

# RIG RAT III



## Wireless Multi-Point Gas Detection System



### The Stand-Alone Solution

The rugged Rig Rat III detection system provides multi-point monitoring for toxic gases, combustibles and oxygen hazards. Self-powered and solar-capable, the Rig Rat III features unequalled versatility, with an extensive range of field configurations. With real-time, two-way data transmission and remote sensing capabilities, the Rig Rat III represents the new generation of stand-alone system technology.

**Self-contained and intrinsically safe, the Rig Rat III is the ultimate in stand-alone detection.**



"INNOVATORS IN GAS DETECTION"

**BW**  
Technologies



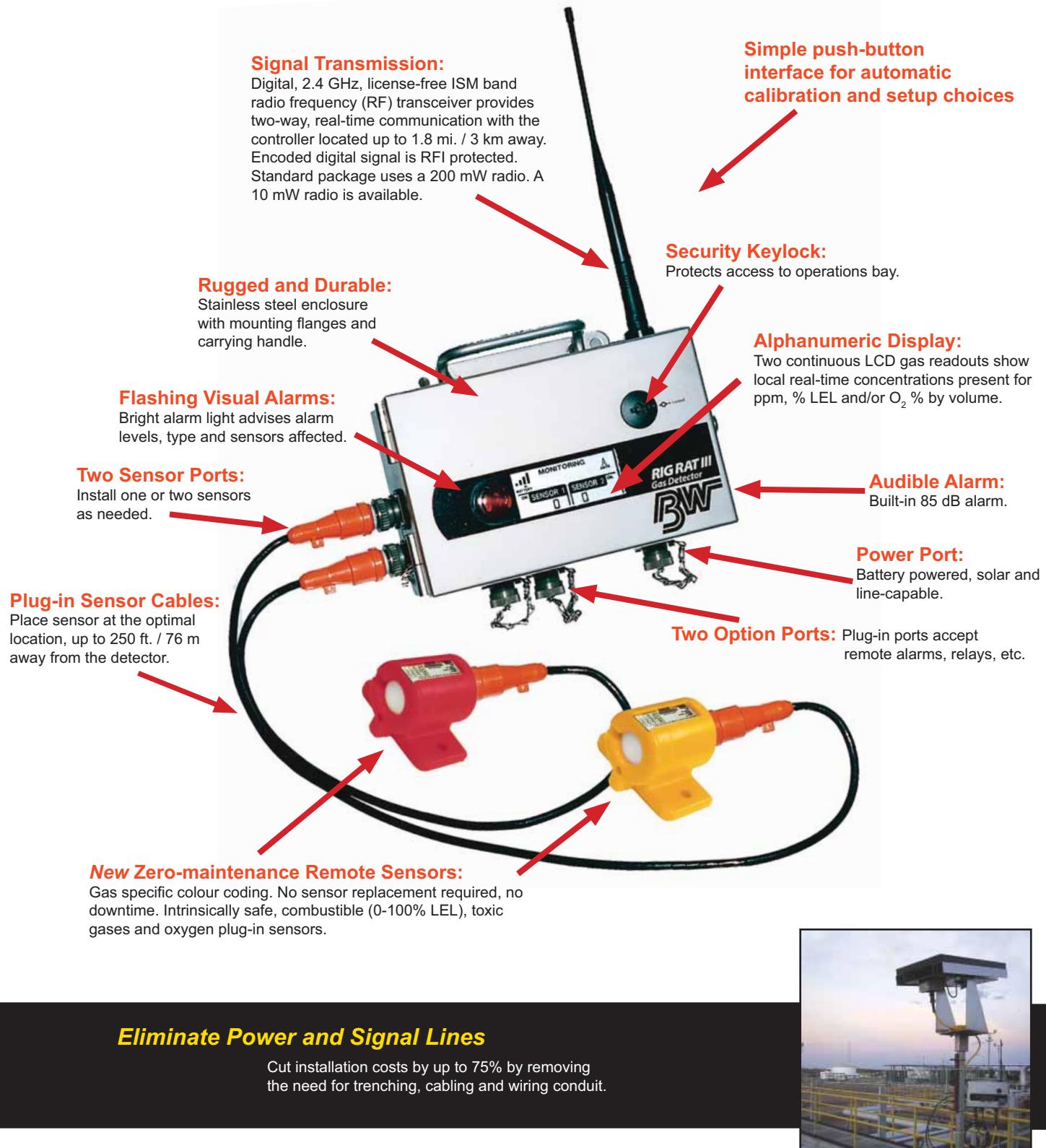
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# RIG RAT III

