Stationary Gas Monitor

AirAware™

INDUSTRIAL SCIENTIFIC

CORPORATION

Instruction
Manual

OUR MISSION

Design - Manufacture - Sell:
Highest quality products
for the preservation of
life and property.

Provide:
Best customer service
available.

Dear Valued Customer:

Thank you for buying and using the Industrial Scientific AirAware™ Gas Monitor.

The AirAware™ can be relied upon for dependable service, day after day. It has been designed, manufactured, tested and proven under the most scrutinizing conditions possible. With the minimal care and maintenance described in this Instruction Manual, it will provide you with years of reliable monitoring.

I am most concerned that you be pleased with the performance of the AirAware™ in the months and years ahead. I urge you to call us with any questions or comments you may have. Often times a phone call and a question can save you hours of frustration. Please never hesitate to contact me at 1-800-DETECTS (338-3287).

All of us at Industrial Scientific appreciate the opportunity to serve you.

Yours very truly,

Kent D. McElhattan
President & CEO
Industrial Scientific Corporation

Stationery Gas Monitor

AirAware™

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WARNINGS AND CAUTIONARY STATEMENTS

Failure to perform certain procedures or note certain conditions may impairr the performance of the instrument. For maximum safety and performance, please read and follow the procedures and conditions outlined below.

⚠ Sensor openings and water barriers must be kept clean. Obstruction of the sensor openings and/or contamination of the water barriers may cause readings to be lower than actual gas concentrations.

CONFIGURATIONS

All versions include a bright 4 digit LED display as well as low and high visual alarm indication.

MONITOR - 68100056-MXX[1]

Includes on-board audio alarm. Domestic North American version includes wall outlet power pack (120 VAC).

CONTROL - 68100056-CXX[2]

Dual alarm relays can be part of a control system to turn on a ventilation system, activate a remote alarm or shut down a process. Visual alarms are standard. Optional audio alarm is also available.

TRANSMIT - 68100056-TXX[2]

Has the ability to interface with any control device accepting a 4-20 mA signal. Visual alarms are standard. Optional audio alarm is also available.

CONTROL/TRANSMIT - 68100056-CTXX[2]

Combines the functionality of the Control and Transmit instruments. Visual alarms are standard. Optional audio alarm is also available.

[1] *Specifying an "I" after the part number will indicate the selection of the international version of the monitor (without power pack).*

[2] *Specifying an "A" after the part number will indicate the selection on the optional on-board audio alarm.*

UNPACKING THE INSTRUMENT

The shipping box should contain the following items. Account for each item before discarding containers.

QUANTITY	PART NUMBER	DESCRIPTION
1 each	6810 0056-XXX	AirAware Instrument
1 each	6700 1347	AirAware Instruction Manual

NOTE: *Bias sensors (HCl, NH3, NO) are not installed in instruments prior to shipment. Refer to Sensor Replacement section (page 21) for instructions.*

After unpacking, if any item listed is missing, contact either your local distributor of Industrial Scientific products, or call Industrial Scientific Corporation directly at 1-800-DETECTS (338-3287) in the United States and Canada, or (412) 788-4353.

MOUNTING & INSTALLATION

The mounting height of the AirAware is dependent on the gas being monitored and the source of the gas. General mounting guidelines are as follows:

Gas	Heavier Than Air Will collect in low lying areas 3' (1m) above floor	Similar To Air Breathing zone monitoring recommended 3'-6' (1-2m) above floor	Lighter Than Air Will collect in high areas 3' (1m) below ceiling
Ammonia (NH3)			X
Carbon Monoxide(CO)		X	
Chlorine (Cl2)	X		
Chlorine Dioxide (ClO2)	X		
Hydrogen Chloride (HCl)		X	
Hydrogen Cyanide (HCN)			X
Hydrogen Sulfide (H2S)	X		
Nitric Oxide (NO)	X		
Nitrogen Dioxide (NO2)	X		
Oxygen (O2)		X	
Phosphine (PH3)	X		
Sulfur Dioxide (SO2)	X		

With 5 conduit-type knockouts located around the outside edges as well as a back plate knockout for flush mounting, the AirAware offers maximum mounting flexibility. There is even provision for mounting on electrical outlets with 2" and 4" (North American) centers.

