

# CITY MULTI<sup>®</sup> VRF ZONING SYSTEMS

A NEW APPROACH TO ZONING EFFICIENCY



# FLEXIBLE, EFFECTIVE, INNOVATIVE

VRF zoning systems provide more precise comfort control and energy effectiveness to buildings of all shapes and sizes.

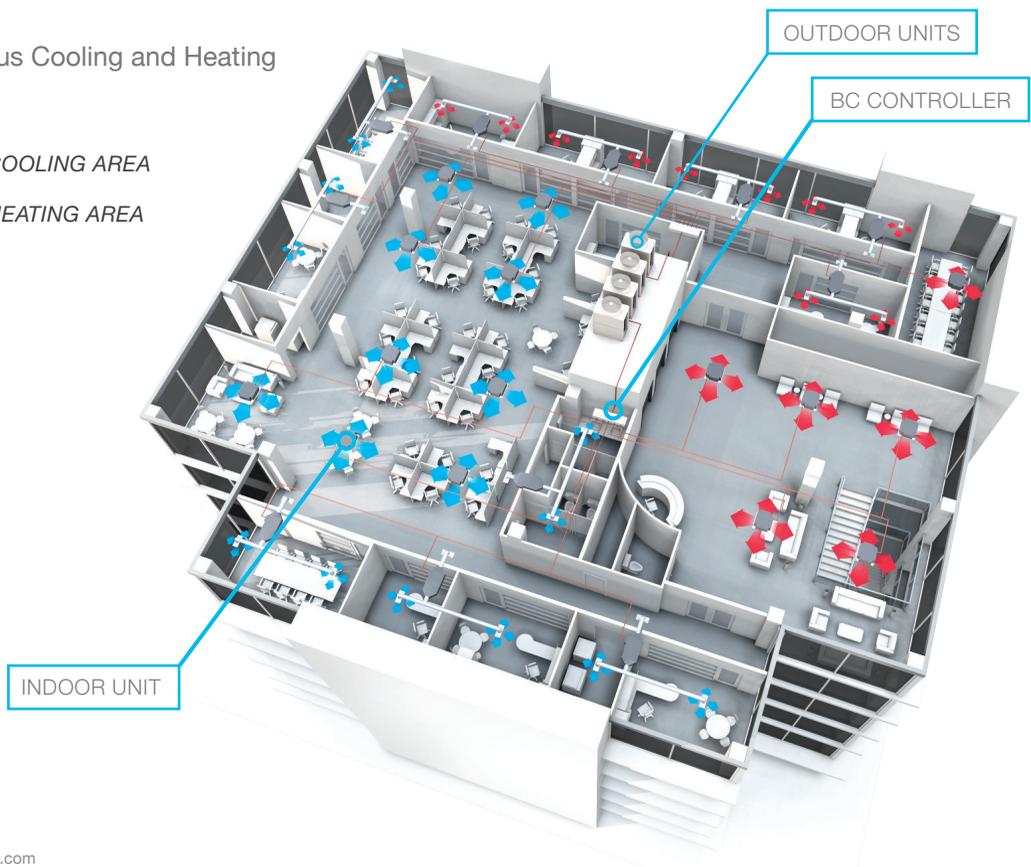
These systems serve a wide variety of applications – everything from cooling or heating a single room or an entire home (using a ductless-split system) to a large commercial building with multiple floors to a large campus with multiple buildings.

Mitsubishi Electric offers a unique two-pipe VRF zoning system that moves refrigerant effectively to the zone to be heated or cooled, so the temperature of that area can be more precisely controlled. Using an R2-Series heat recovery system you can simultaneously cool some zones while heating others. This great feature means you're effectively recovering heat energy that

would have otherwise been wasted, an important factor when you consider that as much as 60% of a building's energy usage comes from its HVAC system. Our systems (with capacities up to 30 tons) consist of condensing units, indoor units, a branch circuit controller required for heat recovery, and corresponding system and zone controllers. The controllers provide a wide variety of functions to satisfy each zone's requirements, including temperature control, operation mode, fan speed, timer settings and more.

## Simultaneous Cooling and Heating

-  COOLING AREA
-  HEATING AREA



What would you design if you could forget about complex ductwork and bulky HVAC equipment? Imagine the buildings you could effectively create with VRF zoning.

Mitsubishi Electric VRF zoning solutions feature smaller refrigerant lines, smaller chases, ductless systems and other factors that let you effectively reclaim up to 10% of the space in your buildings sacrificed to conventional HVAC systems.

