



**TRANE®**

*Integrated*



**5G** Air Conditioning System

*a smart solution for every building*



**IR** Ingersoll Rand®

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## TVR System

The new Variable Refrigerant, TVR™ air conditioning concept is a modular HVAC system designed to provide the ideal climate in offices, retail establishments, hotels, luxury apartments, and villas. Furthermore, it is equally suited to new construction and retrofit projects. In the global arena, TVR™ systems have gained significant popularity with air conditioning professionals and discerning end users who recognize its considerable benefits.

TVR™ can be installed as the main HVAC system in a facility or as a supplemental one that coordinates with an existing HVAC installation to meet different application requirements.

TVR™ (Trane Variable Refrigerant) technology systems combine one or more centralized DC Inverter, aircooled compressors and condensers connected to many indoor (fan coil) units throughout the building.

A single TVR™ system fully integrates all functions necessary for filtration, cooling/heating, and ventilation. The indoor climate quality can be improved when pretreated outside air is connected either directly to the indoor units or introduced as a separate system. The TVR™ system offers advantages throughout the lifecycle of the project; from design, installation, commissioning, operation and maintenance. The Independent Zone Control delivers energy savings for the end user by ensuring that the indoor units for unoccupied rooms remain off.



## Advantage

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### **Energy Efficient:**

The TVR™ system's automatic power consumption adjustment matches the cooling load perfectly to the changing needs of all the individual zones, thus realizing energy savings. The capacity is controlled intelligently and distributed evenly over the different zones without wasting energy.

### **Energy Management**

The optional centralized control system of TVR™ already has all the power management data or information points of each individual zone. Adding the power measurement softwares allows the user to calculate the individual power consumption per zone, per floor or per building. The control software will require a Digital ammeter per condenser and the outdoor centralized controller.





## Applications



### systems offer compelling benefits along the entire value chain

#### Benefits for Designers

- Design Flexibility. A single condensing unit can be connected to many indoor units of varying capacity and configurations (i.e., Hi wall, Cassette, Convertible and Ducted Split).
- The relative light weight of the system reduces requirements for structural reinforcement of roofs. Because ductwork is used only for the ventilation system, it can be smaller than the ducting required in standard ducted systems, reducing building height and costs.
- TVR™ systems are ideally suited to buildings with diverse, multiple zones requiring individual control, such as office buildings, hospitals, or hotels.

#### Benefits for Installers

- TVR™ systems are easy to install; deployment and installation costs are significantly lower. The TVR™ systems are light and can easily fit into a standard elevator. Large commercial equipment by comparison are bulky and require specialist material handling equipment.
- Since the units are modular, large cooling capacities can be achieved by combining multiple units.
- Modularity of the design also enables stages, floor by floor or zone by zone installation, for example when a building is not fully occupied.
- Trane, with its range of standard TVR™ modules and sophisticated electronic controls aims to provide near plug-and-play commissioning.



## Applications

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### Benefits for Owners

- **Comfort** : TVR™ Systems can be deployed over several zones, each with its individual set point control. Since TVR™ systems use DC Inverter compressors with wide capacity modulation, precise temperature control can be achieved.
- **Energy Efficiency** : Duct losses are virtually eliminated in a TVR™ system, which in a conventional ducted version can be as much as 10 to 20% of the total airflow. Furthermore, a TVR™ system can include one, two or three compressors, one of which is DC Inverter + Fixed or both inverters. These factors constitute to higher system operational efficiency.

- TVR™ systems typically have multiple compressor units. System redundancy is therefore improved, as is the ability of the system to provide cooling while any maintenance or repair work is being undertaken.

### Benefits for Operators

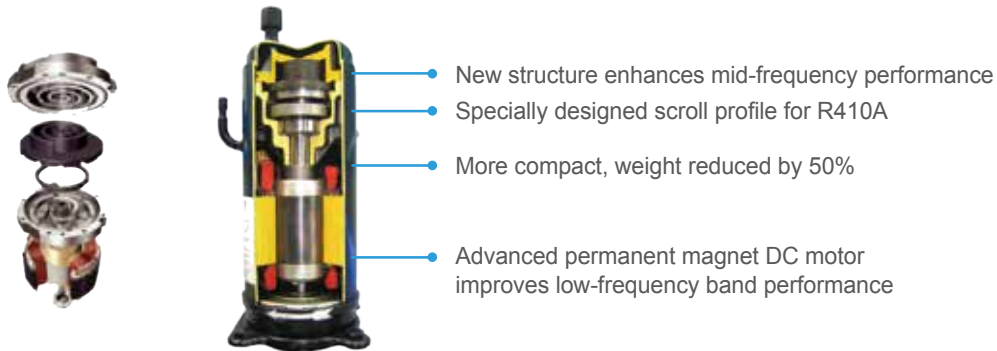
- TVR™ systems involve lower maintenance costs compared to other systems.
- Since these are variations of DX systems, water treatment issues are avoided.
- Normal maintenance for a TVR™, similar to that of any DX system, consists mainly of cleaning and changing filters and cleaning outdoor coils.