To insure there is no damage to the main electronics, it is recommended that the circuit board be removed prior to relieving a knockout or drilling through the pilot points for the flush mount option. Extreme caution should be taken when removing and re-installing the circuit board so as not to damage it.
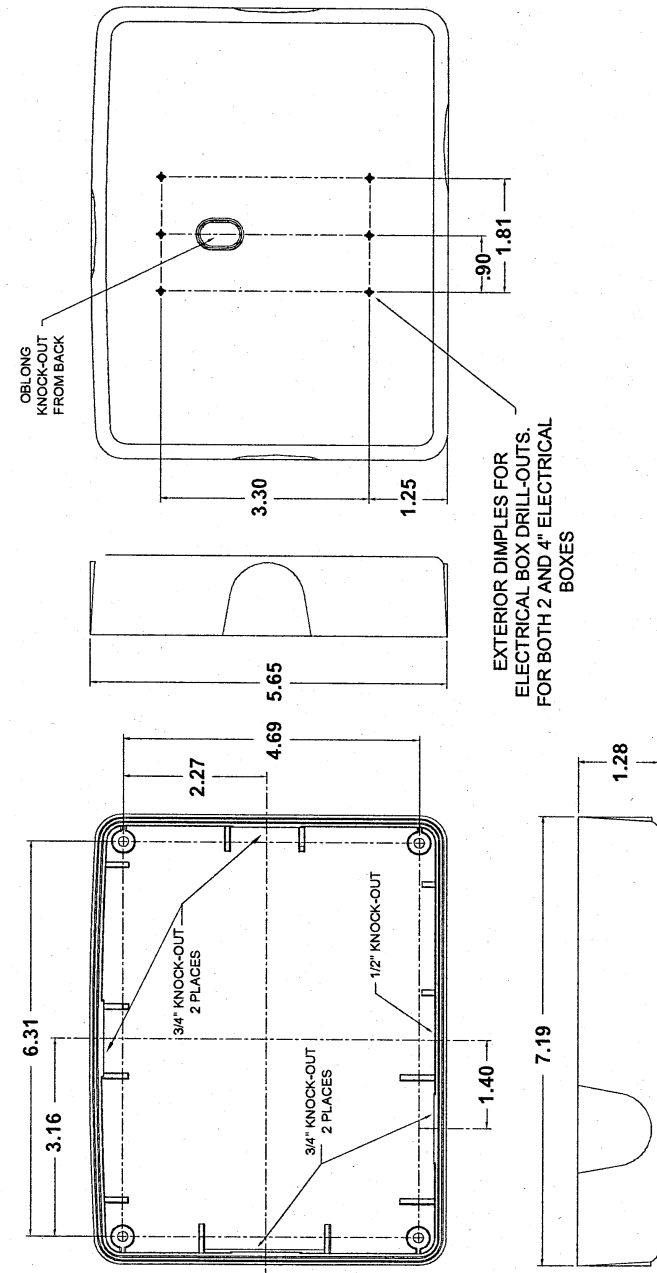
WIRING

Connect only to Class 2 power supply through approved conduit and enclosures in accordance with local authorities having jurisdiction.

Recommended Cable: 3 or 4 conductor (application dependent), 24 AWG, stranded tinned copper, shielded cable Belden #9842 or equivalent.
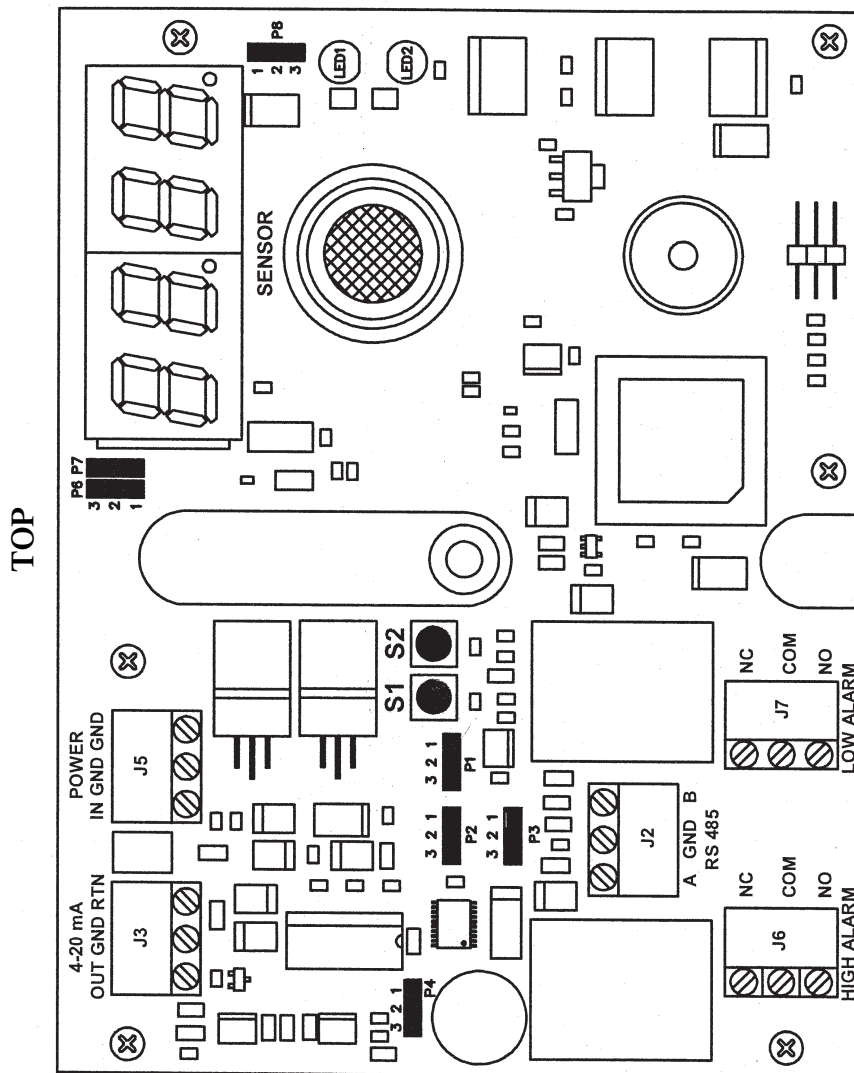
WARM-UP AND OPERATION

All AirAware versions operate on 12-24 VDC. The Monitor version includes a 120 VAC power pack for North American electrical sockets (*not included in the International version*) that supplies 24 VDC to the instrument.

