PureAire monitoring systems, inc.

Air Check✓
O_2 Deficiency Monitor 0-25%

Instruction Manual

For model D **Part number 99018**

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Rev 4.16 August 7, 2026

Welcome to PureAire Monitoring Systems

I'd like to thank you for investing in our continuous life safety and process control toxic gas monitoring systems.

PureAire offers an unbeatable combination of experience and innovation in solving the safety and environmental needs of our customers. We can provide small systems of a few points to a total multi-point turnkey computerized package.

PureAire's proprietary sensor cell technology and state-of-the-art electronics are designed to interface with the latest distributive or PLC based control systems. We believe that our experience, innovative products, and commitment to service will satisfy your specific monitoring needs now and in the future.

Our growth is a result of our total commitment to supporting our customers. We are available 24 hours a day, 7 days a week to help you when you need us. Our 24-hour Emergency phone number is 1-224-443-5445. We can provide field service, preventative maintenance programs and training to your technicians in the operation of our equipment. Our goal is to provide the best after sale service and support in the industry. That is just one way PureAire takes that extra step to ensure your complete satisfaction.

Thank you again for investing in PureAire Monitoring Systems for your monitoring needs and I'm proud to welcome you to our family of valued and satisfied customers.

Sincerely,

Albert A. Carrino
CEO

Please Read Before Installation

The following will damage the Air Check Oxygen monitor.

1. The Air Check O_2 monitor requires **24 VDC regulated power**. **Please Do Not connect** the monitor to any voltage that exceeds 24 Volts DC, or **ANY AC Voltage.**

2. Do not power the Air Check Oxygen monitor with the oxygen sensor unplugged from the main PC board. **Do Not Connect** the O_2 sensor to the PC board while the monitor is powered. This Will Damage the O_2 sensor.

3. The oxygen sensor cell is matched to the electronics. **Never exchange** the electronics with an oxygen sensor from a different monitor.

4. When calibrating or challenging the Air check O_2 Ex monitors,

    a. Do not expose the monitor to flow rates that exceed ½ liter per minute, (500 cc per minute) flow.

    b. Expose the monitor to span gas blends that consist of Oxygen and Nitrogen only. **Do Not expose the monitor to any combustible gas,** i.e., Methane, Hydrogen, etc. Exposure to combustible span gases can damage the oxygen zirconium sensor cell.

5. Do not expose the Oxygen monitor to silicone, Freon, or corrosive compounds. They can cause a loss of sensitivity and damage the sensor.

6. Do not expose the monitor to high flow air or install it directly in front of fans. The high air flow can cool the oxygen sensor and cause an inaccurate reading.

7. When using the Air Check O_2 monitor, Do not expose the oxygen sensor directly to a water stream. In areas requiring wash downs, cover and protect the monitor and power supply. Contact PureAire for details on a waterproof enclosure.

8. The Factory Password for entering the menus is 557

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1: Introduction

The ***Air Check*** ✓O_2 Deficiency Monitor is a compact gas monitoring system that is ideal for the continuous monitoring of inert gas storage areas, confined spaces, and other locations where low oxygen levels may pose a hazard to personnel. Unlike electrochemical sensor cells the ***Air Check*** ✓O_2 zirconium cell provides stable oxygen readings even in areas where temperature and humidity levels are changing. The PureAire ***Air Check*** ✓O_2 Deficiency Monitor is suitable for either indoor or outdoor use*. Factory calibrated against a NIST traceable reference standard and UL, CUL and Ce approved.

The heart of the monitoring system is a long-lasting zirconium sensor, which responds to low oxygen conditions within seconds and provides accurate measurements over a wide temperature and humidity range. The zirconium O_2 sensor cell will operate continuously for 10 or more years and requires an absolute minimum of maintenance. There are no zero or span calibration pots to adjust and when compared to disposable type sensors, our long-life zirconium O_2 sensor can save up to hundreds of dollars in annual maintenance.

Ideal for continuously monitoring oxygen levels in confined spaces or areas where inert gases are used, the ***Air Check*** ✓O_2 Deficiency Monitor does not drift or loose sensitivity when the weather or temperature changes.

Each system consists of a long-life zirconium oxide sensor cell and three-wire transmitter. The ***Air Check*** ✓O_2 monitor may be used as a stand-alone gas detector, linked to optional PureAire single and multipoint controllers, or connected to your own centralized control and surveillance system. This manual covers the installation, operation, and maintenance of the ***Air Check*** ✓O_2 deficiency monitor.

1.1 Key Features

The ***Air Check*** ✓O_2 monitor incorporates several user-friendly features designed to simplify installation, operation, and maintenance.

1.1.1 Long Life Zirconium Oxide O_2 Sensor

The system's O_2 sensor cell has a life of well over 10 years of continuous operation. Unlike concentration O_2 cells, PureAire's exclusive zirconium oxide sensor cell does not need an oxygen reference gas for proper operation. The ***Air Check*** ✓O_2 monitor can detect low oxygen levels in confined spaces and process tools without the need of a reference gas.

1.1.2 Smart Electronics

The ***Air Check*** ✓O_2 monitor incorporates a special electronic circuit that continuously monitors sensor operation. Cell degradation or complete failure will immediately be detected. This smart circuitry alerts the user to sensor faults and other electrical problems that may interrupt surveillance through the standard mA signal output signal or through the optional fault relay.

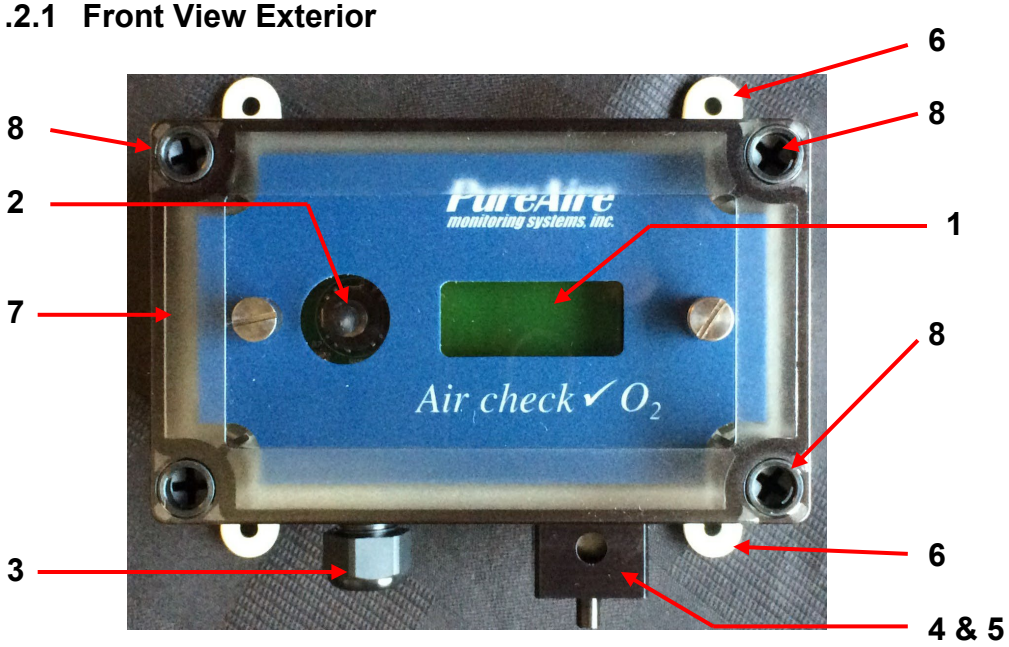
* For washdown areas use p/n 99118

1.1.3 Calibration

The ***Air Check*** ✓O_2 monitor incorporates a stable zirconium oxide sensor that rarely requires calibration. Changing barometric pressure changes or changes in temperature and humidity do not affect the zirconium oxide oxygen cell. The earth is a wonderful source of calibrated oxygen at 20.9%, therefore under ambient conditions visual verification of the ***Air Check*** ✓O_2 monitor to 20.9% oxygen is easily performed. There are no zero or span pots to adjust. The O_2 monitor only requires periodic testing with nitrogen to verify the cells response to low oxygen levels. See Section 6.2 for the testing procedure to nitrogen.

