

TOSHIBA
Carrier

Variable Refrigerant Flow

Heat Pumps for Commercial Applications



SMMS 
SUPER MODULAR MULTI SYSTEM



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Toshiba Carrier solutions

Toshiba Carrier offers both ductless and ducted comfort solutions for all applications: residential, light commercial and larger commercial buildings.

- Residential solutions include indoor units designed to blend perfectly with home interiors. These products also incorporate advanced filtration systems to deliver optimum comfort.
- Light commercial solutions combine top performance, comfort and energy efficiency.
- Large commercial solutions include VRF systems with an optimized combination of energy efficiency, flexibility and comfort. These systems are designed with a wide choice of stylish indoor units that blend with a variety of interior decors.

Your Toshiba Carrier distributor also handles a full line of Carrier comfort solutions, including chillers, rooftops, and VRF systems. That means you have access to all the solutions you need, all from one convenient, reliable source that you already trust.

Dedicated to Quality

Toshiba Carrier embraces its commitment to comfort with a company-wide focus on attention to detail. This focus resonates through every stage of the development process from design to user field tests. Installations using our products and systems feature a higher standard of indoor quality, quieter sound levels, and enhanced energy savings.



Introducing the VRF Heat Pump System Advantage



Comfort where it's needed

VRF (Variable Refrigerant Flow) technology is part of an innovative new indoor comfort system designed for larger buildings. The modular design of VRF systems allows quick response to the specific heating or cooling needs of each individual zone making it one of the most effective and efficient systems available.

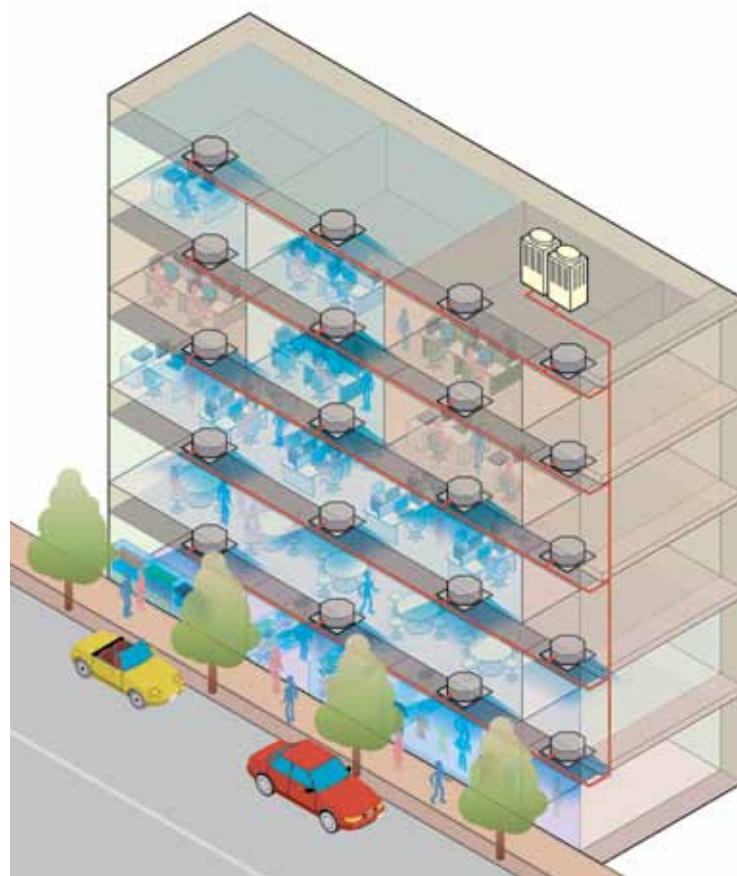
In a typical office building installation, refrigerant flow is delivered only to zones where temperature control is needed and discontinued in areas it isn't. The result is remarkably efficient performance that minimizes energy loss and makes optimal use of zone-specific temperature control.



Easier installation

VRF systems provide several installation advantages as well by eliminating the need to install large distribution fans, water pumps and large bore pipes. As a result, VRF systems do not require dedicated maintenance rooms or service shafts. In addition the small footprints of the outdoor units save space and make installation easier.

Toshiba Carrier SMMS-i systems fully leverage all of the advantages of VRF, combining energy savings, easy installation and operation, application flexibility, and long-term reliability to deliver the indoor comfort solutions you need.



Intelligent Comfort Solutions

SMMS-i systems feature innovative technologies that allow Toshiba Carrier to deliver a superior combination of high efficiency, flexibility and comfort.

SMMS
SUPER MODULAR MULTI SYSTEM



Efficiency

The Toshiba Carrier VRF system, SMMS-i, offers innovations in energy efficiency in part by combining advanced, vector-controlled inverters with high-efficiency multi-speed compressors.



Flexibility

SMMS-i systems provide impressive installation flexibility with the ability to connect up to 38 indoor units to one outdoor unit. They also offer industry-leading flexibility in piping configuration – up to 720* feet long and up to 130** feet high.

* Outdoor unit to farthest indoor unit

** Between the lowest and highest indoor unit

Comfort

SMMS-i systems with intelligent VRF ensure precise control over temperature in every zone in the building, regardless of the distance between the fan coil and the outdoor unit.



Energy Efficiency

Toshiba Carrier combines variable speed compressors with vector-controlled inverters to achieve greater operating performance under constant loads.

World-leading performance

Toshiba Carrier inverter-driven compressors deliver outstanding capacity under partial load. The 8- and 10-ton outdoor units incorporate three of these compressors per unit, while the 6-ton model uses two to achieve full performance. These compressors improve both energy efficiency and comfort when compared to standard, non-inverter systems.

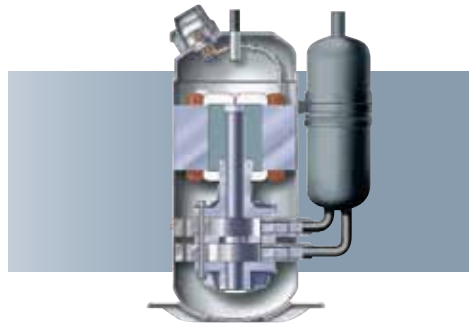
High-performance outdoor units with three compressors and three inverters





Fast, load-matching control

Each compressor in Toshiba Carrier SMMS-i systems is controlled with a dedicated inverter board that taps the compressor's full potential. This combination helps achieve precise control over the system for load matching and smoother compressor operation.



Inverter-driven compressor

Toshiba Carrier compressors include optimized discharge port positioning and blade thickness to reduce compression loss and friction resistance. Rotor magnets with large surface areas and slit designs realize greater efficiency and reduce noise.

Variable speed operation

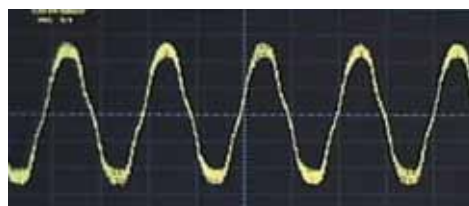
During operation, the system determines which heat exchanger can be used most efficiently and selects the compressor to deliver the power required. Compressor speed is adjusted in nearly seamless, 0.1 Hz steps. Responding precisely to the capacity needs of the space, this responsive operation minimizes energy loss when changing frequencies.

Inverter-driven continuous operation reduces energy consumption as compared to standard systems. At the same time, building occupants will enjoy a more comfortable indoor environment with even, consistent room-to-room temperatures.



Magnetic rotor

Each motor employs a compact and powerful rare earth magnetic rotor and features reduced eddy-current loss.

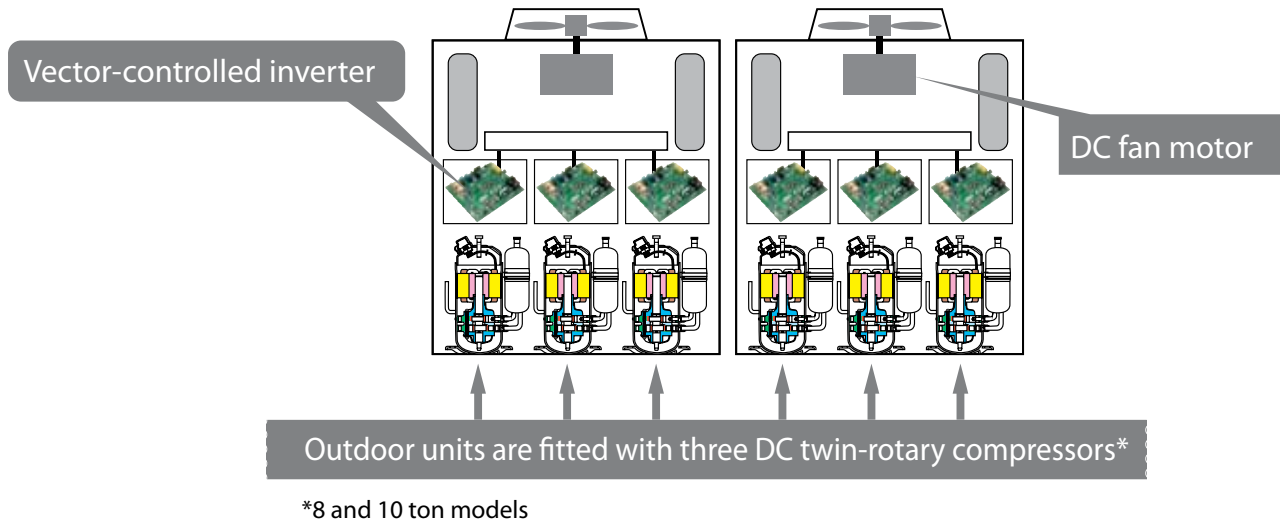


Smooth sine curve

The fast-calculating vector-controlled inverter quickly converts current into a smooth sine curve. This translates into smoother operation of the compressor's DC motor and improved operating efficiency.

