



MSA Chillgard® RT Photoacoustic Infrared Refrigerant Monitor

[The industry standard for refrigerant leak detection monitors]



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The Chillgard RT Photoacoustic Infrared Refrigerant Monitor provides economical, low-level monitoring of refrigerant gases used in most refrigeration systems or chillers.

Many chillers still use the older ozone-depleting refrigerants which are being phased out by the Montreal Protocol, an international agreement. These refrigerants will be in short supply, as their manufacture terminated at the end of 1995. This and a Federally-imposed excise tax have driven up the replacement cost, making it essential to detect leaks as low as 1 ppm. Without the capability to monitor down to this low level, leaking refrigerant gases can go undetected for long periods of time.

Replacement cost of refrigerants is expensive. The Chillgard RT Monitor saves operating costs by detecting a leak early enough to prevent a major loss of refrigerant gas. In addition, some replacement refrigerants have a threshold-limit value (TLV) lower than their predecessors. The TLV determines the amount of refrigerant gas a worker can be exposed to while in the mechanical equipment room.

Because of these factors, monitoring for refrigerant gases is now a necessity. Also, ANSI/ASHRAE 15-1994 now requires mechanical equipment room leak detectors.

Sensor Technology

The Chillgard RT Monitor utilizes very stable and highly selective photoacoustic infrared (IR) technology to sense refrigerant gases at levels as low as 1 part-per-million.

The Chillgard RT Monitor can operate for months with virtually no zero drift. Its inherent stability eliminates the requirement of various auto-zeroing techniques which take the monitor "off-line" at regular intervals, leaving the area unprotected. This technique also presents the danger of zeroing on a "contaminated" fresh air source or on low levels of leaking refrigerant, rendering the monitor ineffective for detecting an alarm condition.

Installation of a "fresh air" sampling line or "on-line" scrubber is not required with the Chillgard RT Monitor. These add additional expense to the installation and require routine maintenance to ensure proper operation.

The Chillgard RT Monitor has a high immunity to interferants commonly found in mechanical equipment rooms such as cleaning agents and solvents. There is also no effect due to changes in humidity, a common problem with all other sensor technologies. Both are typical sources of false alarms when other sensing technologies are in use.

UL Approved

The Chillgard RT Refrigerant Monitor has been listed to proposed UL 2075. This assures not only protection from fire and shock hazards, but also assures performance of the instrument to the specifications listed.

Features

- Detectability down to 1 ppm
- Easy to install, operate and maintain

- Operates over a wide temperature range
- Complies with ANSI/ASHRAE 15-1994
- 2-line x 20-character vacuum fluorescent display which shows alarm indications and actual gas concentration
- Three alarm levels
- Relay outputs for each alarm level
- Password protection
- Can be expanded with the Multipoint Sequencer to monitor up to 8 locations.

Applications

Common refrigerant gases used in industries can also be monitored. These include:

- Propellant filling operations
- Solvent cleaning stations
- Cold storage and transport facilities
- Meat packing plants
- Supermarkets and refrigerant storage locations.

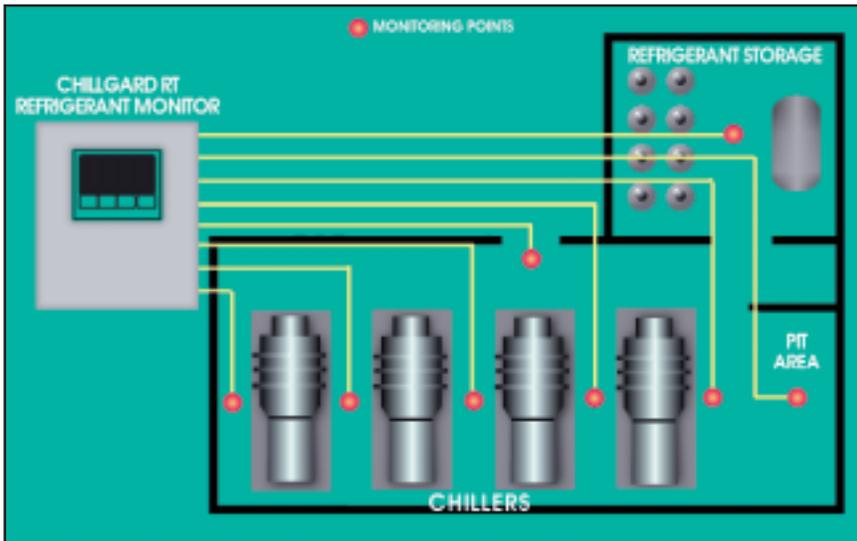
Expandability

Simply by adding the Multipoint Sequencer, the Chillgard RT Refrigerant Monitor can be expanded to monitor up to 8 locations. The Multipoint Sequencer is mounted internally in the monitor and can be factory- or field-installed. The results are:

- Refrigerant gas monitoring is now more cost effective, especially when monitoring large areas or multiple locations or chillers
- The fastest possible response to any leak or spill is obtained
- Fresh sample is pumped from locations up to 500 feet for each sample.

Single or Multiple Refrigerants

Most installations require detection for one specific type of refrigerant. However, some mechanical



Typical Chillgard RT Refrigerant Monitor Installation.

equipment rooms may have multiple chillers operating on more than one type refrigerant. For these applications a Chillgard RT Monitor with multigas capability can be installed to detect each type of refrigerant on a per location basis.

The multigas Chillgard RT Monitor allows the user to select from a menu of refrigerants for each sample line when the Multipoint Sequencer is installed. In this manner, any of the available selections from the menu can be applied to each line. If the particular refrigerant is drawn into the corresponding sample line, the part per million value and refrigerant type will be displayed.