## Wireless Multi Point Gas Detector with Sensors

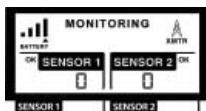
Rig Rat III is completely modular in design, with plug-in ports for all system components and field interfaces: remote sensors, remote alarms, relays, solar power, etc. Microprocessor-based operation and advanced sensor technology ensure reliability and performance.

Cost-effectiveness is a hallmark of the Rig Rat III. Trenching and cabling costs are eliminated through wireless, two-way digital RF data transmission. Maintenance-free combustible sensors reduce the need for costly upkeep requirements.



## Alarm Status

The large LCD keeps you advised of any gas hazard present. The intelligent LCD readouts provide instant diagnostic information.



### In the event of an alarm condition:

- ▲ Alarm signal is transmitted
- ▲ The RED alarm LED flashes
- ▲ DANGER icon lights and flashes
- ▲ The audible alarm pulses
- ▲ Alarm port option(s) trigger
- ▲ The LCD readouts show the concentration of gas(es) present



## Low or High Gas Alarm

A LOW alarm condition triggers:

- ▲ Alarm signal transmission to the controller (and receiver alarms)
- ▲ Alarm port options
- ▲ Built-in audible 85 dB alarm

Users can field-select, if desired, the above functions to activate during HIGH alarm only instead of during LOW alarm.

The LOW ALARM or HIGH ALARM gas icon will light, advising alarm level and sensor affected. The field functions will activate on the alarm level selected. Current alarm setpoints can be viewed at any time.

## Sensor Integrity Alarm

The integrity alarm is triggered if a sensor is missing or a sensor cable is damaged. In addition to the above alarm notification, sensor 1 or sensor 2 FAIL icon will light to advise which sensor or cable is affected.



## Low Battery Alarm

The battery level is continuously displayed. The longest bar indicates a fully charged battery. If battery power drops below usable levels a low battery alarm will activate the above alarm signals, the **Arrow** will be under the shortest bar and the **Battery Bar** will flash.



## Transmitter Status

The Rig Rat III controller is in constant two-way communication with all remotely located system elements. The radio transmitter (XMTR) icon is continuously displayed on the detector to indicate system communication status.

 In the event of an alarm condition, the digitally coded signal is transmitted to the appropriate controller channel (and/or receiver alarm). The **XMTR** icon changes and flashes to advise transmission mode.



 If the transmitter has been turned OFF to prevent false alarms during calibration or service, the **DISABLED** icon will appear below the **XMTR** icon. The disable button is located in the operation bay.

In the event that communication is lost between the detector and controller, or other system elements, the appropriate alarms will be activated both at the controller and the remotely located detectors.