High-efficiency Inverter driven compressors

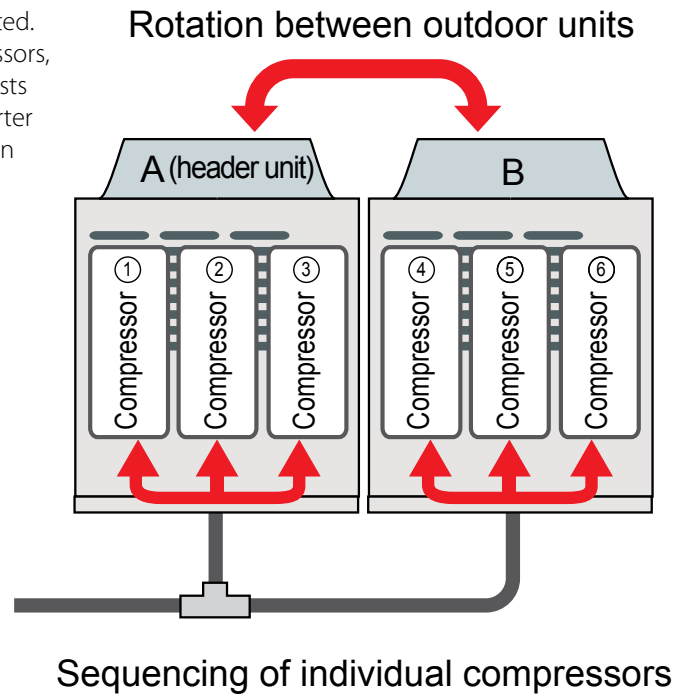
Every outdoor unit incorporates three new inverter driven compressors* — this is unique to Toshiba Carrier and the air conditioning industry.



Reliability

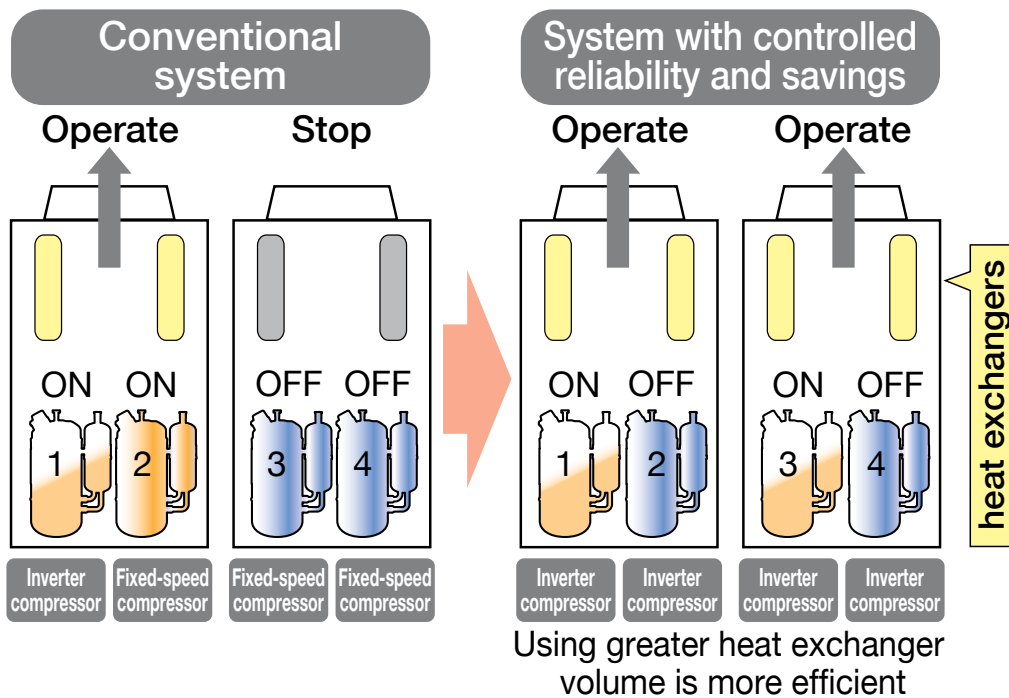
With dual-rotation, the load is distributed more evenly — this means that the operating sequence of the outdoor units and the individual compressors is rotated to spread the operating hours more evenly.

As the compressors are all inverter driven, power surges are eliminated. Over- or under-utilization of power, typical for non-inverter compressors, is eliminated, and there is no on/off power surge as the system adjusts to the demand required by the occupant or system. The use of inverter compressors reduces the risk of compressor failure, more common in standard non-inverter systems.



Energy Savings

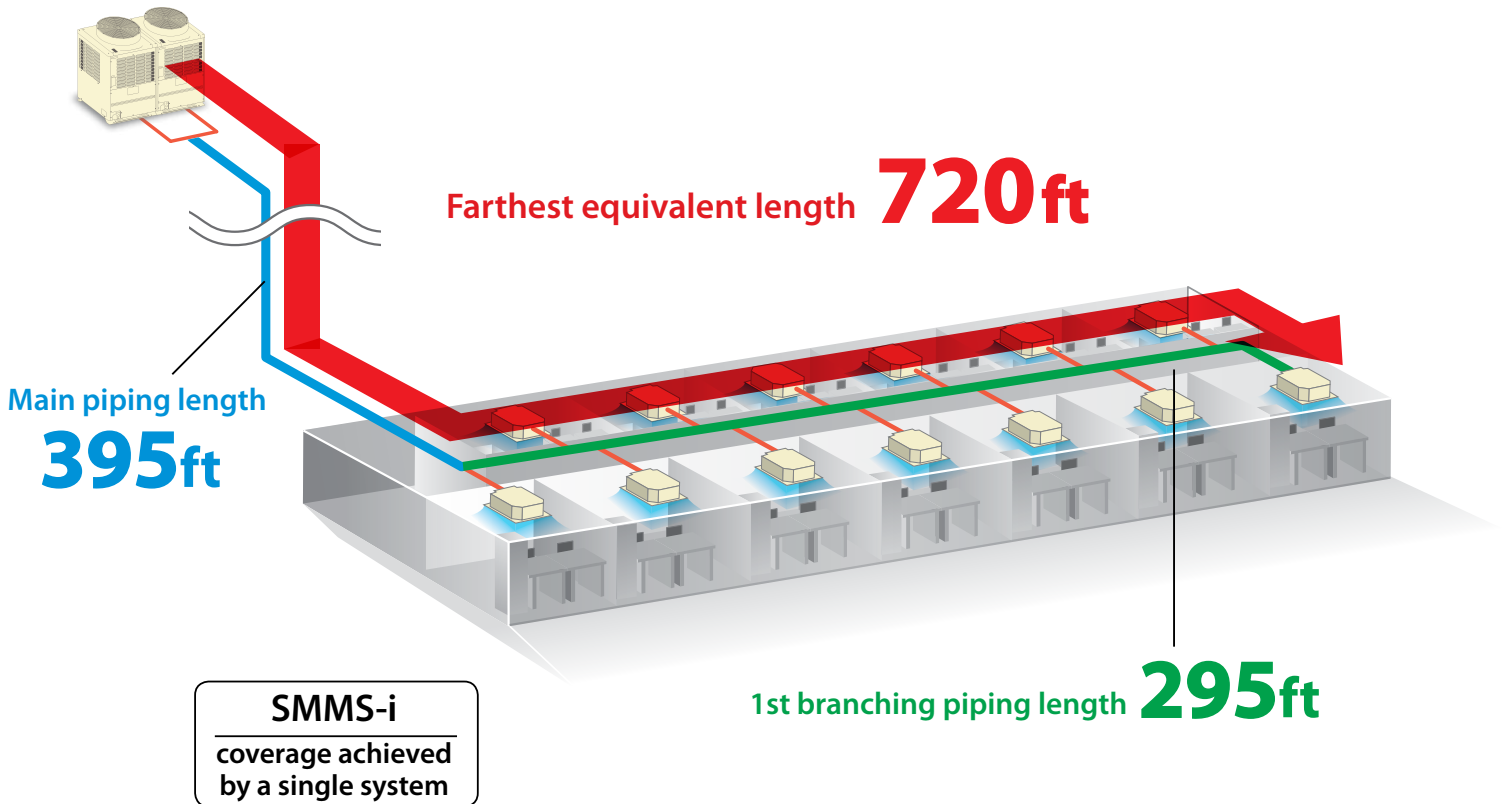
During operation the system determines which heat exchanger can be used most efficiently and selects the compressor to deliver the power required. Inverter systems save energy as continuous operation offers the same capacity with lower power consumption. This benefits all occupants by maintaining more even room temperatures, as well as reducing energy consumption.



Application Flexibility

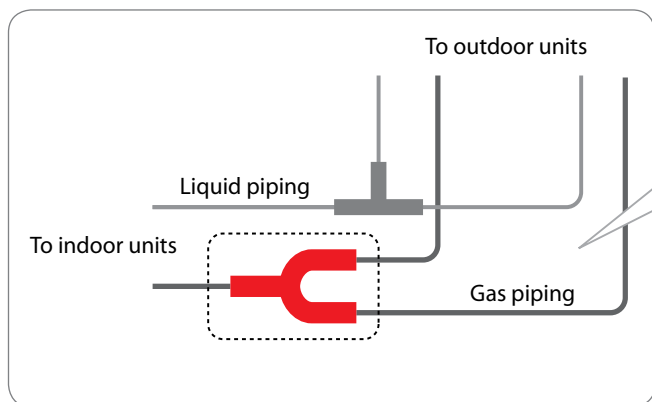
Long pipe length for greater flexibility

With Toshiba Carrier SMMS-i systems, layouts can be designed with a maximum equivalent distance of up to 720 feet. This leads to fewer limitations, making it much easier to design for floors with many small rooms, or for tenants who often rearrange their floor layouts. Y-shaped branching joints on the gas pipes between SMMS-i outdoor units ensure that refrigerant flow is equalized to each branch for enhanced system reliability.



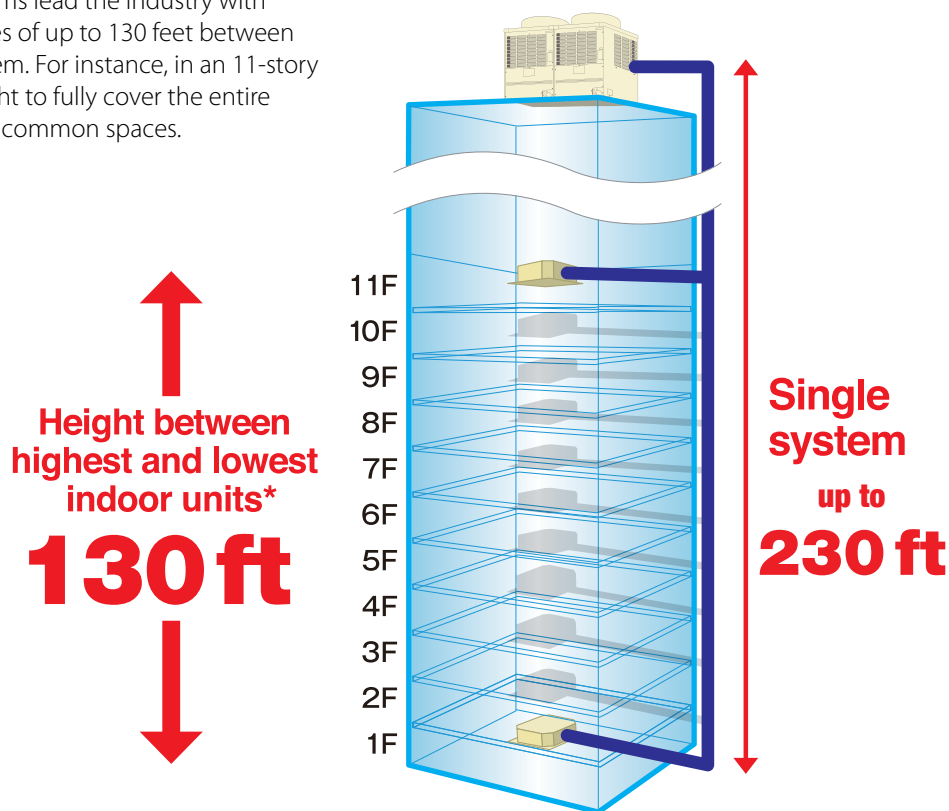
Piping

Y-shape branching joints on the gas pipes between SMMS-i outdoor units results in equalized flow to each branch for more reliable operation.



