Each sensor can be manually or automatically calibrated, depending on the sensor's calibration method (see page 47 for setting the calibration method).

Sensors should ONLY be calibrated after completion of the zero process.

If the sensor calibration method is set to Auto Cal or the sensor being calibrated is an infrared sensor, see page 39 to calibrate the sensor element.

NOTE: LEL and CO_2 - LEL and CO_2 versions of the AirLink 6940NXP can only be calibrated using Auto Cal (see page 39).

HCl - It is recommended that the HCl version only be calibrated using Auto Cal, but Manual Cal can be used if desired.

O_2 - If calibrating with 100% N_2, you must use Manual Cal. To calibrate using Auto Cal, a gas concentration between 10 and 18% O_2 is recommended.

Calibration Frequency

A calibration should be performed EVERY thirty (30) days. Days since the last calibration should NEVER exceed ninety (90) days. RKI recommends that you calibrate your device regularly to ensure proper functionality and a safe work environment.

Materials

- 0.5 LPM fixed flow regulator with knob and calibration tubing

---

WARNING: **If calibrating with Cl_2 or HCl, a regulator <u>must</u> be dedicated for use with that gas <u>only</u>. Do not use that dedicated regulator for any other gases, particularly H_2S.**

- calibration cup
- calibration cylinder or gas generator (For O_2 sensors, RKI recommends using 100% N_2. For all other sensors, RKI recommends using 50% of the full scale value of your detected gas.)

NOTE: Some detected gases use surrogate gases for calibration. Detected gases needing a surrogate gas for calibration are listed below. If you are using a surrogate gas for calibration, that surrogate gas concentration multiplied by the factor listed below should equal about 50% of the detected gas' full scale.

<div align="center">**Table 5: Surrogate Calibration Gases**</div>

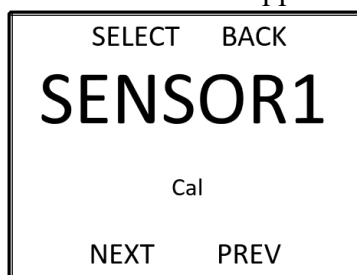| Detected Gas	Surrogate Calibration Gas	Factor
Arsine (AsH_3)	Phospine (PH_3)	1.4
Chlorine Dioxide (ClO_2)	Chlorine (Cl_2)	1
Formaldehyde (CH_2O)	Carbon Monoxide (CO)	0.2
Hydrogen Fluoride (HF)	Chlorine (Cl_2)	7.5
Ozone (O_3)	Chlorine (Cl_2)	0.8
	Nitrogen Dioxide (NO_2)	1

Procedure

1. <u>For EtO calibration gas</u>: Connect the tubing to the regulator, turn the regulator on, and allow gas to flow for **1 minute** before proceeding.

   <u>For HCl calibration gas</u>: Connect the tubing to the regulator, turn the regulator on, and allow gas to flow for **10 minutes** before proceeding.

2. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

   Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

3. Press and release ADD until the "Cal" menu item appears.

```
      SELECT    BACK

   SENSOR1

          Cal

      NEXT     PREV
```

4. Press MENU to select the Calibration menu item.

5. Unscrew and remove the sensor housing cap.

6. Install the calibration cup to the AirLink 6940NXP's sensor housing base.

7. Use the sample tubing to connect the regulator to the calibration cup.

8. For toxic gas cylinders, like Cl_2, it is important to vent the regulator while installing it onto the cylinder. Open the regulator by turning the knob counterclockwise and install it onto the cylinder.

> *WARNING:* ***Be sure to use a breathing apparatus and to ventilate the area well when calibrating with high concentrations of toxic gases.***

9. After 20-30 seconds, press ADD or SUB to adjust the reading until the on-screen value matches the concentration listed on the calibration cylinder.

```
     BACK      BACK

   SENSOR1
       CALIBRATION

        0.0
      ADD       SUB
```
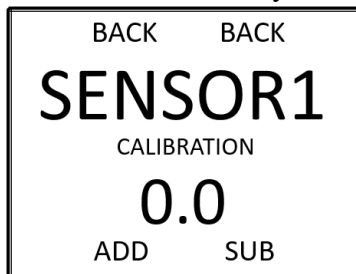
10. For all calibration gases except Cl_2, ClO_2, EtO, and HCl: Let the gas flow for 1 minute.

    For Cl_2 calibration gas: Let the gas flow for 3 minutes.

    For ClO_2 calibration gas: Let the gas flow for 6 minutes.

    For EtO calibration gas: Let the gas flow for 1.5 minutes.

    For HCl calibration gas: Let the gas flow for 5 minutes.

11. Press and release ADD or SUB to adjust the reading until the on-screen value matches the concentration listed on the calibration cylinder.

```
     BACK      BACK

   SENSOR1
       CALIBRATION

       50.0
      ADD       SUB
```
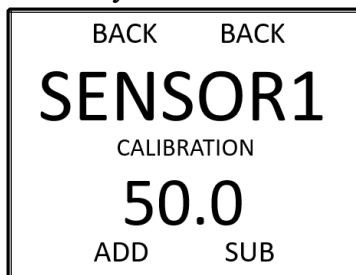
    For detectors using a surrogate gas, adjust the reading to match the surrogate gas concentration multiplied by the factor listed in Table 5 on page 37. Some versions will have to be set above full scale.

> **NOTE:** For 10.6 eV and 11.7 eV PID sensors, if you are calibrating with a gas other than isobutylene, you must take the calibration gas' factor to isobutylene into account when setting the calibration gas concentration.

> **NOTE:** Even if the reading does not need adjustment to match the calibration cylinder's concentration, you must adjust it up and then back down to reset the Cal field in the Zero/Calibration Timer Information screen.

12. When calibration is complete, remove the calibration cup from the sensor housing and reinstall the sensor housing cap.

13. Press MENU or BACK to return to the Sensor Settings menu.

Calibrating the Sensor (Auto Cal)

Each sensor can be manually or automatically calibrated, depending on the sensor's calibration method (see page 47 for setting the calibration method). If the sensor calibration method is set to Manual, see "Calibrating the Sensor (Manual Cal)" on page 36.

Sensors should ONLY be calibrated after completion of the zero process.

If the sensor has already been manually calibrated, skip to "Sensor Radio Address" on page 43.

NOTE: <u>LEL and CO_2</u> - LEL and CO_2 versions of the AirLink 6940NXP can only be calibrated using Auto Cal (see the next section).

<u>HCl</u> - It is recommended that the HCl version only be calibrated using Auto Cal, but Manual Cal can be used if desired.

<u>O_2</u> - If calibrating with 100% N_2, you must use Manual Cal. To calibrate using Auto Cal, a gas concentration between 10 and 18% O_2 is recommended.

Calibration Frequency

A calibration should be performed EVERY thirty (30) days. Days since the last calibration should NEVER exceed ninety (90) days. RKI recommends that you calibrate your device regularly to ensure proper functionality and a safe work environment.

Materials

• 0.5 LPM fixed flow regulator with knob and calibration tubing

---

WARNING: **If calibrating with Cl_2 or HCl, a regulator <u>must</u> be dedicated for use with that gas <u>only</u>. Do not use that dedicated regulator for any other gases, particularly H_2S.**

• calibration cup
• calibration cylinder or gas generator (For O_2 sensors, RKI recommends using 100% N_2. For all other sensors, RKI recommends using 50% of the full scale value of your detected gas.)

NOTE: Some detected gases use surrogate gases for calibration. Detected gases needing a surrogate gas for calibration are listed below. If you are using a surrogate gas for calibration, that surrogate gas concentration multiplied by the factor listed in Table 6 should equal about 50% of the detected gas' full scale.

Table 6: Surrogate Calibration Gases

| Detected Gas	Surrogate Calibration Gas	Factor
Arsine (AsH_3)	Phospine (PH_3)	1.4
Chlorine Dioxide (ClO_2)	Chlorine (Cl_2)	1
Formaldehyde (CH_2O)	Carbon Monoxide (CO)	0.2
Hydrogen Fluoride (HF)	Chlorine (Cl_2)	7.5
Ozone (O_3)	Chlorine (Cl_2)	0.8
	Nitrogen Dioxide (NO_2)	1

<u>Procedure</u>

1. <u>For EtO calibration gas</u>: Connect the tubing to the regulator, turn the regulator on, and allow gas to flow for **1 minute** before proceeding.

   <u>For HCl calibration gas</u>: Connect the tubing to the regulator, turn the regulator on, and allow gas to flow for **10 minutes** before proceeding.

2. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

   Press ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

3. Press and release ADD until the "Cal" menu item appears. Press MENU to select the "Cal" menu item.

```
  SELECT    BACK

 SENSOR1

        Cal

  NEXT      PREV
```
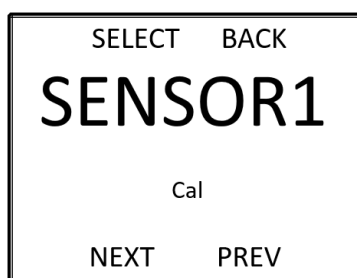
4. Press ADD to proceed to the Auto Calibration confirmation screen.

   To cancel calibration and return to the Sensor Settings menu, press SUB. Pressing MENU or BACK will also return the instrument to the Sensor Settings menu.

```
   BACK     BACK

 SENSOR1
    Would you like
    to cal this unit?

   YES       NO
```
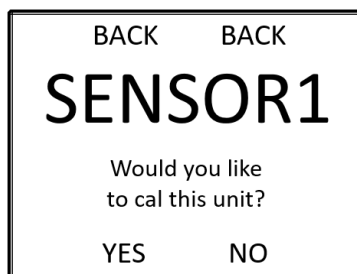
5. Press ADD again to confirm and advance to the set calibration point screen.

   To cancel calibration and return to the Sensor Settings menu, press SUB. Pressing MENU or BACK will also return the instrument to the Sensor Settings menu.

```
┌─────────────────────────┐
│  BACK        BACK       │
│                         │
│    SENSOR1              │
│                         │
│      Are you sure       │
│    you want to Cal?     │
│                         │
│   YES        NO         │
└─────────────────────────┘
```

6. Press the ADD and SUB buttons to adjust the reading on the screen to match the concentration listed on the calibration cylinder.

```
┌─────────────────────────┐
│  NEXT     BACK          │
│                         │
│    SENSOR1              │
│                         │
│     Set Cal Point.      │
│                         │
│      50                 │
│   ADD       SUB         │
└─────────────────────────┘
```

   For detectors using a surrogate gas, adjust the reading to match the surrogate gas concentration multiplied by the factor listed in Table 6 on page 40.

NOTE: For 10.6 eV and 11.7 eV PID sensors, if you are calibrating with a gas other than isobutylene, you must take the calibration gas' factor to isobutylene into account when setting the calibration gas concentration.