Once powered, the instrument will go through an automatic self-test. During this time it will complete a full display segment test, brief audio and visual alarm test, software version, gas type, configuration M, C, T, CT (*Note: "A" as an indicator of optional audio alarm*) and finally a live continuous display of the gas concentration. During the first three minutes of operation the alarms will not activate and the 4-20 mA signal with be held at 3 mA.***

Each AirAware utilizes electrochemical sensors that may require between 10 and 360 minutes (gas dependent) to stabilize when initially activated. During this warm-up period, the unit may display concentrations of gas and possibly alarm.

During normal operation, the LED display shows:

C1O2, PH3 - 0.0 to 1.0 ppm in 0.01 ppm increments

HCN, HC1 - 0.2 to 30.0 ppm in 0.1 ppm increments

C1 - 0.2 to 50.0 ppm in 0.1 ppm increments

NO2, SO2 - 0.2 to 99.9 ppm in 0.1 ppm increments

NH3 - 4 to 200 ppm in 1 ppm increments

CO, H2S, NO - 0 to 999 ppm in 1 ppm increments

O2 - 0.0 to 30.0% by volume in 0.1% increments

*** *A flashing decimal point on the lower right corner of the display will appear for 3 minutes after start-up, calibration, bump, or programming. This is an indicator that the 4-20 mA signal is locked at 3 mA and that all alarm functions are*
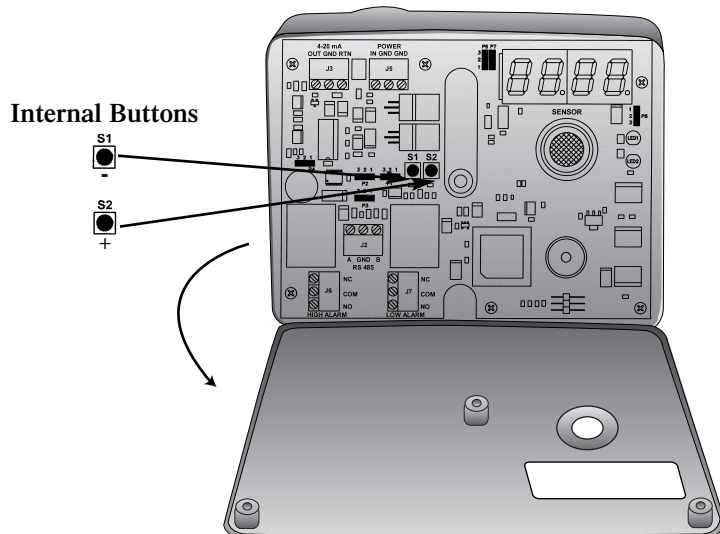
SET-UP MODE

The AirAware™ is a very flexible gas-monitoring instrument with many options. Listed below are the various programming modes and procedures required to select various options.

1. In order to make programming changes, remove the optional vanity plate (if installed) from the face of the instrument by sliding it to the left or right.

Slides
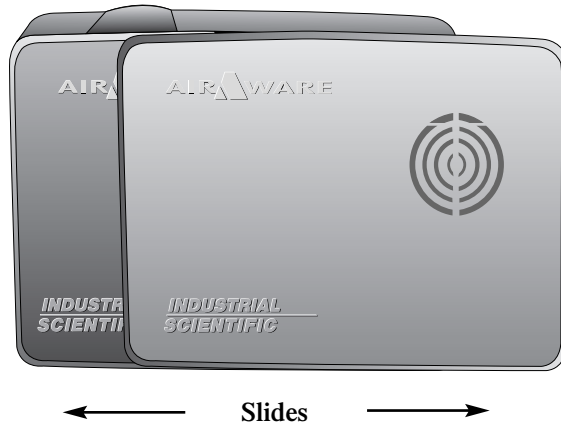
2. Loosen the 5 Phillips head (captive) screws on the faceplate allowing it to hinge downward to provide access to internal **S1** or **S2** buttons. (Labeled S1 and S2.)

Internal Buttons

3. Press and hold both the (ZERO/RESET) and (CAL) keys on instrument faceplate simultaneously for 5 seconds. "Bump" will appear in the display indicating the instrument is now in the Set-up Mode. At this point the alarm relays* are disabled, audio alarms* are disabled, and the current output* locks at 3.0 mA for all gases except oxygen, which goes to 16.0 mA until set-up is complete. If no buttons are pressed within a 3-minute time period, the instrument reverts to normal operation.***

Calibration

Zero/Reset
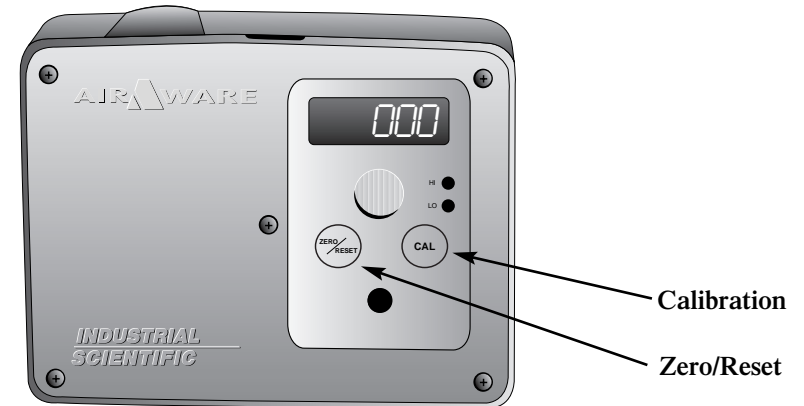
4. Pressing the (CAL) key will advance forward through the various options, while pressing the (ZERO/RESET) key will step backward. The internal keys act as **S1** or **S2** buttons (Page 8) to set the actual set-up values or parameters.