Greater support for height differences between indoor units

Toshiba Carrier SMMS-i systems lead the industry with support for height differences of up to 130 feet between indoor units on a single system. For instance, in an 11-story building, this is enough height to fully cover the entire floor as well as corridors and common spaces.



*Calculated at 11.5ft per floor



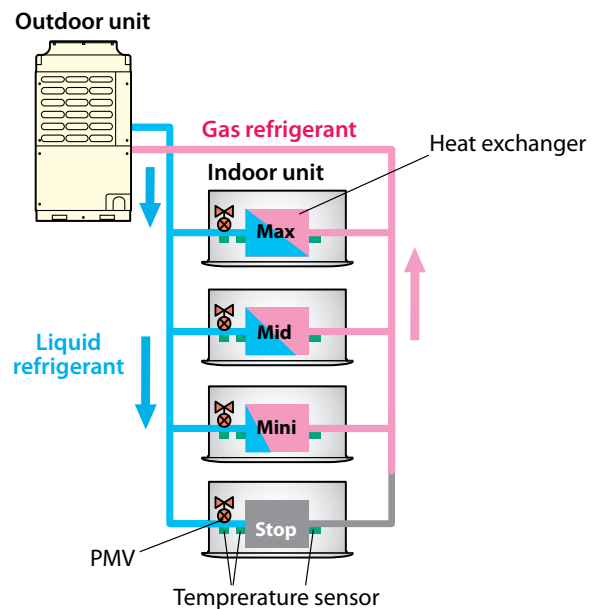
Small footprint for easier handling & installation

The outdoor units provide installation flexibility with compact footprints and light unit weights. Units can be transported to a roof via elevator with no crane needed. Installations are quicker, easier and with fewer weight-related restrictions. All of this convenience and space savings is available with all of the comfort and performance you expect from Toshiba Carrier.

Operating temperature range

SMMS-i systems achieve a wide operating range that continues to heat even as outdoor temperatures dip down to 5° F. This enables enhanced application flexibility and use of the system in colder regions.

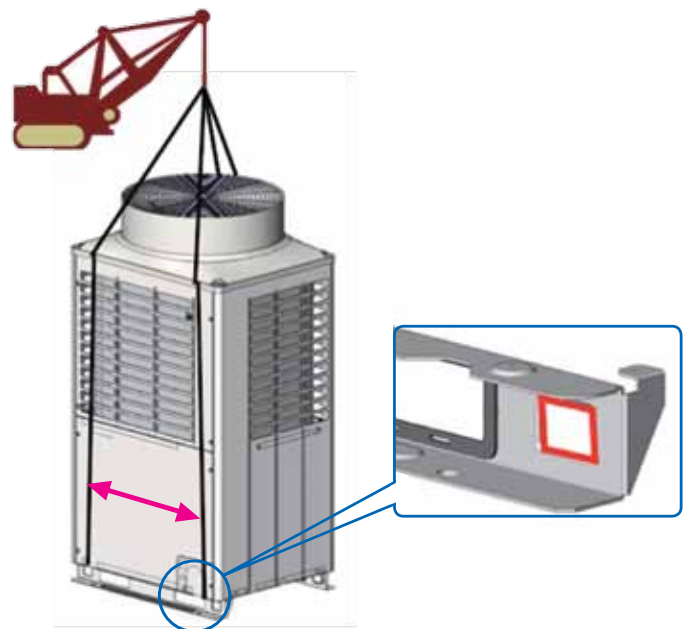
Outdoor temp. range	SMMS-i
When cooling	23°F to 109°F (DB)
When heating	5°F to 60°F (WB)





■ Square carrying holes

When a crane is needed to transport the unit to a rooftop, square carrying holes, one each located on the lower corners of the outdoor unit, ensure safer, surer lifting. Belts passing through the holes maintain positioning and load balance throughout the lifting operation.



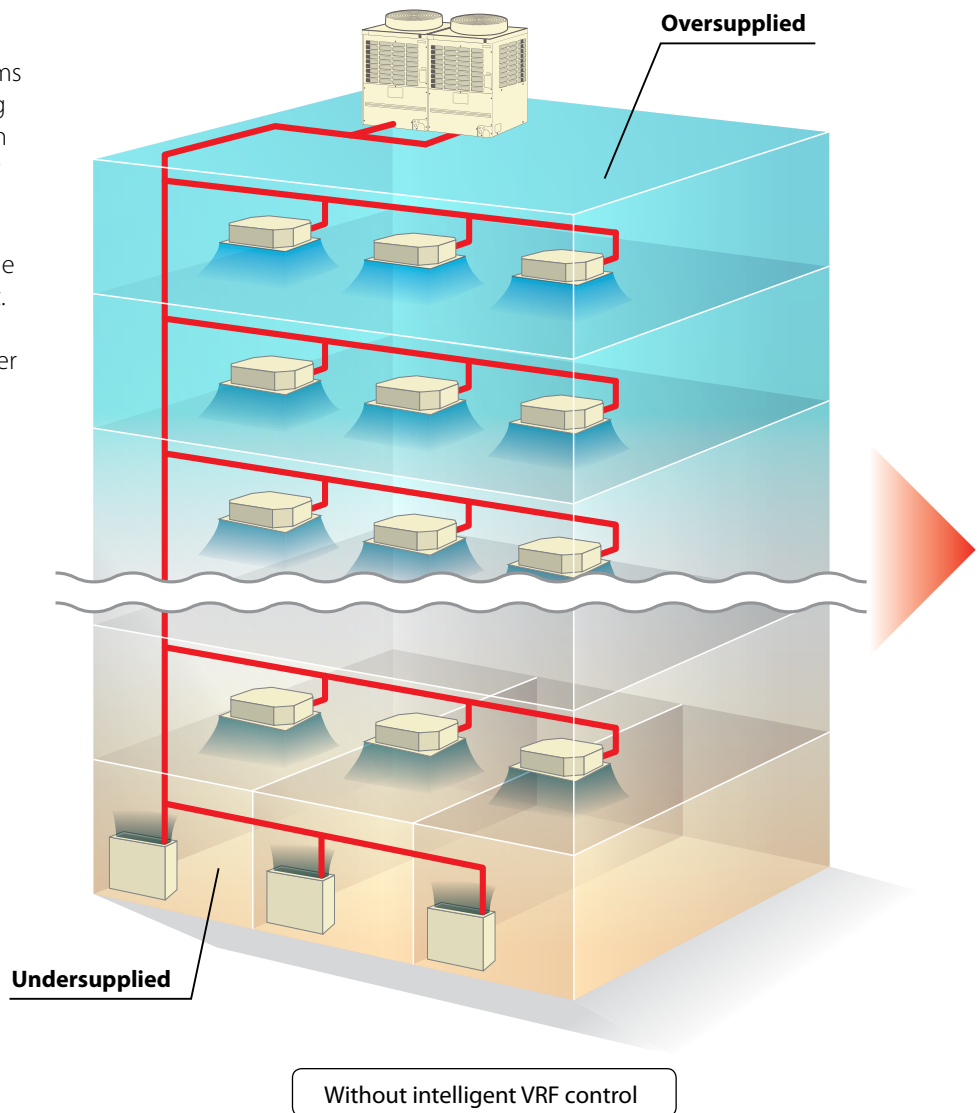
Enhanced Comfort

New intelligent VRF control

Toshiba Carrier systems with intelligent VRF control provide levels of comfort other systems simply cannot match. That's because differing pipe lengths in commercial buildings result in inconsistent levels of performance, especially when several indoor units are connected to a system. This imbalance is caused by pressure loss and thermal leaks that inhibit the optimum refrigerant flow to each indoor unit.

For example, without intelligent control, upper floor indoor units within VRF systems place loads on the refrigerant supply. This causes a delay before enough refrigerant reaches the lower floors to deliver efficient levels of operation.

Without intelligent VRF control, refrigerant flows unevenly throughout the structure, typically oversupplying areas closer to the outdoor unit and undersupplying areas that are farther away.