---

7. Press MENU to save the gas concentration setting and advance to the calibration start screen.

```
┌─────────────────────────┐
│  NEXT        BACK       │
│                         │
│    SENSOR1              │
│                         │
│     Apply gas, then     │
│    hit menu button.     │
│                         │
│                         │
└─────────────────────────┘
```

8. Unscrew and remove the sensor housing cap from the assembly.

9. Install the calibration cup to the AirLink 6940NXP's sensor housing base.

10. Use the sample tubing to connect the regulator to the calibration cup.
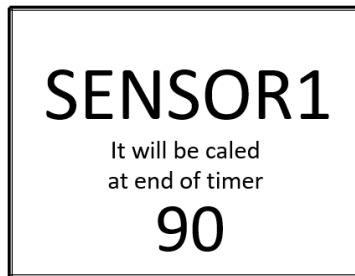
11. For toxic gas cylinders, like Cl_2, it is important to vent the regulator while installing it onto the cylinder. Open the regulator by turning the knob counterclockwise and install it onto the cylinder.

WARNING: ***Be sure to use a breathing apparatus and to ventilate the area well when calibrating with high concentrations of toxic gases.***

12. Press MENU to begin calibrating the sensor. The unit automatically begins the calibration process and displays the time remaining until the process is complete. The amount of time varies based on the gas type.

```
┌─────────────────────────┐
│                         │
│      SENSOR1            │
│                         │
│     It will be caled    │
│     at end of timer     │
│                         │
│         90              │
│                         │
└─────────────────────────┘
```

NOTE: Once the calibration countdown has started, the process cannot be stopped without disconnecting the power from the unit.

13. When calibration is complete, the unit will display the desired calibration point. Remove the calibration cup from the sensor housing and reinstall the rain guard.

```
┌─────────────────────────┐
│    NEXT     BACK        │
│                         │
│      SENSOR1            │
│                         │
│     Now caled at 50     │
│        READING          │
│                         │
│         50              │
└─────────────────────────┘
```
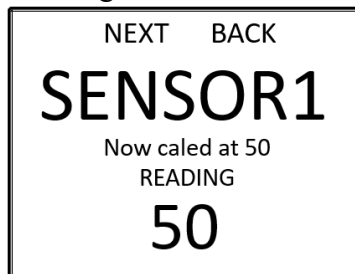
NOTE: If the sensor responds extremely slow, or does not respond to the applied gas, it may indicate a failed sensor element. The sensor element will need to be replaced before completing the zero and calibration process.

14. Turn the regulator knob clockwise to close the regulator.

15. Press MENU or BACK to return to the Sensor Settings menu.
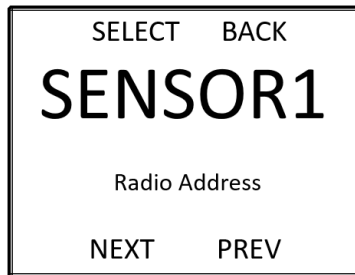
Sensor Radio Address

The AirLink 6940NXP sensor radio addresses are adjustable from 1 to 255. Each of sensor that is turned on has its own radio address, and **the address for each sensor must be set to a different value**.

Each of the AirLink 6940NXP sensor assemblies must have a unique address on the network in order to avoid a fault at the receiving monitor. The default address for Sensor 1 is 1, Sensor 2 is 2, Sensor 3 is 3, and Sensor 4 is 4.

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

    Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the "Radio Address" menu item appears. Press MENU to select the "Radio Address" menu item.

```
     SELECT     BACK

     SENSOR1

     Radio Address

      NEXT      PREV
```

3. Press and release ADD or SUB to increase or decrease the sensor radio address respectively. The AirLink 6940NXP will skip past radio addresses that are in use by the other AirLink 6940NXP sensor assemblies.

```
     BACK       BACK

     SENSOR1
        Address

          1
     ADD       SUB
```
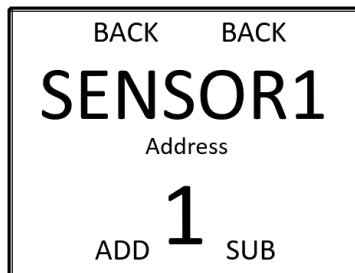
4. Press MENU or BACK to save the radio address setting and return to the Sensor Settings menu.

Sensor Alarm Test

The alarm test simulates a gas level reading in order to ensure proper functionality of the relay settings on the controller. The test can also be used to simulate emergency/safety drills onsite.

NOTE: Triggering AirLink 6940NXP relays will also simulate Alarm 1 and Alarm 2 relays at the controller. Controllers cannot distinguish between real and simulated data received. When the controller relays are triggered, alarm devices will perform as intended, initiating emergency procedures as if a harmful or toxic gas was actually present. To prevent this from occurring, set the controller to calibration mode before performing the alarm test. Calibration mode allows data transmission without relay activation.

It is recommended that an alarm test be conducted EVERY 30 days, alongside the maintenance and calibration of the detector.

Performing the Alarm Test

The alarm test gas level reading can be increased or decreased in increments of 5% of the sensor scale, up to 100% of the sensor scale.
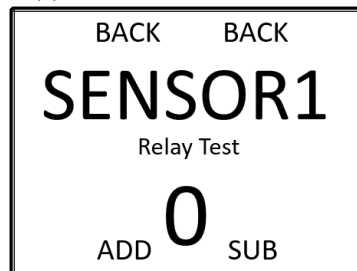
1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

    Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the "Relay Test" menu item appears. Press MENU to select the "Alarm Test" menu item.

```
┌─────────────────────────────┐
│    SELECT      BACK          │
│                             │
│    SENSOR1                   │
│                             │
│       Relay Test             │
│                             │
│     NEXT       PREV          │
└─────────────────────────────┘
```
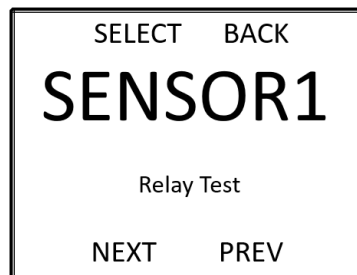
3. Press and release ADD until the Alarm 1 and Alarm 2 levels are reached and the relay(s) are triggered to light all visual alarm(s) and sound all audio alarm(s) on the controller.

```
┌─────────────────────────────┐
│    BACK        BACK          │
│                             │
│    SENSOR1                   │
│       Relay Test             │
│                             │
│            0                 │
│     ADD        SUB           │
└─────────────────────────────┘
```

4. Once all relays have been tested, press SUB to return the alarm test reading back to zero and to deactivate the controller alarm(s).

5. Press MENU or BACK to return to the Sensor Settings menu.

Background Setting (High/Low for O$_2$ Sensors)

The background setting is the gas reading at which the radio transmission changes from once every minute to once every five seconds. The background setting is adjustable so that a consistent level of gas presence does not increase the radio transmission rate.
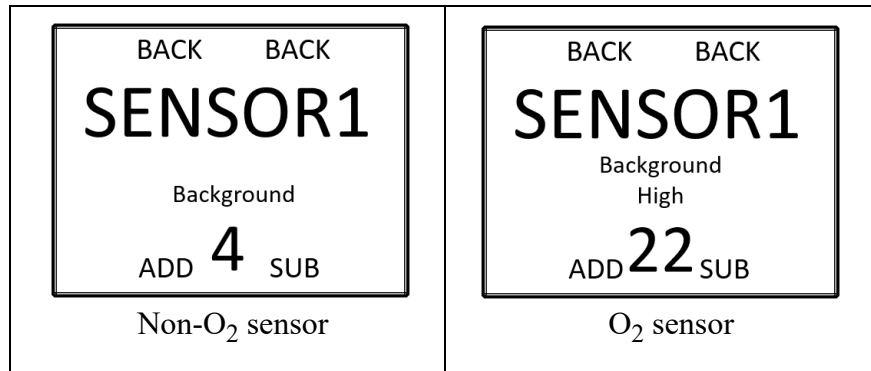
Oxygen sensor assemblies have 2 setpoints: L (for readings below 20.9%) and H (for readings above 20.9%).

	Non-O$_2$ Sensor Assemblies	O$_2$ Sensor Assemblies
Default	4% of full scale	L: 19.0% H: 22.0%
Minimum	1% of full scale	11.0%
Maximum	10% of full scale	24.0%

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

    Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the Background (Background High for O$_2$ versions) menu item appears. Press MENU to select the Background menu item.

Non-O$_2$ sensor — O$_2$ sensor
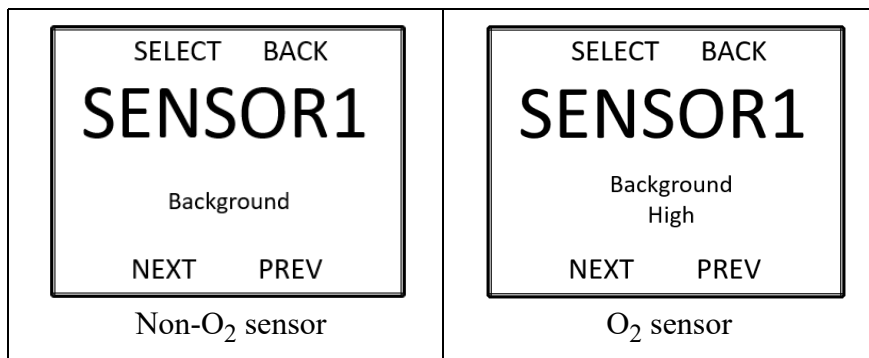
3. Press and release ADD or SUB until the Background (Background High for O_2 versions) is set to the desired level.

    For non-O2 sensor assemblies, skip to Step 5.

BACK BACK **SENSOR1** Background ADD **4** SUB	BACK BACK **SENSOR1** Background High ADD **22** SUB
Non-O_2 sensor	O_2 sensor

4. For O_2 sensor assemblies, press ADD to navigate from the Background High menu item to the Background Low menu item. Press MENU to select the Background Low menu item.

    SELECT   BACK

    SENSOR1

    Background
    Low

    NEXT   PREV
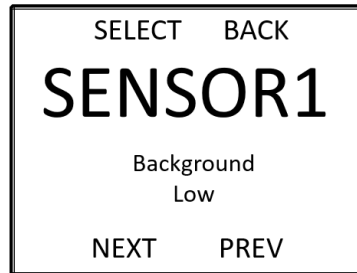
    a. Press ADD or SUB until the Background Low is set to the desired level.

        BACK   BACK

        SENSOR1

        Background
        Low

        ADD **19** SUB
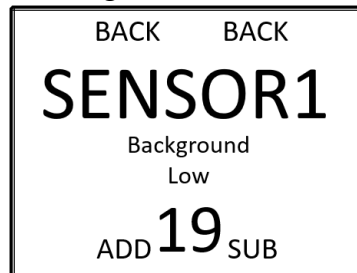
    b. Press MENU or BACK to save the setting(s) and return to the Sensor Settings menu.

5. Press MENU or BACK to save the setting and return to the Sensor Settings menu.

Calibration Method

NOTE: <u>LEL and CO$_2$</u> - This screen does not appear in LEL or CO$_2$ versions of the AirLink 6940NXP because those sensors can only be calibrated using Auto Cal.

<u>HCl</u> - It is recommended that the HCl version only be calibrated using Auto Cal, but Manual Cal can be used if desired.

<u>AsH$_3$ and HF</u> - It is recommended that AsH$_3$ and HF versions only be calibrated using Manual Cal.