Compact and quiet indoor and outdoor units can effectively be placed virtually anywhere – condensing units operate as low as 58 dB(A) and indoor units as low as 22 dB(A). This is perfect for spaces that require minimal disruption, like classrooms, churches or libraries.

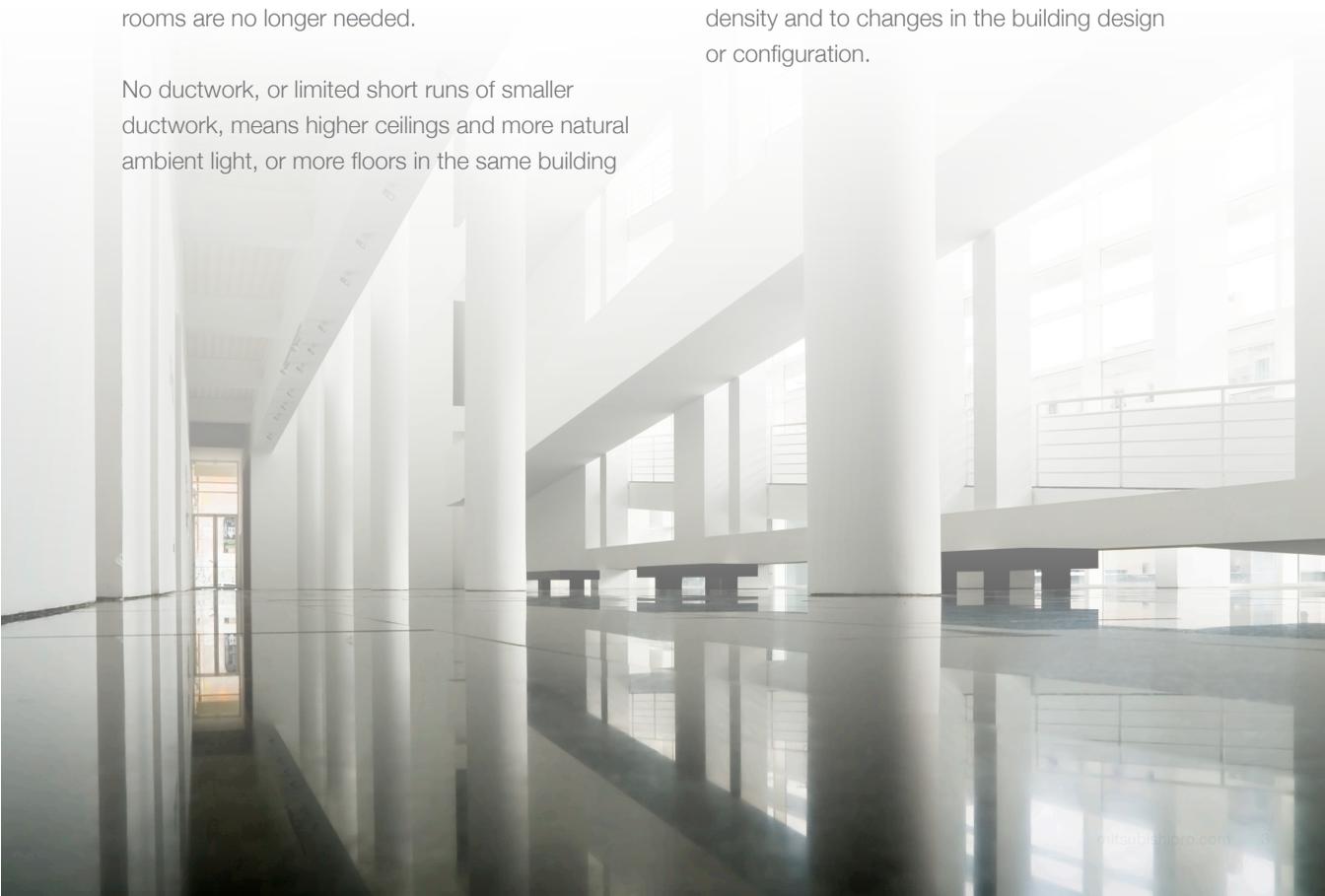
The small size effectively frees up indoor and outdoor space where equipment and mechanical rooms are no longer needed.