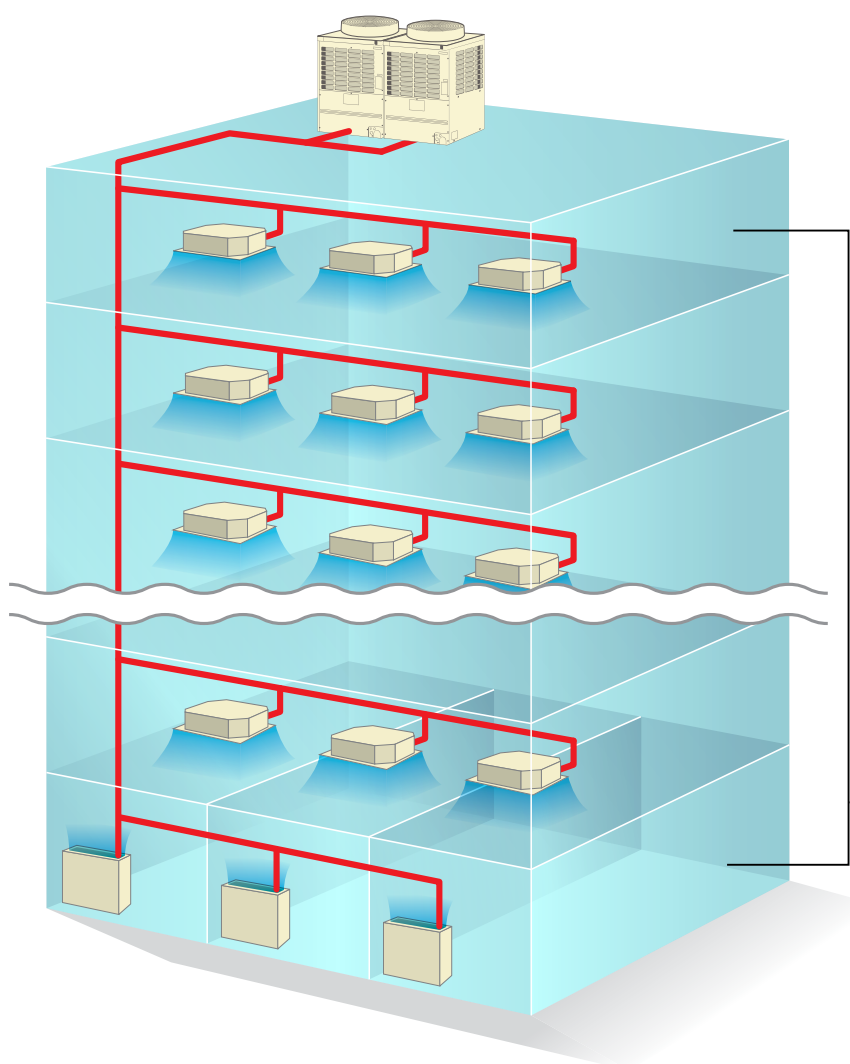
Total system control and consistent room-to-room temperature

The Toshiba Carrier intelligent VRF control overcomes these issues by providing precise control of up to 38 indoor units with just electrical wiring and copper refrigerant tubing. It's intelligent because it sends more refrigerant to areas that need it, and supplies less refrigerant to areas that don't. Comfort is distributed evenly regardless of line length. As a result, occupants enjoy greater overall comfort whether they are closest to the outdoor unit or farthest away.

Additionally, Toshiba Carrier SMMS-i systems monitor the flow of refrigerant to each indoor unit while tracking the model number of each indoor unit, pipe length between each indoor unit and the outdoor unit, as well as data on operating conditions. The system computes the amount of refrigerant required by each indoor unit and controls the unit's pulse motor valve to ensure optimal supply across the system with height difference between outdoor unit and indoor unit of up to 230 feet.

Can be adjusted to maintain consistent temperature

With intelligent VRF control, Toshiba Carrier delivers consistent, room-to-room comfort across several floors of a commercial structure.



With intelligent VRF control



Peace of mind

Building occupants will enjoy even, consistent comfort because the operating sequence of the outdoor units and the individual compressors is rotated to spread operating hours more evenly.

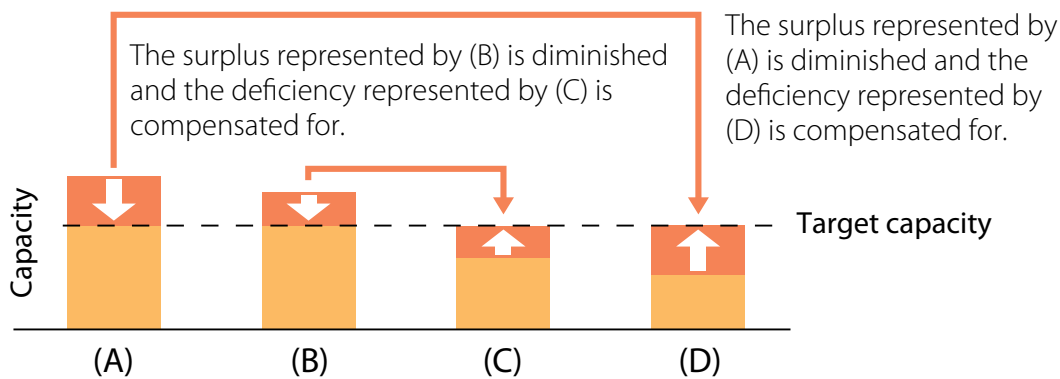
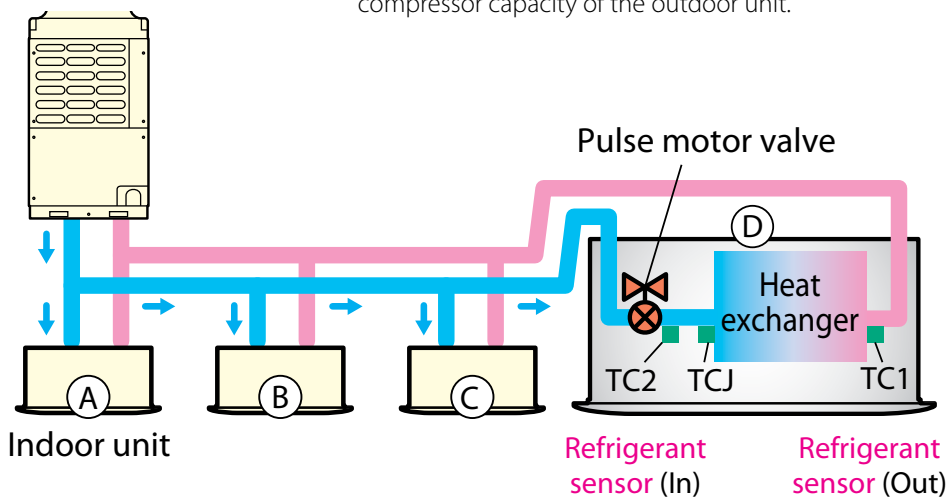
Because the compressors are all inverter-driven, power surges are eliminated. Over- or under-utilization of power, typical for non-inverter compressors, is eliminated, and there is no on/off power surge as the system adjusts to the demand required by the occupant or system. The use of inverter compressors reduces the risk of compressor failure, more common in standard non-inverter systems.





Precise refrigerant flow

One of the keys to delivering precision refrigerant flow and enhanced comfort is the Toshiba Carrier pulse motor valve (PMV) control. The PMV control prevents refrigerant from flowing to indoor units that are not operating. The system reduces bypass loss and achieves tighter control over the compressor capacity of the outdoor unit.



Outdoor units - 208/230V

Appearance			
Nominal Tons	6	8	10
Model name (MMY-)	MAP0724HT9UL	MAP0964HT9UL	MAP1144HT9UL

Standard model (Single unit)

Technical specifications

Outdoor unit model name	MMY-	MAP0724HT9UL	MAP0964HT9UL	MAP1144HT9UL		
Nominal tons	Ton	6	8	10		
Cooling capacity(*1) (with non-ducted indoor units / ducted)	kBtu/h	72/72	96/96	112/110		
Heating capacity(*1) (with non-ducted indoor units / ducted)	kBtu/h	81/81	108/104	130/126		
With Non-ducted Indoor Units	Power supply(*2)	230 V (208/230V) 3-phase 60Hz				
Electrical characteristics (Nominal)(*1)	Cooling	Power consumption	kW	6.44	8.57	9.97
		EER (Energy Efficiency Ratio)	Btu/W	11.2	11.2	11.2
	Heating	Power consumption	kW	6.69	9.44	11.16
		COP(Coefficient of Performance)	W/W	3.55	3.35	3.41
With Ducted Indoor Units	Power supply(*2)	230 V (208/230V) 3-phase 60Hz				
Electrical characteristics (Nominal)(*1)	Cooling	Power consumption	kW	5.90	8.82	9.54
		EER (Energy Efficiency Ratio)	Btu/W	12.2	11.6	11.5
	Heating	Power consumption	kW	6.50	8.87	10.73
		COP(Coefficient of Performance)	W/W	3.46	3.44	3.44
External dimensions	Height	in	72.8	72.8	72.8	
	Width	in	39.0	47.6	47.6	
	Depth	in	30.7	30.7	30.7	
Total weight	Unit	lb	546	742	742	
Compressor	Type	Hermetic twin rotary compressor				
	Motor output	kW	2.3 x 2	2.1 x 3	2.5 x 3	
Fan unit	Motor output	W	1,000	1,000	1,000	
	Air volume	cfm	5,800	6,600	7,060	
Refrigerant (*3) (Charged refrigerant amount)		lb	R410A (25.4)	R410A (25.4)	R410A (25.4)	
Electrical specifications	Unit	MCA(*4)	A	36	50	52
		MOCP(*5)	A	40	60	60
Refrigerant piping	Connecting port diameter	Gas side(main pipe)	in	7/8"	7/8"	1-1/8"
		Liquid side(main pipe)	in	1/2"	1/2"	1/2"
		Balance pipe	in	3/8"	3/8"	3/8"
Operation temperature range	Cooling	°F DB	23 to 109			
	Heating	°F WB	5 to 60			
Maximum external static pressure		in WG	0.20	0.20	0.20	
Maximum number of connected indoor units			12	16	19	
Sound pressure level	Cooling/Heating	dB(A)	56/57	60/62	62/63	

(*1)Rated conditions

Cooling : Indoor 80 °F Dry Bulb / 67 °F Wet Bulb, Outdoor 95 °F Dry Bulb.
Heating : Indoor 70 °F Dry Bulb, Outdoor 47 °F Dry Bulb / 43 °F Wet Bulb.

The standard pipe

072 type - 114 type	Equivalent piping length : 25 ft, Height difference : 0 ft
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(*2)The source voltage must not fluctuate more than ±10%

(*3)The amount does not consider extra piping length. Refrigerant must be added on site in accordance with the actual piping length.

(*4)Select wire size base on the larger value of MCA.

MCA : Minimum Circuit Amps (Minimum circuit Amps required for power supply design.)