1.2 Component Identification

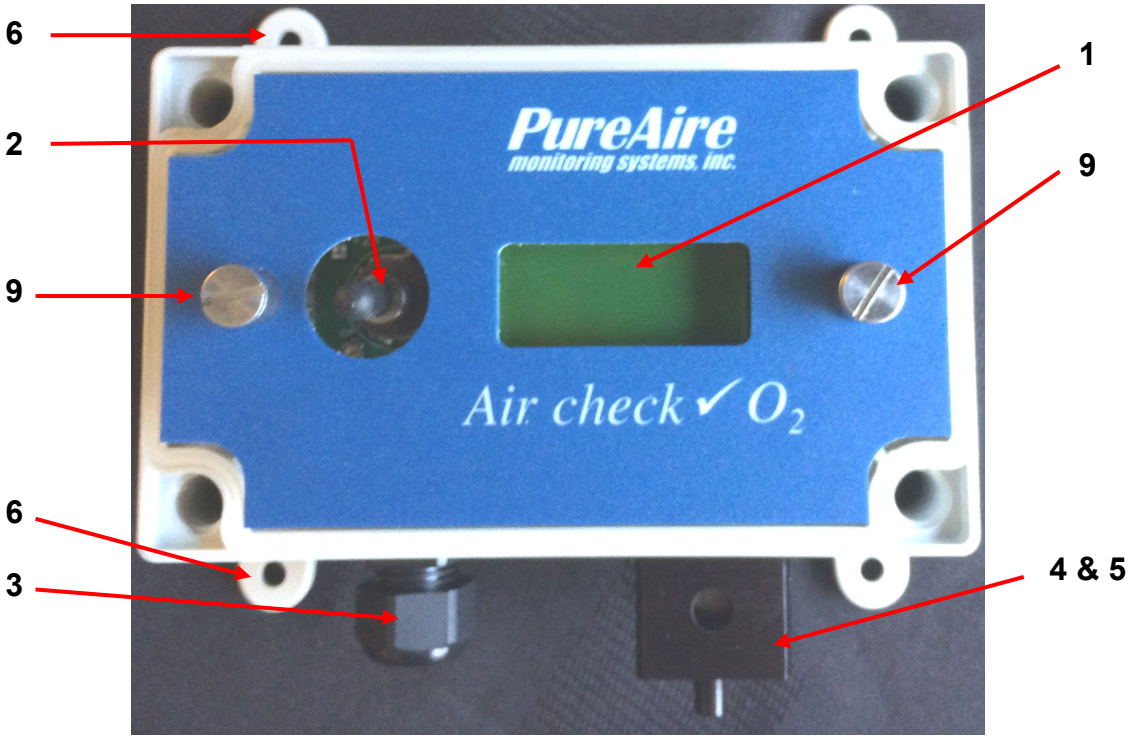
1.2.1 Front View Exterior



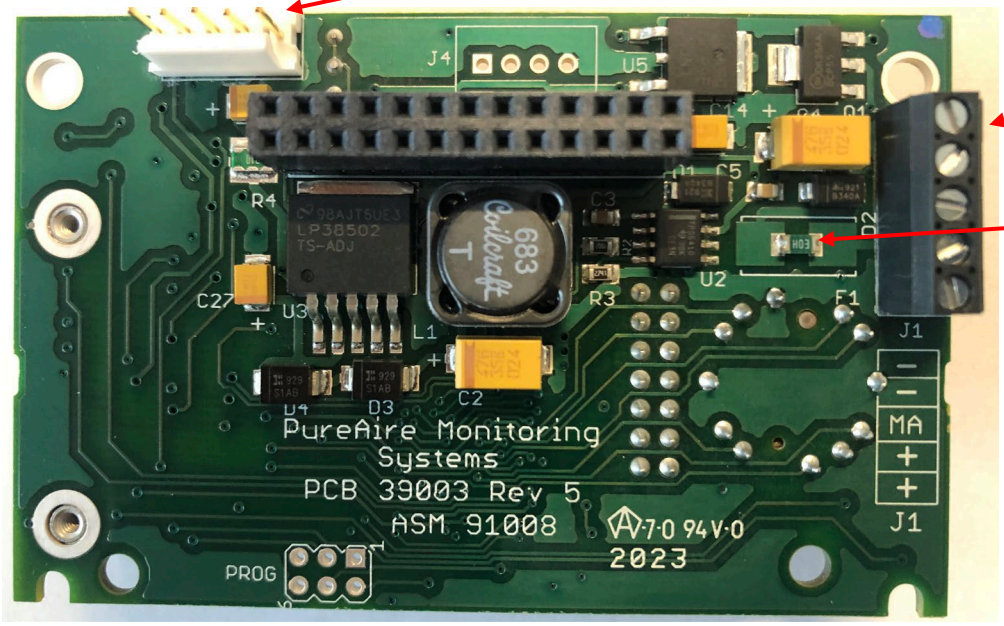
1. **Digital Display** — 3-digit backlit LCD digital display for showing the oxygen levels in percent.
2. **Joystick** — Used for selecting and adjusting the built-in menus. The ***Air Check*** ✓O_2 monitor is available with optional dual level user selectable relays. The joystick is also used to select alarm levels, relay settings and resetting any latching visual and audio alarms.
3. **Cable Port** — This is the opening in the transmitter housing for connecting the 4-20 mA output and 24 VDC power cable.
4. **Sensor Protector**—The O_2 sensor is heated, and the sensor protector shields the cell as well as provides airflow to the cell. It also has a ¼ " diameter tube fitting to permit connecting a nitrogen cylinder for testing the O_2 cell response. **NOTE: The sensor protector will feel HOT to the touch. This is normal.**
5. **Oxygen Sensor** — A zirconium oxide sensor, which detects and measures the level of oxygen. When exposed to oxygen, the sensor outputs an electrical signal proportional to the actual concentration of oxygen.
6. **Mounting Feet** — There are 4 feet used to mount the oxygen monitor to a wall or other flat surface.

7. **Transmitter Cover** — A removable cover that protects the interior of the transmitter.
8. **Transmitter Cover Fasteners** — There are 4 captive screws secure the transmitter cover in place.
9. **Electronics Fasteners** — These captive screws secure the electronics to the enclosure

1.2.2 Front View Exterior



1.2.5 Transmitter Interior

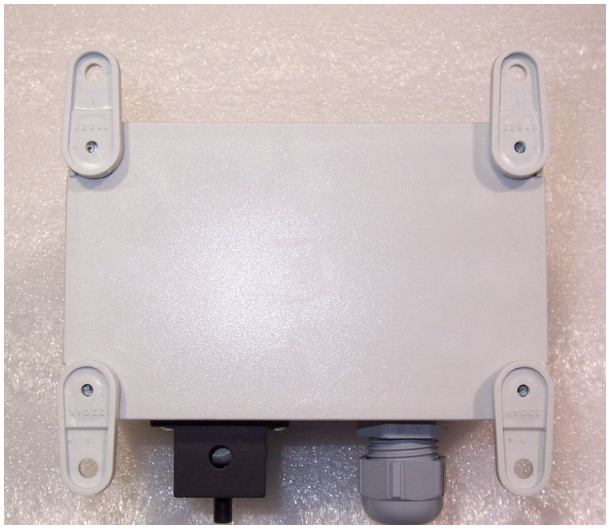


1. **Main Power Terminal Block** — This terminal block is where the main power and 4-20mA analog output connection is made.

2. **Sensor Cell Connector —** This connector is where the Oxygen sensor cell is connected. **NOTE: Never connect the oxygen sensor to this connector while the monitor is powered. This will damage the oxygen sensor**

3. **PTC Resettable Fuse** — The PCB is protected with a PTC Fuse that is resettable and Never needs to be replaced. If it trips, you will need to turn power off to the monitor. When power resumes the fuse will reset.

1.2.8 Enclosure Mounting Feet



Mounting Feet Can be oriented in any direction

Feet can also be removed for mounting the O_2 monitor flush with a wall or other surface

2: Specifications

NOTE: *For our continual product improvement, all specifications are subject to change without notice.*

2.1 Performance Specifications

Sensor Type:	Long Life Zirconium Oxide Sensor Cell **0-25%**
Response Time:	Within 1 second of any change in O_2.
Accuracy:	Delivers ±0.2% O_2 accuracy (± 1% of full scale)
Fault Indicators:	Loss of VDC power (analog signal drops to 0 mA). Sensor cell failure:
Operating Temp:	-40º to 122ºF (-40º to 50ºC); consult PureAire for lower or higher operating temperatures.
Humidity:	0 to 95% RH; consult PureAire for sensors which can operate in 100% condensing RH environments.
UL / CUL listing:	Measuring Equipment E363306
Ce	EN 61000-3-2:2006 EMC, EN 61000-3-3:2008 EMC, EN61010-1-3-2013 LVD

2.2 Gas Detection System

Type:	Long Life Zirconium Oxide Sensor Cell, Range **0-25%**
Sensor Life:	8 to 10+ years under normal conditions.
Transmitter:	Microprocessor electronics with built-in 3-digit backlit LCD display Joystick operated menus

2.3 Signal Outputs

Local Display:	Digital display calibrated for Oxygen. The range is stated on the model label and can also be accessed via the joystick on the front panel. In the measurement mode pushing the joystick down will scroll the gas and range on the display. Push the joystick down again to stop the scrolling and display the gas again.
Standard	Analog Output: DC 4-20 mA

2.4 Electrical Requirements

Power:	24VDC from external power source.
Consumption:	Approximately 250mA

2.5 Physical Characteristics

Dimensions:	5.125 (W) x 3.15 (H) x 3.00 (D) inches; 130 x 80 x 76 mm (Max with feet)
Weight:	1.1 pounds (0.5 kg)
Enclosure Type:	General purpose, Nema 2; not intended for explosive atmospheres.

2.6 AirCheck O_2 System Default Factory settings

The ***Air Check*** ✓O_2 Deficiency Monitor is shipped with factory defaults for the alarm relay settings. The following are the factory defaults:

Menu Function	Factory Default	Menu Defined
Set 4-20mA loop	The mA output is set at the factory using a calibrated Fluke meter.	Use this function to adjust the Oxygen monitors 4mA, (Zero) and 20mA, (Span) to your PLC or distributive control system.
Sensor Adjustment	No factory default	For use when dynamically gas calibrating the Oxygen monitor to a known span gas. See Section 6.2
Manage Passwords	Factory default is **557**	For use when changing the password from factory default to a new password of your choice.
The following	**Formats only used for**	**O_2 Monitors with Alarm Relays**
Set Formats LED and alarm relay State **	Alarm 1 = Normal Alarm 2 = Normal Fault = Normal	Do you want the relays to energize, (normal) or de-energize, (fail safe) when the alarm activates?
Set Alarm Threshold Polarity	Alarm 1 = Inverted Alarm 2 = Inverted Audio = NA	Do you want to alarm at a level higher, (normal) or lower, (inverted) than the alarm threshold?
Set Latching	Alarm 1 = Non-latching Alarm 2 = Non-latching Audio = NA	Do you want the alarm to automatically reset? (non-latching) or do you want to manually reset the alarm? (latching)
Alarm Delay	Alarm = 5 seconds	How long do you want to wait until the alarms activate?
Zero Suppression	000 = 0.00% Refer to section 4.5.6	This function is Not Enabled on the Oxygen monitor.
Set Alarm Thresholds	Alarm 1 = 19.5 % Alarm 2 = 18.0 % Audio = NA	At what level do you want to alarm?
Set Alarm Hysteresis	Alarm 1 = 0.0 % Alarm 2 = 0.0 % Audio = NA	For use when using the O_2 monitor for control of valves and process. See Section 5.5.9

3: Installation

3.1 Site Requirements

The PureAire O2 monitor enclosure should be mounted in an area free of vibration and electrical noise or interference. If possible, avoid areas with high temperatures or condensing humidity.
The oxygen monitor covers a radius of 21 feet and an area of approximately 692 square feet when mounted on a wall. The monitor should be placed no more than 21 feet from potential leak sources such as gas lines, gas cylinders, or any areas where a gas leak might be expected to occur. To ensure safety, the maximum distance between two monitors mounted to the same wall should **not** exceed 21 feet.
When mounting to columns or other internal room locations, the coverage is 1,384 sq ft. The maximum distance between the monitors should **not** exceed 21 feet.
The transmitter and sensor should be installed in a location where gas leaks are likely to occur or where released gases may accumulate. It should be mounted no closer than 12 inches above floor level.

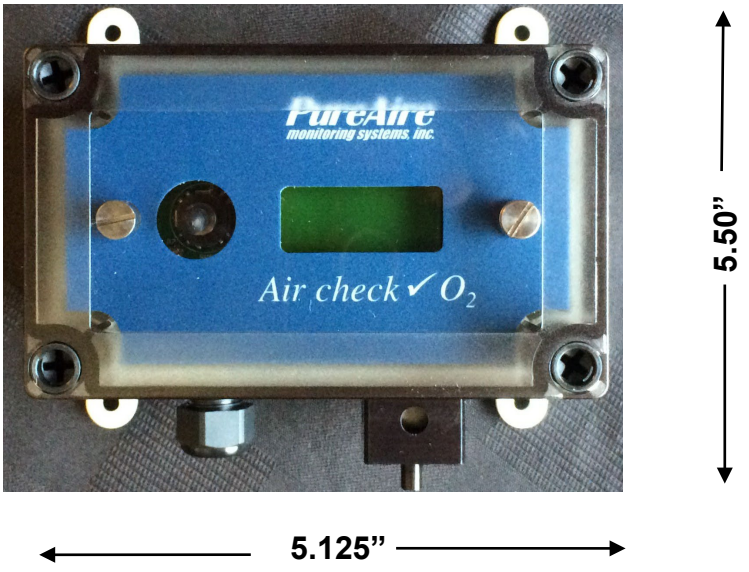
Airflow within the monitored area, the characteristics of the gas (lighter or heavier than air), and the position of workstations and personnel should all be considered in determining the most suitable installation location.

> **WARNING:** *The* **Air Check** ✓ *O_2 monitor is not designed for installation in hazardous areas. Consult PureAire for information on enclosures for use in hazardous environments.*

3.2 Mounting

3.2.1 Transmitter Enclosure

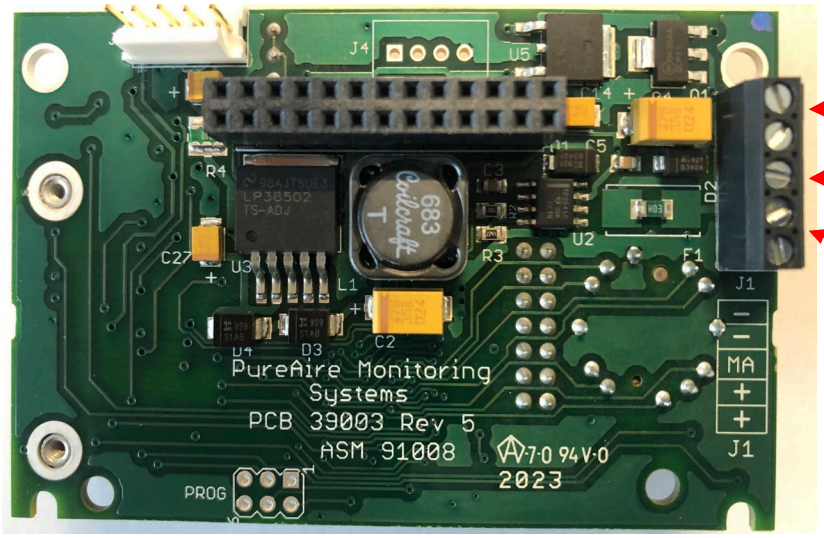
The ***Air Check*** ✓O_2 monitor is designed primarily for wall mounting and should be installed at a height convenient for operation, maintenance, and viewing of the instrument display. The following is a drawing of the mounting dimensions.