<u>O$_2$</u> - If calibrating with 100% N$_2$, you must use Manual Cal. To calibrate using Auto Cal, a gas concentration between 10 and 18% O$_2$ is recommended.

The calibration method selection affects the way the sensor element is calibrated.

<u>Manual Calibration</u> (factory setting): The reading can be entered manually by pressing and release the ADD or SUB buttons during calibration to match the on-screen reading to the value of the gas being applied (see page 36).

<u>Auto Calibration</u>: Sets the reading, after a predetermined amount of time, to the value entered during the auto calibration setup process (see page 39).

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

    Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the Cal Method menu item appears. Press MENU to select the "Cal Method" menu item.

```
  SELECT    BACK

  SENSOR1

   Cal Method

  NEXT     PREV
```
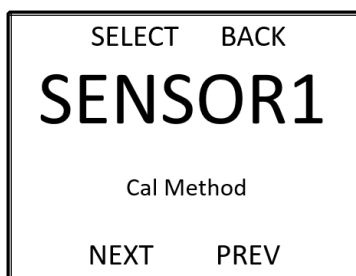
3. Use the ADD and SUB buttons to cycle between manual calibration and auto calibration.

```
   BACK     BACK

  SENSOR1

   Cal Method
    Manual
  NEXT     PREV
```
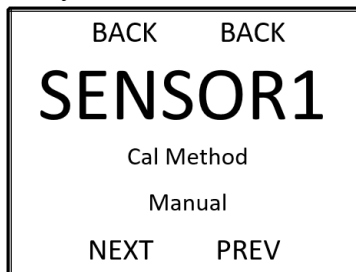
4. Press MENU or BACK to save the calibration method and return to the Sensor Settings menu.

Sensor Information

The system information screen displays the following information:
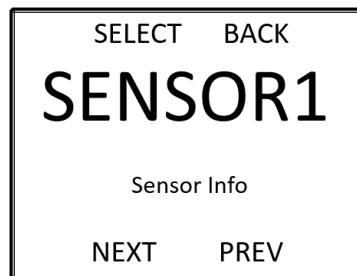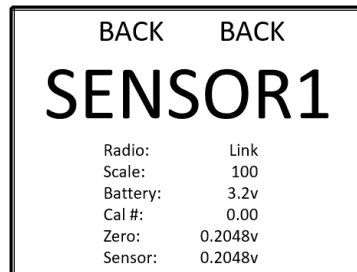
- The connection status to the primary controller
- The scale of the sensor element
- The battery voltage of the device
- The calibration number of the sensor, used for diagnostic purposes
- The voltage value (in volts) that the sensor was reading when zeroed
- The current voltage value (in volts) that the sensor element is reading

This screen is for informational purposes only.

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

   Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the "Sensor Info" menu item appears. Press MENU to select the "Sensor Info" menu item.

```
┌─────────────────────────────┐
│  SELECT      BACK           │
│                             │
│  SENSOR1                    │
│                             │
│       Sensor Info           │
│                             │
│   NEXT        PREV          │
└─────────────────────────────┘
```

3. Review the information displayed.

```
┌─────────────────────────────┐
│  BACK        BACK           │
│                             │
│  SENSOR1                    │
│   Radio:         Link       │
│   Scale:         100        │
│   Battery:       3.2v       │
│   Cal #:         0.00       │
│   Zero:        0.2048v      │
│   Sensor:      0.2048v      │
└─────────────────────────────┘
```

4. Press MENU or BACK to return to the Sensor Settings menu.

Zero/Calibration Timer Information

The zero/calibration time information screen displays the following information:

- Days since the sensor assembly was last zeroed
- Days since the sensor assembly was last calibrated
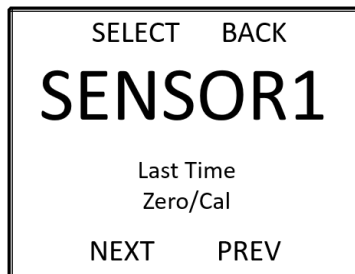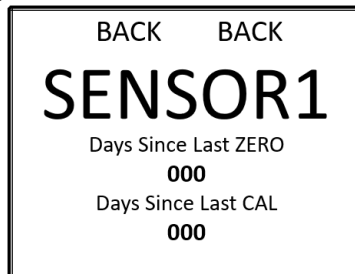
This screen is for informational purposes only.

NOTE: The Days Since Last CAL field automatically updates after an Auto Cal. When performing a Manual Cal, the gas reading must be adjusted by at least one button press to get this field to update.

---

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

   Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press and release ADD until the "Last Time Zero/Cal" menu item appears. Press MENU to select the "Last Time Zero/Cal" menu item.

```
┌─────────────────────────┐
│  SELECT      BACK        │
│                          │
│     SENSOR1              │
│                          │
│       Last Time          │
│        Zero/Cal          │
│                          │
│   NEXT       PREV        │
└─────────────────────────┘
```

3. Review the information displayed.

```
┌─────────────────────────┐
│  BACK        BACK        │
│                          │
│     SENSOR1              │
│   Days Since Last ZERO   │
│          000             │
│   Days Since Last CAL    │
│          000             │
└─────────────────────────┘
```

4. Press MENU or BACK to return to the Sensor Settings menu.

Reset Zero & Calibration Values

Resetting the zero and calibration settings of the sensor element will allow the currently stored zero and calibration values to be rest without having to reconfigure all of the other operational settings like with the Return to Factory Defaults option.

1. If necessary, enter the Product Settings and Configuration menu by pressing and holding MENU for approximately 6 seconds.

    Press and release ADD or SUB to navigate to the desired sensor settings menu, then press MENU to select the menu.

2. Press ADD until the "Return Zero/Cal to Default" menu item appears. Press MENU to select the "Return Zero/Cal to Default" menu item.

```
 BACK      BACK

 SENSOR1

 Return Zero/Cal
   to Default

 YES        NO
```

3. Press ADD to select "Yes" to advance to the "Reset Zero & Cal Only?" confirmation screen.

    To return to the Sensor Settings menu, press SUB to select "No". Pressing MENU or BACK also returns the instrument to the Sensor Settings menu.

```
 SELECT    BACK

 SENSOR1

 Return Zero/Cal
   To Default?

 NEXT      PREV
```

4. If "Yes" is selected, the following confirmation screen appears. Press ADD to reset the Zero and Calibration values.

    To return to the Sensor Settings menu without resetting the Zero and Calibration Values, press SUB. Pressing MENU or BACK also returns the instrument to the Sensor Settings menu.

```
 SELECT    BACK

 SENSOR1

  Are you sure?

 NEXT      PREV
```

5. If "Yes" was selected, the following screen will appear to signal completion of the sensor returning the Zero and calibration settings to their defaults.

```
┌─────────────────────────┐
│   BACK       BACK       │
│                         │
│   SENSOR1               │
│                         │
│     Resetting Done      │
│                         │
│                         │
└─────────────────────────┘
```
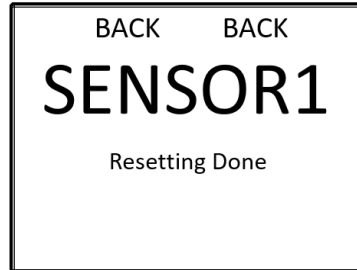
6. Press MENU or BACK to return to the Sensor Settings menu.

NOTE: If the AirLink 6940NXP's stored Zero and Calibration values are reset, the device MUST be zeroed and calibrated again for proper and safe operation of the device.

Back Screen

The Back Screen allows you to exit the Sensor Settings menu and return back to the Product Settings and Configuration menu. To access this menu item, press and release ADD or SUB until the screen displays the Back Screen.

```
┌─────────────────────────┐
│   SELECT     BACK       │
│                         │
│   SENSOR1               │
│                         │
│         BACK            │
│                         │
│   NEXT       PREV       │
└─────────────────────────┘
```
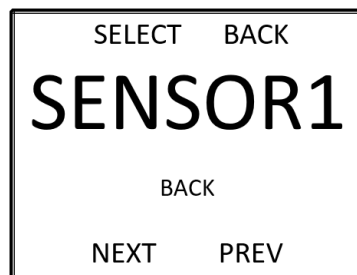
Press MENU to return to the Product Settings and Configuration menu.

Maintenance

RKI recommends that our equipment be calibrated a MINIMUM of every 90 days and STRONGLY advises that calibration be performed every 30 days. Without knowing the specific application, sensor assembly location, gas exposure and other factors, the company recommends monthly calibrations – assuming no damage or potential damage has occurred to the sensor and that there has not been a power outage to the sensor assembly. If damage has occurred or the power supplied to the sensor has changed, a calibration should be completed immediately.

Scheduled maintenance should include the zero and calibration of the sensor and an alarm test. See page 34 and page 44 for instructions to perform these procedures.

The sensor head should be kept free of airborne particles, dirt, mud, spider webs, bugs and insects, and/or any other debris that could potentially cover or coat the sensor. Keeping the sensor head clear of foreign articles will allow for proper operation of the device. A brief inspection during scheduled maintenance should suffice, but dependent upon the location and the environment in which the unit is installed, more frequent inspections may be warranted.

The AirLink 6940NXP may be adversely affected by the exposure to certain airborne substances. Loss of sensitivity or corrosion may be gradual if such materials are present in sufficient concentrations. The performance of the device may be impaired during operation in the presence of substances that can cause corrosion on gold plating. Other inhibiting substances are those that can coat the internal walls of the optical chamber and reduce reflectivity. These include, but are not limited to, heavy oil deposits, dust/powder, water condensation, and salt formation. Continuous and high concentrations of corrosive gases may also have a detrimental long-term effect on the product's service life. The presence of such substances in an area does not preclude the use of this device but makes a shortened sensor element lifetime more likely. Use of the sensor assembly in these environments may require more frequently scheduled maintenance to ensure safe and reliable system performance.

Troubleshooting

This troubleshooting guide describes symptoms, probable causes, and recommended action for problems you may encounter with the AirLink 6940NXP.

NOTE: This troubleshooting guide describes AirLink 6940NXP problems only. See the controller operator's manual for problems you may encounter with the controller.

Table 7: AirLink 6940NXP Fault Codes

Problem	Cause(s)	Solution(s)
F4 Check Sensor Board	The control board has lost communication with the sensor element or sensor housing.	1. Replace the sensor element. 2. Replace the sensor housing.
F5 Try to Zero Again	The unit did not zero correctly, due to: • the presence of gas, • a sensor error, or • an analog sensor board error.	1. Re-zero the device in clear air. 2. Replace the sensor element. 3. Replace the sensor housing.

