



QRAE Plus

Four-Gas Confined Space Gas Detector

Advanced and Compact Four-Gas Confined Space Gas Detector

The **QRAE Plus** is a full-featured, compact, two- to four-sensor confined space gas detector. Key features include easy-to-change, externally accessed battery packs (available in both alkaline and rechargeable versions) and a water-resistant case. The rechargeable, Lithium-ion battery pack provides up to 20 hours of continuous operation. The **QRAE Plus** includes 16,000 datalogging points of storage capacity for download to any PC compatible with Windows 98, NT, 2000 and XP.

Key Features

One to four plug-in "smart" sensors

- Combustibles
- Oxygen
- Hydrogen sulfide
- Carbon monoxide

Optional toxic sensors

- Sulfur Dioxide (SO₂)
- Nitric Oxide (NO)
- Nitrogen Dioxide (NO₂)
- Chlorine (Cl₂)
- Hydrogen Cyanide (HCN)
- Ammonia (NH₃)
- Phosphine (PH₃)

Rechargeable Lithium-ion battery pack provides up to 20 hours of continuous operation

Rugged housing with stands use in harsh environments

- Water- and dust-resistant case
- Strong protective rubber boot

Additional Advantages

- Highly resistant to radio-frequency and other electromagnetic interference
- Strong, built-in sample draw pump draws up to 100 feet (30 meters horizontally or vertically)
- Also available in diffusion configuration
- One-button calibration with auto-zero capability
- Loud audible alarm
- Bright visible alarm
- Interchangeable Lithium-ion and alkaline battery packs

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 shutdowns

Power plants

Pulp and paper industry

Steel mills



ATEX



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Specifications*

Sensor Specifications

Gas Monitor	Range	Resolution
Oxygen	0-30.0%	0.1%
Combustible	0-100% LEL	1% LEL
Carbon Monoxide	0-500 ppm	1 ppm
Hydrogen Sulfide	0-100 ppm	1 ppm
Sulfur Dioxide	0-20.0 ppm	0.1 ppm
Nitric Oxide	0-250 ppm	1 ppm
Nitrogen Dioxide	0-20.0 ppm	0.1 ppm
Chlorine	0-10.0 ppm	0.1 ppm
Hydrogen Cyanide	0-100 ppm	1 ppm
Ammonia	0-50 ppm	1 ppm
Phosphine	0-5.0 ppm	0.1 ppm

Detector Specifications

Size	4.5"L x 3.0"W x 1.8"H (11.5 x 7.6 x 4.6 cm)
Weight	15 oz (425 g) with battery w/o rubber boot
Sensors	<ul style="list-style-type: none"> • Combustible: Protected dual-mode catalytic bead • Oxygen: Electrochemical fuel-cell • Toxic: Interchangeable electrochemical for CO, H₂S, SO₂, NO, NO₂, Cl₂, HCN, NH₃, and PH₃
Battery	<ul style="list-style-type: none"> • Interchangeable Li-ion and alkaline battery packs • Rechargeable units include Li-ion battery pack with internal smart charging, 120V AC/DC wall adapter, and spare alkaline battery pack
Operating Hours	<ul style="list-style-type: none"> • Diffusion: Up to 20 hours continuous operation with Li-ion battery, up to 18 hours with alkaline battery (typical without alarm) • Pump: Up to 16 hours continuous operation with Li-ion battery, up to 12 hours with alkaline battery (typical without alarm)
Display	2 line, 16 digit LCD with LED back light automatically in dim light or alarm condition
Keypad	1 operation and 2 programming keys
Direct Readout	Instantaneous reading of up to four sensors <ul style="list-style-type: none"> • Oxygen as percentage by volume • Combustible gas as percentage of lower explosive limit (LEL) (scalable using Correction Factors) <ul style="list-style-type: none"> - Thermal conductivity mode as percent volume (option) • Toxic gases as parts per million by volume • High and low values for all gases • STEL and TWA values of toxic gases • Battery and shutdown voltage • Date, time, elapsed time, temperature
Alarms	95dB buzzer (at 30 cm) and flashing red LED to indicate exceeded preset limits <ul style="list-style-type: none"> • High: 3 beeps, vibrations and flashes per second • Low: 2 beeps, vibrations and flashes per second • STEL and TWA: 1 beep, vibration and flash per second • Alarms latching with manual override or automatic reset • Additional diagnostic alarm and display message for low battery and pump stall
EM/RFI	Highly resistant to EMI/RFI. Compliant with EMC Directive 89/336/EEC
IP Rating	IP-55, protected against dust and low-pressure jets of water from all directions
Datalogging	Standard 67 hours at one-minute intervals, with serial number of unit, user ID, site number, calibration date
Calibration	Two-point calibration for zero and span, user-selectable three-point calibration for oxygen
Sampling Pump	Optional, internal pump with user selectable flow-rate: High: ~250cc/min, Low: ~150cc/min
Low Flow Alarm	Auto shut-off pump at low flow condition

Detector Specifications (continued)

Hazard Area Approval	<ul style="list-style-type: none"> • US and Canada: UL, CSA (pump only), Classified as Intrinsically Safe for use in Class I, Division I Groups A, B, C, D, T3C • Europe: ATEX II 2G EEx ia d IIC T3 & T4
Approval	-4° to 113°F (-20° to 45°C)
Temperature Humidity	0% to 95% relative humidity (non-condensing)
Attachments	Belt Clip on rugged black rubber boot
Warranty	Lifetime on non-consuming components (per RAE Systems Standard Limited Warranty) 2 years for O ₂ , LEL and CO, and H ₂ S sensors 1 year for all other electrochemical sensors 1 year for pump and battery

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

Monitor-only includes:

- Monitor as specified
- Sensors as specified
- Calibration adapter
- Quick reference guide
- Operation and maintenance manual
- Training CDROM
- Rubber boot with belt-clip
- Pumped units additionally include:
 - 3 external filters
 - External filter adapter
 - Inlet probe 3"
- ProRAE Suite Software Package for Windows 98, 2000, NT and XP
- Computer interface cable

Battery Options

- Alkaline-only includes standard alkaline battery pack
- Rechargeable units include:
 - Lithium-ion battery pack
 - 120 V or 230 V AC/DC wall adapter
 - Spare alkaline battery pack

Monitor with Accessories Kit

- Hard transport case with pre-cut foam
- 15 feet (5 meters) Tygon® tubing
- Constant-flow hand pump (for diffusion models)
- Tool Kit

Optional Calibration Kit

- Four-gas mix in a 34L cylinder (50% LEL, 20.9% O₂, 10 ppm Hydrogen Sulfide, 50 ppm Carbon Monoxide)
- Calibration regulator and tubing

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