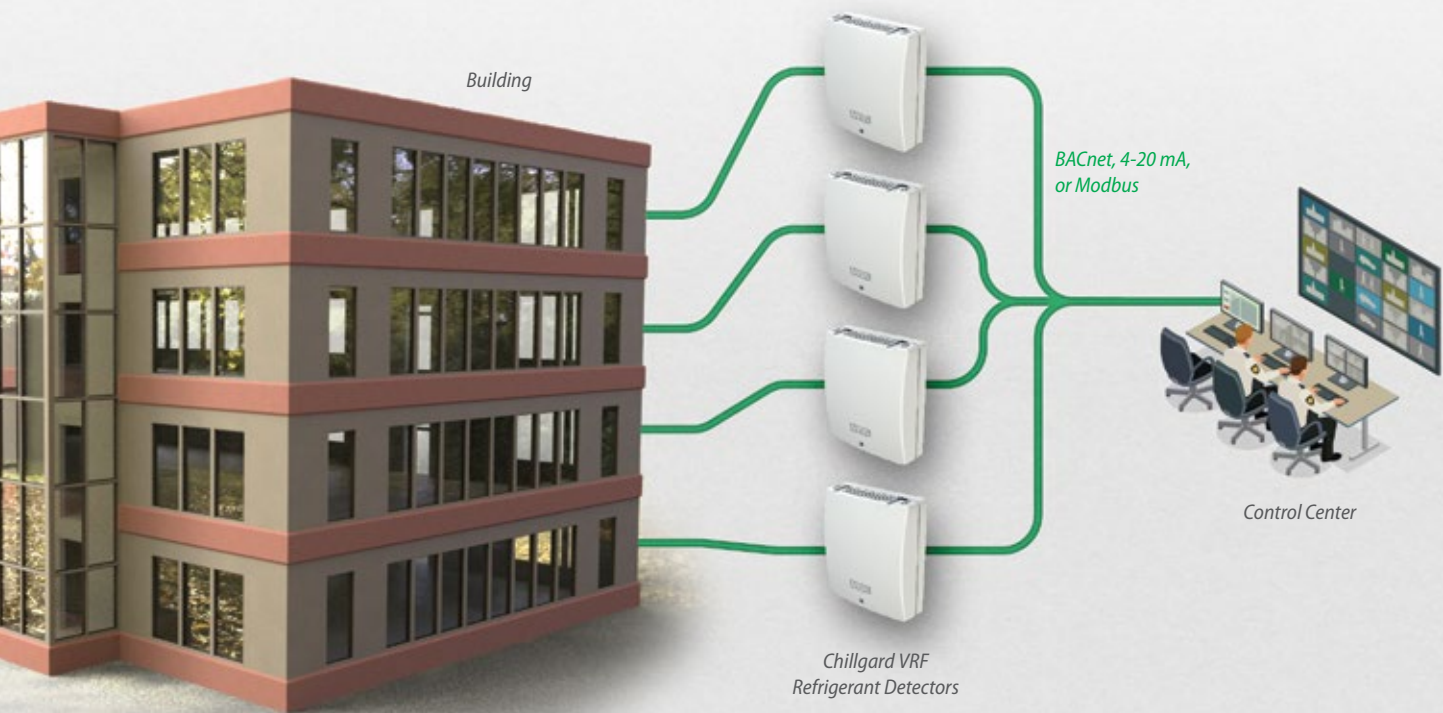


# VRF Leak Detection for Occupied Spaces



WE KNOW WHAT'S AT STAKE.

## VRF Leak Detection



## Leak Detection 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 fancoil 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 55% 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.