Table 7: AirLink 6940NXP Fault Codes

Problem	Cause(s)	Solution(s)
F6 Try to Calibrate Again	The unit did not calibrate correctly, due to: • the absence of gas, • no radio connection to controller, • a sensor error, or • an analog sensor board error.	1. Recalibrate the sensor element and verify that gas is present during calibration. 2. Ensure the AirLink 6940NXP has a radio connection to a controller. 3. Replace the sensor element. 4. Replace the sensor housing.
F14 Check Radio	The AirLink 6940NXP has lost communication with the Primary Monitor due to: • Incorrectly configured Network ID. • The AirLink 6940NXP is obstructed/too far from the Primary Monitor. • Radio module is not working in the AirLink 6940NXP	1. Check that the Network ID on the AirLink 6940NXP matches the Primary Monitor Network ID 2. Move the AirLink 6940NXP away from the obstruction or use a high gain antenna. 3. Replace sensor radio module.
Battery indicator is blank	Approximately 2 weeks of battery life remain (if the battery pack is being used as the primary power source).	Replace the battery pack soon.
* *System faults will activate the fault terminal on the device.*		
** *When replacing the sensor element, the detector must be nulled and calibrated.*		

Table 8: AirLink 6940NXP Warning Symbols (for LEL Type Only)

Problem	Cause(s)	Solution(s)
	The sensor is undergoing a rapid temperature change, resulting in the potential loss of accuracy.	1. Once the sensor element temperature has stabilized, the warning will clear.
	The sensor element is in the warm up period.	1. The gas level reading will gain accuracy and the warning will clear upon completion of the warm up period. Calibrate the sensor element when the warm up period is complete.
	The sensor element is experiencing high electromagnetic interference (EMI).	1. Remove any source of electromagnetic interference (EMI). 2. Reposition or relocate the AirLink 6940NXP.

Replacing the Desiccant

Each AirLink 6940NXP comes with a desiccant bag installed in the junction box. The contents are blue when it is dry. As the desiccant absorbs moisture, it turns amber. Periodically check the desiccant and replace it if it has turned amber.

Replacing the Battery

The battery pack is normally used as a backup to protect against the loss of power if AC power is disrupted. If used to power the AirLink 6940, the battery pack lasts 6 months (45 days if a PID sensor is installed). When the battery indicator is blank, approximately 2 weeks of battery life remain (if the battery pack is used as the primary power source).

The presence of gas will increase the radio transmission rate and decrease the battery lifetime. It is recommended that the battery pack be replaced when the voltage reported is 3.0 volts or less. See page 27 to determine the battery voltage.

WARNING: Only use RKI-supplied replacement battery packs. 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. Release the housing latches, and open the enclosure door.

2. Press and hold SUB for approximately 6 seconds until "OFF" shows on the display screen.

3. Unscrew the faceplate thumbscrews, and pull open the faceplate to access the internal system.

   CAUTION: Be sure power to the AirLink 6940NXP is off before accessing the internal system.

4. Locate the battery connector on the terminal board assembly. Squeeze the locking tab on the battery plug and gently pull it straight out of the battery connector.
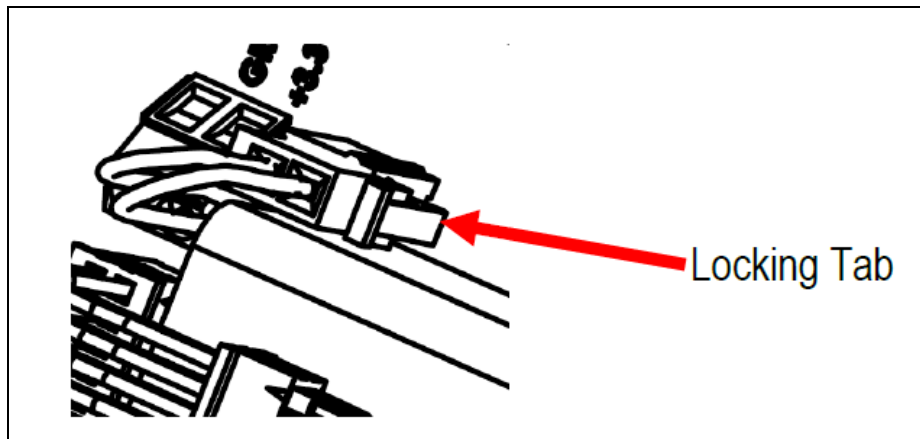
5. Unscrew the captive thumbscrews securing the battery bracket into place.

6. Gently remove the old battery pack.

7. Gently slide the new battery pack in the same orientation as the old battery pack.

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8. Screw the captive thumbscrews to secure the new battery pack using the battery bracket.

9. Plug the battery cable into the 2-pin battery terminal on the terminal board.

10. Close the faceplate and screw the faceplate thumbscrews back into place.

11. Press ADD to initiate the 1-minute startup (3.5 minutes for LEL versions).

12. Allow the installation to warm up for the appropriate amount of time as indicated in the table below. For units with multiple sensors, the warm up period should be based on the installed sensor with the longest warm up time.

Detection Gas	Warm Up Time
Ammonia (NH_3)	4 hours
Arsine (AsH_3)	10 minutes
Carbon Dioxide (CO_2)	
Carbon Monoxide (CO)	
Chlorine (Cl_2)	
Chlorine Dioxide (ClO_2)	
Combustible Gas	
Ethylene Oxide (EtO)	
Formaldehyde (CH_2O)	
Hydrogen Chloride (HCl)	
Hydrogen Cyanide (HCN)	
Hydrogen Fluoride (HF)	
Hydrogen Sulfide (H_2S)	
Nitric Oxide (NO)	
Nitrogen Dioxide (NO_2)	
Oxygen (O_2)	
Ozone (O_3)	
Phosphine (PH_3)	
Sulfur Dioxide (SO_2)	
VOCs	

13. Zero and calibrate the AirLink 6940NXP's sensors as described on page 32.

14. Close and latch the enclosure door.

Cleaning the 10.0 eV or 10.6 eV PID Lamp

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 sensor.*

Clean the 10.0 eV or 10.6 eV lamp if you notice a significant drop in sensitivity from one scheduled calibration to another or if you are not able to calibrate the detector.

11.7 eV lamps should <u>not</u> be cleaned because of their susceptibility to moisture.

Cleaning Kit

The lamp cleaning kits for 10.0 eV and 10.6 eV lamps include:

- an electrode stack removal tool
- a small vial of aluminum oxide powder
- 40 cotton swabs
- 10 finger cots

Lamp Cleaning Procedure

1. Press and hold SUB for approximately 6 seconds until "OFF" shows on the display screen.

2. Unscrew and remove the sensor housing cap from the sensor housing base. Set aside.

    NOTE: A black spacer may be attached to the sensor after you remove the sensor housing cap. Remove the spacer from the sensor and screw it back into the sensor housing cap.
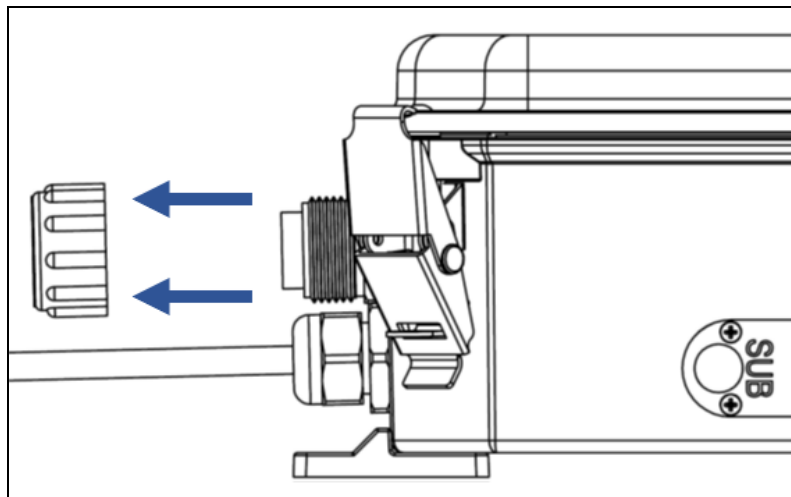
3. Gently unplug the sensor element from the sensor housing board.
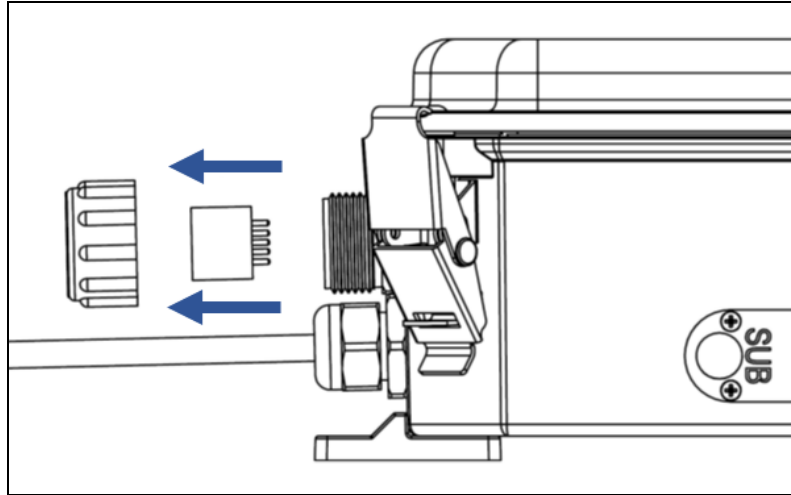
4. Place the PID sensor face down on a flat clean working surface.

5. Do not touch the lamp window with your fingers as this may contaminate the window with finger oil. At this point it is recommended that the finger cots be used on the fingers handling the lamp. Finger cots are included with the lamp cleaning kit.

6. Hold the PID sensor steady on the working surface with one hand and using the other hand, locate the tabs on the electrode stack removal tool and insert them into the slots on the side of the PID sensor near the face.

Figure 6: Using Removal Tool

7. Squeeze the removal tool to push the tabs into the sensor slots until the electrode stack and lamp are released.

8. Carefully lift the PID sensor body away from the electrode stack and lamp. Take care not to touch the lamp window, the flat end of the lamp, with your fingers. If the lamp remains lodged in the sensor body, carefully remove it with tweezers.
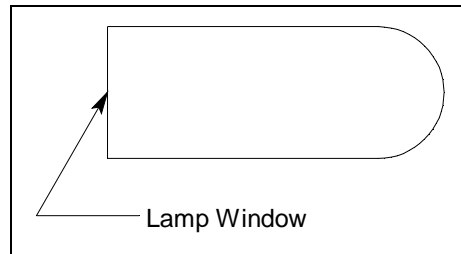
Figure 7: Lamp Window Location

9. If the spring in the lamp cavity comes out, place it back into the lamp cavity.

10. Hold the lamp in one hand being careful not to touch the lamp window with your fingers.

11. With the other hand collect a small amount of aluminum oxide powder on a cotton swab.

12. Use this cotton swab to polish the PID lamp window. Use a circular motion, applying light pressure to clean the lamp window. Do not touch the lamp window with your fingers.

Figure 8: Polishing the Electrode Lamp Window

13. Continue polishing until you can hear a squeaking sound made by the cotton swab moving over the window surface. This usually occurs after about 15 seconds of polishing.

14. Remove the residual powder from the lamp window with a clean cotton swab. Take care not to touch the tip of the cotton swab that is used to clean the lamp as this may contaminate it with finger oil.