*   *Indication of purchase option.*
** *Will not appear on menu if option not purchased.*
*** *A flashing decimal point on the lower right corner of the display will appear for 3 minutes after start-up, calibration, bump, or programming. This is an indicator that the 4-20 mA signal is locked at 3 mA and that all alarm functions are disabled. Once this flashing indicator clears all functions will return to normal.*

MODE	ACTIONS TAKEN
BUMP	Disables: • Visual alarms • Audio alarm* • Relay contacts* • Freezes 4-20 mA current output*
SENSOR TYPE	Display only of sensor type
LOW ALARM	Set values to activate: • Low alarm visual indicator • On-board audible alarm* • Relay contact #1*
HIGH ALARM	Set values to activate: High alarm visual indicator On-board audible alarm* Relay contact #2*
4-20 mA ON-OFF**	Turn analog out put ON or OFF
4-20 mA Range**	Custom scaling of 4-20 mA signal*
AUDIO ON-OFF**	Enable or disable on-board audible alarm* for gas alarms. Note: Fail and Fault conditions will always activate a pulsing audible alarm.
DISPLAY ON-OFF	Turn display ON or OFF when "ON"
DISPLAY TYPE	Select option for • "SAFE, LOW, HIGH" • "NUMERIC" when "ON"
When "OFF"	Blank display during normal operation. Note: Decimal point illuminated in far left corner of display
RELAY ENABLE/DISABLE	Turns Relays On/Off
SET CAL GAS	Set the calibration gas value
MODBUS ADDRESS	Set ModBus Address
NORM	Return to normal operation mode

Aborting the Set-up Mode is achieved at any time by pressing either the (ZERO/RESET) or (CAL) key to select "NORM" and allowing the unit to sit for 5 seconds. Once in the normal run mode the alarm relays*, audio alarms* and 4-20 mA signal* will be fully functional in 3 minutes.

*   Indication of purchase option.
** Will not appear on menu if option not purchased.
*** A flashing decimal point on the lower right corner of the display will appear for 3 minutes after start-up, calibration, bump, or programming. This is an indicator that the 4-20 mA signal is locked at 3 mA and that all alarm functions are disabled. Once this flashing indicator clears, all functions will return to normal.

BUMP TESTING

This mode disables the audio* and visual alarms, relay outputs*, and freezes the analog output* at 3.0 mA for all gases except oxygen, which goes to 16.0 mA. In this mode, the display alternates between "BUMP" and the actual gas reading every half-second for three minutes. Once the display returns to the normal operation the audio* and visual alarms, relay outputs*, and current output* will return to normal operation after an additional three minutes.

SENSOR TYPE

Identifies sensor type currently installed in instrument.

LOW ALARM SET-UP

This adjustment affects the low alarm visual indicator, on-board audible alarm* and low alarm relay contact*.

When in the low alarm mode, the display scrolls "LOW ALARM XXXX" until either of the internal S1 or S2 buttons are pressed to alter the setting, or 3 minutes elapse, at which time the set-up mode is aborted and the unit returns to normal gas readings. "XXXX" indicates the current set point, and decimals are automatically placed as needed. If the S1 or S2 buttons are pressed during this 3-minute time, the display reverts to a continuous numeric reading, which indicates the new alarm setting. Five seconds after the last S1 or S2 keystroke, the scrolling message commences with the newly selected setting.

*   Indication of purchase option.
*** A flashing decimal point on the lower right corner of the display will appear for 3 minutes after start-up, calibration, bump, or programming. This is an indicator that the 4-20 mA signal is locked at 3 mA and that all alarm functions are disabled. Once this flashing indicator clears, all functions will return to normal.

HIGH ALARM SET-UP

This adjustment affects the high alarm visual indicator, on-board audible alarm* and high alarm relay contact*.

When in the high alarm mode, the display scrolls "HIGH ALARM XXXX" until either of the internal [S1] or [S2] buttons are pressed to alter the setting, or 3 minutes elapse, at which time the set-up mode is aborted and the unit returns to normal gas readings. "XXXX" indicates the current set point. Decimals are automatically placed as needed. If the [S1] or [S2] buttons are pressed during this 3-minute time, the display reverts to a continuous numeric reading, which indicates the new alarm setting. Five seconds after the last [S1] or [S2] keystroke the scrolling message commences with the newly selected setting.

4-20 ON/OFF**

Allows user to turn the 4-20 output signal on or off as required.

4-20 MA RANGE**

This adjustment affects 4-20 mA scaling.

The "4-20 MA RANGE" mode specifies a gas value, from 0 up to the full-scale range, which will represent a full-scale current loop output of 20mA. When in this mode, the display scrolls the message "RANGE XXX" until either of the internal [S1] or [S2] keys are pressed to alter the setting, or until a 3 minute timer expires, at which time the set-up modes are aborted and the unit returns to normal gas readings. "XXX" indicates the 20 mA range.

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*   Indication of purchase option.
** Will not appear on menu if option not purchased.
*** A flashing decimal point on the lower right corner of the display will appear for 3 minutes after start-up, calibration, bump, or programming. This is an indicator that the 4-20 mA signal is locked at 3 mA and that all alarm functions are disabled. Once this flashing indicator clears, all functions will return to normal.

