

QRAE PLUS

Advanced and Compact 4-Gas Confined Space Gas Detector

The QRAE Plus is a full-featured, compact, one-to-four sensor confined space gas detector. New features include easy-to-change, externally accessed battery packs (available in both alkaline and rechargeable versions) and an even more water-resistant case design. 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 PC compatible with Windows 98, NT, 2000 and XP.

Key Features

One-to-four plug-in "smart" sensors

- Combustible
- Oxygen
- Hydrogen sulfide
- Carbon monoxide

Optional substance-specific 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 (more than 2 work shifts) of continuous operation

Rugged housing withstands use in harsh environments

- Water and dust resistant case
- Strong protective rubber boot

Additional Features

- Highly resistant to radio frequency and other electromagnetic interference
- Strong, built-in sample draw pump with optional collapsible sample-probe
- Also available in diffusion configuration
- One-button calibration with auto-zero capability
- Loud audible alarm
- Bright visual 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 shut downs

Power plants

Pulp and paper industry

Steel mills



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	15oz (425g)
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 lithium-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 lithium-ion battery, up to 18 hours with alkaline battery (typical without alarm) Pump: Up to 16 hours continuous operation with lithium-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
Keypads	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) (scaleable using correction factors) Thermal conductivity mode as percent volume Toxic gases as parts-per-million by volume High and low values for all gases STEL and TWA values of toxic gases Battery and shut down voltage Date, time, elapsed time, temperature
Alarm	95 dB buzzer and flashing red LED to indicate exceeded preset limits <ul style="list-style-type: none"> High: 3 beeps and flashes per second Low: 2 beeps, vibrates and flashes per second STEL and TWA: 1 beep, vibrates and flash per second Alarms latching with manual override or automatic reset Additional diagnostic alarm and display message for low battery and pump stall
Datalogging	Standard 16,000 downloadable to PC 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
Hazardous Area Approval	<ul style="list-style-type: none"> US: UL, cUL, Classified as Intrinsically Safe for use in Class I, Division 1 Groups A, B, C, D, and Class 2 groups E, F, G Hazardous Locations T6 rating Europe: ATEX EEx ia d IIC T4/T3
Temperature	-4° to 113°F (-20° to 45°C)
Humidity	0% to 95% relative humidity (non-condensing)
Attachment	Durable rubber boot and wrist strap

QRAE Plus Accessories

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:
 - 10 water trap filters
 - Inlet probe 3"
 - Water trap adapter
- Software ProRAE Suite 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 AC/DC wall adapter
 - Spare alkaline battery pack

Monitor with accessories kit also includes:

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

Optional calibration kit also includes:

- 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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