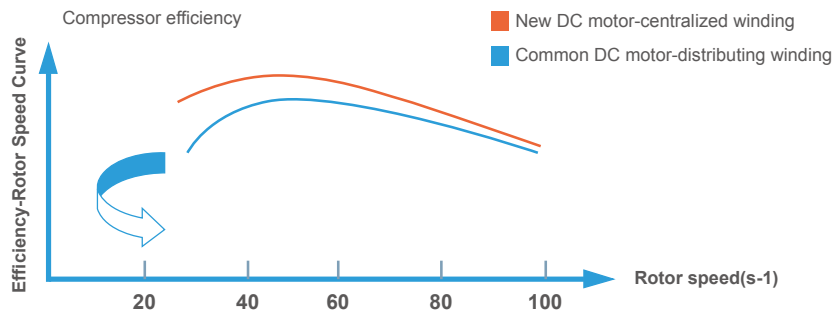
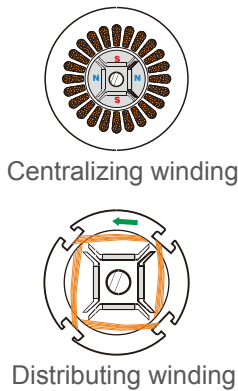
# Features - DC Inverter System

## High efficiency DC Inverter compressor

Trane Air Conditioner achieves the industry's top class energy efficiency of cooling EER and heating COP by utilizing the Brushless Reluctance DC compressor control, improved performance heat exchanger by innovative design and numerous high performance key parts. High efficiency DC inverter compressor reduces power consumption by 25%.

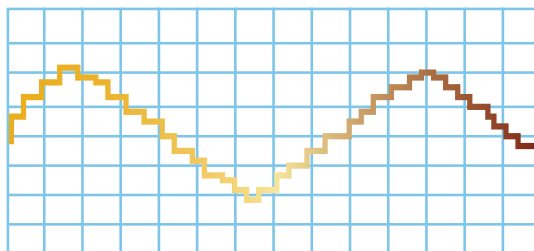


Powerful magnets provide high torque and efficiency and achieve 70% reduction in volume.

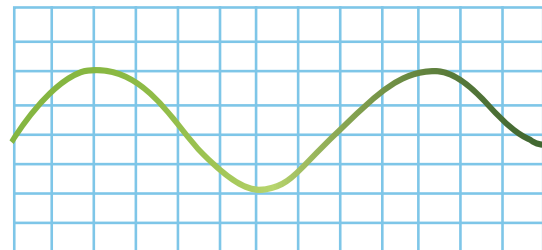


## Smooth 180° sine wave DC Inverter

Adopting the 180° Sine Wave Inverter to smooth motor rotation greatly improves operating efficiency compared with traditional sawtooth wave.



Common Sawtooth Wave



180° Sine Wave DC Inverter

# Features - Higher Reliability

## Cycle duty operation

In one combination, any of the outdoor unit can run as the master unit and master unit can cycle in a period, to realize the equal lifespan among the outdoor units. As a result extend the system lifespan significantly.



## Backup operation

In a multiple system, if one module is failed, other modules can be backup instead of the failed one for continuing operation.



## Precise oil control technology

5 stage oil control technology ensures every outdoor unit & compressor's oil always keep in the safe level, completely solve the compressor oil lack problem.

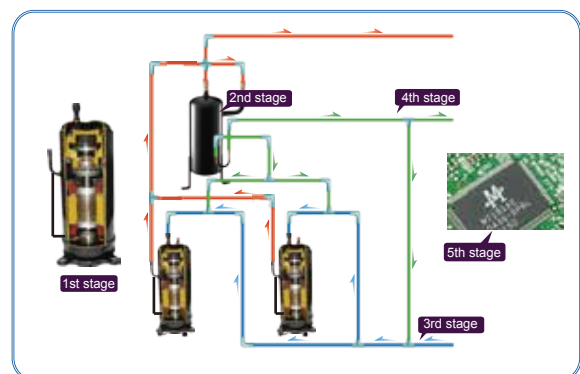
1st stage: compressor internal oil separate

2nd stage: high efficiency oil separator (separation efficiency up to 99%)

3rd stage: oil balance technology between compressors

4th stage: oil balance technology between modules

5th stage: intelligent system oil return program

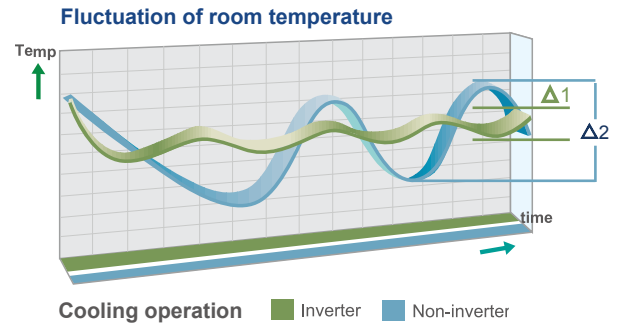




# Features - Enhanced Comfort

## Quick warm-up & cool-down design

By utilizing the benefits of the inverter compressor, the system can reach full load quickly and shorten the warm-up and cool-down times to provide an immediate and comfortable air solution. Less temperature fluctuation will create a better living environment.