3.3 Wiring

The ***Air Check*** ✓ O_2 monitor requires a single, 3-wire shielded cable for analog output and 24 VDC power input. A three-wire shielded cable; 3-conductor, 18 AWG stranded General Cable E2203S.30.860, or equivalent is recommended for the connection. The analog out and VDC power in connections are made on the terminal block inside the transmitter housing.

These connections are made as follows:



- Common
- Common

mA* 4-20mA signal output to PLC

\+ 24VDC Power
\+ 24VDC Power

Identification Legend

PureAire provides the plug-in power supply

*** Caution: DO NOT connect to a powered current loop receiver. The Air Check Oxygen monitor supplies the current loop power.**

3.4 Initial Startup

Once installation of the gas detector has been completed, it is ready for startup. The following procedures should be performed before putting the instrument into operation:

1. Check the integrity of all wiring.
2. Apply VDC power.

The instrument should now be powered up. Upon power up, the ***Air Check*** ✓ O_2 monitor LCD displays the PureAire logo and then starts a 4-minute, (240 second) count down as the current to the zirconium oxide O_2 sensor stabilizes. The monitor will output a 4-mA signal during the entire warm-up period. After the countdown, the oxygen sensor will continue to reach its operating temperature for approximately 30 minutes and the reading displayed will slowly increase to ambient. **Do not make any adjustments to the reading until after the monitor has been powered for at least an hour.**

Oxygen 239 WARM

NOTE: The ***Air Check*** ✓ O_2 monitor's reading may be adjusted to the ambient oxygen level. See section 6.1 for instructions on adjusting.

4: Normal Operation

The ***Air Check*** O_2 monitor is a single point monitor designed for the continuous detection and measurement of ambient oxygen concentration levels.

4.1 Signal Outputs

The ***Air Check*** ✓ O_2 monitor outputs a continuous 4-20 mA analog signal proportional to the measured concentration of oxygen. 4 mA represents 0% O_2 and 20 mA represents 25% O_2 which is the full range. In the event of a system fault, a specific factory defined code will be displayed on the local digital display. This code will indicate the exact nature of the system fault.

CAUTION: DO NOT connect to a powered current loop receiver. The Air Check Oxygen monitor supplies the current loop power.

4.2 Instrument Faults

The ***Air Check*** ✓O_2 monitor incorporates several self-checking features to ensure reliable operation. If a fault condition is detected, the analog output signal is altered: A few common error codes are displayed in the following table:

Condition	Analog Signal
Supply Voltage Out of Range Fault code 16	Analog output drops to 2 mA
Transmitter cable cut	Analog output drops to 0 mA
O_2 Cell complete failure Fault Code 128	Analog output drops to 2 mA Fault Relay activates (Available with Relay Option Only)
O_2 System Warm Up	Analog output drops to 2 mA Fault Relay activates and turns off when system is in the Oxygen operation mode (Available with Relay Option Only)
O_2 Cell voltage fault Fault Code 64	Analog output drops to 2 mA Fault Relay activates (Available with Relay Option Only)
EEPROM Fault 08	Analog output drops to 2mA

NOTE: All system faults are displayed on the front panel. Each fault has its own specific code to identify the specific problem. Please contact PureAire whenever a fault is displayed.

NOTE: *If a Fault condition clears itself, the Fault message will continue to scroll until manually cleared.*

To clear the fault message, ***push the joystick down*** ↓ ***(- Minus)***

4.3 Routine Maintenance Schedule

Continuous gas detection systems depended upon to measure and detect hazardous gas leaks in the workplace requires periodic maintenance to ensure proper operation. The frequency with which this routine maintenance is required depends on the environment. The following table is intended to serve as a general guideline for routine maintenance. The conditions in your particular application, as well as your organization's maintenance policies, will ultimately determine the best routine maintenance schedule for your equipment. Routine Visual Checks

Items to check	Check for power and proper operation
Condition / status when operating properly	Unit should be outputting a 17.4 mA signal when the oxygen level is at 20.9%. The LCD digital display should also indicate 20.9% 0_2 when the oxygen is at ambient levels.

4.3.2 Recommended Routine Maintenance Schedule

Routine Visual Checks	Every 6 months
Sensor Verification with nitrogen	Every 6 months**

** The ambient oxygen level is 20.9%; therefore, under ambient conditions visual verification of the ***Air Check*** ✓O_2 monitor to 20.9% oxygen is constantly being performed. The O_2 monitor only requires periodic testing with nitrogen to verify the cells response to low oxygen levels. See Section 5.5.10 for how to make minor adjustments.

4.4 Loss of Power Indicator

In the event the ***Air Check*** ✓O_2 monitor loses 24VDC power, the 4-20 mA analog output signal drops to 0mA. The LCD display will also display a blank screen.

4.5 Alarm Reset (Only available on monitors with Relay and Alarm PCB)

It the Air ***Check*** ✓O_2 monitor is supplied with the optional alarm relays, whenever the monitors alarms are activated, the built-in alarm relays, panel mounted LED's and optional audio horn will also activate. When the relay settings are non-latching, the alarm relays, LEDs, and horn will automatically reset. If the relay settings are latching, then a manual reset of the alarms are required. Resetting the alarms can be performed through use of the joystick or using the remote reset function.

Joystick – You must enter the password to enter the reset function. After the password is entered and accepted, push the joystick in; (enter) to reset the alarms.

Remote Reset – See section1.2.7. The alarm relay board has a two-pin connector for wiring to a remote switch. When connected to a switch, this remote reset will bypass the joystick and a password will not be needed to reset the alarms.

NOTE: The oxygen levels must recover above the alarm thresholds before the horn can be reset from the remote reset switch or joystick.

5: *Air Check* ✓O_2 Monitor Programming

The ***Air Check*** ✓O_2 Deficiency Monitor is supplied with user selectable settings to adjust the alarm settings, 4 and 20mA output and minor sensor adjustments. The settings are arranged in menus that are accessed by moving the joystick. To access the menus a factory set password is used.

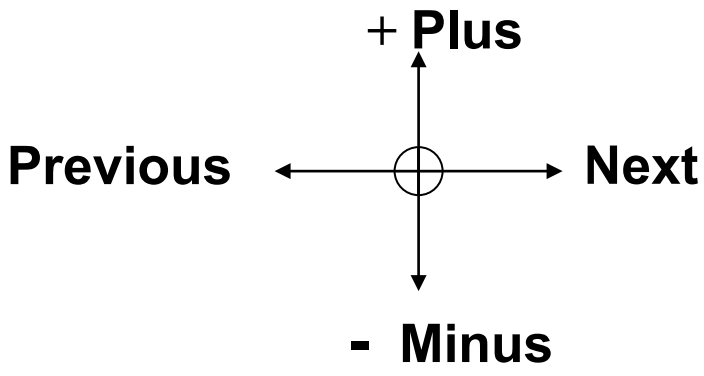
NOTE: The **Air Check** ✓O_2 Deficiency Monitor will continuously monitor oxygen while accessing the menus. **The alarm, fault relays and mA output are all active and online while making any changes to the menus.**

5.1 Joystick Operation

The ***Air Check*** ✓O_2 monitor uses a 4-position joystick with a center pushbutton for selecting menus and changing values. The joystick is programmed to standard protocol as follows:

NOTE: *The joystick has a built-in delay to prevent accidental tampering of the menus. deliberate entries are required.*

CAUTION: *Only qualified personnel should perform programming, maintenance, and sensor verification*



Plus – Pushing the joystick in this direction increases the value

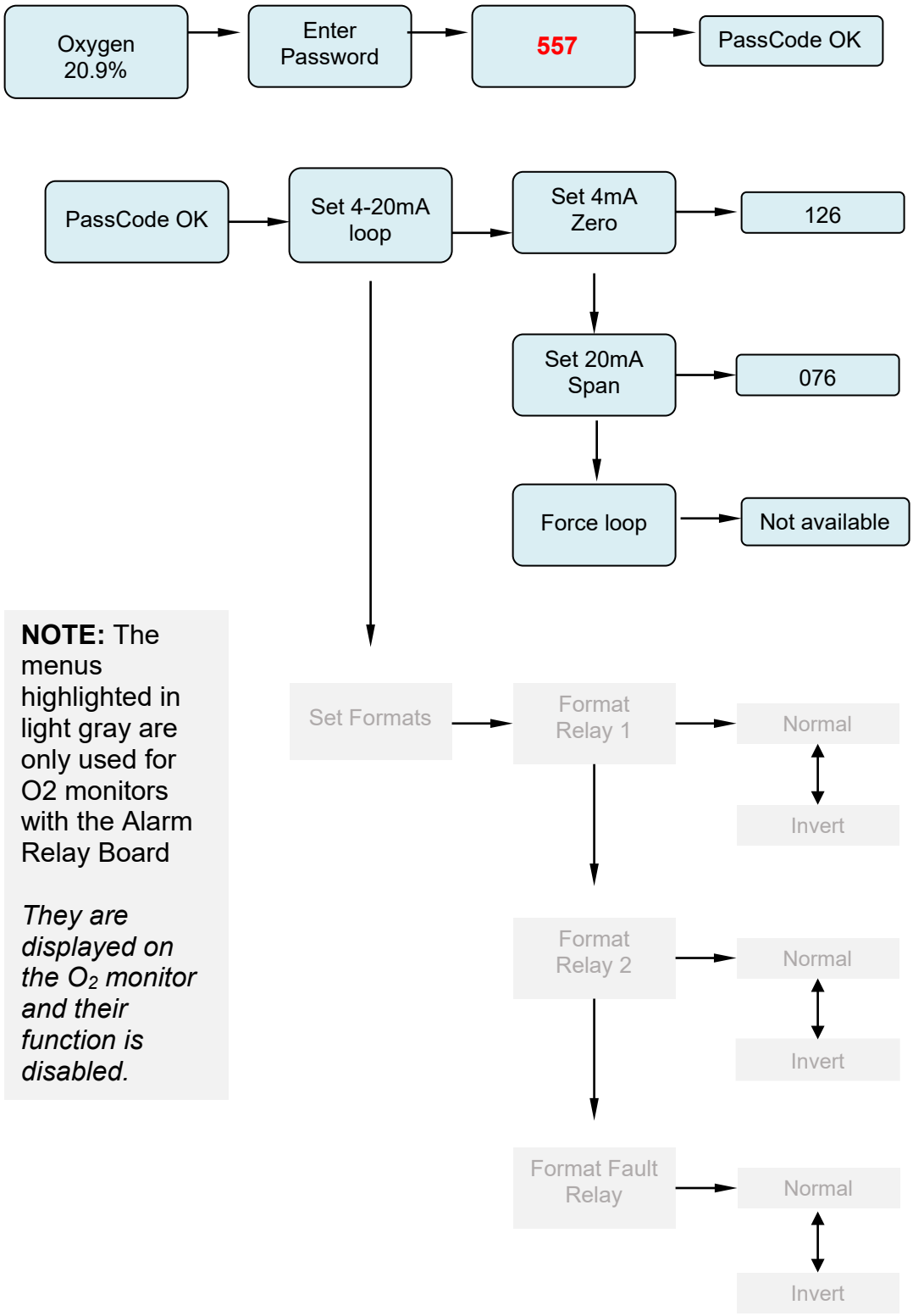
Minus – Pushing the joystick in this direction decreases the value

Next – Pushing the joystick in this direction moves you to the next level of the menu hierarchy.

Previous – Pushing the joystick in this direction takes you out to the last level of menu hierarchy.