Decimals are automatically placed as needed. If the [S1] or [S2] buttons are pressed during this time, the display reverts to a continuous numeric reading, which indicates the changed setting. Five seconds after the last [S1] or [S2] keystroke, the scrolling message commences with the newly selected setting.

AUDIO ENABLE/DISABLE**

This adjustment affects on-board audible alarm.

The audio enable/disable mode specifies if the audio indicator will activate upon alarm. If disabled, all instances of audio activation will remain active (i.e. Fault and Fail) except for gas alarms. When in this mode, the display scrolls the message "AUDIO ON" or "AUDIO OFF" until either of the internal [S1] or [S2] buttons are pressed to alter the setting, or until a 3 minute timer expires, at which time the set-up mode is aborted and the unit returns to normal gas readings. If the [S1] or [S2] buttons are pressed during this time, the display reverts to a continuous text reading of "ON" or "OFF" which indicates the selected setting. Five seconds after the last [S1] or [S2] keystroke the scrolling message commences with the newly selected setting.

DISPLAY ON/OFF

Allows user to turn the digital display on or off as required. If turned off a decimal point will be continuously illuminated in the bottom right corner of the display to indicate a power on condition. When "OFF" has been selected and the instrument is in the normal run mode, user access to the Set-up mode is achieved by following Set-up procedures.

DISPLAY TYPE

This mode allows the user to select between numeric gas concentrations or a text indication of "SAFE, LOW, HIGH". When in this mode, the display scrolls the message "DISPLAY TEXT" or "DISPLAY NUMERIC" until either of the internal [S1 ●] or [S2 ●] buttons are pressed to alter the setting, or until a 3 minute timer expires, at which time the setup modes are aborted and the unit returns to normal gas readings. If the [S1 ●] or [S2 ●] buttons are pressed during this time, the display reverts to a continuous text reading of "TEXT" or "NUM" which indicates the selected setting. Five seconds after the last [S1 ●] or [S2 ●] keystroke the scrolling message commences with the newly selected setting.

SET CAL GAS CONCENTRATION

Although factory set (see below) the calibration gas value can be user adjusted. When in this mode, the display scrolls the message "CAL GAS XXXX YYY ZZZ" until either of the internal [S1 ●] or [S2 ●] buttons are pressed to alter the setting, or until a 3 minute timer expires, at which time the setup modes are aborted and the unit returns to normal gas readings. If the [S1 ●] or [S2 ●] buttons are pressed during this time, the display reverts to XXXX which indicates the newly selected value. Five seconds after the last [S1 ●] or [S2 ●] keystroke the scrolling message commences with the newly selected setting.

XXXX indicates the gas value

YYY   indicates the unit (ppm for toxics, %VOL for oxygen)

ZZZ   indicates the gas type

STANDARD AIRAWARE CALIBRATION SETTINGS		
CO - 100 ppm	Cl_2 - 10 ppm	ClO_2 - 1 ppm
HCl - 10 ppm	HCN - 10 ppm	NH_3 - 25 ppm
H_2S - 25 ppm	NO - 25 ppm	O_2 - 21.0%
PH_3 - 1 ppm	NO_2 - 5 ppm	SO_2 - 5 ppm

MODBUS ADDRESS

Although factory set to the last 3 digits of the instrument serial number, the ModBus address can be user adjusted. When in this mode, the display shows the current address until either of the internal [S1 ●] or [S2 ●] buttons are pressed to alter the setting, or until a 3 minute timer expires, at which time the setup modes are aborted and the unit returns to normal gas readings. If the [S1 ●] or [S2 ●] buttons are pressed during this time, the display reverts to XXXX which indicates the newly selected value. Five seconds after the last [S1 ●] or [S2 ●] keystroke the scrolling message commences with the newly selected setting.

BACK TO NORMAL OPERATION

Immediately upon selecting Normal Mode, the display reads "NORM" for 5 seconds before exiting the Set-up mode. During this 5-second period, the user can continue to scroll forward or backward into other modes before the normal mode starts. After this point, both the (ZERO/RESET) and (CAL) keys must be pressed to re-enter the Set-up mode.

ALARMS

Once the concentration of gas exceeds the preset alarm level, the AirAware will alarm. In all versions the visual alarm indicators will activate and the LED will flash once per second. For units with on-board audible alarm option,* pressing (ZERO/RESET) while the unit is in alarm will silence the on-board alarm buzzer.

All alarms are non-latching; when the level of gas drops below the alarm point, all alarms automatically switch off.

* Indication of purchase option.

Although field programmable the factory alarm set points are as follows:

GAS	LOW ALARM	HIGH ALARM
CO	35 ppm	70 ppm
Cl_2	0.5 ppm	1.0 ppm
ClO_2	0.3 ppm	0.5 ppm
H_2S	10 ppm	20 ppm
HCl	5 ppm	10 ppm
HCN	5 ppm	10 ppm
NO	25 ppm	50 ppm
NO_2	1 ppm	2 ppm
NH_3	25 ppm	50 ppm
O_2	19.5 % vol.	23.5% vol.
PH_3	0.3 ppm	0.6 ppm
SO_2	2 ppm	4 ppm

Frequent bump testing along with good record keeping will ensure optimum performance of the AirAware.

Alarm Conditions for Different Configurations.

