





















## 10. Customizing the Settings

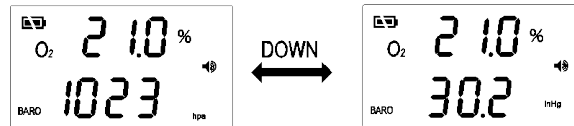
### 1.1 Select Temperature Units

Press the Up button to switch between °F & °C:



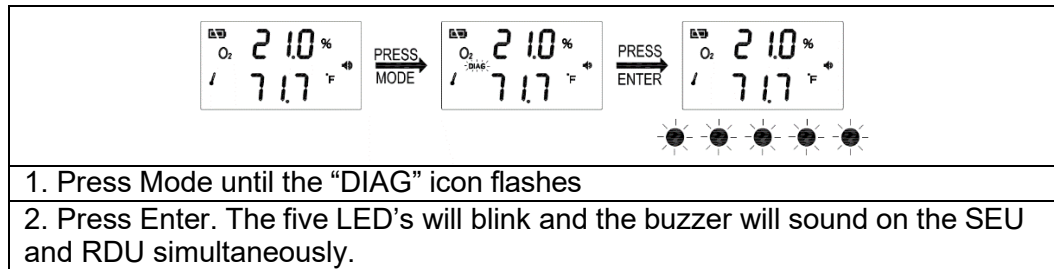
### 1.2 Select Barometric Units

Press the Down button to switch from hPa to inHg

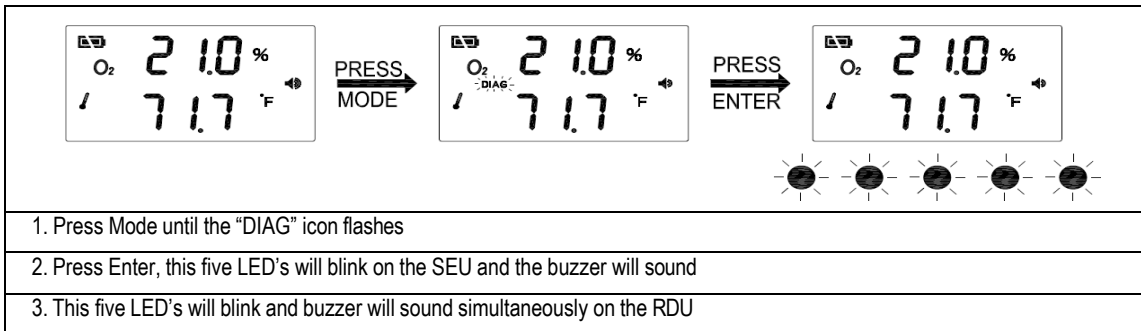


### 1.3 Diagnostic Test

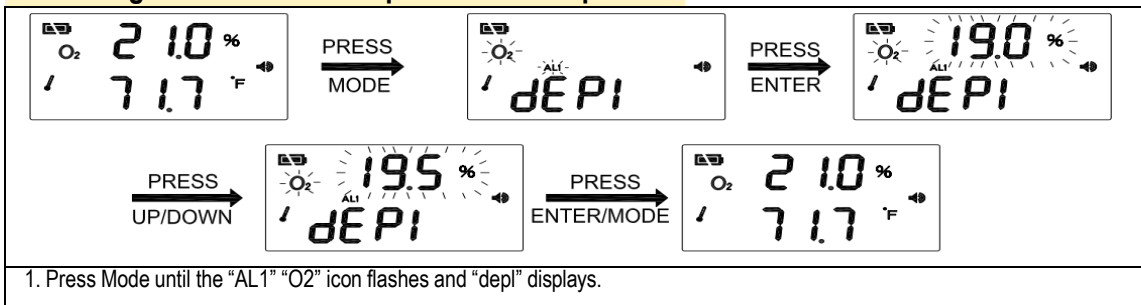
Test the communication link between the SEU & RDU.



### 14 Using the DIAG function



### 1.5 Setting the O2 First Alarm parameter of depletion:



- |                                                                      |
|----------------------------------------------------------------------|
| 2. Press Enter, the "AL1" icon shows on LCD. default AL1= 1.9%       |
| 3. Press Up/Down to go through 18.0%/18.5%/19.0%/19.5%/20%"          |
| 4. Press Enter again(save) or press Mode (not save) quit the setting |

