



*Trane<sup>®</sup> Advantage VRF<sup>™</sup>  
variable refrigerant systems*



# Trane Advantage VRF variable refrigerant systems

A new heating and cooling option from Trane—with legendary Trane benefits.



**Large and small buildings. Old and new buildings. Schools and offices. Trane Advantage VRF can serve as a stand-alone or supplemental system for a wide variety of buildings and applications, offering comfort, efficiency and user control—without compromise.**

Best-in-class energy efficiency. Truly customizable comfort. Available simultaneous heating and cooling throughout a building. All with small footprints and multiple installation options for a wide variety of building types.

These are just some of the benefits of Trane® Advantage VRF™ systems, our newest heating and cooling options that bring a new level of choice to our customers. Trane Advantage VRF systems can be perfect as stand-alone heating and cooling systems—or perfect as supplemental heating and cooling systems.

For a wide variety of customers, applications and building types, Trane Advantage VRF systems can be the solution you've been looking for to improve the comfort of your building—and improve the lives of the people in it.



*Best of all,  
it's a Trane.*

Trane Advantage VRF systems are the newest addition to the broad portfolio of Trane heating and cooling solutions available to our customers. And because Trane has a broad portfolio of heating and cooling solutions, a Trane representative can help examine your unique needs and



## *Moving refrigerant—not air*

Unlike many traditional HVAC systems—which move heated or cooled air throughout the interior of a building using ductwork—Trane Advantage VRF systems use an innovative new process, moving heated or cooled refrigerant throughout the interior of a building using small-diameter pipes. The refrigerant then passes through coils in each room being served by a system; fans or blowers move air past the heated or cooled coils, transferring either warmed or cooled air into the room.

**The benefits of a Trane Advantage VRF system are many, including:**

### *More efficiency*

With an integrated energy efficiency rating of up to 27 IEER, and with a simultaneous cooling and heating efficiency rating of up to 30 SCHE, a Trane Advantage VRF system can save you more on energy costs than any other VRF system.

### *More individual control*

Trane Advantage VRF systems can independently heat or cool different rooms to temperature levels of the occupants' choosing, providing exceptional control and comfort.

### *More installation options*

With smaller equipment and small-diameter refrigerant pipes, Trane Advantage VRF systems can fit in a wider variety of buildings, from historic structures to newly constructed buildings.



help find the right solution to meet those needs—whether it's a Trane Advantage VRF system by itself, a Trane Advantage VRF system in conjunction with another type of HVAC system or a different type of stand-alone system entirely. We are committed to your satisfaction—and your

satisfaction only will be achieved when the right system or combination of systems serve you. Unlike other VRF systems, Trane Advantage VRF is designed to work either by itself or by supplementing other Trane HVAC systems and can share the same intuitive, comfort-enhancing, energy-saving

Trane controls. The result is an easier-to-use integrated heating and cooling solution that maintains high levels of occupant comfort and high efficiency without compromise—and delivers the dependable, reliable performance you expect from Trane.

# Something for everyone

## The many benefits of Trane Advantage VRF variable refrigerant systems

*Trane® Advantage VRF™ systems offer a full range of benefits that few other systems can match—and class-leading efficiency that no other VRF system can beat. You get cost savings, comfort and control to improve life in a wide variety of building types.*

### The best efficiencies in the industry

UP TO  
**27**  
IEER

With an integrated energy efficiency rating of up to 27 IEER, and with a simultaneous cooling and heating efficiency rating of up to 30 SCHE, a Trane Advantage VRF system can save you more on energy costs than any other VRF system. The efficiency comes from both the innovative VRF design and from the superior technology built into the compressors that power every Trane Advantage VRF system. These high-performance variable-speed compressors precisely match their output to demand levels, delivering comfort and energy savings at the same time—and include other design features that further improve not only efficiency and output, but also reliability and longevity.



### Individual zone control

Trane Advantage VRF technology makes it possible to design a system in which every room in a building can be independently heated or cooled to

levels of the occupants' choosing—and unused rooms' climate controls can be switched off entirely. Some traditional HVAC systems are only able to provide either comfort or efficiency; Trane Advantage VRF systems can offer both.

### Multiple control options



Trane Advantage VRF systems offer a variety of control options, including:

- Zone-level for control of individual indoor units
- Centralized-level for control of up to 256 total indoor units in up to 16 groups
- Building-level for control of an entire structure's multiple-VRF systems on-site or via BACnet® connectivity, or remote Internet access
- Integrated building-level for large, stand-alone VRF installations controlled by building managers or owners

## More heating and cooling options for more buildings

The addition of Trane Advantage VRF variable refrigerant flow systems to our full line of HVAC solutions affirms the Trane commitment to giving our customers the options they need to precisely meet their heating and cooling needs. Trane Advantage VRF systems can be the perfect stand-alone or additional system for many structures.