No ductwork, or limited short runs of smaller ductwork, means higher ceilings and more natural ambient light, or more floors in the same building

envelope with less space needed between floors. In short, our systems effectively make it easier to design your building, let you be more innovative, and allow your building to reflect more of your creativity.

VRF zoning benefits:

- Variety of air handlers to meet your design needs.
- Smaller refrigerant piping effectively takes up less space than round or rectangular air ducts or 4-pipe chilled-water piping.
- Effectively eliminate long, bulky long runs of ductwork.
- Mechanical chases and rooms can be smaller.
- System effectively scales to occupancy density and to changes in the building design or configuration.



# MODERN TECHNOLOGY FOR TODAY'S SUSTAINABLE DESIGNS

Mitsubishi Electric VRF zoning solutions take energy efficiency to a whole new level, consistently producing 30-40% energy savings compared to conventional HVAC systems.

We can help you configure the right system to effectively provide the precise cooling and heating you need in any particular area, when you need it. Our exclusive INVERTER-driven compressors effectively deliver precise capacity to every zone, ensuring total comfort and energy efficiency. INVERTER technology varies compressor motor speed match your indoor space load requirements. Compare that to conventional HVAC systems; with only two main states – ON and OFF – conventional systems are less efficient, less effective and less comfortable.

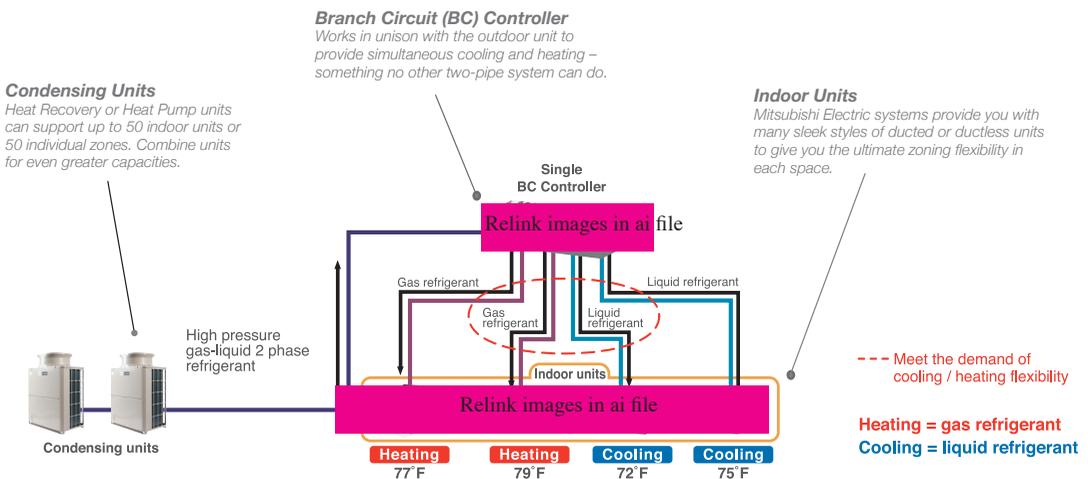
To effectively manage indoor conditions, space temperature can be measured at the indoor unit, within the space, or at the zone controller with

remote sensing. The exclusive i-see Sensor™ available with several indoor units, scans the room and effectively adjusts airflow based on the temperature readings.

Our VRF zoning technology offers the ability to capture a significant number of points toward LEED certification in the Energy & Atmosphere (EA) and Indoor Environmental Quality (IEQ) categories.

We offer energy modeling support that can help you compare how our VRF zoning systems effectively use energy versus other systems, as well as lifecycle cost savings in various climate zones.

## Simultaneous Cooling and Heating with Two-pipe Connections



## VRF ZONING SYSTEM

### Condensing Units

- Modular to effectively meet distributed capacity requirements.
- Flexible placement to free up space.
- Air and water-source heat recovery and heat pump units.
- Revolutionary heat pump systems with our exclusive Hyper-Heating INVERTER™ (H2i®) technology can provide 100% heating capacity at 0° F outdoor temperature and 83% heating capacity at -13° F, for year-round comfort in extreme climates.