### 1.1 Setting the O2 Second Alarm parameter of depletion:

1. Press Mode until the "AL2" "O2" icon flashes and "depl" displays.

2. Press Enter, the "AL2" icon shows on LCD, default AL2= 1.7%

3. Press Up/Down to go through 16.0/16.5%/17.0%/17.5%"

4. Press Enter again(save) or press Mode (not save) quit the setting

### Setting the O2 Third Alarm parameter of depletion:

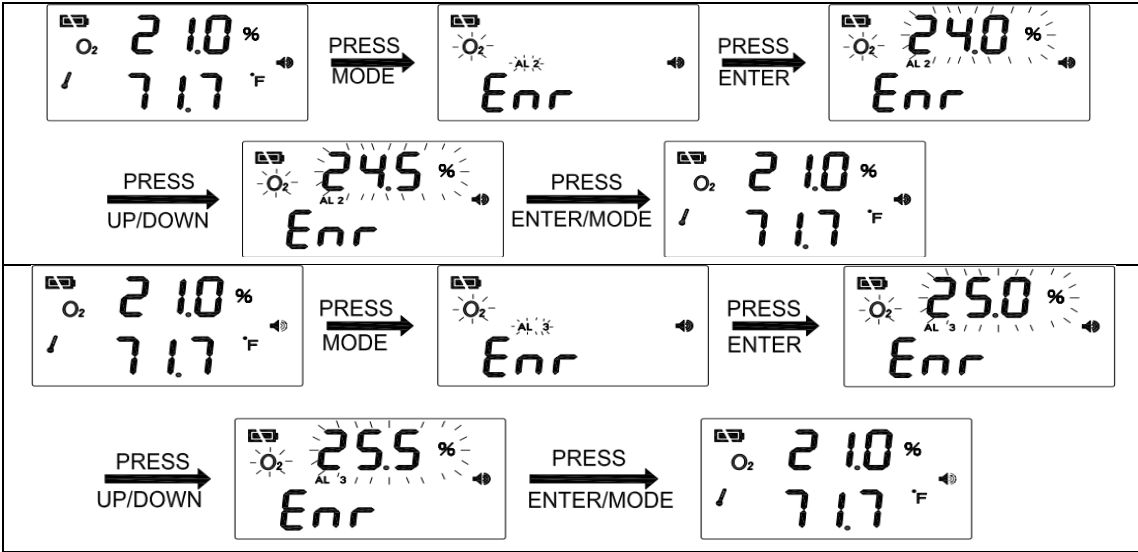
1. Press Mode until the "AL3" "O2" icon flashes and "depl" displays.