### Historic buildings

Installing ductwork in historic buildings often is difficult or impossible; Trane Advantage VRF systems require no ductwork, which can make them an ideal solution.



### Multi-tenant buildings

Buildings such as assisted-living facilities often have tenants whose needs for heating and cooling vary; Trane Advantage VRF systems can simultaneously heat and cool different rooms.

## Seamless integration with Trane controls



Trane Tracer™ controls are known for their superior performance, with the ability to coordinate the functions of Trane heating and cooling equipment.

Monitoring environmental variables and using exclusive Trane-developed algorithms, Trane Tracer controls effectively and efficiently direct the operation of Trane heating and cooling equipment for maximum comfort and energy savings. Trane Advantage VRF systems work seamlessly with Trane Tracer controls—which can make Trane Advantage VRF systems a perfect supplement to an existing Trane system, as might occur when certain rooms in a building need a higher level of user-controllable heating and cooling.



## Smaller footprint and no ductwork for lower-impact installations



Compared to ducted-air HVAC systems, Trane Advantage VRF systems require much less installation space, due to smaller equipment size.

Trane Advantage VRF systems' refrigerant pipes take up much less space than forced-air systems' ductwork, resulting in less impact on the structures in which they're installed—a benefit that's especially important in existing structures.

## Exceptionally quiet operation



Trane Advantage VRF systems operate at very low sound levels, which can improve the comfort and productivity of building occupants. The VRF design quietly moves piped refrigerant to each room,

where specially designed low-noise fans circulate heated or cooled air at sound levels as low as 23 dBA.

## 360-foot maximum piping length



Certain Trane Advantage VRF systems can support a maximum refrigerant pipe length of 360 feet—exceeding the limitations of many competing systems. This redefinition of what's possible with VRF technology comes from a combination of high-performance smart inverter compressors and electronic expansion valves with a unique 2,000-step gear-driven design. The result is especially beneficial for taller buildings: rather than have VRF equipment occupying a mechanical room at the midpoint of a 360-foot-tall building, a Trane Advantage VRF system can occupy the rooftop, freeing up valuable interior floor space.



### Diversely occupied buildings

Churches, schools and other buildings have diverse occupancy patterns that often can best be served with a versatile heating and cooling solution like a Trane Advantage VRF system.



### Tenant-finished commercial property

Due to its installation flexibility, Trane Advantage VRF systems can be the perfect choice for commercial properties with units that are constructed to allow tenant finishing.



### Arena-containing buildings

Buildings containing large spaces like arenas or auditoriums often use a high-capacity HVAC system to heat and cool these areas—but can benefit from a Trane Advantage VRF system to provide supplemental heating and cooling for smaller rooms, especially when the arena-type area is unoccupied. Areas such as luxury suites, ticket offices and administrative rooms can be given full control over their temperatures, adding an extra measure of comfort—and perceived value to customer-occupied areas.

# The technology behind the temperature

## Inside a Trane Advantage VRF variable refrigerant system

The exceptional comfort, control and best-in-class energy efficiency that come from Trane® Advantage VRF™ systems are made possible by in-depth knowledge and superior technology. Our commitment to research and design has yielded industry-leading benefits that not only improve performance and reduce electricity consumption, but also increase reliability and durability. It all adds up to fewer maintenance requirements, less chance of unexpected repairs and lower lifetime cost of ownership to improve the life of your building.

### Advanced compressor technology

The “smart inverter” compressors in Trane Advantage VRF systems are the most technologically advanced compressors available in the industry today, delivering unbeatable efficiency, performance and reliability.

- Variable-speed design precisely matches compressor speed to demand level, maximizing comfort and minimizing energy consumption.
- Asymmetric scroll design alternates suction and discharge through a single port, minimizing frictional losses and improving efficiency.
- Robust shaft design incorporates hardened construction and an oversized shaft diameter to support sustained operation at up to 8,400 rpm for increased refrigerant flow rate, providing additional capacity during periods of high demand.
- Pressurized compressor interior minimizes oil foaming to improve lubricant flow and enhance reliability.
- Vapor injection improves heating performance by using an intercooler to inject refrigerant vapor directly into the compressor, increasing refrigerant flow rate and heating capacity by up to 20 percent.

### Heating and cooling for no-compromise comfort

Trane Advantage VRF systems are available with both heat pump and heat recovery technology.

- Heat pump units use compressors in conjunction with evaporative and condensing coils to move energy, cooling the inside of a building in the summer and heating the inside of a building in the winter.
- Heat recovery units can simultaneously cool some rooms while heating others, thanks to a mode control unit that manages the flow of refrigerant between zones. This design offers a definite benefit for buildings with varying occupancy levels in different rooms.

