

MSA Chillgard® VRF Refrigerant Detector for Variable Refrigerant Flow Systems



Product Features

- Low-level detection—as low as 25 ppm
- Versatility—capable of operating within wide temperature and humidity ranges
- Low maintenance—no moving parts, PAIR sensor technology
- Easy installation—simply secure back plate to wall

- Proven photoacoustic infrared sensor
- Stable zero baseline
- Digital communications
 - BACnet®
 - Modbus



BACnet® is a registered trademark of ASHRAE

WE KNOW WHAT'S AT STAKE.

Chillgard VRF Refrigerant Detector for Variable Refrigerant Flow Systems

Variable refrigerant flow (VRF) systems use pure refrigerant as the cooling and heating medium, versus traditional 4-pipe air conditioning method using hot and cold water. A typical VRF system consists of an outdoor condensing unit that conditions and circulates the refrigerant within buildings to multiple fan-coil units. A building could be conditioned by multiple VRF systems that deliver refrigerant at variable rates and exact amounts to spaces that need it, meeting building heating and cooling needs with increased precision and efficiency.

Engineers and contractors prefer to design and install these types of systems due to their many benefits, including energy savings of up to 40% and personalized comfort. Another incentive for moving to VRF is that these systems earn valuable points toward green building certification programs that recognize best-in-class building strategies and practices, including Leadership in Energy & Environmental Design (LEED) and Green Globes.

All VRF manufacturers work with engineers and contractors to help ensure the safety of all occupants and occupied areas by using best practices for design and installation, based on state, local and national building codes and ASHRAE standards, to minimize the potential for refrigerant leaks.

Building systems using long refrigerant piping and many connections running throughout create the potential for refrigerant leaks, likely causing potential safety issues.

It is important to note that the state, local and national building codes and ASHRAE standards apply to all applications of commercial refrigeration systems, including large chiller systems, packaged rooftop units, split systems including VRF systems.

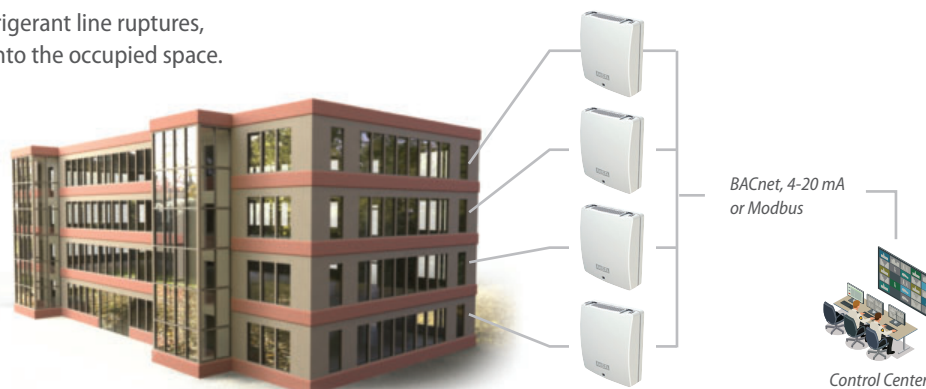
Why monitor refrigerants? If refrigerant leaks into occupied areas, there is risk of injury to occupants due to oxygen deficiency. Finding the areas with potential for highest leak concentration requires discerning both refrigerant quantity within the system and how the refrigerant will distribute should a leak occur. If a refrigeration system component or refrigerant line ruptures, the refrigerant is likely to leak rapidly into the occupied space.

To help ensure the safety of all occupants, occupied areas with potential for highest leak concentration must be determined. Finding these areas requires discerning both refrigerant quantity within the system and how the refrigerant will distribute should a leak occur. If a refrigeration system component ruptures because it is under pressure, the refrigerant is likely to leak rapidly into the occupied space.