(*5)MOCP : Maximum Overcurrent Protection (Amps)

Appearance				
Nominal Tons	12	14	16	20
Model name (MMY-)	AP1444HT9UL	AP1684HT9UL	AP1924HT9UL	AP2284HT9UL

Standard model (Combination)

Technical specifications

Outdoor unit set model name		MMY-	AP1444HT9UL		AP1684HT9UL		AP1924HT9UL		AP2284HT9UL		
Outdoor unit model name		MMY-MAP	0724HT9UL	0724HT9UL	0964HT9UL	0724HT9UL	0964HT9UL	0964HT9UL	1144HT9UL	1144HT9UL	
Nominal tons		Ton	12		14		16		20		
Cooling capacity (*1) (with non-ducted indoor units / ducted)		kBtu/h	136/134		168/168		192/192		226/198		
Heating capacity (*1) (with non-ducted indoor units / ducted)		kBtu/h	156/162		189/185		212/200		246/214		
With Non-ducted Indoor Units	Power supply(*2)		230 V (208/230V) 3-phase 60Hz								
	Cooling	Power consumption	kW	11.87		15.48		17.82		20.87	
		EER(Energy Efficiency Ratio)	Btu/W	11.4		10.9		10.8		10.8	
	Heating	Power consumption	kW	13.58		17.10		19.12		20.75	
		COP(Coefficient of Performance)	W/W	3.36		3.24		3.25		3.47	
With Ducted Indoor Units	Power supply(*2)		230 V (208/230V) 3-phase 60Hz								
	Cooling	Power consumption	kW	11.73		14.97		17.39		17.95	
		EER(Energy Efficiency Ratio)	Btu/W	11.4		11.2		11.0		11.0	
	Heating	Power consumption	kW	14.37		16.22		17.59		18.87	
		COP(Coefficient of Performance)	W/W	3.30		3.34		3.33		3.32	
External Dimensions	Height	in	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	
	Width	in	39.0	39.0	47.6	39.0	47.6	47.6	47.6	47.6	
	Depth	in	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	
Total weight	Unit	lb	546	546	742	546	742	742	742	742	
Compressor	Type	Hermetic twin rotary compressor									
	Motor output	kW	2.3 x 2	2.3 x 2	2.1 x 3	2.3 x 2	2.1 x 3	2.1 x 3	2.5 x 3	2.5 x 3	
Fan unit	Motor output	W	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
	Air volume	cfm	5,800	5,800	6,600	5,800	6,600	6,600	7,060	7,060	
Refrigerant (*3) (Charged refrigerant amount)		lb	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	
Electrical specifications	Unit	MCA(*4)	A	36	36	50	36	50	50	52	52
		MOCP(*5)	A	40	40	60	40	60	60	60	60
Refrigerant piping	Connecting port diameter	Gas side(main pipe)	in	1-1/8"		1-1/8"		1-1/8"		1-3/8"	
		Liquid side(main pipe)	in	5/8"		5/8"		5/8"		3/4"	
		Balance pipe	in	3/8"		3/8"		3/8"		3/8"	
Operation temperature range	Cooling	°F DB	23 to 109								
	Heating	°F WB	5 to 60								
Maximum external static pressure		in WG	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	
Maximum number of connected indoor units			24		28		32		38		
Sound pressure level	Cooling/Heating	dB(A)	59/60		61.5/63.5		63/65		65/66		

(*1)Rated conditions Cooling : Indoor 80 °F Dry Bulb / 67 °F Wet Bulb, Outdoor 95 °F Dry Bulb.
Heating : Indoor 70 °F Dry Bulb, Outdoor 47 °F Dry Bulb / 43 °F Wet Bulb.

The standard pipe

144 type - 228 type	Equivalent piping length : 25 ft, Height difference : 0 ft
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(*2)The source voltage must not fluctuate more than ±10%



(*3)The amount does not consider extra piping length. Refrigerant must be added on site in accordance with the actual piping length.

(*4)Select wire size base on the larger value of MCA.

MCA : Minimum Circuit Amps (Minimum circuit Amps required for power supply design.)

(*5)MOCP : Maximum Overcurrent Protection (Amps)

Outdoor units - 460V

Appearance			
Nominal Tons	6	8	10
Model name (MMY-)	MAP0724HT6UL	MAP0964HT6UL	MAP1144HT6UL

Standard model (Single unit)

Technical specifications

Outdoor unit model name	MMY-	MAP0724HT6UL	MAP0964HT6UL	MAP1144HT6UL		
Nominal tons	Ton	6	8	10		
Cooling capacity(*1) (with non-ducted indoor units / ducted)	kBtu/h	72/72	96/96	112/110		
Heating capacity(*1) (with non-ducted indoor units / ducted)	kBtu/h	81/81	108/104	130/126		
With Non-ducted Indoor Units	Power supply(*2)	460 V 3-phase 60Hz				
Electrical characteristics (Nominal)(*1)	Cooling	Power consumption	kW	6.44	8.57	9.97
		EER (Energy Efficiency Ratio)	Btu/W	11.2	11.2	11.2
	Heating	Power consumption	kW	6.69	9.44	11.16
		COP(Coefficient of Performance)	W/W	3.55	3.35	3.41
With Ducted Indoor Units	Power supply(*2)	460 V 3-phase 60Hz				
Electrical characteristics (Nominal)(*1)	Cooling	Power consumption	kW	5.90	8.82	9.54
		EER (Energy Efficiency Ratio)	Btu/W	12.2	11.6	11.5
	Heating	Power consumption	kW	6.50	8.87	10.73
		COP(Coefficient of Performance)	W/W	3.46	3.44	3.44
External dimensions	Height	in	72.8	72.8	72.8	
	Width	in	39.0	47.6	47.6	
	Depth	in	30.7	30.7	30.7	
Total weight	Unit	lb	621	817	817	
Compressor	Type	Hermetic twin rotary compressor				
	Motor output	kW	2.3 x 2	2.1 x 3	2.5 x 3	
Fan unit	Motor output	W	1,000	1,000	1,000	
	Air volume	cfm	5,800	6,600	7,060	
Refrigerant (*3) (Charged refrigerant amount)		lb	R410A (25.4)	R410A (25.4)	R410A (25.4)	
Electrical specifications	Unit	MCA(*4)	A	18	23	24
		MOCP(*5)	A	20	25	25
Refrigerant piping	Connecting port diameter	Gas side(main pipe)	in	7/8"	7/8"	1-1/8"
		Liquid side(main pipe)	in	1/2"	1/2"	1/2"
		Balance pipe	in	3/8"	3/8"	3/8"
Operation temperature range	Cooling	°F DB	23 to 109			
	Heating	°F WB	5 to 60			
Maximum external static pressure		in WG	0.20	0.20	0.20	
Maximum number of connected indoor units			12	16	19	
Sound pressure level	Cooling/Heating	dB(A)	56/57	60/62	62/63	

(*1)Rated conditions Cooling : Indoor 80 °F Dry Bulb / 67 °F Wet Bulb, Outdoor 95 °F Dry Bulb.
 Heating : Indoor 70 °F Dry Bulb, Outdoor 47 °F Dry Bulb / 43 °F Wet Bulb.

The standard pipe

072 type - 114 type	Equivalent piping length : 25 ft, Height difference : 0 ft
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(*2)The source voltage must not fluctuate more than $\pm 10\%$

(*3)The amount does not consider extra piping length. Refrigerant must be added on site in accordance with the actual piping length.

(*4)Select wire size base on the larger value of MCA.

MCA : Minimum Circuit Amps (Minimum circuit Amps required for power supply design.)

(*5)MOCP : Maximum Overcurrent Protection (Amps)

Appearance				
Nominal Tons	12	14	16	20
Model name (MMY-)	AP1444HT6UL	AP1684HT6UL	AP1924HT6UL	AP2284HT6UL

Standard model (Combination)

Technical specifications

Outdoor unit set model name		MMY-	AP1444HT6UL		AP1684HT6UL		AP1924HT6UL		AP2284HT6UL		
Outdoor unit model name		MMY-MAP	0724HT6UL	0724HT6UL	0964HT6UL	0724HT6UL	0964HT6UL	0964HT6UL	1144HT6UL	1144HT6UL	
Nominal tons		Ton	12		14		16		20		
Cooling capacity (*1) (with non-ducted indoor units / ducted)		kBtu/h	136/134		168/168		192/192		226/198		
Heating capacity (*1) (with non-ducted indoor units / ducted)		kBtu/h	156/162		189/185		212/200		246/214		
With Non-ducted Indoor Units		Power supply(*2)	460 V 3-phase 60Hz								
Electrical characteristics (Nominal)(*1)	Cooling	Power consumption	kW	11.87	15.48	17.82	20.87				
		EER(Energy Efficiency Ratio)	Btu/W	11.4	10.9	10.8	10.8				
	Heating	Power consumption	kW	13.58	17.10	19.12	20.75				
		COP(Coefficient of Performance)	W/W	3.36	3.24	3.25	3.47				
With Ducted Indoor Units		Power supply(*2)	460 V 3-phase 60Hz								
Electrical characteristics (Nominal)(*1)	Cooling	Power consumption	kW	11.73	14.97	17.39	17.95				
		EER(Energy Efficiency Ratio)	Btu/W	11.4	11.2	11.0	11.0				
	Heating	Power consumption	kW	14.37	16.22	17.59	18.87				
		COP(Coefficient of Performance)	W/W	3.30	3.34	3.33	3.32				
External Dimensions		Height	in	72.8	72.8	72.8	72.8	72.8	72.8	72.8	
		Width	in	39.0	39.0	47.6	39.0	47.6	47.6	47.6	
		Depth	in	30.7	30.7	30.7	30.7	30.7	30.7	30.7	
Total weight	Unit	lb	621	621	817	621	817	817	817	817	
Compressor		Type	Hermetic twin rotary compressor								
		Motor output	kW	2.3 x 2	2.3 x 2	2.1 x 3	2.3 x 2	2.1 x 3	2.1 x 3	2.5 x 3	2.5 x 3
Fan unit		Motor output	W	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
		Air volume	cfm	5,800	5,800	6,600	5,800	6,600	6,600	7,060	7,060
Refrigerant (*3) (Charged refrigerant amount)		lb	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	
Electrical specifications	Unit	MCA(*4)	A	18	18	23	18	23	23	24	24
		MOCP(*5)	A	20	20	25	20	25	25	25	25
Refrigerant piping	Connecting port diameter	Gas side(main pipe)	in	1-1/8"		1-1/8"		1-1/8"		1-3/8"	
		Liquid side(main pipe)	in	5/8"		5/8"		5/8"		3/4"	
		Balance pipe	in	3/8"		3/8"		3/8"		3/8"	
Operation temperature range		Cooling	°F DB	23 to 109							
		Heating	°F WB	5 to 60							
Maximum external static pressure		in WG	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	
Maximum number of connected indoor units			24		28		32		38		
Sound pressure level Cooling/Heating		dB(A)	59/60		61.5/63.5		63/65		65/66		

(*1)Rated conditions

Cooling : Indoor 80 °F Dry Bulb / 67 °F Wet Bulb, Outdoor 95 °F Dry Bulb.
Heating : Indoor 70 °F Dry Bulb, Outdoor 47 °F Dry Bulb / 43 °F Wet Bulb.

The standard pipe

144 type - 228 type | Equivalent piping length : 25 ft, Height difference : 0 ft

(*2)The source voltage must not fluctuate more than ±10%

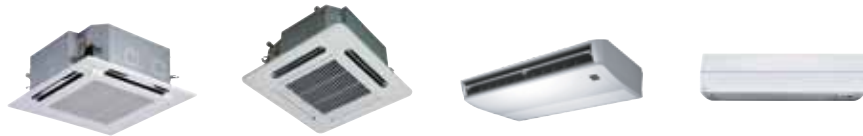
(*3)The amount does not consider extra piping length. Refrigerant must be added on site in accordance with the actual piping length.