### Controls

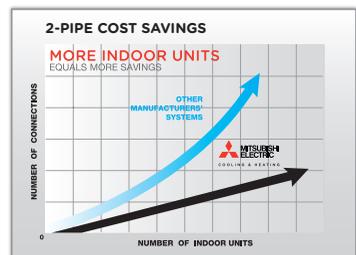
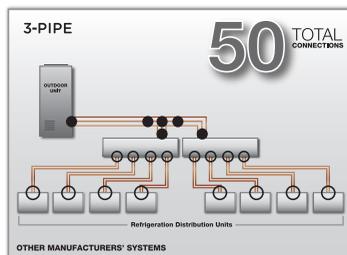
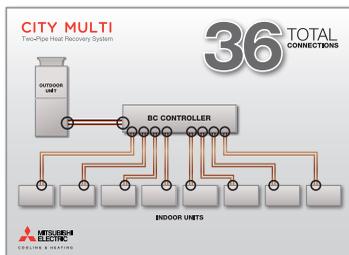
- Assortment of zone controllers provide convenient monitoring and operation of up to 16 indoor units through intuitive and attractive interface.
- Central controllers manage up to 50 indoor units and are available in web-based or touch screen options.
- Flexible CITY MULTI® Controls Network (CMCN) allows you to select the level of control and integration that fits your needs.

### Indoor Units

- Multiple options to effectively meet varied room design and aesthetic needs.
- Ductless units include wall-mounted, ceiling-recessed and suspended, and floor-standing.
- Concealed-ducted units include ceiling, vertical, and floor-standing.
- Integrated return on ductless units saves space.
- Up to 50 indoor units can be connected at up to 150% or 130% of the outdoor unit's rated capacity, depending on system type and design diversity.



### Mitsubishi Electric's Two-pipe Advantage



○ = 2 CONNECTIONS    ● = 3 CONNECTIONS

Mitsubishi Electric's two-pipe VRF solution reduces the cost and complexity of installation. Smaller diameter piping is required, plus fewer piping and wiring connections, which effectively saves on overall installation labor and material costs.

# TOTAL INSTALLED COST ADVANTAGE

The cost of an HVAC system is about more than just equipment and installation. Your total cost equation should also include design, operation, maintenance and replacement.

Mitsubishi Electric VRF zoning systems effectively take less time to install and require significantly less maintenance over time than conventional HVAC.

Mitsubishi Electric's two-pipe VRF systems are engineered to be compact to simplify the installation process. They often fit in existing service spaces, eliminating expensive tear-down and reconstruction often encountered with traditional options, thus effectively saving the customer up front while delivering higher efficiency and ease of maintenance for years to come.

Our VRF zoning systems offer individual set point control to make it easy to meet each occupant's needs. Our advanced controls go even further, effectively enabling building managers to remotely regulate up to 2,000 indoor units from a single PC. You can set and monitor operation, mode, temperature, fan speed, and airflow direction, as well as create an operating schedule that's tailored to the needs of the occupants and the building.

Intuitive controls monitor system functions and provide operation status information for easier diagnostics.

## Total Installed Costs

A true comprehensive comparison of upfront HVAC costs includes more than equipment.

There are potential hidden costs, such as consulting/engineering design costs; installation tooling, rigging and labor; potential electrical and/or structural modifications in a building; complexity of connecting outdoor and indoor equipment; and controls integration VRF zoning systems effectively change the equation.

- ▶ Two-pipe system means fewer piping and wiring connections which reduces labor and material costs.
- ▶ Labor costs are effectively reduced with VRF integrated controls.
- ▶ Lightweight/compact design of the outdoor units effectively reduces the cost of rigging (cranes and lifts) and effectively eliminates the need for structural roof reinforcement.
- ▶ Building controls are easily integrated.
- ▶ Component connections using refrigerant lines versus major runs of duct work reduces labor.
- ▶ By effectively applying the VRF zoning principle of diversity, less outdoor capacity is needed effectively lowering equipment cost.

Mitsubishi Electric is one of the world's most recognized and valued brands. We are committed to building an unmatched infrastructure across the U.S. to support the rapidly emerging VRF zoning technology. No one offers a broader array of tools and support.



It starts with training. Mitsubishi Electric effectively trains more than 5,000 contractors and 1,300 engineers annually on VRF technology, more than any other company in America. We offer training classes nearly every week at one of our many authorized Training Centers. In addition, we have a Training & Development website driven by our Learning Management System. The site gives you:

- CEUs for commercial and residential training.
- Password-protected accounts for all trainees.
- Online registration for all training programs.
- 24/7 access to your training history.

As a result, we have the largest network of trained contractors specialized in installing and servicing our VRF zoning equipment. Our systems have effectively solved complex challenges in a vast array of building types, in every corner of the world, and we've been consistently and successfully selling VRF zoning systems in the Americas longer than any other brand.

