



ChemRAE

Chemical Warfare Agent Detection

Portable, Wireless, CWA Detector

ChemRAE is the latest in state-of-the-art handheld Chemical Warfare Agent detection and identification systems. It is RAE Systems' next-generation sensor technology based on tested and proven Open Loop Ion Mobility Spectrometry (IMS) technology. The ChemRAE uses an improved Ion Mobility Cell™, which provides enhanced selectivity and sensitivity. It is designed to detect Chemical Warfare Agents (CWAs) and toxic industrial chemicals (TICs).

ChemRAE can be used as a stand-alone portable monitor or integrated into an AreaRAE network by using a RAELink2 modem. Integration into an AreaRAE network allows users to add CWA detection to their existing complement of AreaRAE and RAE Systems portable gas monitors.

The ChemRAE weighs less than 2 lbs. and can be powered by a rechargeable lithium-ion battery pack or AA batteries. The system has clear, simple user interface, which can be operated with just one hand. The display provides the operator with agent class, a bar graph of agent concentration and relative time-based dose. The display also shows a battery life indicator, audible alarm level, date and time.

The ChemRAE stores agent alarm information for retrieval at a later time to provide a historical log of events. When integrated into an AreaRAE network, ChemRAE's data is automatically logged by the ProRAE Remote base station computer.

ChemRAE is equipped with two detection libraries for detection of a wide range of chemical weapons and toxic industrial chemicals of interest to first responders.

The ChemRAE is small enough to use as a personal detector, a monitor for surveying contaminated areas or a fixed installation detector. It provides continuous operation, and unlike other IMS systems it does not require expendable desiccant cartridges. The ChemRAE has no consumables and is designed for low life-cycle and operating costs.

Key Features

- Industry-leading IMS technology
- Wireless integration into AreaRAE networks
- Dosage measurement
- Agent identification
- Adjustable sensitivity
- Light weight
- Simple one-hand operation
- Low life-cycle cost with no consumable components

Applications

- First Responder CWA Monitoring
- Personal Protection Monitoring
- HazMat Management
- Fixed and Vehicle-mounted CWA Monitoring

Optional Accessories

- External lithium battery charger
- Alkaline battery adapter



ChemRAE

ChemRAE Specifications*

Chemical Detected	Low Alarm Limit (ppm)	Low Alarm Limit (mg/m ³)
Nerve Agents		
GA (Tabun), GB (Sarin)	0.2	0.02
GD (Soman), GF (Cyclo-Sarin) / VX	0.1	0.01
Blister Agents		
HD (Sulfur Mustard)	0.312	2.00
L (Lewisite)	0.242	2.00
Blood Agents		
Ethylene Oxide	100	180
Acrylonitrile	100	217
Hydrogen Sulfide	10	14
Arsine	5	16
Ammonia	400	278
Phosphor Trichloride	25	140
Carbon Disulphide	500	1557
Allyl Alcohol	40	95
Physical Dimensions		
Size	9"L x 4"W x 2"H	
Weight with Battery	1.8 lbs (0.8 kg)	
Environmental		
Operating Temperature	-22°F to +31°F (-30°C to +55°C)	
Storage Temperature	-40°F to 158°F (-40°C to 70°C)	
EMI	MIL-STD-461C	
EMP	MIL-STD-462	
Vibration	MIL-STD-810D	
Shock	MIL-STD-810D	
Data Interface	RS-232 adapter	
Power		
Line Power	120/240 VAC	
Rechargeable Battery	Li-Ion	
Recharge Time	Approximately 5 hours	
Chargers	Battery charges in the monitor or in an optional stand-alone charger	
Alkaline Battery	6 AA batteries using optional alkaline battery adapter	

*Specifications are subject to change



RAELink2 Specifications*

Operating Mode	Point to multi-point
Size	4"L x 3.5"W x 2"H
Weight	0.9 lbs (0.4 kg) with built-in battery pack
Battery	Rechargeable 7.4V/1.8Ah, Lithium-ion battery pack with built-in charger (less than 10 hours charge time)
Operating Hours	24 hours continuous operation
Frequency	902 - 928 MHz (license-free ISM band)
Spreading Method	Frequency hopping
Hopping Patterns	15
Hopping Channels	50 to 112
Range	Up to 2 miles (varies with antenna)
Peak RF Power	1 watt (+30 dBm)
Modulation	Spread spectrum GSK, 120 or 170 kbps
Occupied Bandwidth	230 kHz
Receiver	
Sensitivity	-108 dBm at 10 ⁻⁶ raw bit error rate
Selectivity	40 dB at f _c , 230 kHz 60 dB at f _c , 460 kHz
Data Transmission	
Error Detection	32 bit CRC, resend on error
Link Throughput	115 kbps
Interface	RS-232, 19.2 kbps
Intrinsic Safety	RAELink2 and ChemRAE are not rated for intrinsically safe applications

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