## Detector Configuration

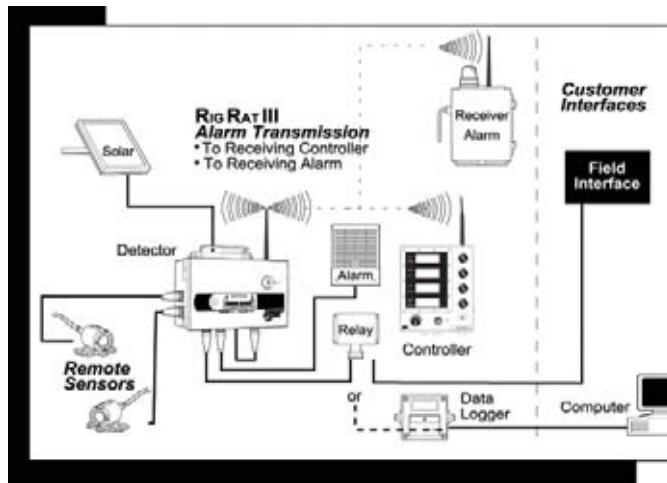
The detector can be equipped with one or two remote gas sensor heads in any gas combination desired. A simple rotary switch is used to choose the sensor type and the measuring range for the sensor head. Alarm setpoints can be field-assigned to desired levels.

## Security, Durability, Simplicity

Housed in a rugged, corrosion-resistant, 14 gauge stainless steel enclosure, the tamper-proof, external hinged door is secured with a key lock and high-tension latch, which protects the control bay. The inner control door is equipped with slip hinges for easy access to the setup and service bay. All electronics are sealed in weatherproof enclosures - only the sensor is exposed to the environment.

## Flexibility and Versatility - Building Block Approach

Modular Rig Rat III Systems are readily installed, modified and expanded without disturbing the work site.



## Facility Monitoring

Any size of system is possible. A system can be readily expanded and changed as site requirements evolve.

## Perimeter Monitoring

Rig Rat III provides a cost-effective solution to perimeter monitoring on large sites.

## Portable Monitoring

Field proven on mobile work sites and by disaster response teams, Rig Rat III is the only truly portable, independent, multi-point system in the world.

## Applications

Some common applications include:

- Drilling Rigs
- Service Rigs
- Offshore Platforms
- Refineries
- Petrochemical Plants
- Gas Plants
- Perimeter Monitoring
- Plant Turnarounds/Shutdowns
- Pipelines
- Tank Farms
- Wellheads and Pump Jacks
- Pulp and Paper Mills
- Hazardous Waste Sites
- Sewage Treatment Facilities
- Loading Docks
- Ammonia Plants
- Nuclear Plants
- Emergency Response Teams
- Fire/HAZMAT



## Radio Signal - The Practical Solution

For optimal signal transmission and reception, a variety of antennas are available.

# RIG RAT III

## Wireless Independent Receiver Controllers with Remote Plug-in Options

The Rig Rat III stainless steel controllers are the central communication center for the Rig Rat III gas detection system. The standard Rig Rat III controller allows the simultaneous display of readings and alarm state messages for up to eight remotely located sensors. The system uses a built-in digital 2.4 GHz, license-free ISM band (RF) transceiver, which allows two-way real-time communication with system elements located up to 1.8 miles (3 km) away. The controller is in constant communication with system elements. Detectors transmit a discretely coded radio signal to the controller, advising the detector of a gas alarm or integrity alarm condition.

### Rugged and Durable:

Rugged, stainless steel enclosure

### Alphanumeric Display:

Real-time readings for all detectors and sensors.

Channel alarm LCD indicator flashes and latches to indicate alarm condition.

Each channel receives unique digitally coded alarm signals from the detector.

### System Reset:

Alarm acknowledgement/ alarm reset switch

### Two Option Ports:

Two plug-in option ports: one for alarm bar and one for discrete relay option (future expansion).

### Status LED:

Advises power status:  
Green - A/C  
Red - Battery

### Multi-Point Systems:

The system can be expanded to include up to several hundred individual monitoring points. *Larger systems require more than one controller.*

