



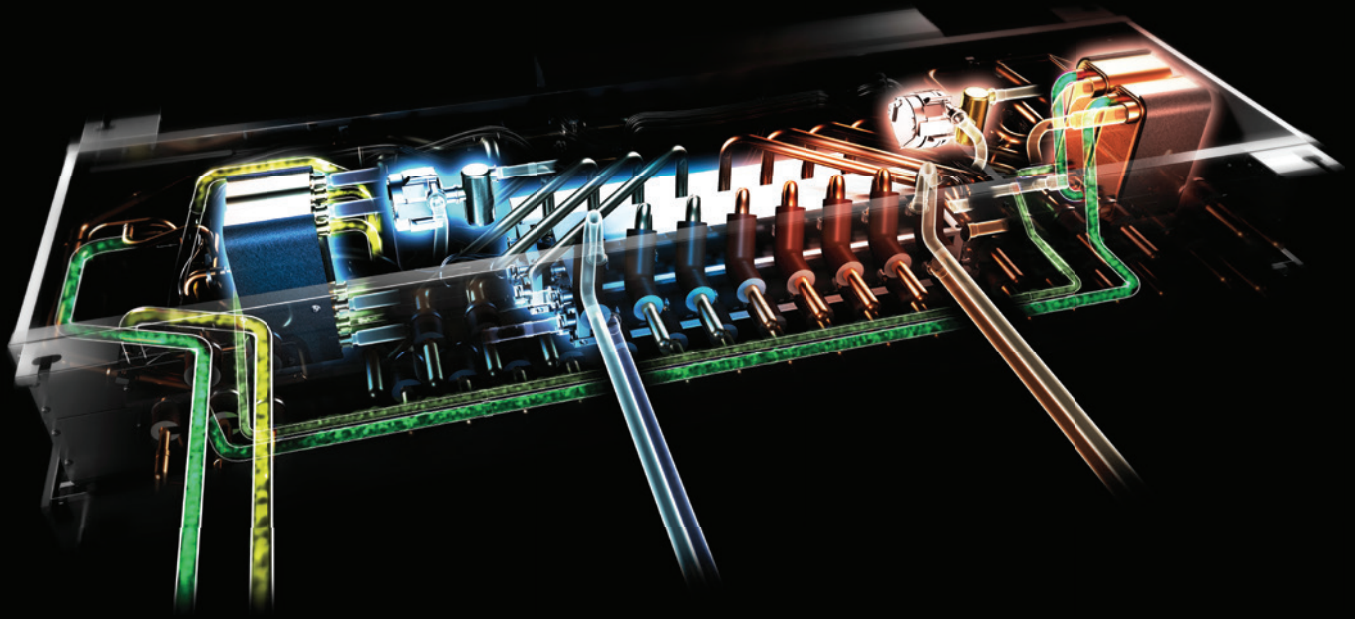
inside and out.

Introducing Hybrid VRF™

The world's first Hybrid Variable Refrigerant Flow (Hybrid VRF) system heats and cools simultaneously without the need for refrigerant in indoor spaces, instead replacing it with water between the Hybrid Branch Circuit (HBC) Controller and indoor units. Hybrid VRF is a truly integrated modern heating and cooling solution for multi-zone commercial spaces.

The system is specifically designed to provide quiet, energy-efficient, simultaneous heating and cooling in occupied spaces.

Hybrid VRF is quick, easy, and flexible to design and install using the same outdoor equipment and control solutions as other CITY MULTI® VRF systems. Furthermore, Hybrid VRF's system architecture makes phased installation and expansion possible, while maintaining the high levels of seasonal efficiency expected with VRF technology.



The heart of Hybrid VRF™

The key to the Hybrid VRF system is the Hybrid Branch Circuit (HBC) Controller.

The Hybrid VRF exchanges heat between refrigerant and water using our unique HBC Controller, reducing the overall refrigerant charge in the system, and keeping the piping in the indoor space refrigerant-free. Air-source

or water-source heat pump heat recovery units connect to the HBC Controller by a two-pipe refrigerant system, allowing for simultaneous heating and cooling in the same way as it does with a VRF system.

The Main HBC Controller supplies both cold water and hot water to the refrigerant-free Sub-HBC Controller, which then feeds the water to up to 16 connected zones, making Hybrid VRF a perfect solution for any size building.

Every Main HBC Controller can accommodate up to 10 tons of nominal system capacity. Sub-HBC Controllers can be added to each Main HBC Controller when additional zoning is required.

Inside the HBC Controller

Standard packaged controls contained within the HBC Controller provide the ability to actively reset cold water and hot water temperatures at each indoor unit. This allows for milder off-coil temperatures in shoulder seasons, which helps prevent an uncomfortable “cold blow” experience. Using hydronic indoor units can reduce noise during transitions and reduce defrost time by up to 50% through the use of heat recovered from the hydronic loop.