Let **America's #1 selling brand of VRF zoning technology** help you redefine what you can achieve in your buildings.

## Air-source Outdoor Units

## Water-source Units

Condensing Units	Heat Recovery	Heat Pump	Heat Recovery 	Heat Pump 	Heat Pump	Heat Recovery	Heat Pump
<b>Product Series</b>	R2-Series	Y-Series	H2i Hyper-Heating INVERTER™ R2-Series	H2i Hyper-Heating INVERTER™ Y-Series	PUMY-Series	WR2-Series	WY-Series
<b>Power Source(s)</b>	208/230V, 3-phase, 60Hz 460V, 3-phase, 60Hz	208/230V, 3-phase, 60Hz 460V, 3-phase, 60Hz	208/230V, 3-phase, 60Hz 460V, 3-phase, 60Hz	208/230V, 3-phase, 60Hz	208/230V, 1-phase, 60Hz	208/230V, 3-phase, 60Hz 460V, 3-phase, 60Hz	208/230V, 3-phase, 60Hz 460V, 3-phase, 60Hz
<b>Cooling Capacity (60,000 Btu/h)</b>	72,000 - 288,000	72,000 - 360,000	72,000 - 192,000	72,000 - 192,000	36,000 - 60,000	72,700 - 240,000	72,700 - 360,000
<b>Heating Capacity (66,000 Btu/h)</b>	80,000 - 320,000	80,000 - 405,000	80,000 - 216,000	80,000 - 216,000	40,000 - 66,000	80,000 - 270,000	80,000 - 405,000
<b>Sound Pressure Level Range dB(A)</b>	58 - 64	58 - 65	58 - 61	56 - 65 (65 in heating at -5° F outdoor temperature)	49 - 59	47 - 54	47 - 56
<b>Indoor Units Connectable</b>	50 (or up to 150% of outdoor unit capacity)	50 (or up to 130% of outdoor unit capacity)	50 (or up to 150% of outdoor unit capacity)	50 (or up to 130% of outdoor unit capacity)	50 (or up to 130% of outdoor unit capacity)	50 (or up to 150% of outdoor unit capacity)	50 (or up to 130% of outdoor unit capacity)
<b>Net Weight, lbs</b>	503 - 1486	430 - 2178	552 - 1152	497 - 1170	287 - 313	402 - 856	433 - 1377
							

## Ductless Indoor Units

## Ducted Indoor Units

Indoor Units	Wall-mounted	Ceiling-recessed Cassette (4-way)	Ceiling-recessed Cassette (1-way)	Ceiling-suspended	Floor-standing	Ceiling-concealed	Vertical Air Handler
<b>Product Series</b>	PKFY-Series	PLFY-Series	PMFY-Series	PCFY-Series	PFFY-Series	PEFY-Series	PVFY-Series
<b>Power Source</b>	208/230V, 1-phase, 60Hz	208/230V, 1-phase, 60Hz					
<b>Nominal Cooling Capacity (Btu/h)</b>	6,000 - 30,000	8,000 - 36,000	6,000 - 15,000	15,000 - 36,000	6,000 - 24,000	6,000 - 96,000	12,000 - 54,000
<b>Nominal Heating Capacity (Btu/h)</b>	6,700 - 34,000	9,000 - 40,000	6,700 - 17,000	17,000 - 40,000	6,700 - 27,000	6,700 - 108,000	13,500 - 60,000
<b>Sound Pressure Level Range dB(A)</b>	32 - 49	29 - 43	27 - 39	29 - 44	36 - 46	22 - 46	33 - 42
<b>Net Weight, lbs (kg)</b>	22 - 46	37 + 7 (grill) - 60 + 13 (grill)	31 + 7 (grill)	53 - 84	51 - 71	42 - 221	88 - 168
							

Specifications subject to change without notice.

Mitsubishi Electric offers multiple product lines to meet your needs. Our CITY MULTI® VRF zoning line (as shown above) is generally used in commercial applications and offers capacities from three to 30 tons. M- and P-Series split-ductless and ducted solutions are generally installed in residential and light commercial applications and offer both single- and multi-zone solutions. Lossnay® ERVs provide ventilation air with the benefit of energy recovery.

To learn more about Mitsubishi Electric's innovative Variable Refrigerant Flow zoning products and our other HVAC solutions, call **800-433-4822** or visit **MitsubishiPro.com**.



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