### Signal Transmission:

2.4 GHz digital, spread-spectrum, ISM band RF transceiver with 1.8 mile (3 km) transmission radius with 8 dBi antenna

### Optional:

Plug-in RS-485/MODBUS module

### Channel Activation:

Individual enable/disable channel control switches

### Audible:

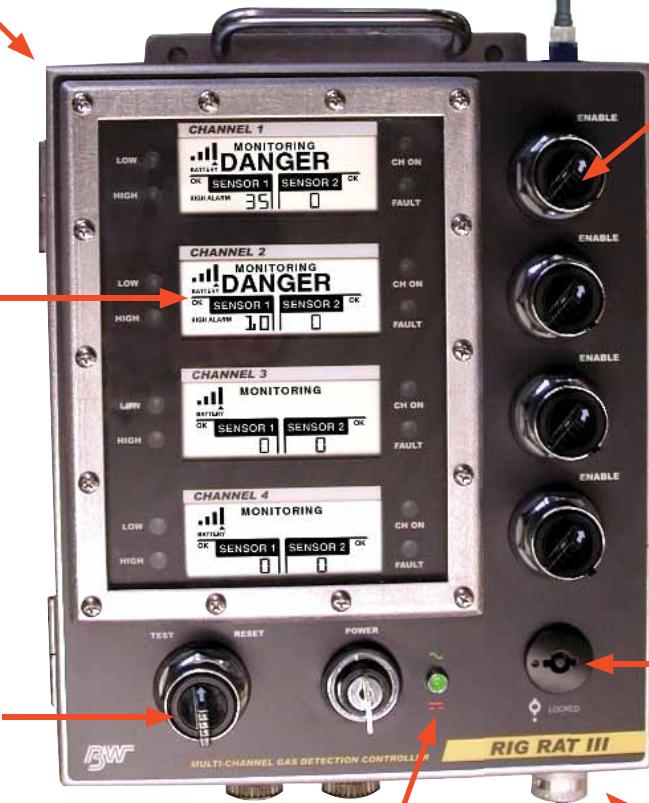
Built-in audible (85 dB) and visual alarms

### Security Locks:

Heavy duty stainless steel latches.

### Security ON/OFF Keylock:

Protects access to operations bay



## Remote Plug-In Accessories and Options

A wide range of rugged, versatile, plug-in options enable you to configure a system to meet your specific monitoring needs. Add, change or move system components as requirements evolve.

<b>Remote Sensors</b>					
Maintenance-free combustible, toxic and oxygen sensors			Select cable length: up to 250 ft. / 76 m		
					
<b>Power Choices</b>					
Independent battery power	Solar-capable: 5, 10, 20 or 30 watt	120/230 VAC line chargers	24 VDC Direct		
					
<b>Audible/Visual Alarms</b>					
Alarm Bar	High-output audible	60,000 candle power	160,000 candle power	101 dB siren	112 dB bullhorn
					
<b>10 Amp AC/DC Relays</b>					
Discrete alarm relay	Weatherproof	Explosion-proof			
					
<b>Other</b>					
Remote Receiver Alarms (Contact BW Technologies for availability)	Repeater Station	Solenoid Driver	Datalogger		
					
<b>Mounting Kits</b>					
Wall mount	Tripod 1 mount	Tripod 2 mount			
					

## Increased Flexibility

**Rig Rat III** provides continuous monitoring for combustibles (0-100 %LEL), oxygen hazards and toxic gases.

### Remote Sensors

Mix, match or change the gas type and/or measuring range. Install one or two sensors as desired. Configuration is simple with plug-in, rugged sensor units and simple rotary switch to change type of sensor and range.

### Remote Sensor Cables

Toxics and oxygen: 250 ft. / 76 m  
Combustibles: 100 ft. / 30 m  
Standard cable length is 10 ft. / 3 m. Optional cables of up to 250 ft. / 76 m are available.

### Continuous Power

**Solar:** Plug-in, stainless steel, solar panels allow continuous operation in remote and isolated locations. Available in 5, 10 and 20 watt versions to accommodate system power requirements.

**Line Power:** 12 or 24 VDC direct or 110/230 VAC trickle chargers power each detector at an adjacent power supply, with short cable runs.

**Independent Battery:** Detector will operate on batteries only for up to 30 days depending on sensors and data transmission interval used.