Each heat exchanger has two **DC inverter-driven water pumps**, used to control water flow and temperature to each indoor unit in conjunction with a modulating flow control valve per branch port.

The **control panel** controls all internal devices within each HBC and communicates with outdoor and indoor units.

The **air purge valves** are utilized during the commissioning procedure to remove air from the system.

The **reversing valves** in the HBC Controller allow the system to operate in heating, cooling, and mixed modes, providing the ability for heat recovery within the system.

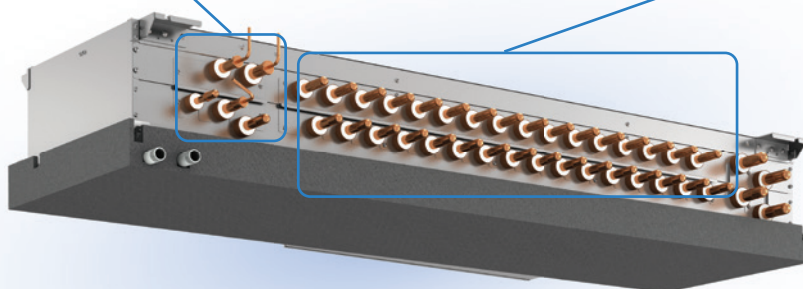
Hex-heating heats water by condensing a hot gas-state refrigerant across the heat exchanger to provide water up to 140°F to indoor units.

Both sets of heat exchangers can operate in cooling or heating modes, as well as a mixed mode which allows for simultaneous operation.

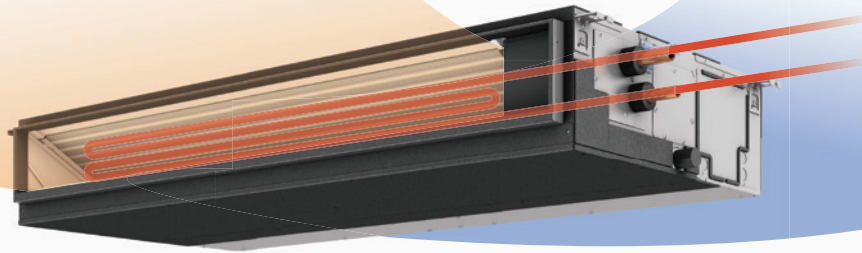
Hex-cooling cools water by expanding a liquid refrigerant across the heat exchanger to provide water as low as 41°F to indoor units.

Easy-access connections for refrigerant piping, expansion tank, fill line and condensate.

Each port of the HBC Controller serving an individual zone has a **flow control valve block** to allow it to send and return cold or hot water to each zone with an integrated modulating flow valve that varies water flow to each indoor zone.



Simultaneous hydronic heating and cooling



Hybrid VRF creates a refrigerant-free closed loop to heat and cool occupied spaces.

Modulating hot or chilled water flow from an HBC Controller to indoor units heats or cools every space to maintain exceptional comfort.

Heated or chilled water flows from the heat exchangers through a 3-way valve block to allow for use in any zone. The system is designed for a low delta-T water design with active water temperature reset for effective seasonal comfort.

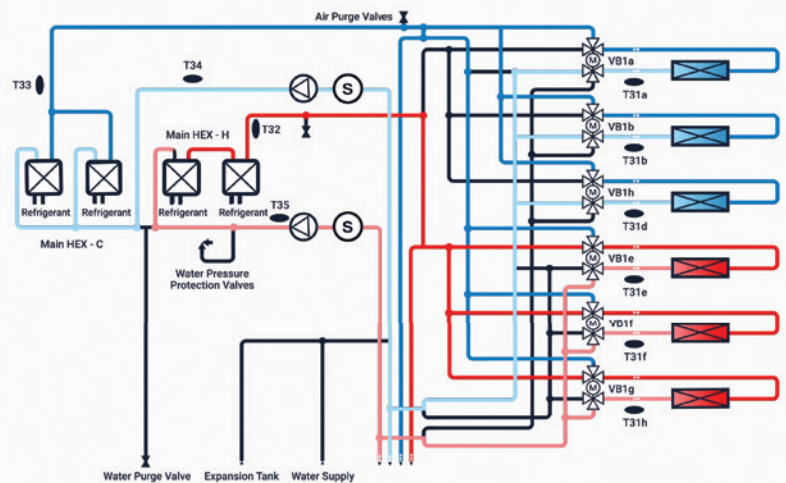


Illustration represents six indoor units. HBCs can support up to 16 independent zones.