	MONITOR	CONTROL	TRANSMIT	CONTROL/ TRANSMIT
Low Alarm	Flashing "LOW" indicator Low Alarm Audible Alarm	Flashing "LOW" indicator Low Alarm relay switched	Flashing "LOW" indicator mA signal proportional to display	Flashing "LOW" indicator Low Alarm relay switched mA signal proportional to display
High Alarm	Flashing "HIGH" indicator High Alarm Audible Alarm	Flashing "HIGH" indicator High Alarm relay switched	Flashing "HIGH" indicator mA signal proportional to display	Flashing "HIGH" indicator Low Alarm relay switched mA signal proportional to display
Zero Failure	Flashing Display Pulsing Audio Alarm	Flashing Display Pulsing Audio Alarm*	Flashing Display Pulsing Audio Alarm mA signal at old value	Flashing Display Pulsing Audio Alarm mA signal at old value
Instrument Failure	Flashing Display Pulsing Audio Alarm	Flashing Display Pulsing Audio Alarm*	Flashing Display Pulsing Audio Alarm mA signal at 0 mA	Flashing Display Pulsing Audio Alarm mA signal at 0 mA
No Sensor Installed	Flashing Display Pulsing Audio Alarm	Flashing Display Pulsing Audio Alarm*	mA signal at 0 mA Pulsing Audio Alarm	mA signal at 0 mA Pulsing Audio Alarm

Indication of purchase option.

MODBUS INTERFACE

The AirAware is a ModBus RTU compliant instrument. Please consult the factory for detailed information of ModBus registers.

BUMP (FUNCTION) TESTING

Bump (function) testing is the act of applying a known concentration of gas to the monitor and verifying that the instrument is performing properly. There are two common philosophies when it comes to BUMP or FUNCTION testing.

Applying gas to the instrument while in the normal run mode and awaiting a response within the allotted time is easily achieved. When applying gas through the calibration adapter, the unit should respond to 90% of the reading within 2-3 minutes (sensor specific). At this point all on-board and remote alarms should be activated and the 4-20 mA signal should reflect the display reading on the instruments.

If a test of the sensor and display only is required without the activation of on-board or external alarming devices, selecting the "BUMP" option in the Set-up mode disables all alarming functions. At this point, the alarm relays* are disabled, audio alarms* are disabled and the current output* locks at 3.0 mA for all gases except oxygen, which goes to 16.0 mA. Instrument automatically returns to normal operation.

If an instrument fails to operate properly following any bump "functional" test, a full instrument calibration should be performed prior to use. Refer to Section 11 (Calibration) for details.

Test gas kits for all gases, including oxygen, are available from Industrial Scientific; see page 25 for ordering information.
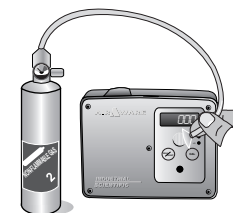
ZEROING

Zeroing an AirAware is the act of setting the instrument to read either 000 ppm or 00.0 ppm (20.9 for oxygen) in a gas/hazard-free environment. The atmosphere must be clean and free from the target gas during the zeroing process.
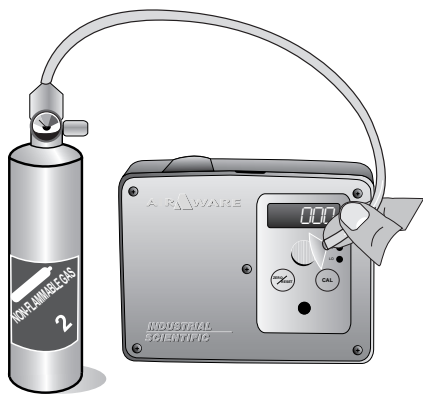
If through ventilation and other measures it is impossible to entirely remove the target gas from your facility, bottled "zero" gas should be applied to the instrument.

Connect the zero gas bottle, regulator, and tubing to the calibration adapter. Connect adapter to sensor opening and open regulator. Allow zero gas to flow for a minimum of 2 minutes.

With the "zero" gas still flowing to the sensor, press and hold the (ZERO/RESET) key for a total of 10 seconds. During the first 5 seconds the normal screen is still displayed. During the next 5 seconds, the text or numeric display flashes once per second. If the key is still held after the full 10 seconds the word "ZERO" is displayed.

*** *A flashing decimal point on the lower right corner of the display will appear for 3 minutes after start-up, calibration, bump, or programming. This is an indicator that the 4-20 mA signal is locked at 3 mA and that all alarm functions are disabled. Once this flashing indicator clears, all functions will return to normal.*

Release the key and the zeroing process begins. At the end of the zero process, the word "PASS" or "FAIL" is displayed for 5 seconds along with a .25 second audible beep, after which time the unit reverts to the normal reading screen. An oxygen sensor will always be zeroed to 20.9%, regardless of what the span gas is set to, and no span reserve is shown for oxygen during zeroing.

If the unit displays "FAIL" do a full calibration of the unit. If the unit fails a full calibration the sensor may need to be replaced. Contact Industrial Scientific Corporation for a replacement sensor; see page 24 for ordering information.

CALIBRATION

Industrial Scientific recommends that a full instrument calibration be performed using a certified concentration(s) of Industrial Scientific branded calibration gas(es) quarterly to ensure maximum accuracy. Use of calibration gases from manufacturers other than Industrial Scientific may void product warranties and limit liability claims against the manufacturer.

Calibrating the AirAware is simply applying a known concentration of gas to the unit, and "telling" the unit to self-adjust to read that concentration. The calibration values are pre-programmed into the instrument in order to simplify the procedure. For details on changing this pre-programmed value, refer to page 14.