Enter – Pushing the joystick directly in the center enters the information into the microprocessor

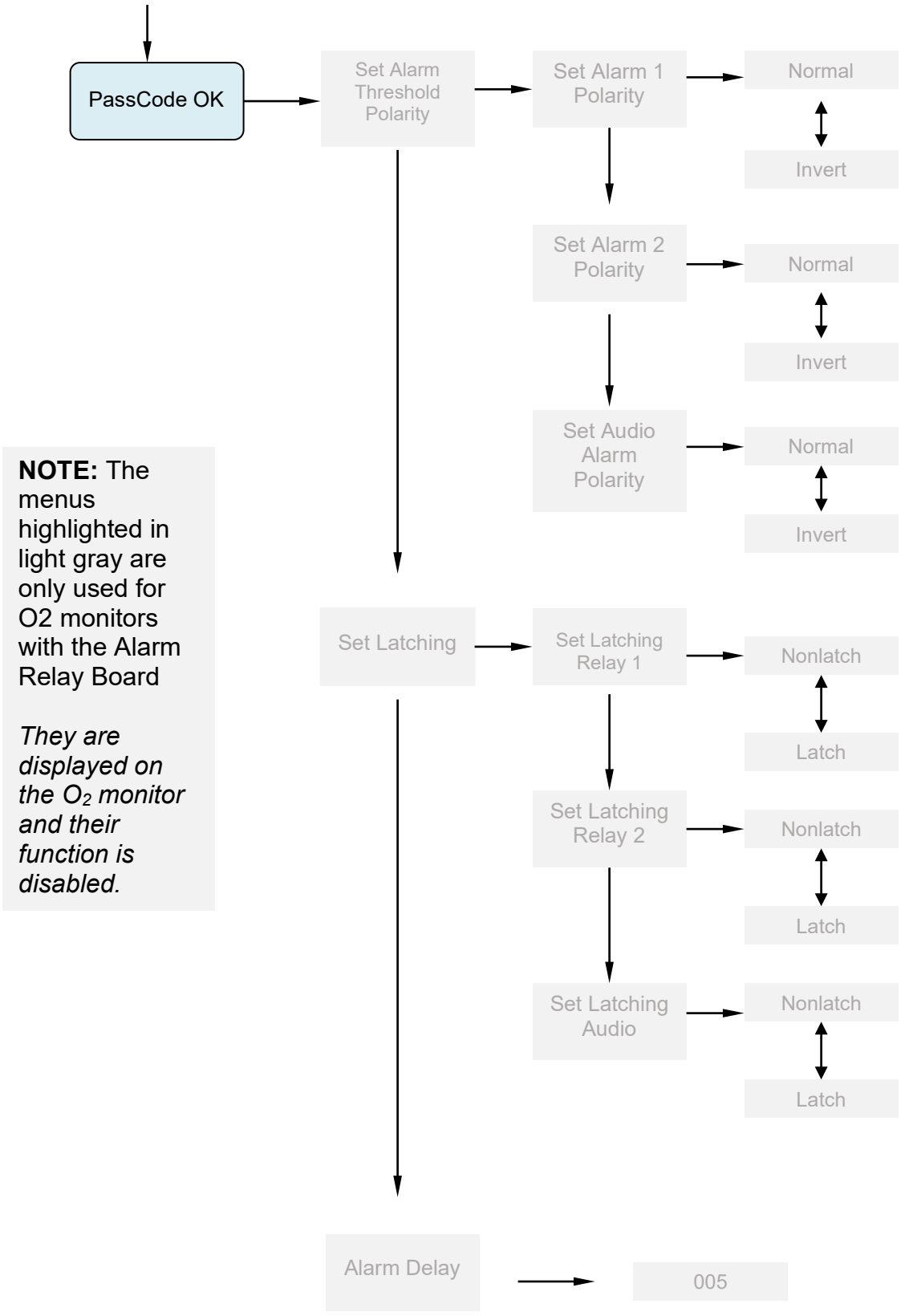
5.2 Program Flowchart



NOTE: All numerical values shown are only examples and are not Factory Defaults

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.



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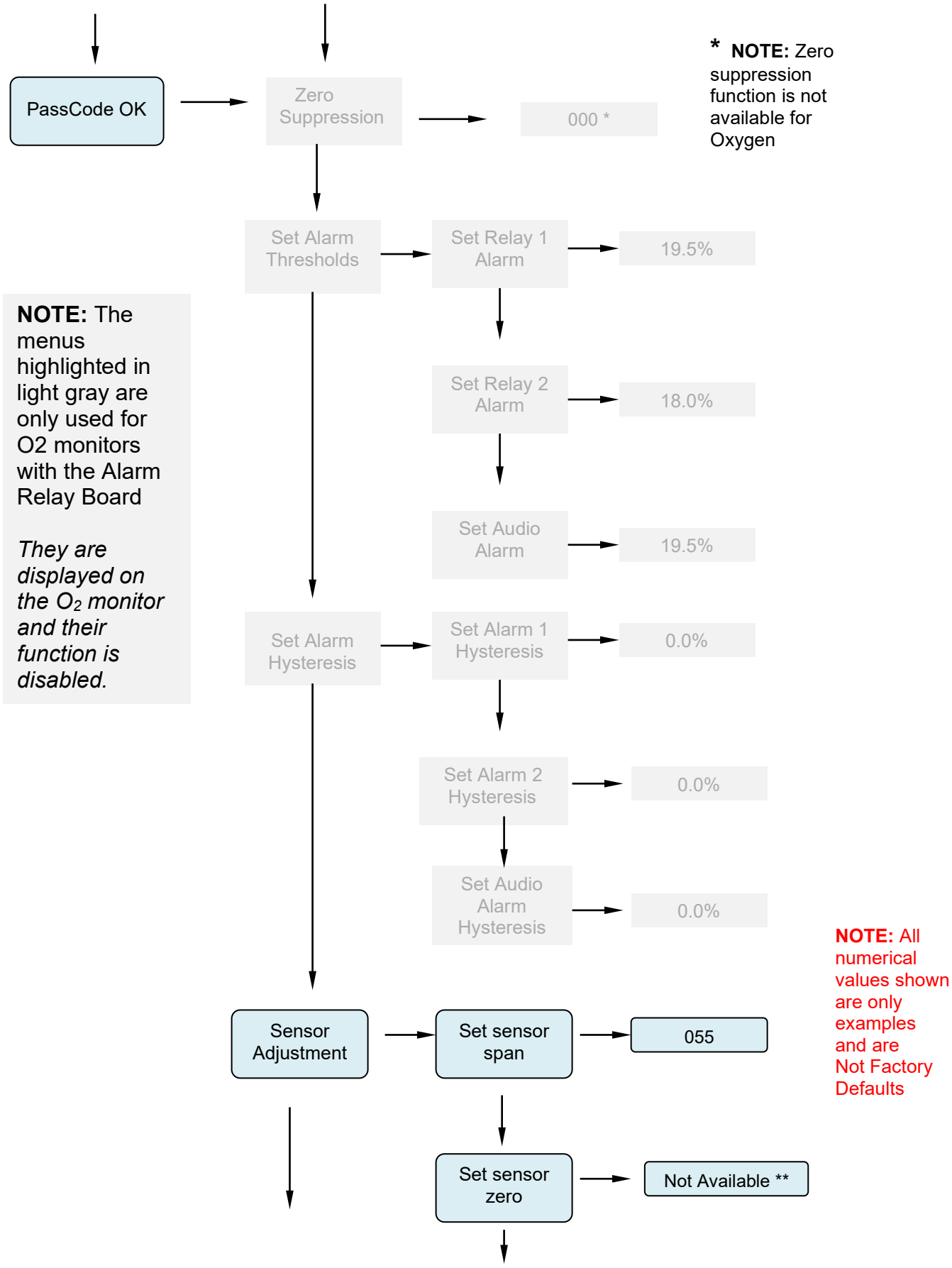
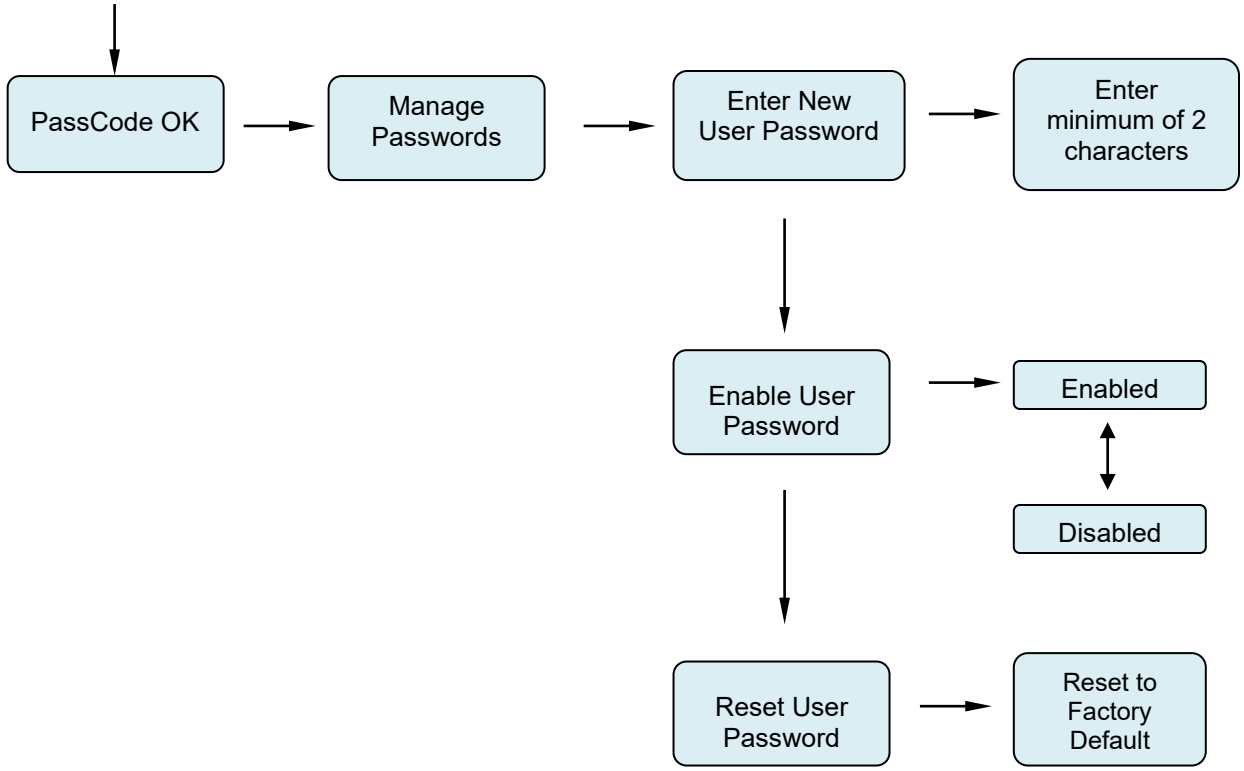


* **NOTE:** Zero suppression function is not available for Oxygen

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

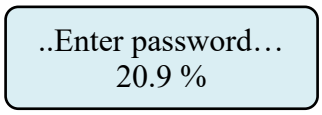
NOTE: All numerical values shown are only examples and are Not Factory Defaults


PassCode OK
Manage Passwords
Enter New User Password
Enter minimum of 2 characters
Enable User Password
Enabled
Disabled
Reset User Password
Reset to Factory Default

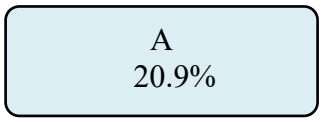
5.3 Entering the Password

The Air Check Oxygen monitor is supplied with a factory set password to prevent unauthorized access to the menus. **The Password is 557.** The following explains how to enter the password.

1. Push the joystick once to the right. **Enter Password** will scroll on the first line of the digital display. The second line will still display the current oxygen level.

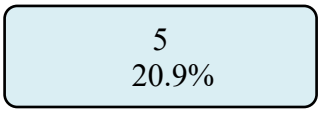


2. Push the joystick again once more to the right to enter the input screen. **The letter A will appear and flash.**

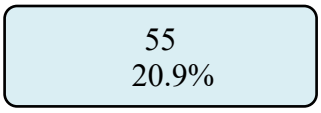


NOTE: *The display has characters that start with A through Z and 0 through 9. Pushing the joystick up or down will permit you to scroll through the alphanumeric characters.*

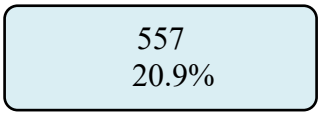
3. Push the joystick up or down to enter the first digit. The display is an alphanumeric display and toggles from A through Z followed by 0 to 9. The character to be entered will flash.



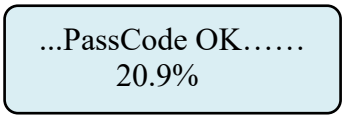
4. Push the joystick again to the right to select the second entry. Push the joystick up or down to select the second digit. The character being entered will flash and the first character entered will remain lit.