(*4)Select wire size base on the larger value of MCA.

MCA : Minimum Circuit Amps (Minimum circuit Amps required for power supply design.)

(*5)MOCP : Maximum Overcurrent Protection (Amps)

Indoor units



Non-Ducted Models	Cooling capacity BTU/h (Ton)	4-way Cassette	Compact 4-way Cassette	Ceiling Unit	High-Wall Unit
	7,500 (0.6)		MMU-AP0071MH2UL		MMK-AP0073H2UL
	9,500 (0.8)		MMU-AP0091MH2UL		MMK-AP0093H2UL
	12,000 (1)		MMU-AP0121MH2UL		MMK-AP0123H2UL
	15,400 (1.25)		MMU-AP0151MH2UL		MMK-AP0153H2UL
	18,000 (1.5)	MMU-AP0182H2UL	MMU-AP0181MH2UL	MMC-AP0181H2UL	MMK-AP0183H2UL
	21,000 (1.75)	MMU-AP0212H2UL			
	24,000 (2)	MMU-AP0242H2UL		MMC-AP0241H2UL	MMK-AP0243H2UL
	30,000 (2.5)	MMU-AP0302H2UL			
	36,000 (3)	MMU-AP0362H2UL		MMC-AP0361H2UL	
42,000 (3.5)	MMU-AP0422H2UL		MMC-AP0421H2UL		



Ducted Models	Cooling capacity BTU/h (Ton)	Concealed Duct	Concealed Duct High Static Pressure	Slim Duct
	7,500 (0.6)	MMD-AP0074BH2UL		MMD-AP0074SPH2UL
	9,500 (0.8)	MMD-AP0094BH2UL		MMD-AP0094SPH2UL
	12,000 (1)	MMD-AP0124BH2UL		MMD-AP0124SPH2UL
	15,400 (1.25)	MMD-AP0154BH2UL		MMD-AP0154SPH2UL
	18,000 (1.5)	MMD-AP0184BH2UL		MMD-AP0184SPH2UL
	21,000 (1.75)	MMD-AP0214BH2UL		
	24,000 (2)	MMD-AP0244BH2UL		
	30,000 (2.5)	MMD-AP0304BH2UL	MMD-AP0304H2UL	
	36,000 (3)	MMD-AP0364BH2UL	MMD-AP0364H2UL	
	42,000 (3.5)	MMD-AP0424BH2UL		
48,000 (4)	MMD-AP0484BH2UL	MMD-AP0484H2UL		



MMU-AP*2H2UL**

4-way Cassette

Individual louver control

Each of the four louvers can be positioned at different angles. This allows customized airflow control based on user comfort preferences.

⇒ Enables airflow to be adapted to user preferences.



RBC-U31PG(W)-UL

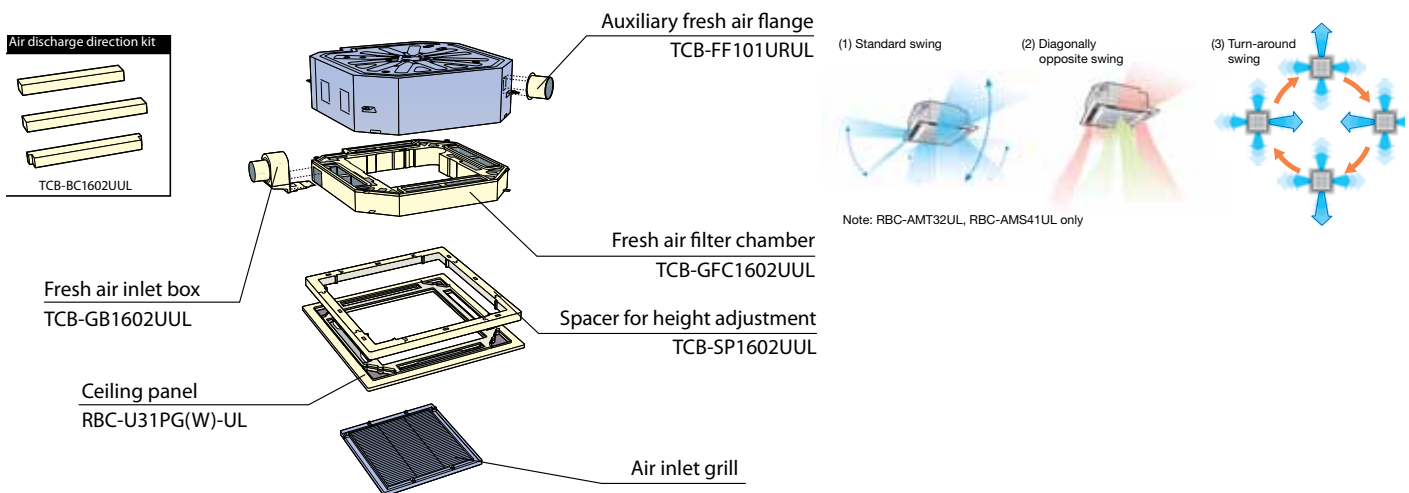
Technical specifications

Model name	MMU-	AP0182H2UL	AP0212H2UL	AP0242H2UL	AP0302H2UL	AP0362H2UL	AP0422H2UL	
Cooling capacity	kBtu/h	18	21	24	30	36	42	
Heating capacity	kBtu/h	20	24	27	34	40	47.5	
Electrical characteristics	Power supply	230V (208/230V) 1-phase 60Hz						
	Power consumption	kW	0.026	0.036	0.036	0.043	0.088	0.112
Appearance (Ceiling panel)*	Model	RBC-U31PG(W)-UL*						
External Dimensions Main unit (Ceiling panel)*	Height	in 10.1(1.2)*				in 12.6(1.2)*		
	Width	in 33.1(37.4)*						
	Depth	in 33.1(37.4)*						
Total weight Main Unit (Ceiling panel)*	lb	44(10)*				55 (10)*		
Fan unit	Standard air flow (High/Mid/Low)	cfm	550/480/440	670/540/490	670/540/490	730/630/510	1,160/840/630	1,250/840/670
	Motor output	W	60	60	60	60	150	150
Connecting pipe	Gas side	in	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"
	Liquid side	in	1/4"	3/8"	3/8"	3/8"	3/8"	3/8"
	Drain port (nominal dia.)	in	VP25 (Polyvinyl chloride tube: External Dia.1-1/4 Internal Dia.1)					
Sound pressure level (High/Mid/Low) (*1)	dB(A)	35/33/31	38/33/31	38/33/31	41/36.5/34	46/40.5/36.5	48.5/40.5/37.5	

*Figures in parentheses are for ceiling panels.

(*1)The actual values in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

Options





MMU-AP***1MH2UL

Compact 4-way Cassette

Perfect for grid system ceiling

This compact unit fits perfectly into ceilings and matches standard architectural modules to virtually eliminate the need to cut ceiling tiles.

Designed for simple installation and easy maintenance

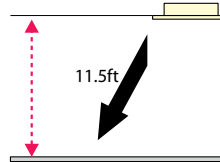
- Slim design is only 10.6 inches in height even when an electrical box is located inside the unit
- Installation is easy using the panel adjust pocket. Use the "adjust pocket" function for fine adjustments after installation
- Available for ceilings up to 11.5 feet in height†
- Drain-checking hole makes it possible to check the drain pan through the side case



RBC-UM11PG(W)UL



Drain-checking hole



Maximum height

†8.1 ft on AP007 and AP009

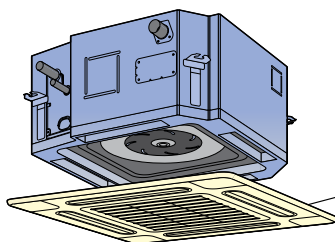
Technical specifications

Model name	MMU-	AP0071MH2UL	AP0091MH2UL	AP0121MH2UL	AP0151MH2UL	AP0181MH2UL	
Cooling capacity	kBtu/h	7.5	9.5	12	15.4	18	
Heating capacity	kBtu/h	8.5	10.5	13.5	17	20	
Electrical characteristics	Power supply	230V (208/230V) 1-phase 60Hz					
	Power consumption	kW	0.034	0.036	0.038	0.041	0.052
Appearance (Ceiling panel)*	Model	RBC-UM11PG(W)-UL					
External dimensions Main unit (Ceiling panel)*	Height	in	10.6(1.1)*				
	Width	in	22.6(27.6)*				
	Depth	in	22.6(27.6)*				
Total weight Main unit (Ceiling panel)*		lb	35(7)*				
Fan unit	Standard air flow (High/Mid/Low)	cfm	320/270/220	330/280/220	330/300/240	390/330/280	450/380/310
	Motor output	W	60	60	60	60	60
Connecting pipe	Gas side	in	3/8"	3/8"	3/8"	1/2"	1/2"
	Liquid side	in	1/4"	1/4"	1/4"	1/4"	1/4"
	Drain port (nominal dia.)	in	VP25 (Polyvinyl chloride tube: External Dia.1-1/4 Internal Dia.1)				
Sound pressure level (High/Mid/Low) (*1)		dB(A)	38.5/35/31	40/35.5/31	40/36/32	42.5/37.5/33	46.5/41.5/36

*Figures in parentheses are for ceiling panels.

(*1)The actual values in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

Options



Ceiling panel
RBC-UM11PG(W)-UL



MMC-AP*1H2UL**

Ceiling Unit

Comfortable ambience

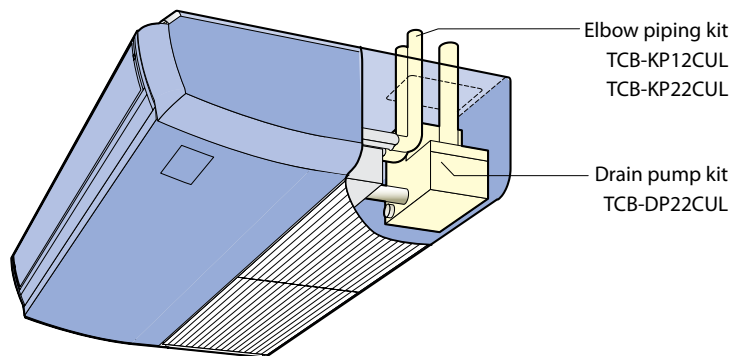
- Quiet: New design reduces noise level to half that of conventional units
- Louver control: Airflow angle is automatically set to the most suitable setting according to cooling or heating needs. An automatic swing mode enables airflow to reach all areas of the room to create a comfortable ambience.