### Audible/Visual Alarms

Remote, plug-in audible/visual alarms alert personnel that there is an alarm condition on site. Alarms are powered by the controller or detector.

Optional receiver alarms are equipped with their own RF transceiver with a 1.8 mile (3 km) transmission radius. Receiver alarms include built-in backup battery. Contact BW Technologies for availability.

### Relays

Plug-in, 10-amp SPDT AC/DC single and dual relays trigger site-specific interfaces and are powered by the controller or detector.

### Solenoid Driver

Activates process or fluid control systems, if required.

### Datalogger

Data collected is expressed in % LEL, ppm or % by volume, as required. IBM compatible.

*Note: The detector is equipped with two option ports. A 4-port MOB (multiple option box) is available for the inclusion of additional interfaces.*

### Mounting Kits

Tripod and wall mount kits are available to simplify installation. Tripod kits accept 5, 10 and 20 watt solar panels.

### Repeater Station

The repeater station effectively doubles the transmission range of the detector. The repeater station is equipped with both a radio receiver and a transceiver that relays the alarm signal to the controller. A solar panel will provide continuous power. Contact BW Technologies for availability.

# Rig Rat III

## Multi-Point Wireless Gas Detection System

**Gases Monitored:** Change the gas monitored and/or the measuring range at any time.

- Combustible Gases/Vapors
- Oxygen
- Toxics: Ammonia  
Carbon Monoxide  
Chlorine  
Chlorine Dioxide  
Ethanol  
Ethylene Oxide  
Hydrogen  
Hydrogen Chloride  
Hydrogen Cyanide  
Hydrogen Sulfide  
Nitric Oxide  
Nitrogen Dioxide  
Ozone  
Phosgene  
Phosphine  
Sulfur Dioxide

**Power Independence:** The following sensor configuration lists the duration of the internal, rechargeable battery life (per charge):

- 2 toxic sensors: Up to 30 days
- 1 toxic, 1 LEL: Up to 5 days
- 2 LEL sensors: Up to 3 days

*Note: Battery life will vary depending on transmission interval and temperature.*

### Order Information

For full system order information and system configuration, contact BW Technologies.

**RR-3000:** Rig Rat III Wireless Gas Detector (standard) comes with one 5 dBi antenna.

**RR-3000S:** Rig Rat III Non-Wireless Gas Detector comes complete with all standard Rig Rat III components, except antenna and transceiver.

**RR-3C04:** Rig Rat III 4-Channel Controllers are capable of simultaneous display and annunciation of up to 8 remotely located sensors.

**RR-3CMBUS:** RS-485/MODBUS output module.

**RR-REP1-4:** Rig Rat Repeater re-transmits wireless signal from four (4) detectors to controller.

**RR-3BAT-01:** Optional 12 V, 10.4 amp hr. battery pack.

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### SPECIFICATIONS

#### SYSTEM:

Signal Transmission: 2.4 GHz licence free, ISM band spread-spectrum RF transceiver.  
User-settable discrete codes.

Distance: Up to 1.8 mi. / 3 km, depending upon antenna configuration

#### GAS DETECTOR:

Power: 12 volt, 3.4 amp hr. rechargeable battery

Battery Life: Up to 30 days, without active recharge (dependent on sensors)

Recharge: Via solar power; line (24 VDC direct, 110/230 VAC) or bench chargers

#### ALARMS:

Visual Alarms: Large, red flashing light

LCD: alarm level present, sensor affected and alarm type

Oscillating 85 dB at 3 ft. / 1 m (typical)

Gas Alarm Levels: Two per sensor (LOW, HIGH) with field-settable setpoints

Other Alarms: Fault advises missing sensor, damaged cable and/or low battery alarm

#### LCD DISPLAYS:

Gas ppm or %: Two continuous, alphanumeric gas readouts and status displays:

Status Indicators Advise: Simultaneously and continuously displays gas concentration(s) present