Simplicity

The Chillgard RT Monitor and its Multipoint Sequencer is easy to install and operate. Four (4) front-panel keys configure the entire system.

The front panel displays all alarm and trouble messages. If a trouble condition occurs, the message is clearly shown on the display and it indicates the type of trouble.

The display also indicates the monitored location and the



corresponding gas concentration.

Upgradeability

When your chiller is converted to one of the newer refrigerants, your MSA Chillgard RT Monitor can also be converted. If a Chillgard RT Monitor with multigas capability has been installed it's a simple process to select the proper refrigerant type from the selection menu. Other conversions may require a simple upgrade of the photoacoustic infrared sensor.

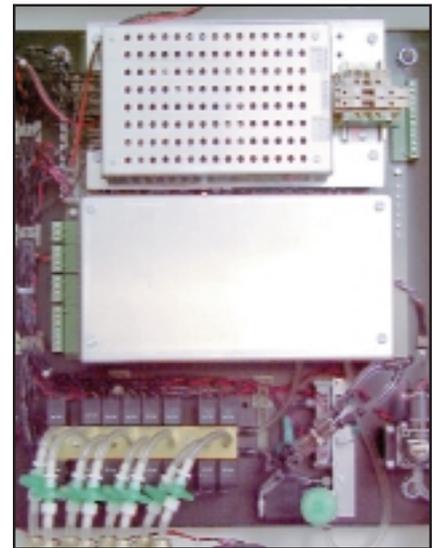
Accessories

Remote Relay Module

The Chillgard RT Remote Relay Module provides discrete relay outputs on a per-channel basis when the Multipoint Sequencer is in use. Eight, sixteen, or twenty-four relays can be utilized to provide a



Chillgard RT Refrigerant Monitor Relay Module



Chillgard RT Refrigerant Monitor Interior with Multipoint Sequencer.

relay output for either Caution, Warning, Alarm, or all of these conditions. These relay outputs are commonly used to activate horns, strobes, or ventilation equipment for separate areas that are monitored by the Chillgard RT Multipoint Sequencer.

Since the Remote Relay Module communicates with the Chillgard RT over a RS-485 serial link, it can operate remotely from the Chillgard RT Monitor. This allows the Chillgard RT Monitor to be installed in the best possible location to keep the sampling lines as short as possible but still provide alarm conditions that can be annunciated at a location of the user's choice.

Specifications- Remote Relay

Communication -	RS-485
Wiring -	Twisted-pair shielded
Audible alert -	Piezo electric 75 db@5'
Operating Power requirements -	120 VAC $\pm 10\%$ at 240 Watts, or 240 VAC $\pm 10\%$ at 120 Watts
Relays -	4A@120/240 VAC
Operating temperature -	0-50°C, 32-122°F
Physical Enclosure type -	Designed for Nema 4
Dimensions -	12"H x 14"W x 6"D
Weight -	25 lb.(0.453 kg.)

Refrigerants Detected with the Chillgard RT Monitor

Ammonia	R-134A	R-408A
R-11	R-141B	R-409A
R-12	R-142B	R-410A (AZ20)
R-13	R-143A	R-500
R-22	R-152A	R-502
R-23	R-218	R-507
R-32	R-227	R-508B (SUVA 95)
R-113	R-236FA	FM-200
R-114	R-401A (MP 39)	HFE-7100
R-123	R-402A (HP 80)	HFE-347E
R-124	R-404A (HP 62)	
R-125	R-407C (AC 9000)	

Detection of other refrigerants is possible. Contact an MSA representative at 1-800-MSA-INST for more information on your refrigerant monitoring needs.

Other Available Accessories:

Remote Display Module
Top Mounted Alarm Strobe

Ordering Information

See Chillgard RT Assemble-To-Order (ATO) order form, Bulletin 0730-03.

Specifications

Performance

Stability:	0-50 ppm \pm 1 ppm; (ammonia \pm 2 ppm;) 51-1000 ppm \pm 10% reading
Linearity:	0-50 ppm \pm 1 ppm, (ammonia \pm 2 ppm) 51-1000 \pm 10% of reading
Response:	Updated instrument reading every 7 seconds
Operating temperature:	0-50°C, 32-122°F
Temperature effect:	\pm 0.3% per °C of reading
Relative humidity:	0-95% non-condensing, no effect on reading
Sample flow rate:	0.75 liter/minute
Maximum total tubing length:	150 feet standard performance. 500 feet optional for applications where a slower speed of response is acceptable

Operating

Power requirements:	120 VAC \pm 10% at 0.56 Amps, or 240 VAC \pm 10% at 0.3 Amps
Alarm relays:	3 relays @ 8 Amps resistive
Audible output	Sonic Alert 75 db standard
Analog output:	0-10V, and 4-20mA isolated sourcing
Serial output:	RS-232
Maximum signal load:	0-10V into 2kOhms, or 4-20mA into 1kOhms
Sample tubing connections:	1/4" w/ 1/8" ID or 3/16" ID
Flow switch:	Activates at flow < 0.5 liter/min.

Performance, Multipoint Sequencer

Maximum sampled points: Eight (8)	
Maximum sample tubing length:	150 ft. ea. standard 500 ft. optional (1/4" OD, 3/16" ID Tubing)

Physical

Enclosure Type:	Designed as NEMA 4
Dimensions:	18" H x 16" W x 7" D
Weight:	45 lb.

Note: This Data Sheet contains only a general description of the product shown. While uses and performance capabilities are described, under no circumstances should the product be used except by qualified, trained personnel, and not until the instructions, labels or other literature accompanying the product have been carefully read and understood and the precautions therein set forth followed. Only they contain the complete and detailed information concerning this product.



DS 07-2016
(L) Nov 2001
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