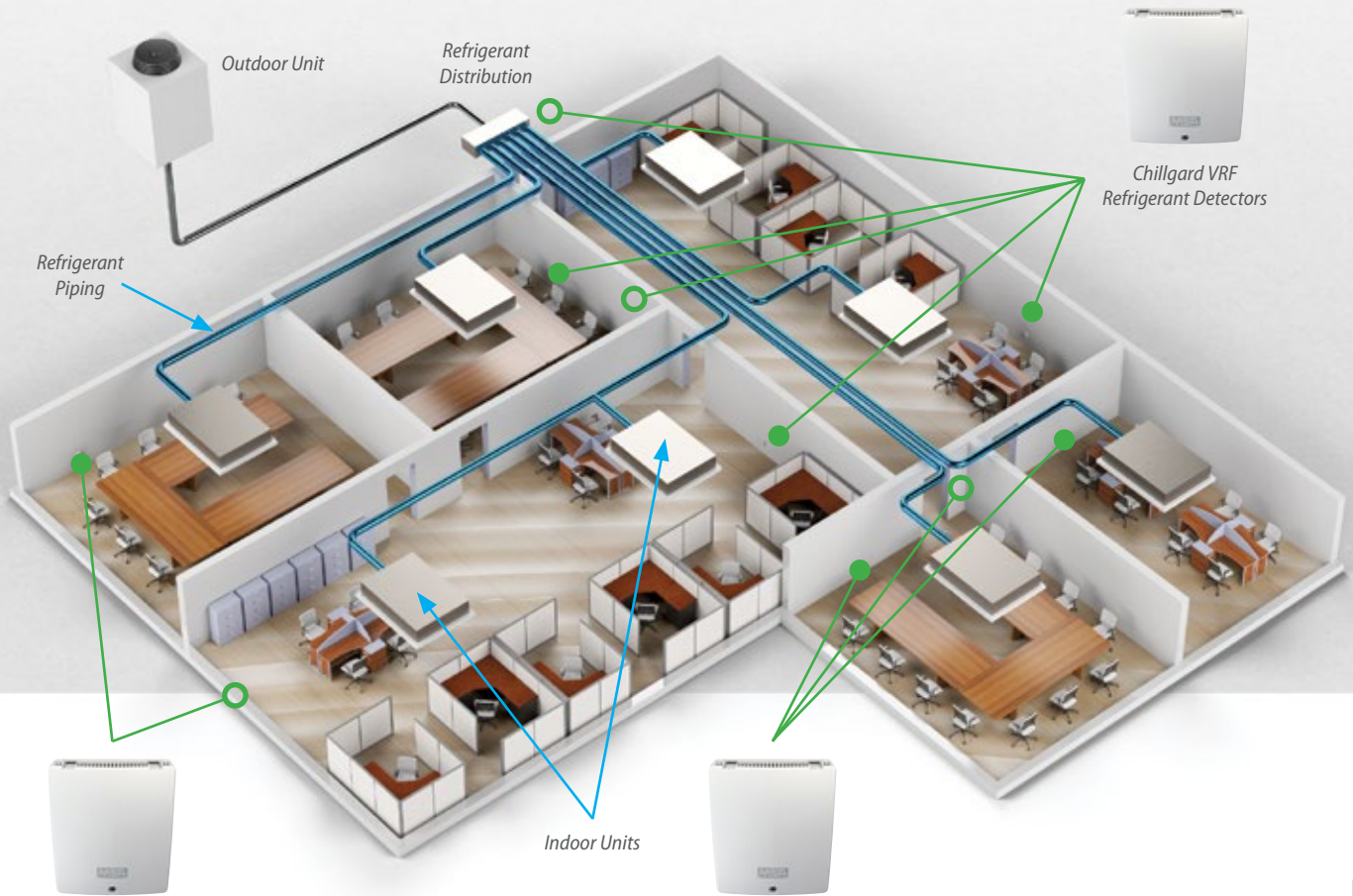
All VRF manufacturers work with engineers and contractors to help ensure the safety of all occupants and occupied areas by using best practices for design and installation, based on state,

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, and 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. To help ensure the safety of all occupants, 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 or refrigerant line ruptures, 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.



Typical installation of Chillgard VRF Detector in hotel room.

## 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

*BACnet® is a registered trademark of ASHRAE*

## 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
- Easy installation—simply secure back plate to wall
- Proven photoacoustic infrared (PAIR) sensor
- Stable zero baseline
- Digital communications
  - BACnet®
  - Modbus
- 2-year warranty



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.

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