STANDARD AIRAWARE CALIBRATION SETTINGS		
CO - 100 ppm	Cl_2 - 10 ppm	ClO_2 - 1 ppm
HCl - 10 ppm	HCN - 10 ppm	NH_3 - 25 ppm
H_2S - 25 ppm	NO - 25 ppm	O_2 - 21.0%
PH_3 - 1 ppm	NO_2 - 5 ppm	SO_2 - 5 ppm

To calibrate the instrument:

• If necessary, connect zero air gas bottle, regulator, and tubing to the calibration adapter.

• Press and hold the (CAL) button. After 5 seconds, the display will blink five times and "Zeroing" will appear on the display. Release the (CAL) button.***

• After the unit fiinishes auto-zeroing, it will display either PASS or FAIL. If teh sensor passes the zeroing function, switch gas cylinders and connect the calibration adapter to the sensor opening and start the flow of gas to the sensor by opening the regulator. Maintain flow of gas to the sensor until the display indicates, "PASS XXX" or "FAIL". During this time the display will flash the SPAN RESERVE value of the sensor. Once calibration is complete, the display will flash "PASS XXX" or "FAIL."

• If the unit indicates "PASS XXX," document the XXX (span reserve) value in your calibration records. Remove calibration gas and disassemble regulator from cylinder.***

• If the unit indicates "FAIL," the display will alternate between "FAIL" and actual readings. The audible alarm will sound every 1/2 second and the 4-20 mA signal will reflect displayed readings.***

Check the following if the unit indicates:

• "Fail"

• Calibration gas cylinder concentration matches the pre-programmed calibration gas settings in the "Set-up" mode.

• Calibration gas cylinder is not empty.

*** *A flashing decimal point on the lower right corner of the display will appear for 3 minutes after start-up, calibration, bump, or programming. This is an indicator that the 4-20 mA signal is locked at 3 mA and that all alarm functions are disabled. Once this flashing indicator clears, all functions will return to normal.*

If the unit fails a second time the sensor may need to be replaced. Contact either your local distributor of Industrial Scientific Corporation instruments or Industrial Scientific directly.

NOTE: Use only Industrial Scientific test gas equipment.
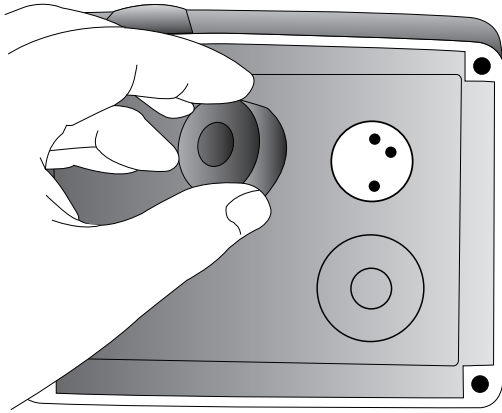
SENSOR REPLACEMENT

Occasionally, AirAware sensors will need to be replaced. Repeated failures of zero, calibration, and bump tests can be indications that the sensor has degraded. Replacement sensors are available from authorized Industrial Scientific distributors. Refer to page 24, Replacement Sensors and Accessories, for part numbers.

To replace a sensor in the AirAware:

• Remove power from the unit.

• Remove the optional vanity plate (if installed) from the face of the instrument by sliding it to the left or right (page 8).

• Loosen the 5 Phillips head (captive) screws on the faceplate allowing it to hinge downward (page 8).

• Unplug the used sensor (page 22) and discard.

• Remove the shorting clip (page 22) or small bias circuit board from the replacement sensor, aligning the holes in the board with the pins on the sensor; plug the new sensor into the instrument.

• Replace cover, and reapply power.

Once powered, the display will briefly show the symbol for the gas being monitored, then a live display of the gas concentration. Each AirAware utilizes electrochemical sensors that may require between 10 and 360 minutes (gas dependent) to stabilize when initially activated. During this warm-up period, the unit may display concentrations of gas and possibly alarm. Allow sufficient time for the instrument to stabilize prior to proceeding.
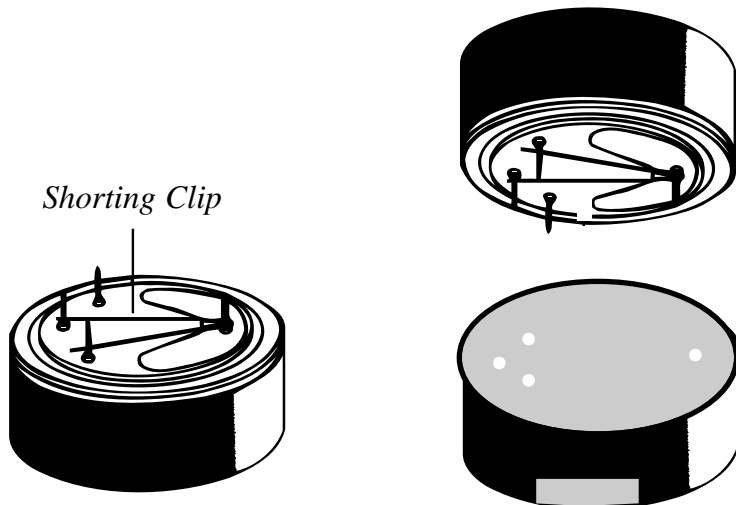
Shorting Clip