Transmitter status, battery level, sensor fault, alarm level setpoints

#### CONTROLS:

Three:

1. Power ON/OFF

2. Transmitter (XMTR) DISABLE

3. Transmission TEST

#### PORTS:

SECURITY: Keylock access to control panel

#### GENERAL SPECIFICATIONS:

Humidity: 5% to 95% RH (non-condensing)

Size: 8.46 x 11.26 x 4.53 in. / 21.49 x 28.6 x 11.51 cm

Weight: 11 lb. 6 oz. / 5.15 kg

#### GAS SENSORS:

Type: Remote interchangeable plug-in units

Combustibles: catalytic bead; toxics and oxygen: electrochemical

Powered: By the detector

Humidity: 5% to 95% RH (non-condensing)

Temperature Range:

Combustibles: -40 to +50 °C / -40 to +122 °F

Hydrogen Sulfide: -40 to +50 °C / -40 to +122 °F

NH<sub>3</sub>, Cl<sub>2</sub>, HCl, ClO<sub>2</sub>, O<sub>3</sub>: -20 to +40 °C / -4 to +104 °F

Other toxics and oxygen: -20 to +50 °C / -4 to +122 °F

Physical: Toxic/O<sub>2</sub>: stainless steel, NEMA 4

Combustible: maintenance-free, encapsulated, NEMA 4

Warranty: 2 years, including all sensors (except NH<sub>3</sub> and PH<sub>3</sub> - 1 year)

Gas Monitoring Specifications	LCD Increments	Standard Measuring Ranges Available						
		Units	#=1	#=2	#=3	#=4	#=5	#=6
Combustibles (encapsulated)	1 % LEL	%	0-100					
Hydrogen Sulfide	1 ppm	ppm	0-100	0-50	0-500	0-20		
Sulfur Dioxide	1 ppm	ppm	0-100		0-20	0-10		
Ammonia	1 ppm	ppm	0-50	0-100				
Carbon Monoxide	1 ppm	ppm	0-500					
Chlorine	0.1 ppm	ppm	0-5.0	0-10.0				
Oxygen	0.1%	%v/v	0-25.0%	0-30.0%				
Other Gases	Contact BW Technologies							

#### CONTROLLERS:

Standard controller (RR-3C04) for up to 4 Rig Rat III detectors

MODBUS (RS-485) -optional

Discretely coded radio signals from each detector

Power: 110 VAC; 230 VAC (selectable)

Battery Backup: Two 12 VDC rechargeable batteries (normal operation: up to 4 hrs.)

#### ALARMS:

Visual: LCD displays alarm level present, sensor affected and alarm type

Audible: 85 dB at 3 ft. / 1 m (typical)

#### ALARM RELAY OUTPUTS:

INDICATORS: LEDs (four / channel): 2 alarm indicators, 1 fault, 1 channel enable

CONTROLS: One ON/OFF switch; one ENABLE/DISABLE switch per channel and one momentary reset/test switch

#### PORTS:

Antenna port: TNC (reverse polarity)

Alarm bar port: 12 VDC output per channel

External relay port: Alarm specific relay option

Common relay port: Low, high and fault (latching configurable)

Humidity: 5% to 95% RH (non-condensing)

Enclosure: Self-contained 14 gauge stainless steel with mounting flanges, NEMA/Type 4

Physical: 14.95 x 11.16 x 5.15 in. / 37.97 x 28.35 x 13.08 cm; weight 21 lb. / 9.53 kg

*DUE TO ONGOING RESEARCH AND PRODUCT IMPROVEMENT, SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.*

#### RATINGS AND CERTIFICATIONS:



#### RR-3000 Gas Detector:

Sensors: LEL: Class I, Div. 1, Groups C, D; Class II, Div. 1, Group G

Toxics, Oxygen: Class I, Div. 1, Groups C, D; Class II, Div. 1, Group G

Controller: Class I, Div. 1, Groups C, D; Class II, Div. 1, Group G



for ordinary locations

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