15. Ensure the lamp is completely dry and any visible signs of contamination are removed before reinstalling.

16. Hold the electrode stack between the thumb and forefinger of one hand and place the window end of the lamp inside the O-ring seal in the electrode stack with the other hand as shown below.
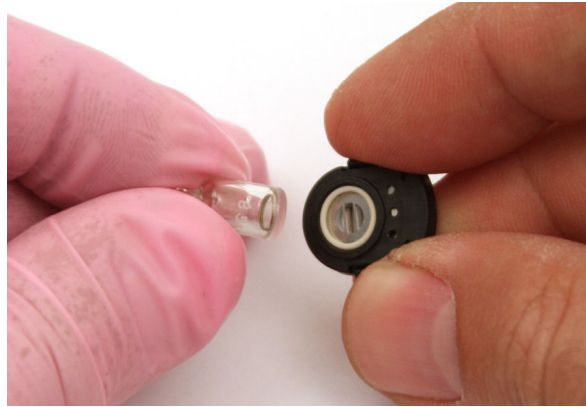

Figure 9: Reinstalling the Electrode Lamp

17. Twisting the lamp slightly during insertion will help to ensure the lamp window is snug against the stack's front electrode. The lamp should be supported by the O-ring.

18. Continuing to hold the electrode stack between your forefinger and thumb, carefully insert the lamp into the lamp cavity in the sensor ensuring that the lamp remains in position.

19. Press in the electrode stack firmly to ensure that the stack wing clips are engaged and the faces of the stack and sensor body are flush.

20. Plug the sensor element into the sensor housing board. Ensure that the pins on the sensing element align with the sockets on the sensor housing board.
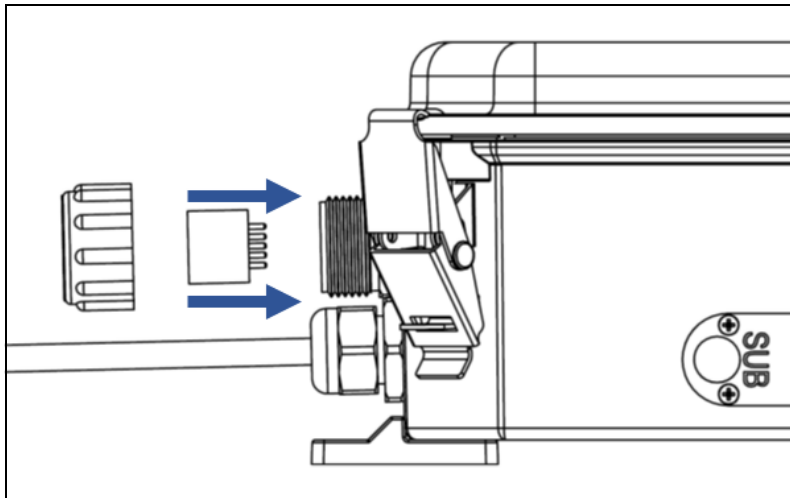
21. Screw the sensor housing cap back onto the sensor housing base, ensuring that the sensor housing cap is only tightened hand tight.
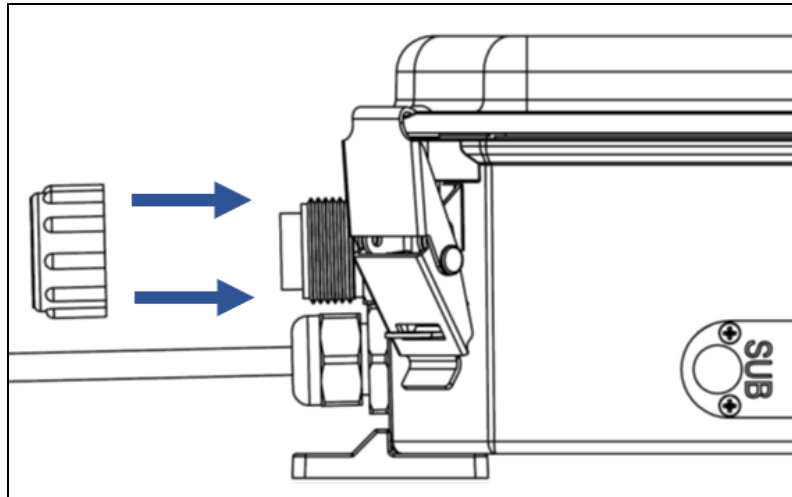
22. Press ADD to initiate the 1-minute startup (3.5 minutes for LEL versions).

23. Wait 10 minutes and then zero and calibrate the detector as described on page 34.

Replacing the PID Lamp

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 sensor.*

If cleaning the PID lamp does not resolve any calibration problems you may be having, the lamp may need to be replaced.

Ordering the Correct Replacement Lamp

It's important to order the correct replacement lamp for your PID sensor.

1. Look at the part number label on the side of your PID sensor.

2. See the table below for replacement lamp part numbers based on your sensor's part number.

Table 9: PID Sensor Replacement Lamp Part Number

Sensor Part Number	Replacement Lamp Part Number
61-0302	51-1503
61-0303	
61-0304	
61-0305	51-1504

Lamp Replacement Procedure

NOTE: Do not touch the new lamp window (the flat end) with your fingers as this may contaminate the window with finger oil.
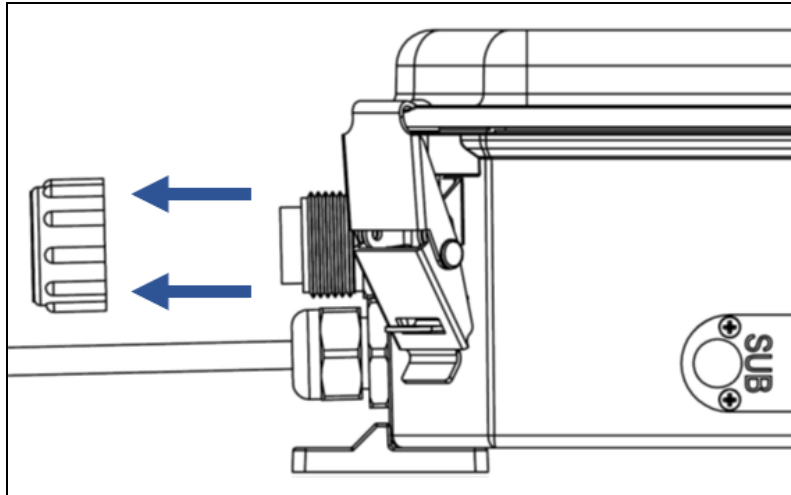
1. Press and hold SUB for approximately 6 seconds, until "OFF" shows on the display screen.

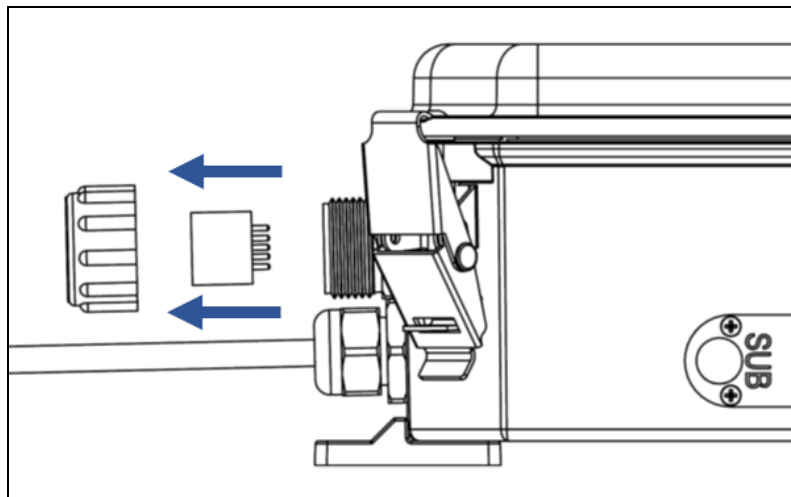2. Unscrew and remove the sensor housing cap from the sensor housing base. Set aside.

   NOTE: A black spacer may be attached to the sensor after you remove the sensor housing cap. Remove the spacer from the sensor and screw it back into the sensor housing cap.

3. Gently unplug the sensor element from the sensor housing board.

4. Place the PID sensor face down on a flat clean working surface.

5. Hold the PID sensor steady on the working surface with one hand and using the other hand, locate the tabs on the electrode stack removal tool and insert them into the slots on the side of the PID sensor near the face.


Figure 10: Using Removal Tool

6. Squeeze the removal tool to push the tabs into the sensor slots until the electrode stack and lamp are released.

7. Carefully lift the PID sensor body away from the electrode stack and lamp. If the lamp remains lodged in the sensor body, carefully remove it with tweezers.

8. If the spring in the lamp cavity comes out, place it back into the lamp cavity.

9. Discard the old PID lamp.

NOTE: At this point it is recommended that the finger cots be used on the fingers handling the lamp. Finger cots are included with the lamp cleaning kit.
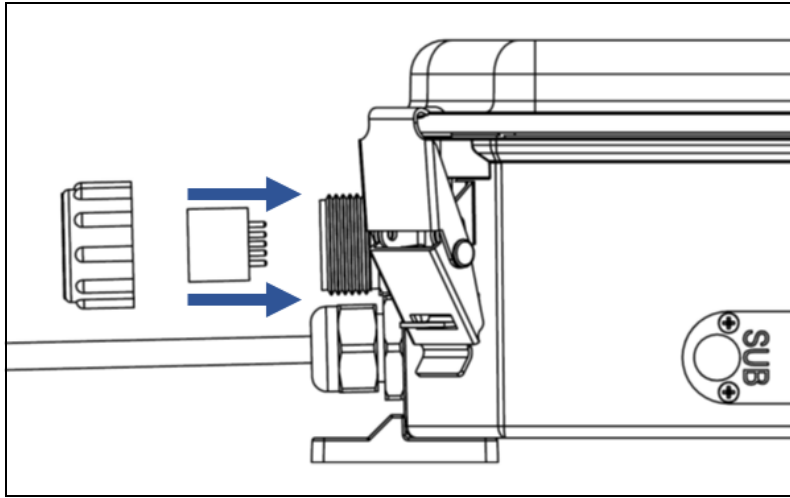
10. Hold the electrode stack between the thumb and forefinger of one hand and place the window end of the new lamp inside the O-ring seal in the electrode stack with the other hand as shown below. Take care not to touch the lamp window.
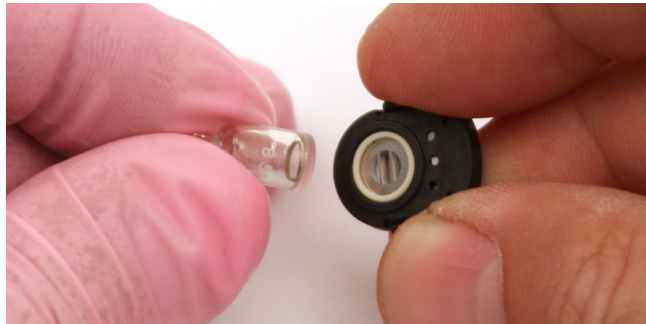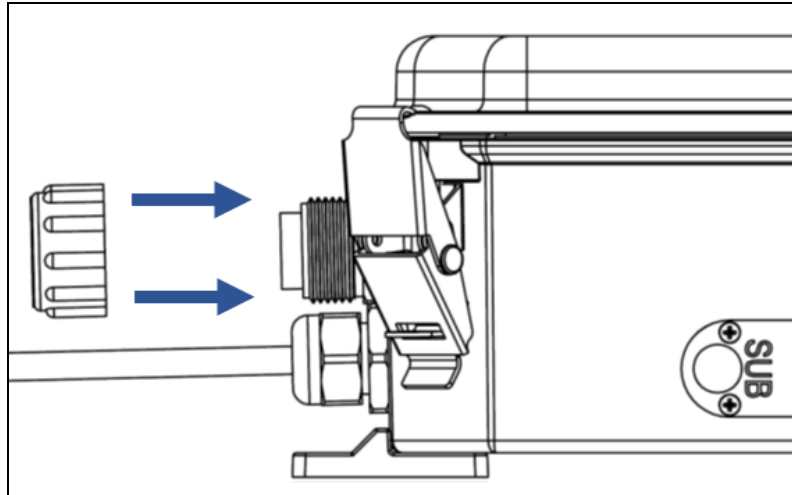

Figure 11: Reinstalling the Electrode Lamp

11. Twisting the lamp slightly during insertion will help to ensure the lamp window is snug against the stack's front electrode. The lamp should be supported by the O-ring.