5. Push the joystick again to the right to select the third entry. Push the joystick up or down to select the third and final digit. The character being entered will flash and the first and second characters entered will remain lit. You are now ready to enter the 3-digit password.



6. Push the joystick in the center to enter the password. If you entered it correctly the display will scroll **Password OK.**

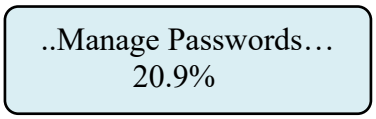


NOTE: If an incorrect password has been entered, the display will indicate Password Failed. Push the joystick to the left to access the monitoring mode. From this mode you can reenter the password again.

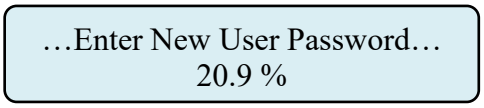
5.4 Changing the User Password

The Air Check Oxygen monitor is supplied with a factory set password to prevent unauthorized access to the menus. The user can change this password and the following explains how to change the password.

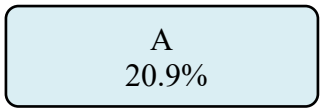
1. Push the joystick down to access the **Manage Passwords Menu**. **Manage Passwords** will scroll on the first line of the digital display. The second line will still display the current oxygen level.



2. Push the joystick to the right to enter the input screen. **Enter New User Password** will scroll on the first line of the digital display

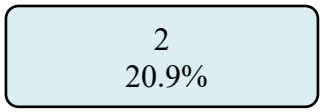


3. Push the joystick to the right to enter the input screen. **The letter A will appear and flash.**

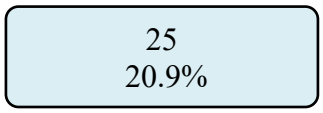


NOTE: *The display has characters that start with A through Z and 0 through 9. Pushing the joystick up or down will permit you to scroll through the alphanumeric characters.*

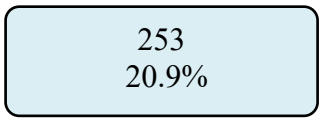
4. Push the joystick up or down to enter the first digit. The display is an alphanumeric display and toggles from A through Z followed by 0 to 9. The character to be entered will flash.



5. Push the joystick again to the right to select the second entry. Push the joystick up or down to select the second digit. The character being entered will flash and the first character entered will remain lit.

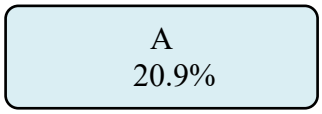


6. Push the joystick again to the right to select the third entry. Push the joystick up or down to select the third and final digit. The character being entered will flash and the first and second characters entered will remain lit. You are now ready to enter the 3-digit password.

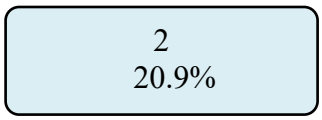


7. Push the joystick in the center to enter the password. This will display the next command, **Re-Enter New Password**

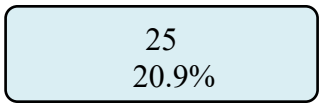
8. Push the joystick to the right to enter the input screen. **The letter A will appear and flash.**



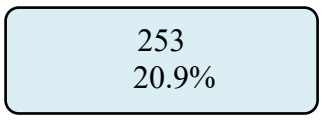
9. Push the joystick up or down to enter the first digit. The display is an alphanumeric display and toggles from A through Z followed by 0 to 9. The character to be entered will flash.



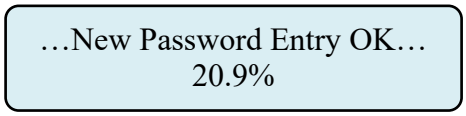
10. Push the joystick again to the right to select the second entry. Push the joystick up or down to select the second digit. The character being entered will flash and the first character entered will remain lit.



11. Push the joystick again to the right to select the third entry. Push the joystick up or down to select the third and final digit. The character being entered will flash and the first and second characters entered will remain lit. You are now ready to enter the 3-digit password.



12. Push the joystick in the center to enter the password. If you entered it correctly the display will scroll **"New Password Entry OK".**



NOTE: If on the second entry the password entered was different from the first, the display will take you back to the "Re-enter Password Screen". You'll need to repeat steps 2 through 11. If you do not enter the password correctly, the monitor remembers the last password that was properly input.

5.4.1 Enable User Password

This menu permits the user to activate or disable the password function on the Oxygen monitor. Push the joystick down. **"Enable User Password"** will scroll on the first line of the digital display

…Enable User Password… 20.9%

Push the joystick right to display the status. If enabled it will display **"Enabled"**

Enabled 20.9%

Push the joystick up or down to change the status. Once enabled or disabled is selected, Push the joystick in the center to enter the new status. If correctly entered the display will scroll **"Enable User Password"**

…Enable User Password… 20.9%

5.4.2 Reset User Password

This menu permits you to reset the password back to **557, as set at the factory.**

…Reset User Password… 20.9%

Push the joystick right to display the menu, **"Reset to factory Default".**

…Password Reset to factory Default… 20.9%

Push the joystick in, (like a doorbell) to reset the password back to 557.
Push the joystick left 4 times to go back to the measuring mode.

NOTE: If you lose your password please contact PureAire with your serial number or DTM number

Oxygen 20.9%

5.5 Entering the Menus

The ***Air Check*** ✓O_2 monitor is supplied with main menus with sub menus to adjust mA outputs, alarm relay settings, sensor adjustments and zero suppression for toxic and corrosive gas sensor cells.

5.5.1 Set 4-20mA loop

.Set 4-20mA loop..
20.9%

This main menu will permit the adjusting of the 4mA and 20mA output from the Air Check O_2 Monitor. It also provides a function that will send an actual output between 4mA and 20 mA to test any remote control and alarm system attached to the O_2 monitor.

NOTE: *To read the mA output, Air Check O_2 monitor must either be connected to a remote PLC controller or SCADA system. You can also connect the Air Check O_2 monitor to a volt meter to read the mA output. Please consult PureAire for more information.*

From this main menu, pushing the joystick to the right will select the sub menu and the digital display will scroll the following:

..Set 4mA zero…
20.9%

This is the menu at which to adjust the 4mA output being sent from the Air Check O_2 Monitor.

To change this value, push the joystick right to display the 4 mA setting. The display will indicate a value between 0 and 255 counts. Pushing the joystick up increases the value and pushing the joystick down decreases the value. The 4mA output being sent from the Air Check O_2 monitor will change as the number on the digital display changes. Press **ENTER** to accept the value.

255
20.9%

Push the joystick to the left brings you back to the pervious Main menu. The digital display will scroll the following:

...Set 4mA zero…..
20.9%

Push the joystick down to access the next sub menu; **Set 20mA Span will scroll.**

...Set 20mA Span…
20.9%

This is the menu at which to adjust the 20mA output being sent from the Air Check O_2 Monitor.

To change this value, push the joystick right to display the 20mA span setting. The display will indicate a value between 0 and 255 counts. Pushing the joystick up increases the value and pushing the joystick down decreases the value. The 20mA output being sent from the Air Check O_2 monitor will change as the number on the digital display changes. Press **ENTER** to accept the value.

255
20.9%

Push the joystick to the left brings you back to the pervious Main menu. The digital display will scroll the following:

...Set 20mA span…..
20.9%

Push the joystick down to access the next sub menu; **Force loop will scroll.**

….Force Loop….
20.9%

NOTE: The Force Loop function is not available on the Air Check O_2 monitor. It was designed for toxic and corrosive gases.

This is the sub menu is only used on PureAire's toxic and corrosive monitors.

…Not Available..
20.9%

Push the joystick to the left brings you back to the pervious menu. The digital display Will scroll the following:

...Force Loop…..
20.9%

NOTE: When adjusting the 4 mA and 20mA settings, the actual reading may quickly switch from your setting and an alternate number. This is a run time indication and is normal.

5.5.2 Set Formats *(Only available on O_2 monitor with Relays)*

This is the menu at which to adjust the relay states for the two gas alarm relays and the individual instrument fault relay.

NOTE: *The O_2 system must have the relay module installed to access this menu. If no relay module is installed the display will indicate N/A, (not available)*

Push the joystick down to access the next main menu, **Set Formats.** The display will scroll the following:

…Set Formats…
20.9%

This menu will permit the setting of the two alarm relays and the fault relay settings from normally de-energized state, **Normal**, to normally energized state, **Inverted.**

From this main menu, pushing the joystick to the right will select the sub menu and the digital display will scroll the following:

..Format Relay 1…
20.9%

This is the menu at which to adjust the first level alarm relay state on the Air Check O_2 Monitor.

To change this value, push the joystick right to display the relay state. The display will Indicate **INVERT.** Pushing the joystick down will change the relay state from INVERT to NORMAL. Press **ENTER** to accept the value.

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

INVERT
20.9%

↕

NORMAL
20.9%

After entering the relay state, the display will default back to the Set Formats menu. The display will scroll the following:

..Set Formats…
20.9%

From this main menu, pushing the joystick to the right will select the sub menu and the digital display will scroll the following:

..Format Relay 1…
20.9%

Push the joystick down to access the next main menu, **Set Formats.** The display will scroll the following:

… Format Relay 2..
20.9%

This is the menu at which to adjust the second level alarm relay state on the Air Check O_2 Monitor.

To change this value, push the joystick right to display the relay state. The display will Indicate **INVERT.** Pushing the joystick down will change the relay state from INVERT to NORMAL. Press **ENTER** to accept the value.

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

INVERT
20.9%

NORMAL
20.9%

After entering the relay state, the display will default back to the Set Formats menu. The display will scroll the following:

..Set Format …
20.9%

From this main menu, pushing the joystick to the right will select the sub menu and the digital display will scroll the following:

..Format Relay 1…
20.9%

Push the joystick twice to select the fault relay to be adjusted. The display will scroll; **Format Fault Relay.**

..Format Fault Relay...
20.9%

This is the menu at which to adjust the fault alarm relay state on the Air Check O_2 Monitor.

To change this value, push the joystick right to display the relay state. The display will Indicate **INVERT.** Pushing the joystick down will change the relay state from INVERT to NORMAL. Press **ENTER** to accept the value.

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

INVERT
20.9%

NORMAL
20.9%

After entering the relay state, the display will default back to the Set Formats menu. The display will scroll the following:

..Set Formats...
20.9

5.5.3 Set Alarm Threshold Polarity *(Only available on O_2 monitor with Relays)*

Alarm Threshold Polarity determines if an alarm concentration is set above or below a threshold value. For example, if an alarm of 19.0% for Oxygen is selected, the Alarm Threshold Polarity must be set to **Invert** for the monitors alarm to activate when the reading goes below 19.0%. For toxic and corrosive gases selecting a **Normal** setting for the Alarm Threshold Polarity means that the system will alarm when the gas concentration exceeds, goes above, an alarm set point. This menu will permit the selection of the alarm polarity. To access this menu from the "Set Formats" menu, push the joystick down to display the **Set Alarm Threshold Polarity** adjustment menu. This will scroll on the digital display.

..Set Alarm Threshold Polarity..
20.9%

Push the joystick right to access the first sub menu; **Set Alarm 1 Polarity** will scroll on the display. This is the menu at which to adjust the first level alarm polarity state on the Air Check O_2 Monitor.

..Set Alarm 1 Polarity...
20.9%

To change this value, push the joystick right to display the relay state. The display will Indicate **INVERT.** Pushing the joystick down will change the relay state from INVERT to NORMAL. Press **ENTER** to accept the value.

INVERT
20.9%

NORMAL
20.9%

After entering the relay state, the display will default back to the Set Alarm 1 Polarity menu. The display will scroll the following:

..Set Alarm Polarity..
20.9%

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

Push the joystick down to access the next sub menu; **Set Alarm 2 Polarity** will scroll on the display. This is the menu at which to adjust the second level alarm polarity state on the Air Check O_2 Monitor.