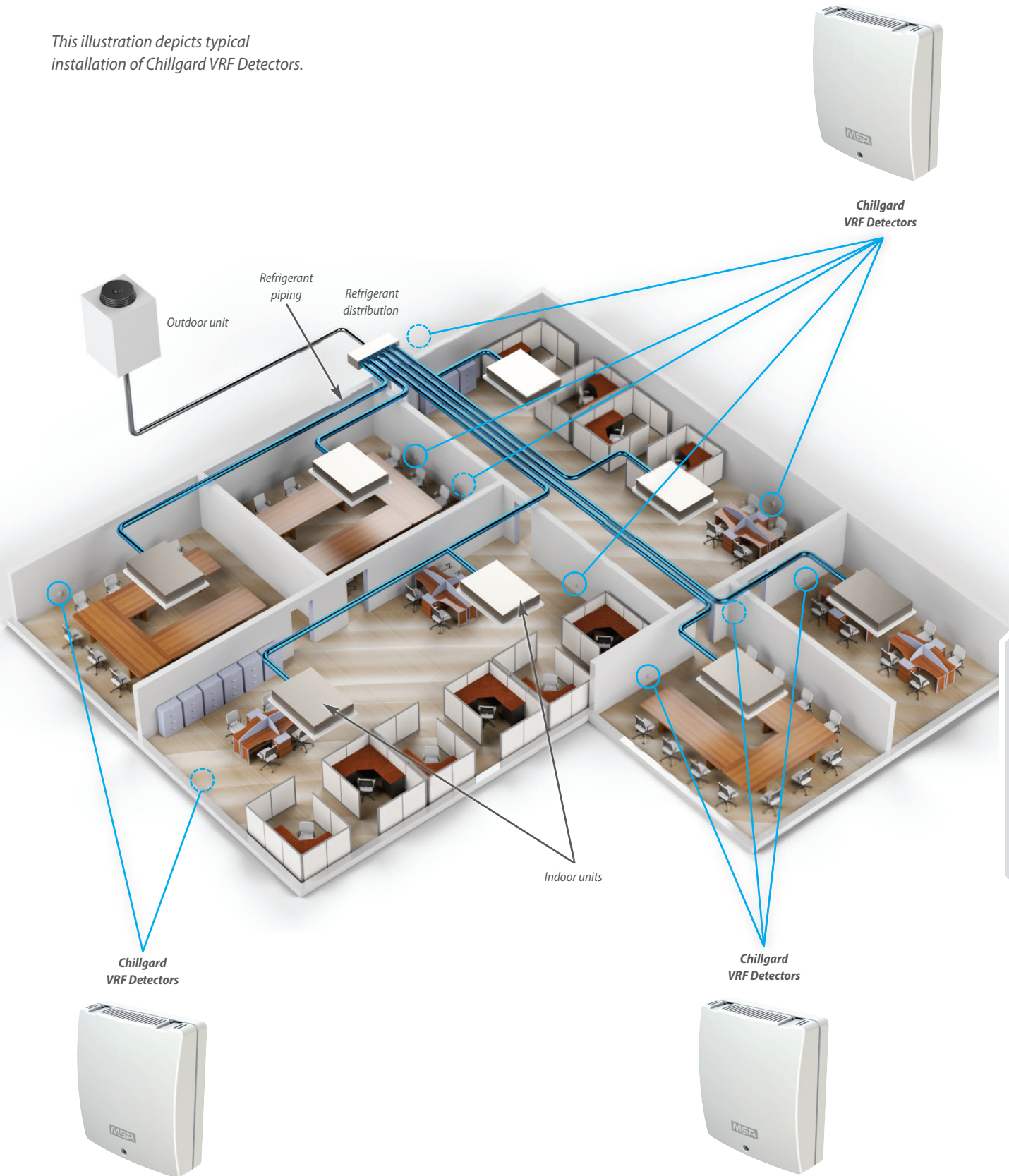
Potential risks of refrigerant leaks necessitate installation of refrigerant leak detectors with photoacoustic infrared (PAIR) sensing technology. PAIR technology enables devices to operate for long periods of time without adjustment or zero drift. The Chillgard VRF Refrigerant Detector provides a stable zero baseline while achieving low detection levels at 25 ppm minimum detection. This detector has no moving parts; only an annual calibration check is recommended. The refrigerant detector consists of two basic parts: the cover that incorporates electronics with sensing elements, and the base. Power requirements are 24 VDC/VAC.

These units can be installed to work independently, communicating directly to building management systems; through BACnet MS/TP, Modbus RTU or via analog. Digital communication adds the benefit of gas detection integration for a total building management and control solution. The Chillgard VRF System is the only detector that offers building owners and managers complete control and monitoring capability.