12. Continuing to hold the electrode stack between your forefinger and thumb, carefully insert the lamp into the lamp cavity in the sensor ensuring that the lamp remains in position.

13. Press in the electrode stack firmly to ensure that the stack wing clips are engaged and the faces of the stack and sensor body are flush.

14. Plug the sensor element into the sensor housing board. Ensure that the pins on the sensing element align with the sockets on the sensor housing board.

15. Screw the sensor housing cap back onto the sensor housing base, ensuring that the sensor housing cap is only tightened hand tight.

16. Press ADD to initiate the 1-minute startup (3.5 minutes for LEL versions).

17. Wait 10 minutes and then zero and calibrate the detector as described on page 34.

Replacing the PID Electrode Stack

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 sensor.*

The electrode stack can last for the life of the PID sensor if the AirLink 6940NXP is used in a very clean, controlled environment. When used in a heavily contaminated or dirty environment, the electrode stack may only last a month. A contaminated electrode stack will cause a drop in sensitivity which can cause problems calibrating the PID channel. The electrode stack should be replaced if the PID sensor shows signs of contamination even after cleaning or replacing the lamp.

NOTE: Do not touch the new lamp window (the flat end) with your fingers as this may contaminate the window with finger oil.
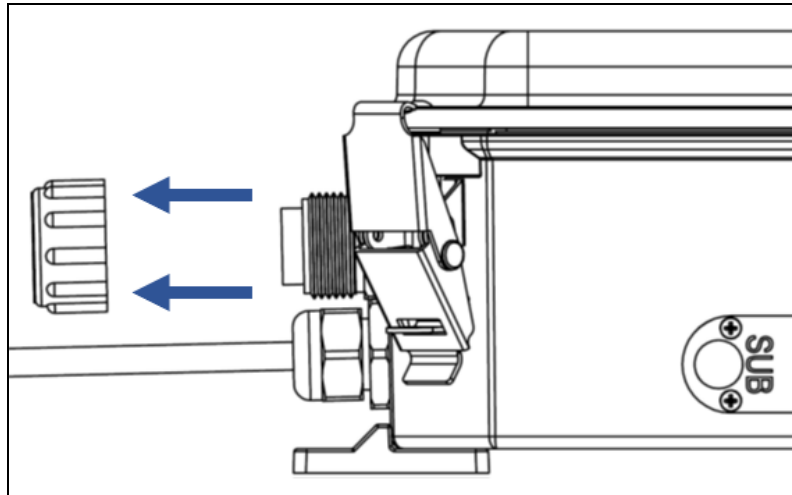
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1. Press and hold SUB for approximately 6 seconds until "OFF" shows on the display screen.

2. Unscrew and remove the sensor housing cap from the sensor housing base. Set aside.
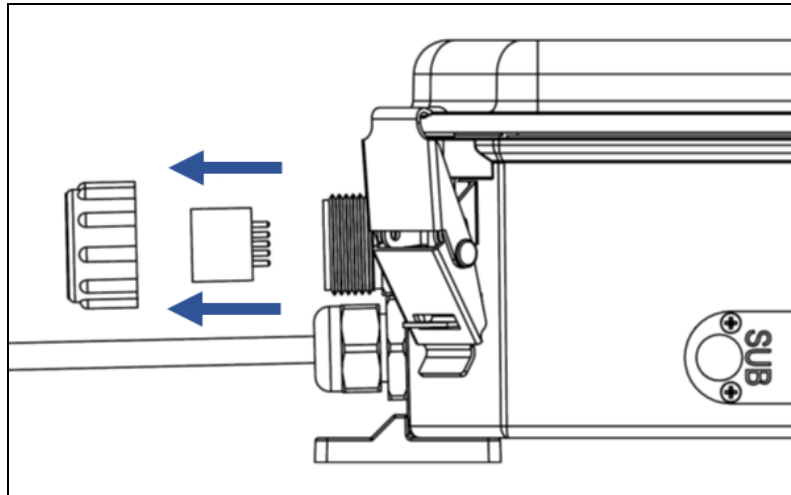

   NOTE: A black spacer may be attached to the sensor after you remove the sensor housing cap. Remove the spacer from the sensor and screw it back into the sensor housing cap.

---

3. Gently unplug the sensor element from the sensor housing board.

4. Place the PID sensor face down on a flat clean working surface.

NOTE: At this point it is recommended that the finger cots be used on the fingers handling the lamp. Finger cots are included with the lamp cleaning kit.

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5. Hold the PID sensor steady on the working surface with one hand and using the other hand, locate the tabs on the electrode stack removal tool and insert them into the slots on the side of the PID sensor near the face.

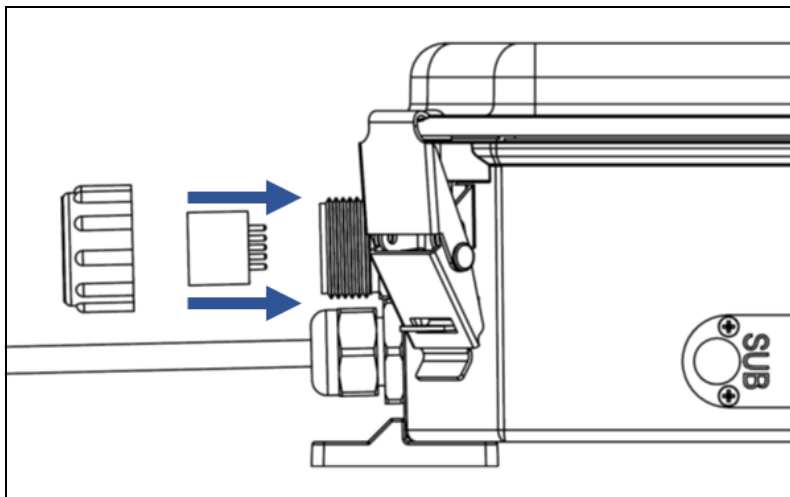**Figure 12: Using Removal Tool**

6. Squeeze the removal tool to push the tabs into the sensor slots until the electrode stack and lamp are released.

7. Carefully lift the PID sensor body away from the electrode stack and lamp. If the lamp remains lodged in the sensor body, carefully remove it with tweezers.

8. If the spring in the lamp cavity comes out, place it back into the lamp cavity.

9. Discard the old electrode stack.

10. Hold the new electrode stack between the thumb and forefinger of one hand and place the window end of the lamp inside the O-ring seal in the new electrode stack with the other hand as shown below. Take care not to touch the lamp window.
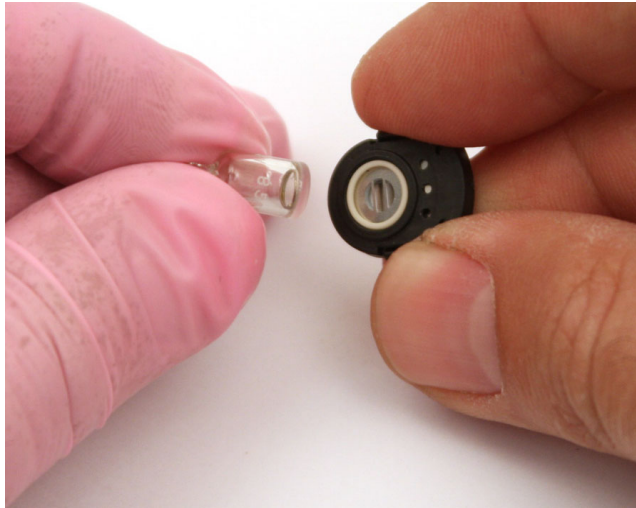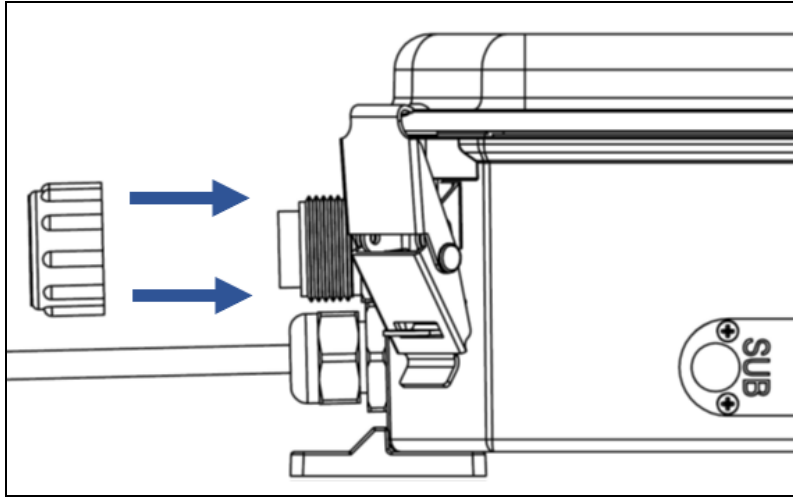

Figure 13: Reinstalling Electrode Lamp

11. Twisting the lamp slightly during insertion will help to ensure the lamp window is snug against the stack's front electrode. The lamp should be supported by the O-ring.

12. Continuing to hold the electrode stack between your forefinger and thumb, carefully insert the lamp into the lamp cavity in the sensor ensuring that the lamp remains in position.

13. Press in the electrode stack firmly to ensure that the stack wing clips are engaged and the faces of the stack and sensor body are flush.

14. Plug the sensor element into the sensor housing board. Ensure that the pins on the sensing element align with the sockets on the sensor housing board.

15. Screw the sensor housing cap back onto the sensor housing base, ensuring that the sensor housing cap is only tightened hand tight.

16. Press ADD to initiate the 1-minute startup (3.5 minutes for LEL versions).

17. Wait 10 minutes and then zero and calibrate the detector as described on page 34.

Replacing the Sensor

RKI recommends replacing the sensor element whenever a slow response to gas is observed during the normal calibration process. After replacing the sensor element, the device MUST be zeroed and calibrated for proper operation of the device.