..Set Alarm 2 Polarity ..
20.9%

To change this value, push the joystick right to display the relay state. The display will Indicate **INVERT.** Pushing the joystick down will change the relay state from INVERT to NORMAL. Press **ENTER** to accept the value.

INVERT
20.9%

NORMAL
20.9%

After entering the relay state, the display will default back to the Set Relay 2 Alarm Threshold menu. The display will scroll the following:

..Set Alarm 2 Polarity..
20.9%

Push the joystick down to access the next sub menu; **Set Audio Alarm Polarity** will scroll on the display. This is the menu at which to adjust the second level alarm polarity state on the Air Check O_2 Monitor.

..Set Audio Alarm Polarity...
20.9%

NOTE: *The O_2 system must have the audio alarm option module installed to access this menu. If this option is installed the display will indicate N/A, (not available)*

To change this value, push the joystick right to display the relay state. The display will Indicate **INVERT.** Pushing the joystick down will change the relay state from INVERT to NORMAL. Press **ENTER** to accept the value.

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

INVERT
20.9%

NORMAL
20.9%

After entering the relay state, the display will default back to the **Set Audio Alarm Polarity** menu. The display will scroll the following:

..Set Audio Alarm Polarity...
20.9%

5.5.4 Set Latching *(Only available on O_2 monitor with Relays)*

This is the menu at which to adjust the relay alarm state for the two gas alarm relays and the individual instrument fault relay. The selection permits setting the relays to a latching or non-latching state. In a latching state, the relay will remain activated until the user manually selects the Enter Key. In a non-latching state, the alarm relay will automatically reset once the gas concentration has returned to 20.9% for oxygen.

NOTE: *The O_2 system must have the relay module installed to access this menu. If no relay module is installed the display will indicate N/A, (not available)*

...Set Latching…
20.9%

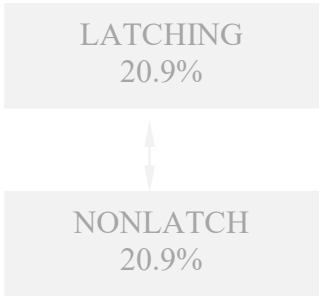
This menu will permit the setting of the two alarm relays and the fault relay settings from a latching to a non-latching state when they are activated.

From this main menu, pushing the joystick to the right will select the sub menu and the digital display will scroll the following:

..Set Latching Relay 1…
20.9%

This is the menu at which to adjust the first level alarm relay state on the Air Check O_2 Monitor.

To change this value, push the joystick right to display the relay state. The display will Indicate **LATCH.** Pushing the joystick down will change the relay state from LATCHING to NON-LATCHING. Press **ENTER** to accept the value.



NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

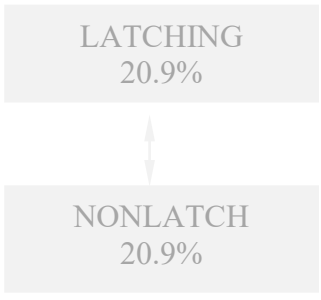
After entering the relay state, the display will default back to the **Set Latching** menu. The display will scroll the following:

From this main menu, pushing the joystick to the right will select the sub menu and the digital display will scroll the following:

Push the joystick down to select the next relay to be adjusted. The display will scroll the following, **Set Latching Relay 2.**

This is the menu at which to adjust the second level alarm relay state on the Air Check O_2 Monitor.

To change this value, push the joystick right to display the relay state. The display will Indicate **LATCHING.** Pushing the joystick down will change the relay state from LATCHING to NONLATCH. Press **ENTER** to accept the value.



After entering the relay state, the display will default back to the **Set Latching** menu. The display will scroll the following:

..Set Latching….
20.9%

From this main menu, pushing the joystick to the right will select the sub menu and the digital display will scroll the following:

..Set Latching Relay 1…
20.9%

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

Push the joystick twice to select the Audio Alarm relay to be adjusted. The display will scroll; **Set Latching Audio Alarm.**

..Set Latching Audio Alarm…
20.9%

This is the menu at which to adjust the Audio alarm relay state on the Air Check O_2 Monitor.

NOTE: *The O_2 system must have the audio alarm option module installed to access this menu. If this option is installed the display will indicate N/A, (not available)*

To change this value, push the joystick right to display the relay state. The display will Indicate **LATCHING.** Pushing the joystick down will change the relay state from LATCHING to NONLATCH. Press **ENTER** to accept the value.

LATCH
20.9%

NONLATCH
20.9%

After entering the fault relay state, the display will default back to the **Set Latching** menu. The display will indicate the following:

..Set Latching….
20.9%

5.5.5 Resetting a Latching Alarm *(Only available on O_2 monitor with Relays)*

To reset a latching alarm relay, you must enter the password correctly and then push the joystick down to enter the reset command. The Oxygen monitor also has an internal 2-pin terminal block for connecting a remote reset switch. (See Alarm Relay board, section 1.2.7)

5.5.6 Set Alarm Delay *(Only available on O_2 monitor with Relays)*

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

Push the joystick down to access the next main menu, **Alarm Delay.** The display will scroll the following:

…Alarm Delay…
20.9%

This is the amount of time an alarm level concentration of oxygen must be present before the instrument's gas concentration alarm(s) will be activated. This menu will permit setting a user selected time delay for activating alarm relays 1 and 2. You can select from 0 seconds up to 255 seconds after an alarm level has been exceeded before the alarm relays to activate.

To change this value, push the joystick right to display the time screen. The display will indicate a value between 0 and 255 seconds. Pushing the joystick up increases the value and pushing the joystick down decreases the value. Press **ENTER** to accept the value.

005
20.9%

After entering the alarm delay, the display will default back to the Alarm Delay menu and the display will scroll the following:

…Alarm Delay…
20.9%

NOTE: *The alarm delay is only available for alarms 1 and 2. There is no delay for the fault relay. Any system fault will immediately activate the Fault Relay.*

5.5.7 Set Zero Suppression *(Only available on O_2 monitor with Relays)*

This function not used on the Oxygen monitor. It is only used to decrease the sensitivity of selected gas sensors. Although the menu permits the changing of settings, it is totally disabled in the Oxygen monitor. The factory default is set at 000.

NOTE: This function is not available on the Air Check Oxygen monitor.

…Zero Suppression…
000

5.5.8 Set Alarm Thresholds *(Only available on O_2 monitor with Relays)*

..Set Alarm Thresholds..
20.9%

This main menu will permit adjusting the oxygen concentration percentage that will activate alarm levels 1 and 2. If the Audio alarm output module is installed, it will also permit setting the level at which the audio alarm will activate.

NOTE: *To activate the audio alarm, the AirCheck O_2 monitor must have the audio alarm option.*

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

From this main menu, pushing the joystick to the right will select the first sub menu and the digital display will scroll the following: **Set Relay 1 Alarm Threshold.**

..Set Relay 1 Alarm Threshold…
20.9%

This is the gas concentration at which the instrument's first level alarm will be activated. To change the displayed value, push the joystick to the right to display the first level alarm setting. The display will indicate a value between 00.0% and 25.5%.

Pushing the joystick up increases the value and pushing the joystick down decreases the value. Press **ENTER** to accept the value.

19.5%
20.9%

After entering the relay state, the display will default back to the **Set Relay 1 Alarm Threshold** Menu. The display will scroll the following:

..Set Relay 1 Alarm Threshold…
20.9%

Push the joystick down to access the next sub menu; **Set Relay 2 Alarm Threshold,** will scroll on the digital display.

..Set Relay 2 Alarm Threshold…
20.9%

This is the gas concentration at which the instrument's second level alarm will be activated. To change the displayed value, push the joystick to the right to display the second level alarm setting. The display will indicate a value between 00.0% and 25.5%.

Pushing the joystick up increases the value and pushing the joystick down decreases the value. Press **ENTER** to accept the value.

18.0%
20.9%

After entering the relay state, the display will default back to the **Set Relay 2 Alarm Threshold** Menu. The display will scroll the following:

..Set Relay 2 Alarm Threshold…
20.9%

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

Push the joystick down to access the next sub menu; **Set Audio Alarm Threshold,** will scroll on the digital display.

..Set Audio Alarm Threshold…
20.9%

This is the gas concentration at which the instrument's audio alarm will be activated. To change the displayed value, push the joystick to the right to display the second level alarm setting. The display will indicate a value between 00.0% and 25.5%.

Pushing the joystick up increases the value and pushing the joystick down decreases the value. Press **ENTER** to accept the value.

NOTE: *The O_2 system must have the audio alarm option module installed to access this menu. If this option is installed the display will indicate N/A, (not available)*

19.5%
20.9%

NOTE: ***The audio can be set into only one alarm level. You can choose between alarm level 1 or alarm level 2 or set a completely different setting.***

After entering the relay state, the display will default back to the **Set Audio Threshold.** Menu. The display will scroll the following:

..Set Audio Alarm Threshold…
20.9%

5.5.9 Set Alarm Hysteresis *(Only available on O_2 monitor with Relays)*

PureAire's oxygen monitor may be used as a control system. When used to regulate oxygen levels the need of a dead band, "hysteresis" may be required for the alarm relays. This menu will permit the setting of the alarm hysteresis to a desired concentration of Oxygen. When using hysteresis, the alarm set point now becomes an average alarm setting for an action to occur. When adding the hysteresis value to the alarm set point, this then defines the alarm and dead band for an action to occur.

For example, if you require a valve to close at 14.9% oxygen level and to reopen again at 15.5% oxygen level, you will set the Alarm Threshold at 15.2% and set the hystersis value at 0.3%.

Average Alarm set point = 15.2% - Hysteresis 0.3% = 14.9%, Valve Off
Average Alarm set point = 15.2% + Hysteresis 0.3% = 15.5%, Valve On

NOTE: The menus highlighted in light gray are only used for O2 monitors with the Alarm Relay Board

They are displayed on the O_2 monitor and their function is disabled.

To access this menu, push the joystick down to display the **Set Alarm Hysteresis** menu. This will scroll on the digital display.

..Set Alarm Hysteresis…
20.9%

Push the joystick right to access the **Set Alarm 1 Hysteresis**. Pushing the joystick again to the right will display a value 0.0%, (factory default). Pushing the joystick up increases the percentage up to a maximum value of 2.5%. Adjust the digital display until the desired hysteresis value is selected.

0.3%
20.9%

Press **ENTER** to accept this value. The digital display will revert to **Set Alarm 1 Hysteresis.**

..Set Alarm 1 Hysteresis…
20.9%

Push the joystick down to access the next sub menu; **Set Alarm 2 Hysteresis** will scroll on the digital display. Pushing the joystick again to the right will display a value 0.0%. Pushing the joystick up increases the percentage up to a maximum value of 2.5%. Adjust the digital display until the desired hysteresis value is selected.

..Set Alarm 2 Hysteresis…
20.9%

Press **ENTER** to accept this value. The digital display will revert to **Set Alarm 2 Hysteresis.**

..Set Alarm 2 Hysteresis…
20.9%

Push the joystick down to access the next sub menu; **Set Alarm Audio Hysteresis** will scroll on the digital display. Pushing the joystick again to the right will display a value 0.0%. Pushing the joystick up increases the percentage up to a maximum value of 2.5%. Adjust the digital display until the desired hysteresis value is selected.

..Set Audio Alarm Hysteresis…
20.9%

5.5.10 Set Sensor Adjust

This menu will permit fine-tuning of the oxygen readout to a known concentration of Oxygen. It is recommended to adjust the oxygen display to ambient oxygen levels of 20.9%. To access this menu, push the joystick down to display the **Sensor Adjustment** menu. This will scroll on the digital display.

NOTE: **It is recommended to warm up the Air Check Oxygen monitor for two hours before making any adjustments to the sensor.**

..Sensor Adjustment…
20.9%

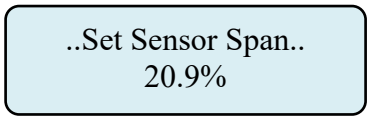
Push the joystick right to access the first sub menu; **Set Sensor Span** will scroll on the display. This is the menu that will permit fine adjustment of the ambient oxygen reading to 20.9%.