### Continuous heating, even during defrost mode

When condenser-coil defrosting is necessary, multiple-module Trane Advantage VRF systems place one or more modules into defrost mode, while one or more other modules continue heating the building’s interior—a significant benefit when compared to some competing systems, which must suspend heating operations entirely while defrosting occurs.



## Available dual-compressor design enhances performance and reliability

Trane Advantage VRF systems are available with a dual-compressor design that provides significant advantages in both operational performance and overall reliability.

- **Quick cooling and heating**—At system startup or when a large change in temperature is specified, both compressors can operate at maximum capacity, providing fast cooling and heating.
- **Improved longevity and reliability**—During periods of moderate demand, the two compressors can alternate in operation, avoiding sustained loads on any single compressor and reducing the stresses and wear that accompany long periods of high output.



*Technology that benefits building occupants—and owners, designers and technicians, too.*

Trane Advantage VRF systems' multiple technological advantages definitely benefit the lives of building occupants with improved comfort and control. But Trane Advantage VRF systems also benefit building owners, system designers, architects, engineers and service technicians with innovative features that make the systems more compatible with a wider variety of structures, easier to design, simpler to commission, more convenient to monitor and more reliable to operate.

### **Wide range of electrical service compatibility**

Trane Advantage VRF systems are available in a variety of configurations that can operate on most commonly available types of electric power—including 208V – 230V, 460V and either single-phase or three-phase service.

### **Easy-to-use system design tools**

For architects and engineers, Trane provides design tools that make it easy to lay out a Trane Advantage VRF system, as well as calculate the amount of piping and refrigerant that will be required.

### **“One-touch” automatic commissioning**

Your new Trane Advantage VRF system can be up and running much sooner thanks to the built-in “one-touch” automatic commissioning interface, which electronically communicates with each component of the system to verify proper installation. For large buildings, this can cut a day-long commissioning process down to about an hour.

### **Automatic inspection and test reports**

Reports on the performance and efficiency of your Trane Advantage VRF system can be automatically generated and sent to your computer or smartphone—a convenient, trouble-free way to stay informed about the system's operational status.

### **Refrigerant-cooled circuit boards for enhanced reliability**

The circuit boards that control a Trane Advantage VRF system are cooled by the system's own refrigerant, reducing heat levels and contributing to longer life and reliable operation.

# Outdoor units

## Modular outdoor units

Our lineup of modular outdoor Trane® Advantage VRF™ variable refrigerant system units is one of the most complete in the industry. Single outdoor units are available in either heat pump or heat recovery configurations, and in 6-, 8-, 10- and 12-ton capacities. Individual units can be combined to form large-capacity systems up to 36 tons. All modular outdoor units are available in either 208V – 230V or 460V designs for use with three-phase, 60 Hz electric service.



### Available Trane Advantage VRF outdoor units

	Power	Nominal Tons				
		6 	8 	10 	12 	14-36 
		Basic Modules				Combined Modules
Heat Pump	208-230/60/3	✓	✓	✓	✓	✓
	460/60/3	✓	✓	✓	✓	✓
Heat Recovery	208-230/60/3	✓	✓	✓	✓	✓
	460/60/3	✓	✓	✓	✓	✓

## Mini outdoor units

Mini outdoor Trane Advantage VRF units are available in heat pump configuration in 3-, 4- and 5-ton capacities. All mini outdoor units are designed for use with 208V – 230V single-phase, 60 Hz electric service.



### Available Trane Advantage VRF mini outdoor units

	Power	Nominal Tons		
		3 	4 	5 
Heat Pump	208-230/60/1	✓	✓	✓

# Indoor units

Indoor Trane® Advantage VRF™ variable refrigerant system units are available in cassette, concealed, high-wall and floor/ceiling configurations, in varying capacities up to 96 MBh.

## Cassette units

These units offer stylish panel designs with strong airflow and quiet operation. Lightweight for easier installation, each unit has an internal condensate pump with integral check valve and optional fresh air intake. Cassette units are available in slim one-way (7.5 – 12 MBh), four-way (9 – 48 MBh) and mini four-way (9.5 – 20 MBh) configurations.



**Slim One-Way**



**Four-Way**



**Mini Four-Way**

## Concealed units

Available in three levels of static pressure capacity, these compact units are easy to install. Internal drain pumps with check valves are optional; larger models can be ducted to supply multiple spaces or larger rooms. All models offer easy-to-clean filters. Concealed units are available in slim duct (7.5 – 48 MBh), mid-static pressure duct (18 – 48 MBh) and high-static pressure duct (36 – 96 MBh) designs.