CAUTION: *Do not remove the sensor housing cap or enclosure lid while the circuits are energized unless the area is determined to be non-hazardous. Keep the sensor housing cap and enclosure lid tightly closed during operation.*

---

1. Press and hold SUB for approximately 6 seconds until "OFF" shows on the display screen.

2. Unscrew and remove the sensor housing cap from the sensor housing base. Set aside.
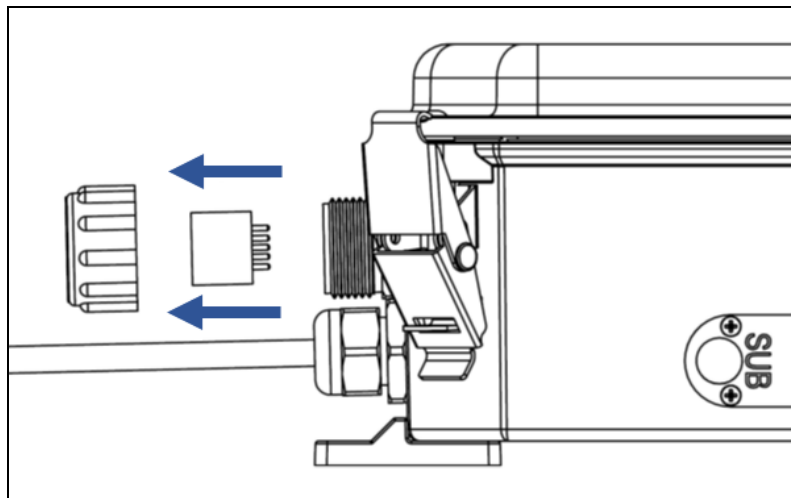

NOTE: A black spacer may be attached to the sensor after you remove the sensor housing cap. Remove the spacer from the sensor and screw it back into the sensor housing cap.
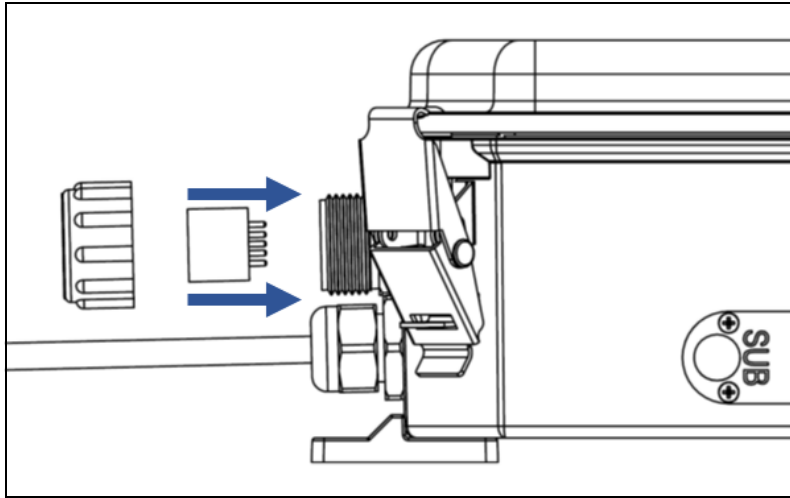
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3. Gently unplug the sensor element from the sensor housing board.

AirLink 6940NXP Operator's Manual
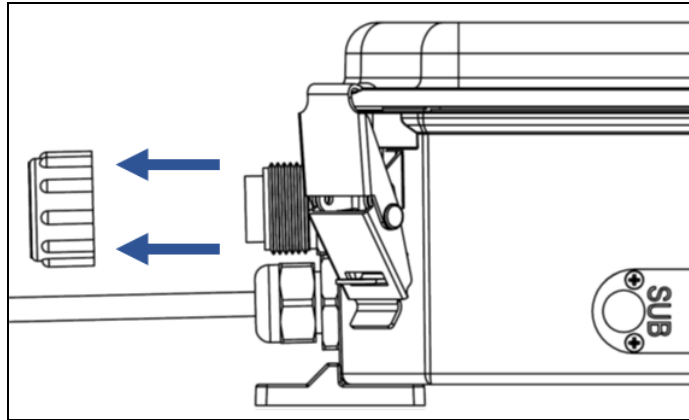
4. Plug the new sensor element into the sensor housing board. Ensure that the pins on the sensing element align with the sockets on the sensor housing board.

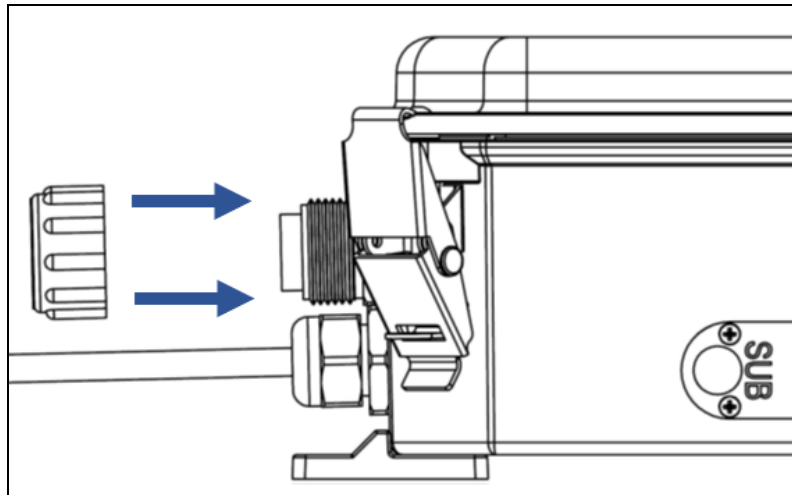

NOTE: Some electrochemical sensing elements are shipped with a shorting spring between two of the pins, this shorting spring MUST be removed before installing the sensing element.

5. Screw the sensor housing cap back onto the sensor housing base, ensuring that the sensor housing cap is only tightened hand tight.

6. Press ADD to initiate the 1-minute startup (3.5 minutes for LEL versions).

7. Allow the installation to warm up for the appropriate amount of time as indicated in the table below. For units with multiple sensors, the warm up period should be based on the installed sensor(s) with the longest warm up time.

Detection Gas	Warm Up Time
Ammonia (NH_3)	12 hours
Arsine (AsH_3)	2 hours
Carbon Dioxide (CO_2)	10 minutes
Carbon Monoxide (CO)	2 hours
Chlorine (Cl_2)	
Chlorine Dioxide (ClO_2)	
Combustible Gas	10 minutes
Ethylene Oxide (EtO)	48 hours
Formaldehyde (CH_2O)	10 minutes
Hydrogen (H_2)	2 hours
Hydrogen Chloride (HCl)	12 hours
Hydrogen Cyanide (HCN)	
Hydrogen Fluoride (HF)	2 hours
Hydrogen Sulfide (H_2S)	
Nitric Oxide (NO)	12 hours
Nitrogen Dioxide (NO_2)	2 hours
Oxygen (O_2)	
Ozone (O_3)	
Phosphine (PH_3)	
Sulfur Dioxide (SO_2)	
VOCs	10 minutes

8. Zero and calibrate the detector as described on page 34.

Replacing the Fuse

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. Release the housing latches, and open the enclosure door.

2. Press and hold **SUB** for approximately 6 seconds until "OFF" shows on the display screen.

3. Unscrew the faceplate thumbscrews, and pull open the faceplate to access the internal system.

   CAUTION: *Be sure power to the AirLink 6940NXP is off before accessing the internal system.*

4. Locate the fuse that needs to be replaced.
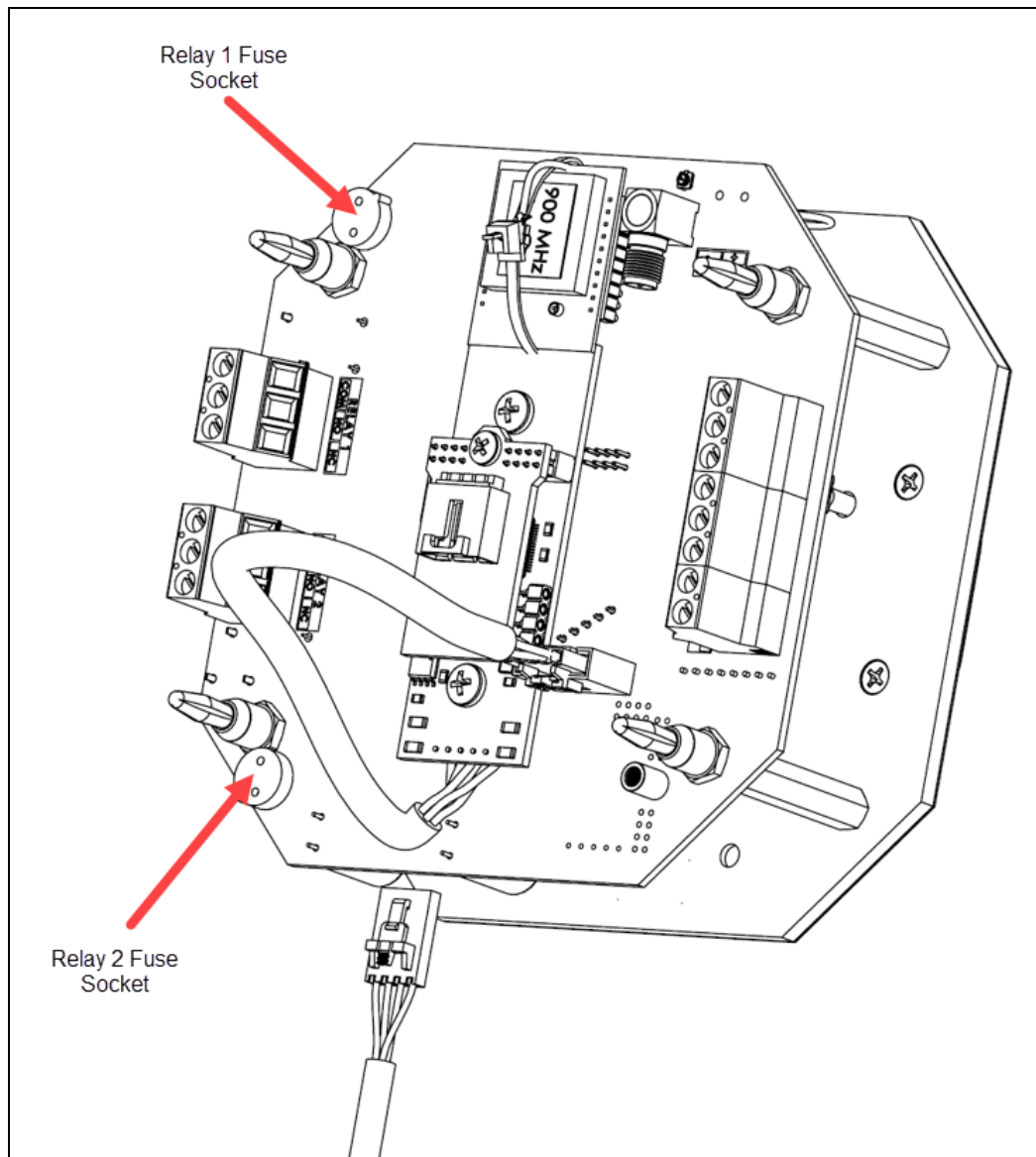
5. Pull the old fuse straight out.