Bias Board

SPECIFICATIONS

SIZE:	7.2" x 5.6" x 1.6" (18.29 cm x 14.22 cm x 4.06 cm)
WEIGHT:	17 oz. (482 grams)
DISPLAY:	4 digit high resolution bright led
RELAY RATING:	Two 5-amps 30 VDC, NO and NC
ANALOG OUTPUT:	4-20 mA three-wire interface 1000 ohms @ 24 VDC 500 ohms @ 12 VDC
CURRENT DRAW:	125 mA @ 24 VDC 200 mA @ 12 VDC
DIGITAL OUTPUT:	ModBus RTU
TEMPERATURE RANGE OF OPERATION:	-4°F to 122°F (-20°C to 50°C) Sensor Dependant
RELATIVE HUMIDITY RANGE:	15-90% for Toxics 0-99% for Oxygen
MEASURING RANGE:	ClO_2, PH_3 - 0.0 to 1.0 ppm in 0.01 ppm increments
	HCN, HCl - 0.2 to 30.0 ppm in 0.1 ppm increments
	Cl_2, - 0.2 to 50.0 ppm in 0.1 ppm increments
	NO_2, SO_2 - 0.2 to 99.9 in 0.1 ppm increments
	NH_3 - 4 to 200 ppm in 1 ppm increments
	CO, H_2S, NO - 0 to 999 ppm in 1 ppm increments
	O_2 - 0.0 to 30.0% by volume in 0.1% increments
POWER:	12 - 24 VDC (120 VAC to 24 VDC power pack included with Domestic North America 'Monitor' version only, optional item for all others)
AUDIO ALARM:	85 db at 1 meter

Subject to change without notice.

REPLACEMENT PARTS & ACCESSORIES

Industrial Scientific offers a wide selection of options necessary for optimum AirAware performance. Supplies available for the AirAware include external audible and visual alarms, calibration kits, vanity plates, controllers and many more. Call for available options for your specific configuration.

REPLACEMENT PARTS AND ACCESSORIES

PART NO.	DESCRIPTION
67001198	Vanity plate (option)
67000596	Calibration adapter (adapter only)
67000604	Calibration adapter assembly (includes cal adapter, tubing and reducer)
17106659	Replacement sensor gasket
77021897	Replacement water barrier for sensor opening
67000265	120 VAC to 24 VDC power adapter (North American wall plug)
17099391	Nylon strain relief for AC power adapter
67001123	Replacement Faceplate Screw
67001115	Replacement Faceplate/Keypad
67001131	Replacement Faceplate Hinge Strap

REPLACEMENT SENSORS

PART NO.	DESCRIPTION
17071093	Ammonia Sensor (NH_3)
17051638	Carbon Monoxide Sensor (CO)
17077330	Chlorine Sensor (Cl_2)
17072497	Chlorine Dioxide Sensor (ClO_2)
17066374	Hydrogen Chloride Sensor (HCl)
17070186	Hydrogen Cyanide Sensor (HCN)
17051636	Hydrogen Sulfide Sensor (H_2S)
17071242	Nitric Oxide Sensor (NO)
17060591	Nitrogen Dioxide Sensor (NO_2)
17050129	Oxygen Sensor (O_2)
17077355	Phosphine Sensor (PH_3)
17060575	Sulfur Dioxide Sensor (SO_2)

CALIBRATION KITS & REPLACEMENT CYLINDERS

Industrial Scientific offers a wide selection of calibration kits and regulators necessary for optimum AirAware performance. Call for available options for your specific configuration.

CALIBRATION KITS

PART NO.	DESCRIPTION
18102147	Ammonia Cal Kit (25 PPM 58 liter)
18100743	Carbon Monoxide Cal Kit (100 PPM 34 liter)
68100155	Chlorine Cal Kit (10 PPM 34 liter)
18102148	Hydrogen Chloride Cal Kit (10 PPM 58 liter)
18102149	Hydrogen Cyanide Cal Kit (10 PPM 58 liter)
68100122	Hydrogen Sulfide Cal Kit (25 PPM 34 liter)
68100130	Nitrogen Dioxide Cal Kit (5 PPM 34 liter)
68100221	Oxygen / Zero Air Cal Kit (20.9% O_2 34 liter)
68100148	Sulfur Dioxide Cal Kit (5 PPM 34 liter)

REPLACEMENT CYLINDERS FOR CALIBRATION KITS

PART NO.	DESCRIPTION
18102151	Ammonia Replacement CYL (25 PPM 58 liter)
18100701	Carbon Monoxide Replacement CYL (100 PPM 34 liter)
18105007	Chlorine Replacement CYL (10 PPM 34 liter)
18102154	Hydrogen Chloride Replacement CYL (10 PPM 58 liter)
18102152	Hydrogen Cyanide Replacement CYL (10 PPM 58 liter)
18104984	Hydrogen Sulfide Replacement CYL (25 PPM 34 liter)
18104976	Nitrogen Replacement CYL (5 PPM 34 liter)
18104059	Phosphine Replacement CYL (1 PPM 58 liter)
18104992	Sulfur Dioxide Replacement CYL (5 PPM 34 liter)

Calibration kits include gas cylinder, 0.5 LPM regulator and carry case.

Note: Calibration cup not included.

Urethane tubing required for SO_2, Cl_2, NO_2, NH_3, HCl and HCN gases

*Contains 5-PPM NO_2 gas as a surrogate calibration standard

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All other Industrial Scientific products are warranted to be free from defects in material and workmanship for a period of eighteen (18) months from the date of shipment, or one (1) year from the date of first use, whichever occurs first, except where otherwise stated in writing in Industrial Scientific literature accompanying the product.

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