

## Quick Start Guide for the MultiRAE Lite 2.0

This document serves as a quick reference guide and is not intended to replace the user manual. It is recommended to consult the user manual for more detail.

### 1. About the MultiRAE Lite

The MultiRAE Lite is a 5-gas portable gas detector with a built-in pump which allows sampling from potentially dangerous areas. This instrument measures the standard confined space gases as well as volatile organic compounds.

### 2. Turning the MultiRAE Lite on

- a. Make sure a water trap filter is installed, twist it clockwise to install and lock it in place. Turn it counter-clockwise to remove the filter.
- b. The MultiRAE Lite has the following buttons from left to right:
  - Y/+
  - MODE
  - N/-
- c. Press and hold the 'MODE' button. Release when a 'beep' is heard. The unit will then run through its warm up sequence.
- d. Allow the unit to warm up its sensors.

### 3. Zero Gas/Fresh Air Calibration

- a. Only perform a 'Fresh Air Calibration' in a clean and uncontaminated atmosphere free from toxic or combustible gases.
- b. After the sensors have warmed up, press the Y/+ button when prompted to perform a 'Fresh Air Calibration'.

#### 4. Normal Operation/Home Screen

- a. When the home screen displays the following:
  - OXY: 20.9 %
  - CO: 0 ppm
  - H2s: 0 ppm
  - LEL 0 %LEL
  - VOC: 0 ppm,  
the unit is measuring and ready to use.

#### 5. Turning the MultiRAE Lite Off

- a. Press and hold the 'MODE' button. A 5 second countdown will begin.
- b. Release the 'MODE' button when a long 'beep' is heard. The unit has turned off.

#### 6. Alarms

The MultiRAE Lite has audible and visual alarms set to trigger at specified gas concentrations.

- a. STEL is short-term exposure limit
- b. TWA is time-weighted average

Sensor	HIGH	LOW	STEL	TWA
LEL %	20	10	-	-
OXY %	23	19.5	-	-
H25 ppm	20	10	15	10
CO PPM	200	35	75	35
voc PPM	100	50	25	10

### 6.1 Testing the Alarms

- a. On the 'Home' screen, press and hold the Y/+ button to activate the audible and visual alarms.
- b. Release the button to stop the test.

## 7. Tips

### 7.1 Pump/Flow Integrity Test

- a. Place a finger over the metal tip of the water trap filter. The unit will go into flow fail and the pump will stop, activating the visual and audible alarms.
- b. Press the Y/+ button to restart the pump and reset the alarm.

### 7.2 Testing the VOC sensor

- a. Expose the writing tip of a felt-tip sharpie and hold close to the water-trap filter inlet without touching it.
- b. Observe the readings rise.
- c. Place the cap over the sharpie and the readings should fall. Wait for the readings to stabilise at close to zero before use.

### 7.3 Testing the Oxygen sensor

- a. Exhale near the tip of the attached water trap filter. Keep this going until 'OXY' registers 19.5% and the alarms are activated.
- b. Press the Y/- button to silence the alarm and wait for the readings to return to 20.9% before using.

## 8. Calibration and Correction Factors

The MultiRAE Lite's combustible and VOC sensors are calibrated to Methane (50 %LEL) and Isobutylene (100ppm) respectively. Therefore, these sensors are not selective to only those gases, especially the VOC sensor. Correction factors have been developed for this purpose to obtain readings in the units of the compounds of interest.

**9. Troubleshooting**

Symptom	Possible Cause(s)	Recommended actions
1. Unit cannot turn on.	Flat/Defective battery	<ol style="list-style-type: none"> <li>1. Disconnect and re-connect battery pack</li> <li>2. Charge the lithium-ion batteries</li> <li>3. Use the alkaline battery pack</li> </ol>
2. Abnormally high readings after turning on at Home screen	Dirty water-trap filter Incorrect calibration gas	<ol style="list-style-type: none"> <li>1. Replace water-trap filter</li> <li>2. Dry-out sensor module (silver cap with black probe inlet)</li> <li>3. Return to Geotechnics to recalibrate</li> </ol>
3. Alarms are activated at Home screen  Pump icon is flashing	Pump flow failed/ blocked	<ol style="list-style-type: none"> <li>1. Turn unit off</li> <li>2. Replace water-trap filter, turn on</li> <li>3. Check if inlet probe is blocked</li> </ol>
4. 'NEG' flashing next to VOC	Current atmosphere is 'cleaner' than fresh air calibration for the VOC sensor	<ol style="list-style-type: none"> <li>1. Turn unit off &amp; on again, repeat the fresh air calibration</li> </ol>
5. Battery icon flashing	Low battery	<ol style="list-style-type: none"> <li>1. Charge battery or replace with alkaline battery pack</li> </ol>
6. 'Lamp' flashing when power on.	PID lamp failure or low ion concentration inside lamp in cold environment	<ol style="list-style-type: none"> <li>1. Turn unit off &amp; on</li> <li>2. Return to Geotechnics to rectify</li> </ol>
7. Readings not registering	Leak in the sample train Pump diaphragm damaged	<ol style="list-style-type: none"> <li>1. Check flow integrity</li> <li>2. Return to Geotechnics to rectify</li> </ol>