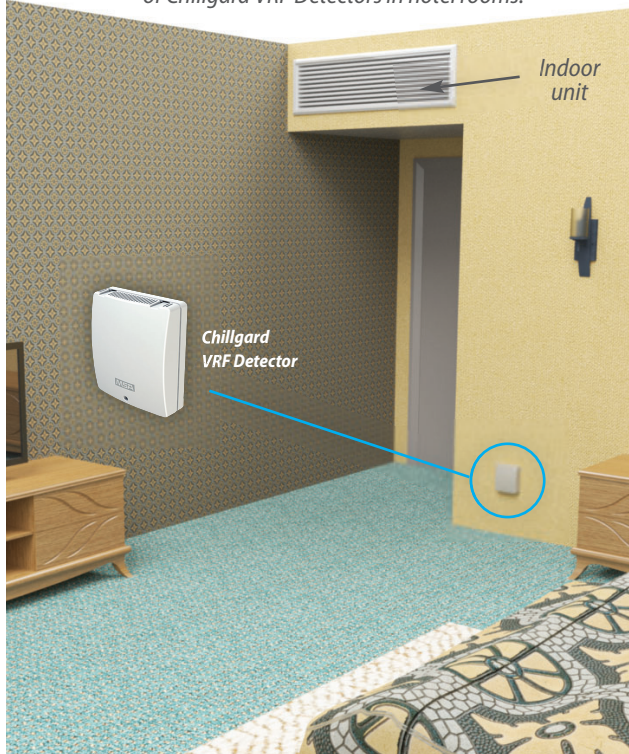
Detector location is key to ensuring that proper detection occurs. Detectors should be installed on flat, interior surfaces located approximately 12–18 inches from floors where refrigerant will likely accumulate, as refrigerant gas is typically heavier than air. VRF detectors can also be installed in ceilings close to manifolds, coils and valves that may be susceptible to leaks. Do not place sensors in areas where air does not circulate freely, such as behind doors or in corners.



This illustration depicts typical installation of Chillgard VRF Detectors.



This illustration depicts typical installation of Chillgard VRF Detectors in hotel rooms.



VRF System Applications

VRF systems are useful for many applications, delivering personalized, compartmentalized comfort conditioning.

- Universities
- Schools
- Historical buildings
- Hotels
- Restaurants
- Places of worship
- Hospitals
- Banks
- Nursing homes
- Strip malls

Ordering Information	
Part Number	Description
10175201	Chillgard VRF, Voltage, Modbus
10175202	Chillgard VRF, Current, Modbus
10175203	Chillgard VRF, Voltage, BACnet
10175204	Chillgard VRF, Current, BACnet

Note: This Bulletin contains only a general description of the products shown. While product uses and performance capabilities are generally described, the products shall not, under any circumstances, be used by untrained or unqualified individuals. The products shall not be used until the product instructions/user manual, which contains detailed information concerning the proper use and care of the products, including any warnings or cautions, have been thoroughly read and understood. Specifications are subject to change without prior notice.

Specifications	
DIMENSION	4.7" x 4.1" x 1.7" (11.9 cm x 10.4 cm x 4.3 cm)
WEIGHT	0.51 lb. (230 g)
VISUAL INDICATIONS	2 LEDs to indicate fault and alarm
RELAY	1 RELAY W/RATED LOAD MAX OPERATING CURRENT MAX SWITCHING CAPACITY
OPERATING POWER	24 VDC ±20%, 24 VAC ±20%, 50/60Hz, class 2
POWER CONSUMPTION	≤ 5 watts
WIRING	14AWG max, 2.5 mm ² , Class 2 copper wiring
OUTPUT OPTIONS	4-20 mA sourcing, ≤ 500 ohm load, 2-10 V, 10k ohm load, RS-485 Modbus RTU, BACnet MS/TP
OPERATING TEMPERATURE	32° to 140°F (0° to 60°C)
RELATIVE HUMIDITY (RH)	0–99% non-condensing
PRESSURE	10.2 to 15.7 PSIA (70 to 108 kPa)
OPERATING RANGE	0-1000 ppm
MINIMUM DETECTION	25 ppm
MINIMUM ALARM	50 ppm
RESPONSE TIME	T50 less than 240 seconds
REPEATABILITY	±10 ppm at 50 ppm
LINEARITY	BETWEEN 25–50 ppm ±10 ppm BETWEEN 50–100 ppm ±20% of reading
AUDIBLE ALARM	70 to 80 dB at 12" (30 cm) for the customized VRF
STANDARD GASES	R-410a
APPROVALS	CANADA CAN/CSA-C22.2 No. 61010-1-12 US UL Std. No. 61010-1 (3 rd edition) INTERNATIONAL IEC61010-1:2010 (3 rd edition) CB certificate CE APPROVAL CE approval, Complies with the applicable LVD and EMC directives REACH/RoHS Compliance

MSA operates in over 40 countries worldwide. To find an MSA office near you, please visit MSAsafety.com/offices.