Technical specifications

Model name	MMC-	AP0181H2UL	AP0241H2UL	AP0361H2UL	AP0421H2UL	
Cooling capacity	kBtu/h	18	24	36	42	
Heating capacity	kBtu/h	20	27	40	47.5	
Electrical characteristics	Power supply	230V (208/230V) 1-phase 60Hz				
	Power consumption	kW	0.038	0.05	0.091	0.11
External dimensions	Height	in	8.3			
	Width	in	35.8	46.5	62.8	
	Depth	in	26.8			
Total weight	lb	46	57	75		
Fan unit	Standard air flow (High/Mid/Low)	cfm	410/360/320	590/530/470	880/770/680	950/820/730
	Motor output	W	60	60	120	120
Connecting pipe	Gas side	in	1/2"	5/8"	5/8"	5/8"
	Liquid side	in	1/4"	3/8"	3/8"	3/8"
	Drain port (nominal dia.)	in	VP20 (Polyvinyl chloride tube: External Dia.1 Internal Dia. 0.79)			
Sound pressure level (High/Mid/Low) (*1)	dB(A)	38.5/35/32.5	40.5/38/35	44/41/37	46/42.5/39.5	

(*1)The actual values in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

Options





MMK-AP*3H2UL**

High-Wall Unit

Elegant and slim

- Easily blends with any room interior
- 70° directional auto-swing louver provides uniform air distribution and enhanced comfort control



Remote control

Technical specifications

Model name	MMK-	AP0073H2UL	AP0093H2UL	AP0123H2UL	AP0153H2UL	AP0183H2UL	AP0243H2UL	
Cooling capacity	kBtu/h	7.5	9.5	12	15.4	18	24	
Heating capacity	kBtu/h	8.5	10.5	13.5	17	20	27	
Electrical characteristics	Power supply	230V (208/230V) 1-phase 60Hz						
	Power consumption	kW	0.018	0.021	0.021	0.043	0.043	0.05
External dimensions	Height	in	12.6					
	Width	in	41.3					
	Depth	in	9.0					
Total weight	lb	33						
Fan unit	Standard air flow (High/Mid/Low)	cfm	340/270/230	350/280/230	350/280/230	490/390/320	490/390/320	600/440/340
	Motor output	W	30	30	30	30	30	30
Connecting pipe	Gas side	in	3/8"	3/8"	3/8"	1/2"	1/2"	5/8"
	Liquid side	in	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"
	Drain port (nominal dia.)	in	VP16 (Polyvinyl chloride tube: External Dia. 0.87 Internal Dia. 0.63)					
Sound pressure level (High/Mid/Low) (*1)	dB(A)	36/32.5/30	39/34/30	39/34/30	43/38/34.5	43/38/34.5	47.5/40.5/35	
(*1)The actual values in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.								



MMD-AP*4BH2UL**

Concealed Duct

High Static Pressure

External static pressure can be raised as high as .48 in. WG, so that all areas of the room can be reached for even temperature distribution, no matter how complex the layout.

High-lift drain pump

Kit that raises the drain piping up to 10.6 inches from the drain port.

Technical specifications

Model name	MMD-	AP0074BH2UL	AP0094BH2UL	AP0124BH2UL	AP0154BH2UL	AP0184BH2UL	AP0214BH2UL	AP0244BH2UL	AP0304BH2UL	AP0364BH2UL	AP0424BH2UL	AP0484BH2UL		
Cooling capacity/Heating capacity	(kBTU/h)	7.5/8.5	9.5/10.5	12/13.5	15.4/17	18/20	21/24	24/27	30/34	36/40	42/47.5	48/54		
Electrical characteristics	Power supply	230 V (208/230V) 1 Phase 60Hz												
	Power consumption	(KW)	.041	.041	.049	.091	.091	.091	.091	.091	.106	.142	.142	
External dimensions	Height	(in)	12.6											
	Width	(in)	21.7				39.4			53.2				
	Depth	(in)	31.5											
Total weight	(lbs)	64				93			119					
Fan unit	Standard air flow (High/Mid/Low)	(cfm)	312/ 282/ 165		371/ 335/ 224		635/ 556/ 382			788/ 694/ 424		1088/ 953/ 706	1324/ 1165/ 871	
	Motor output	(W)	150											
	External static Pressure (factory setting)	(in WG)	.26		.24	.25			.21			.25		
	External static Pressure	(in WG)	.48								.44			
Connecting pipe	Gas side	(in)	3/8"				1/2"			5/8"				
	Liquid side	(in)	1/4"						3/8"					
	Drain port	(nominal dia.)	VP25 (Polyvinyl chloride tube: External Dia. 1-1/4 Internal Dia. 1)											
Sound pressure level*1 (High/ Mid/ Low)	(dB(A))	34/ 30.5/ 27.5	34/ 30.5/ 27.5	34.5/ 32/ 31	37.5/ 35.5/ 29	37.5/ 35.5/ 29	35/ 33/ 31	35/ 33/ 31	35/ 33/ 31	38/ 35.5/ 34.5	41/ 38.5/ 36	41/ 38.5/ 36		

(*1)The actual values in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

Options

Fan Guard for Bottom Inlet: TCB-IG071BUL
TCB-IG151BUL
TCB-IG211BUL



MMD-AP*4H2UL**

Concealed Duct High Static Pressure

Design Flexibility

Satisfies all your design needs.

Compatible with external static pressures up to 1.175 in. WG.

Inspection inlet enables easy access and maintenance.

- drain pump kit

Construction characteristics

Three-phase-switchable static pressure.

The flexibile duct is accessible.

Easy service and installation.

Inspection hole enables easy access and maintenance.

Technical specifications

Model name		MMD-	AP0304H2UL	AP0364H2UL	AP0484H2UL
Cooling capacity/Heating capacity		(kBtu/h)	30/34	36/40	48/54
Electrical characteristics	Power supply	230V (208/230V) 1 Phase 60Hz			
	Power consumption 208V/230V	(KW)	0.38/0.41	0.38/0.41	0.35/0.41
External dimensions	Height	(in)	15		
	Width	(in)	33.5		47.2
	Depth	(in)	26		
Total weight		(lbs)	128		154
Fan unit	Standard air flow	(cfm)	926		1235
	Motor output	(W)	260		
	External static pressure (*1) Factory setting (208V/230V)	(in WG)	0.641/0.814		0.296/0.519
	External static pressure 208V (*3) (High tap/ Mid tap/ Low tap)	(in WG)	1.075/ 0.641/ 0.287		0.606/ 0.296/ Non
	External static pressure 230V (*3) (High tap/ Mid tap/ Low tap)	(in WG)	1.175/ 0.814/ 0.506		0.801/ 0.519/ 0.114
Connecting pipe	Gas side	(in)	5/8"		
	Liquid side	(in)	3/8"		
	Drain port	(nominal dia.)	VP25 (Polyvinyl chloride tube: Dia. 1-1/4 Internal Dia. 1)		
Sound pressure level (*2) 280V (*3) (High/ Mid/ Low)		(dB(A))	49.5/ 45/ 41		47/ 44/ -
230V (*3) (High/ Mid/ Low)		(dB(A))	51/ 47/ 43		49/ 46/ 43

(*1) Non attached filter

(*2) The actual values in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

(*3) The tap is set by wire connection change of fan motor.



MMD-AP*4SPH2UL**

Slim Duct

Functional Design

Only 8.3 inches in height for greater application flexibility.

3-step static pressure setup.

Concealed installation within a ceiling void.

Fresh air intake available.

Slim & quiet

Perfect comfort throughout the room.

Can be used with any style of air diffuser.

Quiet, powerful operation.

Technical specifications

Model name	MMD-	AP0074SPH2UL	AP0094SPH2UL	AP0124SPH2UL	AP0154SPH2UL	AP0181BH2UL
Cooling capacity/Heating capacity	(kBtu/h)	7.5/8.5	9.5/10.5	12/13.5	15.4/17	18/20
Electrical characteristics	Power supply	230 V (208/230V) 1 Phase 60Hz				
	Power consumption	(KW)	.043	.043	.048	.061
External dimensions	Height	(in)	8.3			
	Width	(in)	33.3			
	Depth	(in)	25.4			
Total weight	(lbs)	49			51	
Fan unit	Standard air flow (High/Mid/Low)	(cfm)	318/ 276/ 235	353/ 306/ 265	406/ 353/ 306	459/ 400/ 341
	Motor output	(W)	60			
	External static Pressure Factory setting (*1)	(in WG)	0.08			
	External static Pressure	(in WG)	-0.14 - 0.20			
Connecting pipe	Gas side	(in)	3/8"		1/2"	
	Liquid side	(in)	1/4"			
	Drain port	(nominal dia.)	VP25 (Polyvinyl chloride tube: External Dia. 1-1/4 Internal Dia. 1)			
Sound pressure level (*2) (High/ Mid/ Low)	Under air inlet	(dB(A))	39/ 36/ 33	41/ 38/ 35	41/ 38.5/ 35	44.5/ 41/ 37.5
	Back air inlet	(dB(A))	31/ 30/ 28	32.5/ 31.5/ 28.5	34.5/ 33.5/ 28.5	37/ 34/ 32

(*1) Non attached filter.

(*2) The actual values in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

Options

Auxiliary Fresh Air Flange: TCB-FF101URUL



Remote Controls



Simple wired remote control

RBC-AS21UL

- Start/Stop
- Temperature setting
- Air flow changing
- Check code display



Remote sensor

TCB-TC21LUL

Install this sensor when outside air has been introduced or when overcooling and overheating are to be minimized.



Wireless remote control kit

- Start/Stop
- Changing mode
- Temperature setting
- Air flow changing
- Timer function
Either "ON" time or "OFF" time or "CYCLIC" can be set how many 30 min. later ON or OFF is operated.
- Control by 2 remote controllers is available.
Two wireless remote controllers can operate one indoor unit. The indoor unit can then be operated separately from the two different locations.
- Check code display

*The wireless remote control cannot be connected to Concealed duct high static pressure type or Fresh air intake indoor unit type.