2. Press Enter, the "AL3" icon shows on LCD. Default AL3=12%

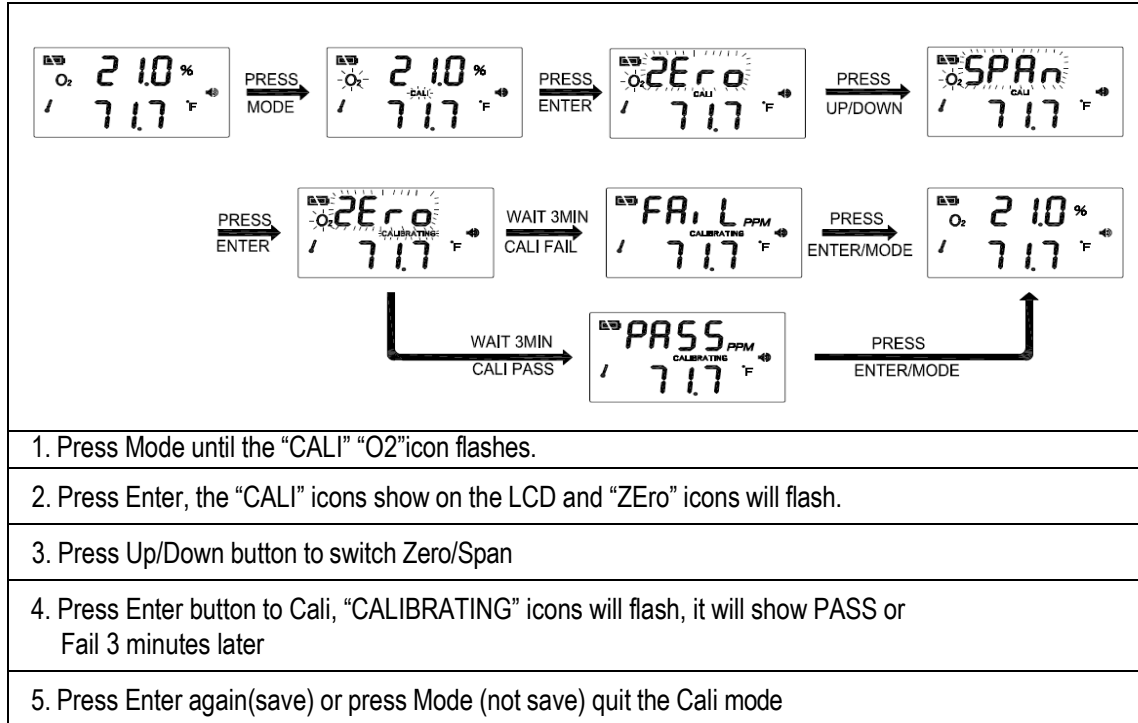
3. Press Up/Down to 12%

4. Press Enter again(save) or press Mode (not save) quit the setting

### 1.2 Setting the O2 Alarm parameters of enrichment:



## 9.1 Calibration



Span calibration should both be performed at least annually. They can be performed onsite or the SEU can be returned for factory calibration. Check your state or local code for calibration schedule requirements in your jurisdiction.

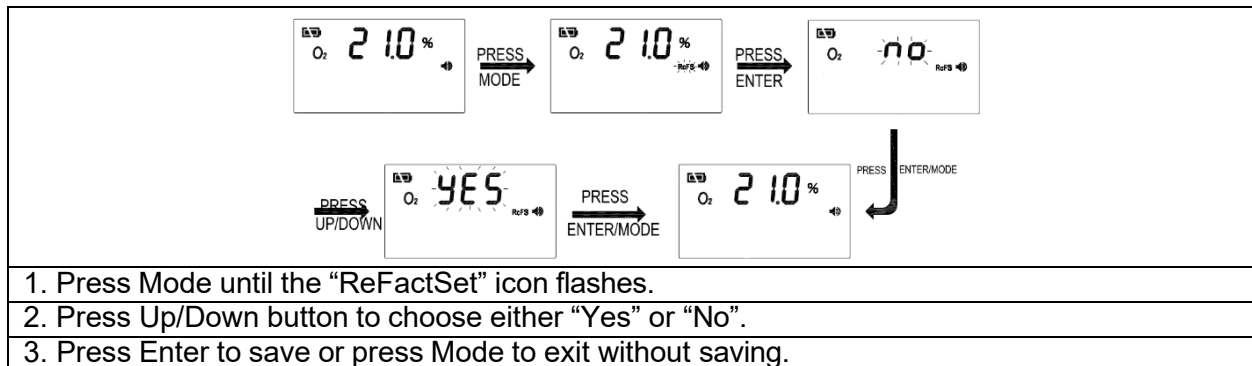
What you will need: A test gas cylinder of 21% oxygen, a test gas regulator and 3-4 ft. (1m) tubing, and a small piece of masking tape to cover the buzzer hole on the bottom right corner of the SEU. If you are calibrating in situ, first inform occupants to ignore the alarms while calibration takes place.

### Span Calibration

1. Hold the tubing from the 21% oxygen gas cylinder to the oxygen sensor opening on the top right-hand corner of the SEU.
2. Open the gas regulator. Set the flow rate between 0.15-0.50 liters per minute.
3. Wait until the O2 reading on the SEU settles consistently at or near 21% O2 on the screen.
4. Press the Mode button 5 times. The “O2” and “CALI” icons will flash.
5. Press Enter to view the calibration settings. The words “O2” and “ZErO” will begin flashing on the LCD.
6. Press the Up or Down arrow key to change from “Zero” to “SPAN”.
7. Press Enter again to begin calibrating. “CALIBRATING” will begin flashing.
8. After approximately 3 minutes, the LCD will display either “PASS” or “FAIL”
9. If the LCD reads “FAIL”, repeat the steps again. If it displays “PASS”, press Enter. The display should now show 21% O2.
10. Remove the oxygen gas.
11. Press the Reset button at the bottom right-hand side of the SEU front cover.

## 10.8 Recover Factory Settings

If calibration or changing custom parameters has caused the ESRAD-02-ZR to behave incorrectly, use the ReFactSet function to return the unit to its original condition at shipping.



## 11. Product Care

To insure you receive the maximum benefit from using this product, observe these guidelines:

- **Repair** - Do not attempt to repair the product or modify the circuitry by yourself. Please contact GasLab directly if the product needs servicing, including the replacement or calibration of sensor See section 15 for technical support contact information.
- **Cleaning** - Disconnect the power before cleaning. Use a damp cloth. Do not use liquid cleaning agents such as benzene, thinner or aerosols, as these will damage the device.
- **Maintenance** – We recommend testing the communication between the SEU and RDU under ‘DIAG’ function. If these five LEDs blink and the buzzer of SEU and RDU sound simultaneously, it indicates that SEU and RDU work normally.

## 12. Safety Notes

Warning: Your safety is very important to us. To ensure to use the product correctly and safety, please read these warnings and the entire User Manual before using the product. Otherwise, the protection provided by the equipment may be impaired. These warnings provide important safety information and should be observed at all times.