6. Align the pins on the replacement fuse with the sockets in the fuse holder.

7. Push the new fuse into the fuse holder.

8. Close the faceplate and screw the faceplate thumbscrews back into place.

9. Press ADD to initiate the 1-minute startup (3.5 minutes for LEL versions).

10. Allow the installation to warm up for the appropriate amount of time as indicated in the table below. For units with multiple sensors, the warm up period should be based on the installed sensor with the longest warm up time.

Detection Gas	Warm Up Time
Ammonia (NH_3)	4 hours
Arsine (AsH_3)	10 minutes
Carbon Dioxide (CO_2)	
Carbon Monoxide (CO)	
Chlorine (Cl_2)	
Chlorine Dioxide (ClO_2)	
Combustible Gas	
Ethylene Oxide (EtO)	
Formaldehyde (CH_2O)	
Hydrogen Chloride (HCl)	
Hydrogen Cyanide (HCN)	
Hydrogen Fluoride (HF)	
Hydrogen Sulfide (H_2S)	
Nitric Oxide (NO)	
Nitrogen Dioxide (NO_2)	
Oxygen (O_2)	
Ozone (O_3)	
Phosphine (PH_3)	
Sulfur Dioxide (SO_2)	
VOCs	

11. Zero and calibrate the AirLink 6940NXP's sensors as described on page 32.

12. Close and latch the enclosure door.

Parts List

Table 10: Parts List

Part Number	Description
09-0300RK	Desiccant bag
33-0560RK	PID sensor electrode stack, low range 10.6 eV sensor, 2 stacks
33-0560-01	PID sensor electrode stack, low range 10.6 eV sensor, 1 stack
33-0562	PID sensor electrode stack, high range 10.6 eV sensor
33-0563	PID sensor electrode stack, 10.0 eV sensor
33-0564	PID sensor electrode stack, 11.7 eV sensor
43-4163	Fuse, 4A
47-5110-7-XX	Cable with connector for remote-mounted kit (specify length in 1-foot increment when ordering; maximum lengths listed on page 11), 7-pin
47-5111-XX	Cable with connectors for remote-mounted antenna (specify length when ordering: choices are 5, 10, 15, 25, 50, 75, 100 ft)
49-1416-02	Battery pack
51-1503	PID sensor replacement lamp, for 10.0 eV, low range 10.6 eV, and high range 10.6 eV sensors
51-1504	PID sensor replacement lamp, 11.7 eV sensor
61-0302	10.6 eV low range replacement sensor, with lamp and stack
61-0303	10.6 eV high range replacement sensor, with lamp and stack
61-0304	11.7 eV replacement sensor, with lamp and stack
61-0305	10.0 eV replacement sensor, with lamp and stack
61-2002	Remote sensor mounting kit, 7-pin non-explosion-proof
66-0001	Sensor, carbon monoxide (CO), for up to 1,000 ppm full scale
66-0002	Sensor, oxygen (O_2), 25% volume full scale
66-0003-1	Sensor, hydrogen sulfide (H_2S), for up to 100 ppm full scale
66-0003-2	Sensor, hydrogen sulfide (H_2S), for 200 to 2,000 ppm full scale
66-0004-1	Sensor, hydrogen chloride (HCl), for up to 20 ppm full scale
66-0004-2	Sensor, hydrogen chloride (HCl), for up to 100 ppm full scale
66-0005	Sensor, hydrogen cyanide (HCN), 50 ppm full scale
66-0006N-1	Sensor, ammonia (NH_3), for up to 100 ppm full scale
66-0006N-2	Sensor, ammonia (NH_3), for 200 to 1,000 ppm full scale

Table 10: Parts List

Part Number	Description
66-0007	Sensor, nitric oxide (NO), for up to 250 ppm full scale
66-0008	Sensor, nitrogen dioxide (NO_2), 20 ppm full scale
66-0009-1	Sensor, ozone (O_3), for up to 5 ppm full scale
66-0009-2	Sensor, ozone (O_3), for 10 to 100 ppm full scale
66-0010	Sensor, sulfur dioxide (SO_2), 20 ppm full scale
66-0011	Sensor, formaldehyde (CH_2O), 10 ppm full scale
66-0012	Sensor, chlorine (Cl_2), for up to 20 ppm full scale
66-0013	Sensor, chlorine dioxide (ClO_2), for up to 5 ppm full scale
66-0014	Sensor, hydrogen fluoride (HF), 10 ppm full scale
66-0015	Sensor, phosphine (PH_3), 5 ppm full scale
66-0016	Sensor, ethylene oxide (EtO), for up to 10 ppm full scale
66-0039	Sensor, hydrogen (H_2), 100% LEL full scale
66-0060	Sensor, methane, LPIR type, 100% LEL full scale
66-0063	Sensor, general hydrocarbons, LPIR type, 100% LEL full scale
66-0067	Sensor, carbon dioxide (CO_2), LPIR type, 5.0% volume full scale
66-0068	Sensor, arsine (AsH_3), 1.00 ppm full scale
71-0591	AirLink 6940NXP Operator's Manual (this document)
81-0002RK-01	Calibration cylinder, 50% LEL hydrogen in air, 34 liter steel
81-0002RK-03	Calibration cylinder, 50% LEL hydrogen in air, 103 liter
81-0004RK-01	Calibration cylinder, 50% LEL propane in air, 34 liter steel
81-0004RK-03	Calibration cylinder, 50% LEL propane in air, 103 liter
81-0007RK-01	Calibration cylinder, 15% LEL hexane in air, 34 liter steel
81-0010RK-01	Calibration cylinder, 10% LEL (5000 ppm) methane in air, 34 liter steel
81-0010RK-03	Calibration cylinder, 10% LEL (5000 ppm) methane in air, 103 liter
81-0012RK-01	Calibration cylinder, 50% LEL methane in air, 34 liter steel
81-0012RK-03	Calibration cylinder, 50% LEL methane in air, 103 liter
81-0064RK-01	Calibration cylinder, 50 ppm CO in air, 34 liter steel
81-0064RK-03	Calibration cylinder, 50 ppm CO in air, 103 liter
81-0069RK-01	Calibration cylinder, 200 ppm CO in air, 34 liter steel
81-0069RK-03	Calibration cylinder, 200 ppm CO in air, 103 liter

Table 10: Parts List

Part Number	Description
81-0072RK-01	Calibration cylinder, 2.5% CO_2 in air, 34 liter steel
81-0072RK-03	Calibration cylinder, 2.5% CO_2 in air, 103 liter
81-0076RK	Zero air calibration cylinder, 17 liter
81-0076RK-01	Zero air calibration cylinder, 34 liter steel
81-0076RK-03	Zero air calibration cylinder, 103 liter
81-0078RK-01	Calibration cylinder, 100% nitrogen, 34 liter steel
81-0078RK-03	Calibration cylinder, 100% nitrogen, 103 liter
81-0100RK-04	Calibration cylinder, 5 ppm benzene in air, 34 liter aluminum
81-0103RK-04	Calibration cylinder, 100 ppm isobutylene in air, 34 liter aluminum
81-0104RK-04	Calibration cylinder, 10 ppm isobutylene in air, 34 liter aluminum
81-0146RK-02	Calibration cylinder, 200 ppm H_2S in nitrogen, 58 liter
81-0149RK-02	Calibration cylinder, 5 ppm H_2S in nitrogen, 58 liter
81-0149RK-04	Calibration cylinder, 5 ppm H_2S in nitrogen, 34 liter aluminum
81-0150RK-02	Calibration cylinder, 10 ppm H_2S in nitrogen, 58 liter
81-0150RK-04	Calibration cylinder, 10 ppm H_2S in nitrogen, 34 liter aluminum
81-0151RK-02	Calibration cylinder, 25 ppm H_2S in nitrogen, 58 liter
81-0151RK-04	Calibration cylinder, 25 ppm H_2S in nitrogen, 34 liter aluminum
81-0170RK-02	Calibration cylinder, 5 ppm SO_2 in nitrogen, 58 liter
81-0170RK-04	Calibration cylinder, 5 ppm SO_2 in nitrogen, 34 liter aluminum
81-0174RK-02	Calibration cylinder, 50 ppm NH_3 in nitrogen, 58 liter
81-0176RK-02	Calibration cylinder, 25 ppm NH_3 in nitrogen, 58 liter
81-0176RK-04	Calibration cylinder, 25 ppm NH_3 in nitrogen, 34 liter aluminum
81-0180RK-02	Calibration cylinder, 10 ppm NO_2 in nitrogen, 58 liter
81-0180RK-04	Calibration cylinder, 10 ppm NO_2 in nitrogen, 34 liter aluminum
81-0181RK-02	Calibration cylinder, 25 ppm NO in nitrogen, 58 liter
81-0181RK-04	Calibration cylinder, 25 ppm NO in nitrogen, 34 liter aluminum
81-0185RK-02	Calibration cylinder, 0.5 ppm PH_3 in nitrogen, 58 liter
81-0185RK-04	Calibration cylinder, 0.5 ppm PH_3 in nitrogen, 34 liter aluminum
81-0190RK-02	Calibration cylinder, 5 ppm Cl_2 in nitrogen, 58 liter
81-0190RK-04	Calibration cylinder, 5 ppm Cl_2 in nitrogen, 34 liter aluminum

Table 10: Parts List

Part Number	Description
81-0192RK-02	Calibration cylinder, 2 ppm Cl_2 in nitrogen, 58 liter
81-0192RK-04	Calibration cylinder, 2 ppm Cl_2 in nitrogen, 34 liter aluminum
81-0194RK-02	Calibration cylinder, 10 ppm HCl in nitrogen, 58 liter
81-0196RK-02	Calibration cylinder, 10 ppm HCN in nitrogen, 58 liter
81-0196RK-04	Calibration cylinder, 10 ppm HCN in nitrogen, 34 liter aluminum
81-1050RK	Regulator with gauge and knob, 0.5 LPM, for 17 liter and 34 liter steel calibration cylinders (cylinders with external threads)
81-1051RK	Regulator with gauge and knob, 0.5 LPM, for 34 liter aluminum, 58 liter, and 103 liter calibration cylinders (cylinders with internal threads)
81-1185	Calibration cup with 3 foot tube
81-9029RK-02	Calibration cylinder, 100 ppm NH_3 in N_2, 58 liter
81-9029RK-04	Calibration cylinder, 100 ppm NH_3 in N_2, 34 liter aluminum
81-9062RK-04	Calibration cylinder, 5 ppm EtO in air, 34 liter aluminum
82-0003RK	Electrode stack removal tool
82-0101RK	Magnetic wand
82-0300RK	Aluminum oxide powder PID lamp cleaning kit, with electrode stack removal tool, for 10.0 eV and 10.6 eV PID sensors' lamps ONLY