Integral receiver

RBC-AX31U(W)-UL
(For 4-way Cassette)



Integral receiver

RBC-AX22CUL
(For Ceiling)



Stand alone receiver

TCB-AX21UL
(For 4-way Cassette, Compact 4-way Cassette, Ceiling, Concealed Duct, Slim Duct)



Central Remote Control

BMS-CM1281TLUL



Smart Manager

BMS-SM1280HTLUL



RBC-AMT32UL and RBC-AMS41UL

Functions

- Individual control (ON/OFF, operating mode, etc.)
- Manages up to 128 units (Max: 2 x 64 indoor units)
- Flexible grouping in zones
- External input/output control (Input: ON/OFF signal, Output: Error signal)

Web Browser Control Software

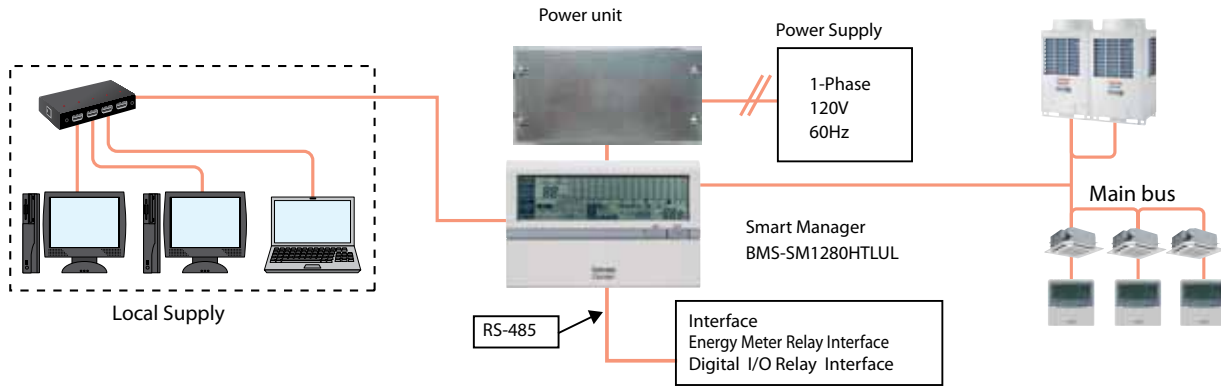
- List View available - Displays all Indoor Units in one screen
- Set View available - Shows Basic Indoor Unit settings on main screen
- Advanced Operation and Master schedule functions available
- Up to 4 Concurrent users can be connected
- Up to 32 User accounts can be programmed with different levels of access (at least 1 must be administrator level)
- Same Hardware control features as the BMS-CM1281TLUL Controller
- Can be connected to a single PC or LAN to allow advanced control functions from a Multi-Language Web Browser Display Screen*
- Energy Monitoring and report creation functions available
- Advanced operation & master schedules can be set on a calendar
- Additional Digital I/O Device Available
- Thin profile controller and separate power supply unit enables easy installation.

Individual Wired Controller

- Local control of individual fan coil
- Clock display and Schedule timer (RBC-AMS41UL only):
Possible to program schedule timer (7-day timer) function
Possible to program 8 functions for each day of the week
- *The following items can be set in program: Operation time, Operation start/stop, Operation mode, Temperature setting, Restriction on button operation

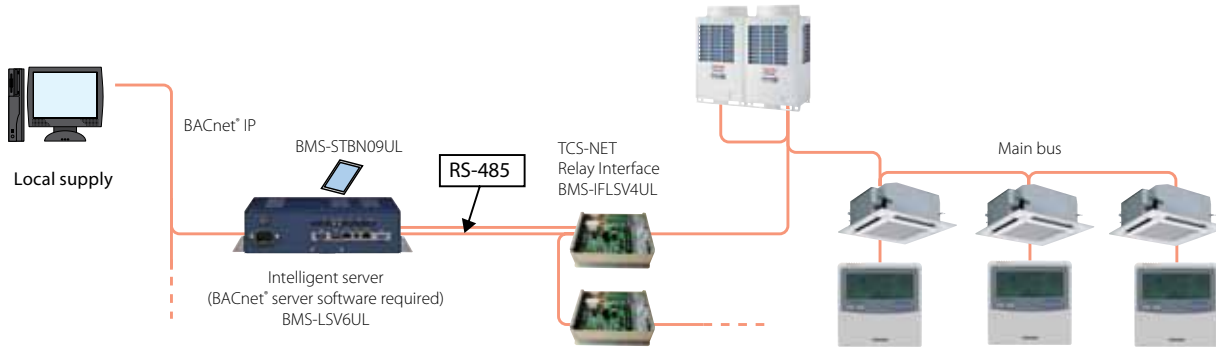
Air conditioning control systems

Smart Manager

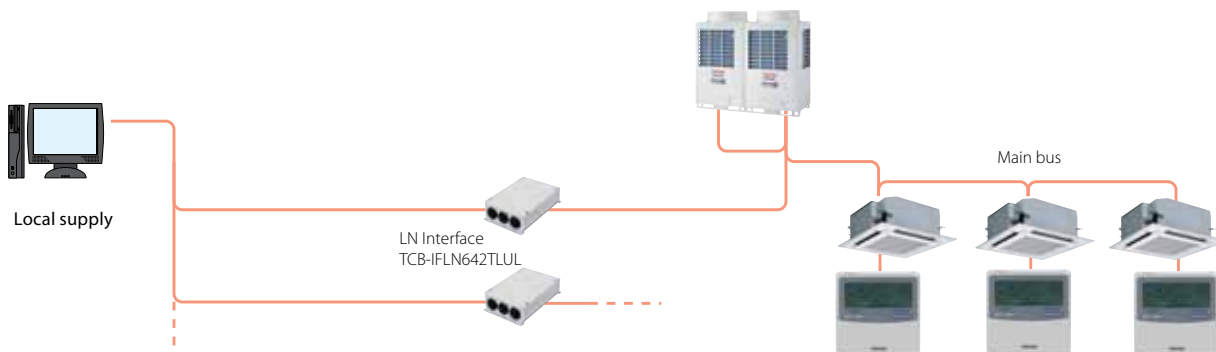


Open network systems

BACnet® system



LonWorks®



Network control

BACnet® system



Intelligent Server
BMS-LSV6UL



BACnet® Server Software
BMS-STBN09UL



Relay Interface BMS-IFLSV4UL
For TCS-NET

• BACnet®

The BACnet® system operates in conjunction with the BAC net server. Server uses object signals to provide the following functions:

Object signals command

- ON/OFF
- Mode: cool/heat/fan
- Temperature setting
- Central/local
- Fan speed

Monitoring

- ON/OFF etc.

Mode

- Cool/heat/fan/failure
- Temperature setting
- Room temperature
- Central/local, etc.

LonWorks®



LN Interface
TCB-IFLN642TLUL

• LonWorks® LN Interface

The LonWorks® interface manages the SMMS-i air conditioning system as a Lon device to communicate with the customer's Building Management System and to monitor operational status. A maximum of 64 units are controllable per interface.

• SNVT signal

Signals and provides the following functions:

Object signals command

- ON/OFF
- Mode: cool/heat/fan
- Temperature setting
- Central/local

Monitoring

- ON/OFF

Mode

- Cool/heat/fan/failure
- Temperature setting
- Room temperature
- Central/local, etc.

1. LonWorks®: Registered trademark Echelon corporation

2. BACnet®: ANSI/ASHRAE 135-1995, A data Communication Protocol for Building Automation and Control Networks.

Application Control

TCB-PCDM4UL



Size: 2.8 × 3.3 (in.)

* Install the optional P.C. board in the inverter assembly of the outdoor header unit.



Power peak-cut Control

• Feature

The upper limit capacity of the outdoor unit is restricted based on the outdoor power peak selected setting.

• Function

Two control settings are selectable by setting SW07 on the interface P.C. board on the header outdoor unit.

TCB-PCMO4UL



Size: 2.2 × 2.4 (in.)

* Install the optional P.C. board in the inverter assembly of the outdoor header unit.



Snowfall fan control

• Feature

The upper limit capacity of the outdoor unit is restricted based on the outdoor power peak selected setting.

Night operation (Sound reduction) control

• Feature

Sound level can be reduced by restricting the compressor and fan speeds.

External master ON/OFF control

• Feature

The outdoor unit starts or stops the system.

Operation mode selection control

• Feature

This control can restrict the selectable operation mode.

TCB-PCIN4UL



Size: 2.9 × 3.1 (in.)

* Install the optional P.C. board in the inverter assembly of the outdoor header unit.



Error/Operation output control

• Feature

Enables external output of error and operation signals.

Compressor operation output

• Feature

Enables external signal output for each compressor that is in operation within any given outdoor unit. This feature provides a practical method for calculating total operating times for each compressor.

Ⓛ : Operation monitoring lamp

Ⓜ : Error monitoring lamp

Operation monitoring: Display relay is ON with more than one indoor unit operation.

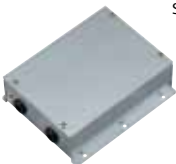
EMG monitoring: Display relay is ON when the system is in error status.

Operating rate output

• Feature

External output of system operating rates enables remote monitoring of operating conditions.

TCB-IFCB-4UL

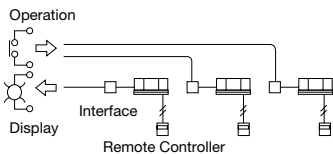


Size: 7.9 × 6.7 × 2.6 (in.)

Remote location ON/OFF control box

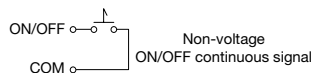
• Feature

Start and stop of the air conditioner is possible by an external signal and indication of operation/ alarm externally.



Monitoring

ON/OFF status (for indoor unit)
 Alarm status (system & indoor unit stop)
 ON/OFF command
 Air conditioner can be turned ON/OFF by the external signals.
 The external ON/OFF signals will initiate the signals shown below.



TCB-PCNT31TLUL

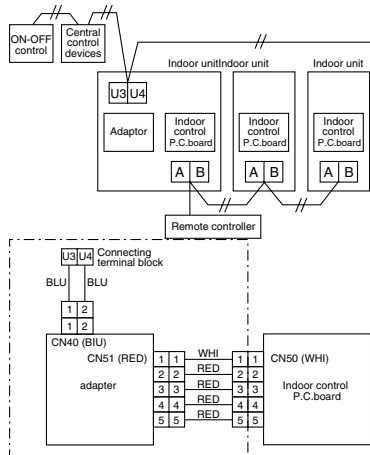
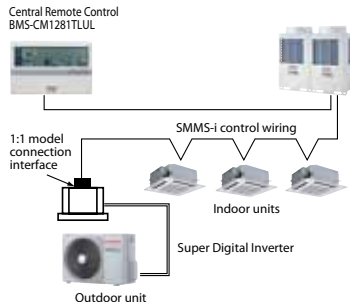


Size: 3.3 × 2.0 (in.)
 Install optional P.C. board in E-parts of the indoor unit.

Network adapter

• Feature

Link adapter for "1:1 model" to enable connection to VRF system network.
 1:1 model: Super digital inverter
 Used only for light commercial products



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