CITY MULTI® VRF technology

CITY MULTI VRF heat pumps are designed with advanced components that work together to optimize performance and efficiency in any climate.



The **INVERTER compressor** varies the amount of circulating refrigerant by constantly adjusting the operating frequency based on the system's leading.



Reversing valves allow the system to reverse the refrigerant flow and use indoor heat exchangers to discharge heat while the outdoor heat exchanger absorbs heat from ambient air.



The **variable speed fan** operates at the exact speed required to achieve the best possible balance of heat exchange and efficiency.



Outdoor units

Hybrid VRF uses N-Generation high efficiency R2 air-cooled 6–14-ton units and L-Generation WR2 water-cooled 6–14-ton units.

The N-Generation high efficiency models use our unique all-aluminum HexiCoil design to reduce refrigerant charge in the outdoor condensing unit, making them the perfect fit for Hybrid VRF systems.

Indoor units

Hybrid VRF technology is currently available with our new hydronic medium static ducted, ceiling cassettes, and wall-mounted indoor unit options.

Each indoor unit can be controlled centrally or individually.



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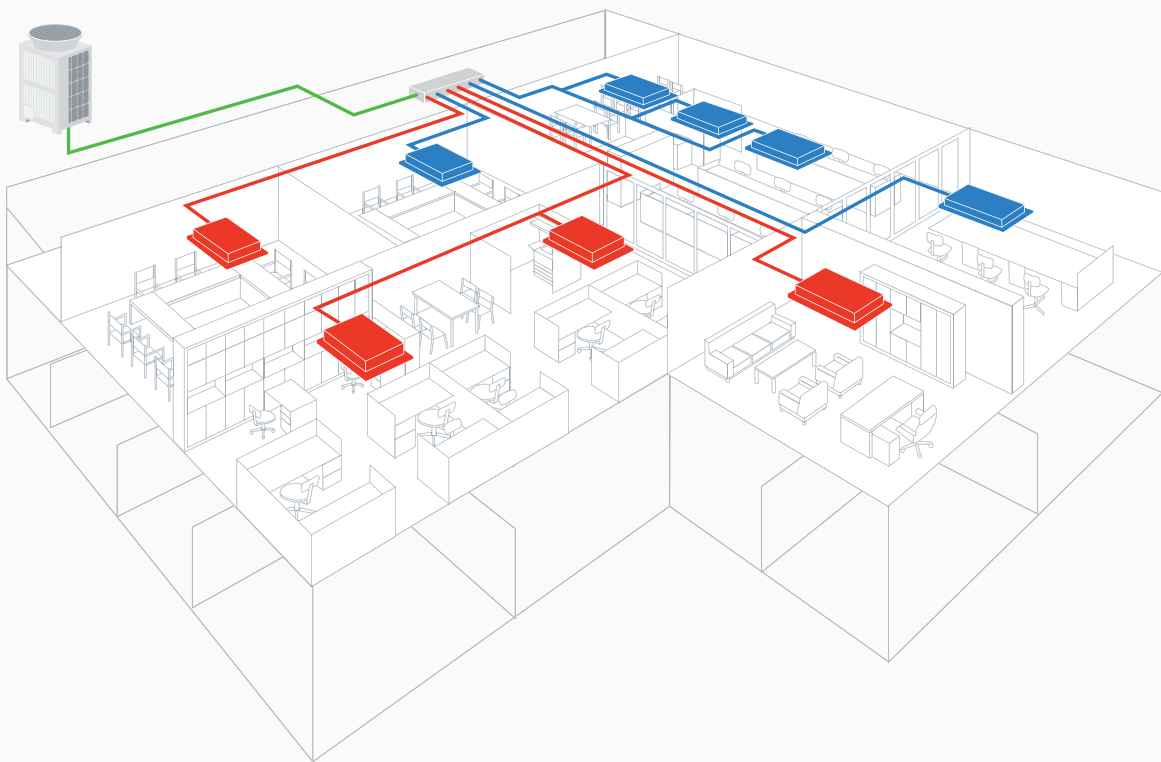


Scan here to see all compatible indoor and outdoor units and accessories.



Scalable design, affordable installation

A small footprint and modular design means building owners can take advantage of a manageable phased installation.



**Reduced
refrigerant and
materials equals
reduced cost.**

Save on installation cost and labor by eliminating refrigeration work between the HBC Controller and Hybrid VRF indoor units. Hybrid VRF allows for traditional copper water piping or Multi-layer composite piping to be used between the HBC Controller and Hybrid VRF indoor units.

Our unique 2-pipe heat recovery system requires less piping than a 4-pipe chiller system. In addition, the system does not require an external pump, valves, sensors, actuators, or other ancillary controls associated with conventional 4-pipe chiller systems.