1. Please handle the device carefully; do not subject the product to impact or shock. Otherwise, this may cause the accuracy drift.
2. Do not place the unit near a heat source. Heat can cause distortion of the unit, which may result in an explosion or fire.
3. Do not touch the exposed electronic circuitry of the device under any circumstances, as there is the dangerous of electric shocks.
4. Please take care of cable connection between SEU and RDU. Make sure the cable from SEU is connected into the INPUT port of RDU.
5. Please ensure the external power supply is normally supplied to ventilation fan while the relay is working. If there has no normally power supply to the fan, the relay will not work, which may result in potential danger with lower O2 concentration in confined space

## 13. Specifications

### ■ Oxygen & Temperature Sensor Specifications:

<b>Oxygen Sensor Specifications</b>	
Range	0 - 25% display
Display Resolution	0.1%
Accuracy	Better than 2%FS
Pressure Dependence	Auto pressure compensation, built in barometer. (500-1200 mbar)
Response Time	O2: <2min by 90%
<b>O2 AL1</b>	<b>18.0%, 18.5%, 19.0%, 19.5%, 20.0%. The default AL1 is 19.0%.</b>
<b>O2 AL2</b>	<b>16.0%, 16.5%, 17.0%, 17.5%. The default AL2 is 17.0%</b>
<b>O2 AL3</b>	<b>15.5%, 15.0%, 14.5%, 14.0%, 13.5%, 13.0%, 12.5%, 12%. The default AL3 is 12.0%.</b>
Sound Alarm	80db@10cm
Warm-Up Time	< 60 seconds at 72°F (22°C)
<b>Temperature Sensor Specifications:</b>	
Temperature Range	32°F to 122°F (0°C to 50°C)
Display Resolution	0.1°F (0.1°C)
Display Options	°F /°C
Accuracy	±2.7°F (±1.5°C) when O2 concentration is below first alarm level
Response Time	20-30 minutes
<b>Operating Conditions:</b>	
Operating Temperature	32°F to 122°F (0°C to 50°C)
Humidity Range	0 ~ 95% RH non-condensing
<b>Storage Conditions:</b>	
Storage Temperature	-4°F to 140°F (-20°C to 60 °C)

### ■ Power Supply

Power Supply	DC	9~32VDC (12~32VDC recommended), 2A.
	AC adapter	Input: 100~240 VAC,50/60Hz, 0.6A Output: 12VDC, 2000mA.
Battery	Voltage	6VDC (5.4V~7.0V), recommended capacity is 12AH

### ■ Relay Outputs

**There are three relay outputs:**

- Relay 1 operates at alarm1 for O2
- Relay 2 operates at alarm2 for O2
- Relay 3 is not related to alarms and depends on power on/off

**The peak current for all relays are less than 2A@30 VDC or 250 VAC, SPDT.**

### ■ 4-20mA Outputs

CL01:420mA	O2: 0~25%
CL02:420mA	Temp: 32 to 122° F (0-50°C)

■ Weight and Dimensions

SEU	Weight	1 lb.
	Dimensions (LxWxD)	6.69 x 4.96 x 2.73 inches
RDU	Weight	0.4 lb.
	Dimensions (LxWxD)	5.51 x 3.54 x 1.89 inches



## 14. Fault Codes & Troubleshooting Guide

This section includes a list of Frequently Asked Questions for problems you may encounter with the ESRAD-02-ZR OXYGEN Monitor.

No	LCD Fault Icon	Description (of the fault)	SEU Indication	RDU Indication	Suggested Actions
1	Er3	The ambient temperature has exceeded the temperature range 32°F to 122°F (0°C to 50°C)	“Er3” flash, Fault LED blink	“Er3” flash, Fault LED blink	This error will disappear when the temperature returns to the range between 32°F to 122°F (0°C and 50°C)
2	Er5	EEPROM System Problem	“Er5” flash, Fault LED blink	“Er5” flash, Fault LED blink	Power on again or press reset button, if the “Er5” always appear, please contact with the local dealer.
3	Er7	Internal Data Transmission Error	“Er7” flash, Fault LED blink,	“Er7” flash, Fault LED Blink	Check the RJ45 plug is connected into the INPUT port of RDU, if the “Er7” displays on the RDU only. Press reset button on SEU or power on again

## 15. Support & Warranty

The quickest way to obtain technical support is via email. Please include a clear, concise definition of the problem and any relevant troubleshooting information or steps taken so far, so we can duplicate the problem and quickly respond to your inquiry.

[info@edaphic.com.au](mailto:info@edaphic.com.au)



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