**Slim Duct**



**Mid-Static Pressure Duct**



**High-Static Pressure Duct**

## High-wall and floor/ceiling units

For specialty applications, two designs are available. Both feature crisp, modern styling and include easy-to-clean filters and wireless remote controls. High-wall units are available in capacities from 7.5 – 24 MBh; floor/ceiling units have capacities from 18 – 24 MBh.



**High Wall**



**Floor/Ceiling**

### Available Trane Advantage VRF indoor units

	Nominal Capacity										
	7.5	9.0	12.0	18.0	20.0	24.0	30.0	36.0	48.0	75.8	96.0
 <b>Slim One-Way</b>	✓	✓	✓								
 <b>Mini Four-Way</b>		✓	✓	✓	✓						
 <b>Four-Way</b>		✓		✓		✓	✓	✓	✓		
 <b>Slim Duct</b>	✓		✓	✓		✓	✓	✓	✓		
 <b>Mid-Static Pressure Duct</b>				✓		✓	✓	✓	✓		
 <b>High-Static Pressure Duct</b>								✓	✓	✓	✓
 <b>High Wall</b>	✓	✓	✓	✓	✓	✓					
 <b>Floor/Ceiling</b>				✓		✓					

## Trane Advantage VRF variable refrigerant system controls

# Advanced controls for every application.

Trane® Advantage VRF™ systems include a variety of control options to make systems easy to use and comfort easy to achieve, helping to improve the life of your building.



**Individual zone controls** allow management of up to 16 indoor units via a wired or wireless remote control. Each controller can be used to set zone temperature, heating/cooling mode and fan speed. Simple scheduling is also possible for improved energy savings.

- Unit on/off
- Fan-speed control
- Temperature selection
- Simple scheduling
- Multi-unit control
- Tenant control security lock with permission setting (wired remote)



**Centralized controls** allow power and heating/cooling mode management of up to 128 indoor units connected to a central on/off controller. A typical application for this type of control would be an elementary school, with the entire building's group of VRF units monitored and controlled from the principal's office.

- System control of up to 128 indoor units
- On/off scheduling
- Remote control restriction
- Cooling/heating mode control
- Indoor unit error display



**System controls** provide a higher level of management for multiple VRF systems, as might be found in a multi-floor building. System controls provide more-advanced scheduling, operation and alarm history management; they can be accessed remotely for monitoring via an Internet connection.

Optional BACnet® connectivity adds the benefit of VRF system integration with Trane Tracer™ controls for a total building management and control solution. An available Pulse Input Module can be connected to watt-hour meters to allow individual tenant billing.

- Easy system control and monitoring
- Varying levels of accessibility
- Dynamic user security management
- User-editable control logic
- History management
- Power distribution management
- Remote control and monitoring via Internet connection



**Integrated building control** software is available for large, stand-alone VRF installations. It offers building owners and managers complete control and monitoring capability of all connected VRF systems and units.

- System control and monitoring
- Scheduling
- Zone management
- Power distribution management
- History management

# *Trane solutions: Making buildings better for life*



## **Performance**

Trane® products are designed, engineered, built and tested to provide exceptional performance. With their ability to provide different temperature levels in different rooms in the same building, Trane Advantage VRF™ variable refrigerant systems honor a long legacy of indoor comfort solutions and provide a new benchmark in individual control.

## **Innovation**

Trane was built on the belief that innovative leadership can solve virtually any challenge. A century of developing technological breakthroughs in the science of heating and cooling is now marked with our introduction of Trane Advantage VRF systems: our latest innovation in efficient indoor comfort solutions for a wide variety of customers, applications and building types.



### **Commitment**

Our commitment to customer satisfaction is what has kept Trane an industry leader for more than a century. Carefully listening to our customers and truly understanding their needs is the surest way for us to recommend the right indoor comfort solution that will provide years of service and satisfaction. Because Trane offers a wide variety of products—including our new Advantage VRF systems—we are uniquely able to match every customer with a system or combination of systems that's right for them.

### **Knowledge**

To become and remain an industry leader requires a full understanding of existing knowledge and a never-ending quest for new discoveries. For one hundred years, Trane has built and maintained its leadership status in the HVAC industry by employing the brightest and most inquisitive scientists, engineers and design experts—all of whom share a singular passion to know and explore the ever-evolving technology that improves the lives of our customers.

*Visit [Trane.com/VRF](http://Trane.com/VRF) for more information on Trane Advantage VRF variable refrigerant systems—or contact your local Trane account manager to learn more.*

Scan the code or  
visit [Trane.com/VRF](http://Trane.com/VRF)  
to learn more about  
Trane® Advantage VRF™.



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