



# CHEMGARD – IR Gas Monitor

## [ Toxic Gases Under Control ]

The CHEMGARD Gas Monitor from MSA can monitor more than 60 gases in the TLV range such as hydrocarbons, solvents, alcohol's, alkanes and toxics.

The photoacoustic infrared sensing technology provides precise, low cost and high performance monitoring. It is extremely stable and highly selective to the gas of interest and can operate for months with virtually no zero drift.

Cross sensitivity to water vapour, a common problem with many types of infrared analysers, does not occur with the CHEMGARD. Its proprietary sensing technique determines the amount of water vapour in the sample and subtracts it from the gas reading. This provides an extremely stable gas reading, with no compromise in the instruments sensitivity.

The instrument typically draws the gas sample via an internal pump. An internal flow switch alerts the operator if the gas sample is blocked. An optional multi point sequencer can be included in the CHEMGARD to allow either 4 or 8 points to be sampled.

The IR Gas Monitor series of instruments includes the "CHILLGARD RT" that is specifically designed to monitor for refrigerant leaks. For further information please refer to Data Sheet 07-523.2 and the back of this data sheet.

### [ Features and Benefits ]

- High performance, low maintenance and low cost
- Detects concentrations of 1 ppm, permitting early alarming
- Easy to install, operate and maintain

- Photoacoustic infrared technology
- Operation over a wide temperature range
- Large, easy to read, fluorescent display showing gas concentration and alarms
- 3 adjustable alarm levels
- Relay outputs for each alarm level
- Monitoring of up to 8 measuring points
- No effect from water vapour in the gas sample

### [ Measuring Principle ]

The CHEMGARD measures the gas of interest by the principle of infrared photoacoustic absorption. Sample gas enters the monitor measuring cell and is exposed to infrared. The sample gas absorbs some of the infrared and this absorbed energy is a function of the gas concentration.

The absorbed radiation has a unique spectrum for each gas making it possible to detect refrigerants selectively using special infrared filters. When the infrared is modulated a pressure change is generated in the measuring cell. This photoacoustic pressure signal is measured with a sensitive condenser microphone.

The signal from the microphone is electronically filtered, linearised and amplified to provide a display of the actual gas concentration.

## Technical Specifications

<b>Measurable Gases</b>	see list at bottom of page
<b>Measuring Range</b>	0...1000 ppm [other measuring ranges available, e.g. 0–10, 0–100 ppm or 0–1%, 0–10%, 0–100% Vol]
<b>Accuracy</b>	0...100 ppm $\pm 2$ ppm, 100...1000 ppm $\pm 10\%$ of the reading
<b>Linearity</b>	0...100 ppm linear, 100...1000 ppm $\pm 2\%$ of full scale
<b>Sensitivity</b>	2 ppm
<b>Resolution</b>	1 ppm
<b>Reproduceability</b>	$\pm 2$ ppm over 12 months according to specified operating conditions
<b>Response Time</b>	70 s for 90% of the final reading, based on a single point instrument
<b>Operating Temperature</b>	0 °C...+ 50 °C
<b>Temperature Effect</b>	$\pm 0.3\%$ of the reading per °C
<b>Relative Humidity</b>	0...99% RH, non condensing, no effect on the reading
<b>Sample Flow Rate</b>	0.75 l/min
<b>Maximum Sample Tubing Length</b>	45 m with 3 mm ID [1/8" ID]

## Operation

<b>Power Supply</b>	120 VAC $\pm 10\%$ , 0,56 A; 240 VAC $\pm 10\%$ , 0,3 A
<b>Alarm Relays</b>	3 relays, 240 VAC, resistive
<b>Analogue Output</b>	4...20 mA, 0...10 V for channel recognition
<b>Maximum Signal Load</b>	0...10 V into 2K ohm or 4...20 mA into 1K ohm
<b>Line Ø</b>	1/4" exterior, 1/8" interior
<b>Flow Switch</b>	activates at flow < 0.5 l/min
<b>Multipoint Sequencer Option</b>	without: 1 measuring point with: 4 or 8 measuring points
<b>Display</b>	Vacuum fluorescent display, 2 lines each with 20 characters
<b>Dimensions [height x width x depth]</b>	460 x 410 x 180 mm
<b>Weight</b>	Approx. 20 kg

### Excerpt from the list of substances that can be measured with the CHEMGARD:

Acetone, acrylonitrile, benzene, 1,3-butadiene, butane, butyl acetate, cyclopentane, dimethylamine, ethane, ethanol, ethyl acetate, ethyl benzene, ethylene, ethylene oxide, heafluoropropylene, hexane, isopropanol, carbon dioxide, carbon monoxide, methanol, methylene chloride, methylethyl ketone, methyl isobutyl ketone, methyl methacrylate, perfluoropromethyl vinyl ether, phosgene, propane, propylene oxide, sulfur hexafluoride, nitric oxide, nitrogen trifluoride, styrene monomer, tetrachloroethylene, tetrachloromethane, tetrafluoroethylene, toluene, trichloroethane, trichloromethane, trichloroethylene, triethylamine, xylene.

CHEMGARD can be configured for individual requirements. Please contact MSA for additional monitoring substances and ordering details.

### Model CHILLGARD RT:

Coolants R-11; -12; -13; -22; -113; -114; -123; -124; -125; -134a; -141b; -142b; -152a; -402a; -404a; -407c; -500; -502; -507; -508b; ammonia.

Please see leaflet 07-523.2.

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