



# QRAE

## Simple and Reliable 4-Gas Monitor for Confined Space Entry

The **QRAE** is a dedicated confined space entry monitor with an internal pump. Its durable, rechargeable, standard Lithium-ion batteries provide a 12-hour day of detecting combustibles, oxygen, hydrogen sulfide and carbon monoxide. The extended duration Lithium-ion battery option provides up to 18 hours of continuous operation.

### Key Features

#### Reliable plug-in "smart" sensors

- Combustible Gas
- Oxygen
- Hydrogen Sulfide
- Carbon Monoxide

**Robust external casing** for harsh environments:

- Strong protective rubber boot
- Water and dust resistant
- Rugged ABS plastic/metal case
- Protects from portable radio interference (RFI)

**Ease of use** with one hand operation

- One button calibration with auto zero capability

**Strong built-in sample draw pump** with optional collapsible remote sampling probe

- Sample flow rate at 150cc/min
- Patented security mechanism warns of sample tube crimping or blockage
- Prevents liquid flow into monitor with optional collapsible sample-probe

### Power source features

- Option of Lithium-ion, alkaline and automotive 12V adapter charger
- Field replaceable batteries
- Unit will run and charge simultaneously

**Large keys** operable with three layers of gloves

### Loud audible alarm

### Bright visual alarm

**Standard 20,000 point (or 100 hours) datalogging** storage capacity for download to PC compatible with Windows 98, NT, 2000 and XP

### Applications

#### Confined Space Entry

- Waste water treatment plants
- Marine and off-shore oil wells
- Landfill operations
- Trenches, silos, railcars
- Coal mines
- Cruise ships
- Sewers and manholes
- Tunnels

**Refineries and petrochemical plants** including off-shore drilling and plant shut downs

#### Power plants

**Pulp and paper industry**



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## Specifications\*

### Sensor Specifications

Gas Monitor	Range	Resolution
Oxygen	0-30.0%	0.1%
Combustible Gas	0-100% LEL	1% LEL
Carbon Monoxide	0-500 ppm	1 ppm
Hydrogen Sulfide	0-100 ppm	1 ppm

### Detector Specifications

<b>Size</b>	4.65"L x 3.0"W x 1.9"H (11.8 x 7.6 x 4.8 cm)
<b>Weight</b>	16 oz. (450 g) with battery w/o rubber boot
<b>Sensors</b>	<ul style="list-style-type: none"><li>Protected catalytic bead for combustible gases</li><li>Electrochemical sensors for oxygen, H<sub>2</sub>S, CO</li></ul>
<b>Battery</b>	<ul style="list-style-type: none"><li>Interchangeable Li-ion and alkaline battery packs</li><li>Rechargeable units include Lithium-ion battery pack with internal smart charging, 120V AC/DC wall adapter, and spare alkaline battery pack</li></ul>
<b>Operating Hours</b>	12 hours continuous operation (typical) Extended Lithium-ion battery option provides 18 hours continuous operation (typical) Unit will run and charge simultaneously (this method not to be employed in hazardous locations)
<b>Display</b>	2 line, 16 digit LCD with LED back light automatically in dim light or alarm condition
<b>Keypad</b>	1 operation and 2 programming keys
<b>Direct Readout</b>	Instantaneous values <ul style="list-style-type: none"><li>Oxygen as percentage by volume</li><li>Combustible gas as percentage of lower explosive limit (LEL) (scaleable using correction factors)</li><li>H<sub>2</sub>S &amp; CO as parts per million by volume</li><li>High and low values for all gases</li><li>STEL and TWA values of toxic gases</li><li>Battery and shut down voltage</li><li>Date, time, elapsed time, temperature</li></ul>
<b>Alarms</b>	90 dB buzzer and flashing LED to indicate exceeded preset limits <ul style="list-style-type: none"><li>High: 3 beeps and flashes per second</li><li>Low: 2 beeps and flashes per second</li><li>STEL and TWA: 1 beep and flash per second</li><li>Alarms latching with manual override or automatic reset</li><li>Additional diagnostic alarm and display message for low battery and pump stall</li></ul>
<b>EMI/RFI</b>	Highly resistant to EMI/RFI. Compliant with EMC Directive 89/336/EEC
<b>IP Rating</b>	IP-55, protected against dust and low pressure jets of water from all directions
<b>Datalogging</b>	Standard 20,000 points (100 hours, 4 channels at one minute intervals) downloadable to PC with serial number of unit, user ID, site number, calibration date
<b>Calibration</b>	Two-point field calibration for zero and span gas
<b>Sampling Pump</b>	Optional, internal pump with user selectable flow-rate: High: ~250cc/min, Low: ~150cc/min
<b>Low Flow Alarm</b>	Auto shut-off pump at low flow condition
<b>Hazard Area Approval</b>	<ul style="list-style-type: none"><li>US and Canada: UL, cUL, Classified as Intrinsically Safe for use in Class I, Division I Groups A, B, C, D, Hazardous Locations T3C rating</li></ul>
<b>Approval Temperature</b>	-4° to 113°F (-20° to 45°C)
<b>Humidity</b>	0% to 95% relative humidity (non-condensing)
<b>Attachments</b>	Durable black rubber boot with belt clip and wrist strap
<b>Warranty</b>	Lifetime on non-consuming components (per RAE Standard Warranty), 2 years for O <sub>2</sub> , LEL, CO and H <sub>2</sub> S sensors, 1 year for all other sensors, 1 year pump, 1 year battery

\*Ongoing projects to enhance our products means that these specifications are subject to change

### QRAE Accessories

#### Monitor only includes:

- Monitor as specified
- Sensors as specified
- Rechargeable battery (as specified)
  - Standard rechargeable Lithium-ion or
  - Optional, extended duration Lithium-ion
- 120 V AC/DC Wall Adapter (if specified)
- Alkaline battery adapter
- External battery charger
- Calibration adapter
- 3-inch inlet probe
- 3 external filters
- Quick reference guide
- Operation and maintenance manual
- Rubber boot with belt clip
- Software ProRAE Suite Package for Windows 98, 2000, NT and XP
- Computer interface cable

#### Confined Space Entry Kit also includes:

- Hard transport case with pre-cut foam
- Sampling wand with 15 feet (5m) of self-coiling Tygon® tubing
- Four-gas mix in a 34L cylinder (50% LEL, 20.9% O<sub>2</sub>, 25 ppm Hydrogen Sulfide, 50 ppm Carbon Monoxide)
- Tool kit
- Calibration regulator (male) and tubing

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