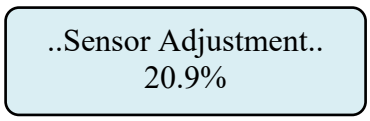
..Set Sensor Span..
20.9%

Push the joystick right to access the sensor span. The display will indicate a value between 0 and 255 counts. Pushing the joystick up increases the counts and decreases the percent oxygen value displayed on the Air Check. Pushing the joystick down decreases the counts and increases the oxygen value displayed on the Air Check. As the counts increase and decrease the percent oxygen displayed will also increase and decrease. Adjust the digital display until 20.9% + / - 0.1% is displayed. The actual oxygen reading will fluctuate from 20.8% to 21.0%.

093
20.9%

Press **ENTER** to accept this value. The digital display will revert back to **Set Sensor Span.**



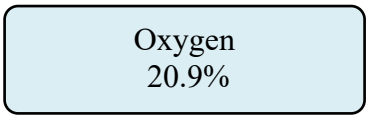


Press the joystick to the left to revert back to the **Sensor Adjustment** menu.

NOTE: The "Set Module Zero" menu is not available for the Oxygen monitor This menu was designed for PureAire toxic and corrosive gas monitors. When selected, nothing will happen. Push the joystick Left to leave this menu.

5.5.11 Main Operation Mode

To select the main menu from any sub menu, push the joystick left until the Main Menu appears. The digital display will indicate the following:



6. Maintenance & Sensor Verification

Earth's atmosphere naturally contains oxygen at a stable concentration of 20.9%. Therefore, under normal conditions, you can visually verify the Air Check O_2 monitor's readings against this natural standard. The monitor requires occasional testing with a known oxygen concentration to validate the sensor's response to reduced oxygen levels. Furthermore, an annual fine-tuning might be necessary to ensure the sensor's span remains accurate. Span adjustment can be performed using the ambient environment (20.9% O_2), or, when a clean environment cannot be confirmed, against the 20.9% O_2 (ultra zero air) reference gas (see section 6.3).

6.1 Sensor Verification Gas

For testing the Air Check O_2 monitor, PureAire recommends the use of our Sensor Verification Kit, which contains the two nitrogen-balanced mixtures used for span adjustments and sensor functionality verification:

- 20.9% O_2 (ultra zero air)
- 8% O_2 in N_2 balance

Each gas serves a distinct purpose. The 8% O_2 mixture is the working gas for routine verification: a single application functions as both a bump test and an accuracy check (see section 6.2). The 20.9% O_2 (ultra zero air) is a span reference, used only when the ambient environment cannot be confirmed to be clean (see section 6.3).

The Sensor Verification Kit can be purchased directly from PureAire: **P/N 94049 with a fixed flow regulator (for non-pump units), or P/N 94050 with a demand flow regulator (for pump units).** Equivalent gas can also be purchased from your local gas supplier or can be recommended by PureAire as required.

6.2 Sensor Verification Equipment

The PureAire Sensor Verification Kit contains everything you'll require for the verification process: If sourcing gas locally instead, a large upright cylinder with a CGA 580/590 connection can be utilized just as effectively with a compatible regulator.

Sensor Verification Equipment Kits Contents and Replacement Part Numbers		
Part Number	**Description**	**Quantity**
94049-Fixed Flow Regulator (Non-Pump Units) Sensor Verification Kit	**94016**-Oxygen, 8%, 103 liter cylinder **94019**-Oxygen, 20.9% (ultra zero air), 103 liter cylinder **94013**-Fixed Flow Regulator, C-10 0.5lt/min **94021**-2ft Length of 1/8" ID ¼" OD tubing **94012**-Carrying Case w/shoulder strap **26036-**Flow Cap - Square **94003**-Flow Cap – Round	1 of each
94050-Demand Flow Regulator (Units w/Pump) Sensor Verification Kit	**94016**-Oxygen, 8%, 103 liter cylinder **94019**-Oxygen, 20.9% (ultra zero air), 103 liter cylinder **94014**-Demand Flow Regulator, C-10 **94021**-2ft Length of 1/8" ID ¼" OD tubing **94012**-Carrying Case w/shoulder strap **26036-**Flow Cap - Square **94003**-Flow Cap – Round	1 of each

The kit regulators supply gas at the correct rate automatically: the fixed flow regulator (94049) is preset to 500ccs/min (0.5LPM), while the demand flow regulator (94050) supplies gas as the pump draws it. If using your own regulator, set it to 500ccs/min or 0.5LPM to guarantee a consistent and controlled supply of gas during the verification process.

If not using the included regulator, remember to set the regulator to ensure a gas flow rate of 500ccs/min or 0.5LPM. This guarantees a consistent and controlled supply of gas during the verification process.
Subjecting the Air Check monitor to different concentrations or mixtures of oxygen span gas is acceptable. Please take care not to expose the sensor to any harmful gases.

NOTE: If the instrument is connected to a controller, set the controller to standby mode to avoid accidental alarms.

6.3 Sensor Functionality Verification Procedure

CAUTION: Always adhere to all safety protocols while handling compressed gases and oxygen-depleting mixtures.

Testing the sensor and monitor's response to a reduced-oxygen environment provides a quick check on their functionality. Apply the 8% O_2 in N_2 balance mixture from the Sensor Verification Kit. The monitor reading should drop to 8.0% O_2 within a minute. Upon removal of the gas, the unit should recover to the ambient oxygen level of 20.9% within the same timeframe.

A single application of the 8% mixture provides a full check of the monitor as it comes configured from the factory. Because 8% O_2 is below the standard alarm thresholds of 19.5% and 18% O_2, the test exercises the complete alarm response: check that optional features like the alarm relays and audio alarms are triggered during the alarm state and deactivate appropriately after the test. And because the mixture is certified to a known oxygen concentration, the same application also verifies the accuracy of the monitor's reading, which should fall within ±0.2% of the certified value (8.0% O_2). No additional test gas is required for routine verification.

If the sensor reading deviates more than 0.2% from the expected value, adjust the sensor's span (see section 6.3) and repeat the test. If the sensor doesn't recover, or has difficulty reaching the 8% reading, please reach out to PureAire for more comprehensive servicing.

6.4 Annual Span Verification to Ambient Oxygen

The Air Check O_2 monitor should typically display a reading of 20.9% in a clean, non-oxygen-deficient environment, mirroring the ambient oxygen concentration. However, over time and with sensor aging, this reading may marginally decrease. Hence, we recommend an **annual** verification and adjustment of the sensor's span to reflect the ambient oxygen concentration of 20.9%

When spanning to the ambient environment, it is crucial to position the Air Check O_2 monitor in an environment devoid of oxygen deficiency or contamination. This ensures an accurate reflection of the ambient oxygen concentration, promoting the device's precision and longevity. Using this procedure, you can span adjust the O_2 monitor to accurately display the oxygen concentration as 20.9% under standard, non-oxygen-deficient conditions.

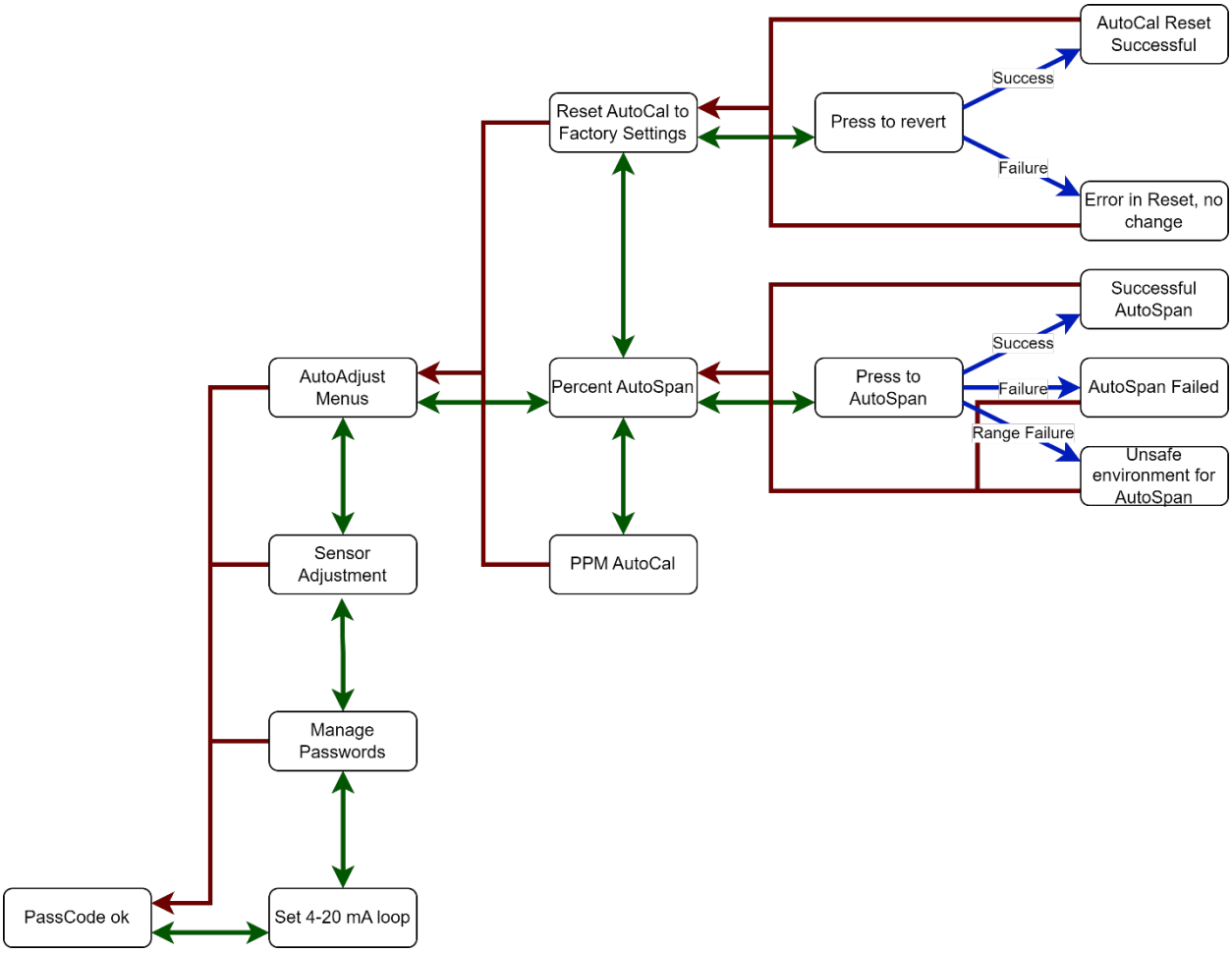
If a clean ambient environment cannot be guaranteed (for example, leaks are present or their absence

cannot be verified), do not span to ambient air. Instead, apply the 20.9% O_2 (ultra zero air) mixture from the Sensor Verification Kit and adjust the span until the monitor reads 20.9%. This is the intended use of the ultra-zero air: a certified clean-air reference for span adjustment. It is not required for routine bump testing.

See sections 6.4 & 6.5 for instructions on span adjustment.

NOTE: It is recommended to warm up the Air Check Oxygen monitor for at least two hours before making any adjustments to the sensor.

6.5 AutoAdjust Functions



6.5.1 Monitor AutoSpan

The V5.0 update introduced the AutoSpan feature for the monitor, which can be accessed using the user password (default = 557). Once “Password ok” is displayed, navigate to the AutoAdjust Menu using the joystick. Within the AutoSpan menu, toggle right and then press in to start AutoSpan when prompted to ‘Press to AutoSpan’.

This innovative feature adjusts the internal span of the monitor to match the ambient oxygen level, nominally at 20.9%. Please note that PureAire’s specifications state that the monitor’s accuracy is within ±0.2%. If the monitor’s reading is already within 20.7-21.1%, the AutoSpan function will be unavailable and any attempts to AutoSpan will not modify the internal settings.

Moreover, if the monitor’s reading is <19.5 or >22.5%, an “Unsafe environment for AutoSpan” alert will appear upon attempted AutoSpan, and no changes will be made. This is a safety feature designed to ensure accurate readings.

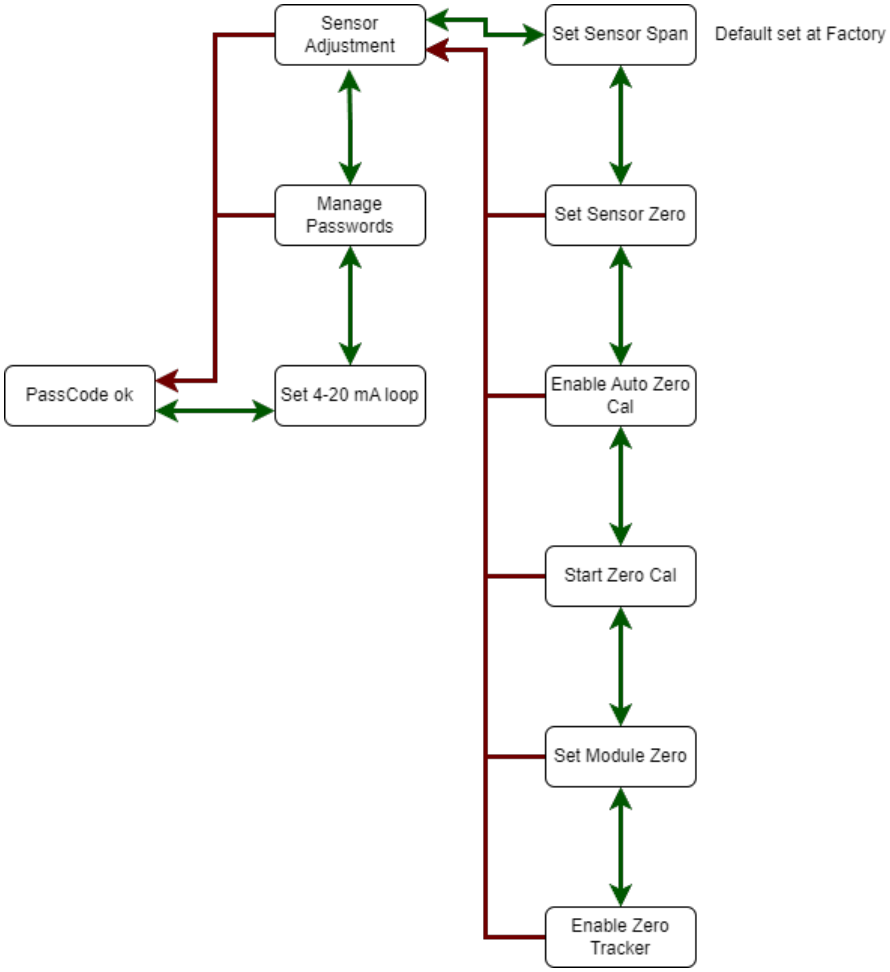
Even though AutoSpan is a helpful new addition, standard manual span adjustment is still available as per your needs. For manual adjustment, please see Section 6.5.

6.5.2 Reset AutoCal to Factory Settings

The V5.0 update also included a new menu option called “Reset AutoCal to Factory Settings”. This feature allows you to reset only the sensor’s span to its original factory settings, without affecting other parameters such as alarm thresholds or relay formats that you may have customized.

To use this option, navigate to the “Reset AutoCal to Factory Settings” menu, and when prompted, press in to initiate the reset. This will revert the sensor’s span to its factory setting while keeping your personalized configurations intact.

6.6 Manual Monitor Span Adjustment



Navigate to the “Set Sensor Span” menu and toggle right to access the sensor span. The display will indicate a value between 0 and 255 counts. Pushing up or down on the toggle will increase and decrease the count value respectively. To increase the displayed reading on the monitor, decrease the sensor span.

Adjust the span until the digital display reads 20.9 ± 0.2%. Press ENTER on the joystick to accept the value.

NOTE: The monitor can be calibrated to a known concentration of Oxygen, to see the exact span gas concentration the entire Air Check O_2 monitor needs to be completely immersed into the span gas environment.

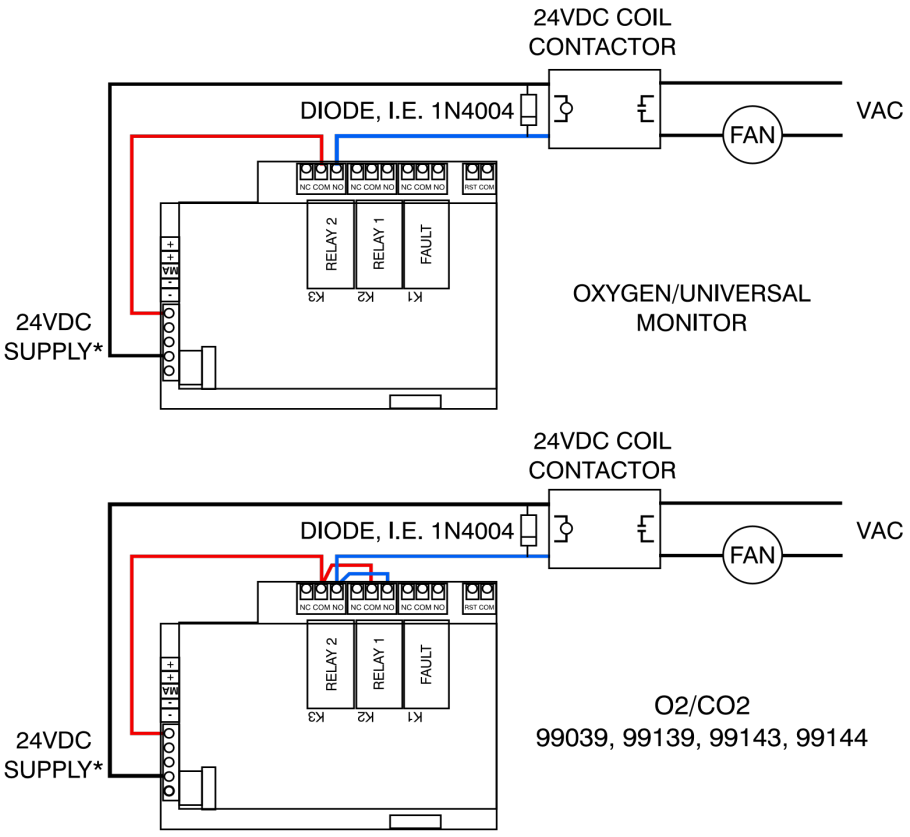
CAUTION: For best results, the Oxygen monitor should be protected from wind and high airflow when gas calibrating with test gas, as well as tested in an upright position to allow the span gas to fully saturate the sensor cell.

O2 monitor
Connected to gas cylinder

7.0 Appendix

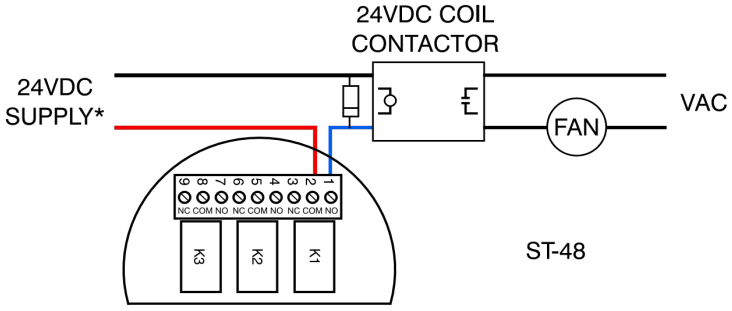
CONTACTOR/FAN CONNECTION

EXTERNAL RELAY FOR LOADS >2A



* OK TO USE EXTERNAL SUPPLY AS LONG AS VOLTAGE IS 24VDC/AC OR LESS

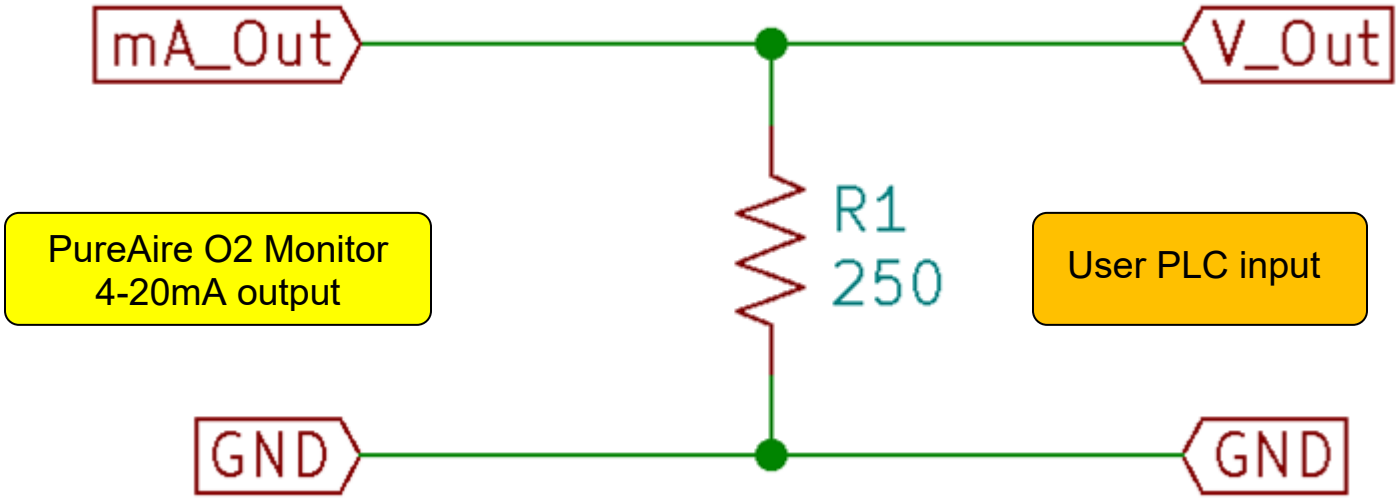
DIAGRAMS FOR 99016, 99029, 99129, 99028, 99145, 99097, 99141, 99035, 99128, 99020, 99045, UNLESS NOTED.



NOTE: ENSURE CONTACTOR CHOSEN HAS CORRECT COIL VOLTAGE AND IS CURRENT-RATED FOR YOUR LOAD

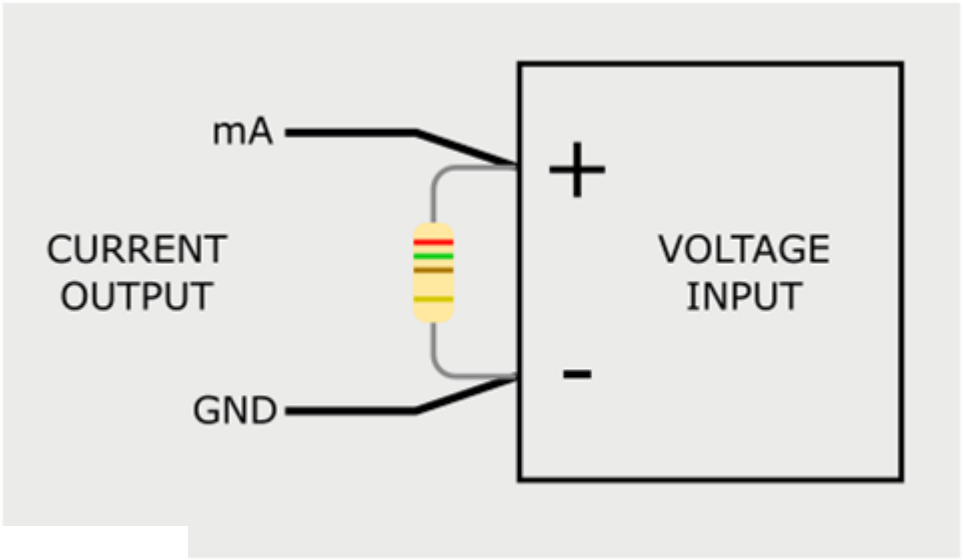
Rev B, 091922

How to convert 4-20mA current output to a 1-5 VDC voltage output



PureAire O2 Monitor
4-20mA output

User PLC input



Attach 250-ohm resistor to the
PLC or device input