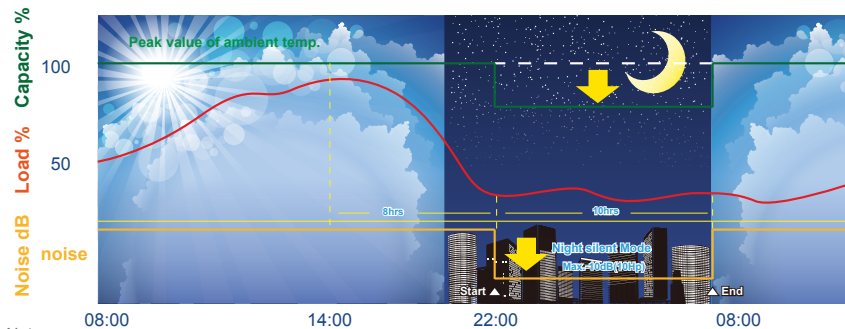


## Night silent operation mode

High comfort outdoor unit's multi-choice of silent mode during the night. Super silent operation mode can reduce sound level further, minimum 46.8dB (A).

Night silent operation will be activated X hours after the peak temperature during daytime, and it will go back to normal operation after Y hours.

- Mode 1→X: 6 hours, Y: 10 hours
- Mode 2→X: 8 hours, Y: 10 hours
- Mode 3→X: 6 hours, Y: 12 hours
- Mode 4→X: 8 hours, Y: 8 hours

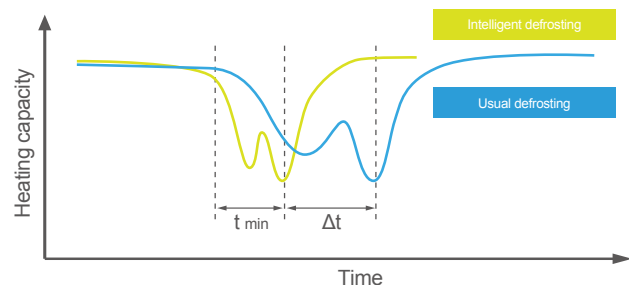


Notes:  
This function can be activated by setting at site. Temperature(load) curve shown in the graph is just an example.

## Intelligent defrosting technology

Intelligent defrosting program will judge the defrosting time according to the system real requirement, reduce the heating loss by unnecessary defrosting and make the indoor side more comfortable.

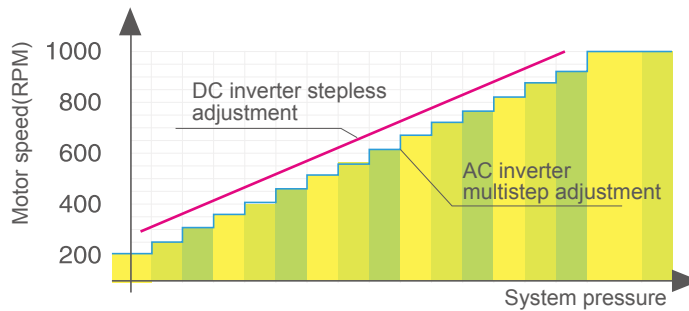
Defrosting time can be shortened to 4 min. due to the specialized defrosting valve.



# Features - Unique Fan Characteristics

## DC Fan Motor

According to the running load and system pressure, the system controls the speed of DC fan to achieve the minimum energy consumption and best performance.



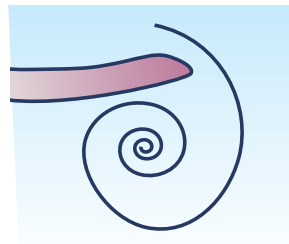
## Fan grille

Optimized fan blade shape with new air outlet grille enhanced air flow volume which greatly improves fan performance and decreases noise. Standard 0~20Pa, 20~40Pa to be customised.



## New profile fan blade

A new blade with sharp edges and a slight curve increases the airflow rate and lowers vibration and airflow resistance.



## Multi solenoid valves control technology

Multi solenoid valves control technology in one system. All the solenoid valves equipped in the unit ensure temperature-control precisely, system running steadily and economically to provide a comfortable environment.



# Features - Easier Installation & Service

## Simple signal line connection

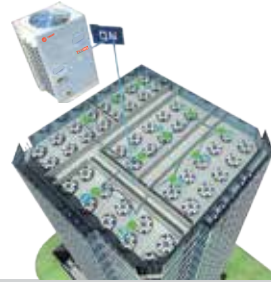
Centralized controller (TCONTCCM03A/30A) can be connected from indoor side or outdoor side (XYE terminals) at will. Only one group of communication wire of PQE, achieved both of communication for indoor & outdoor unit. It's more convenient for communication wiring.



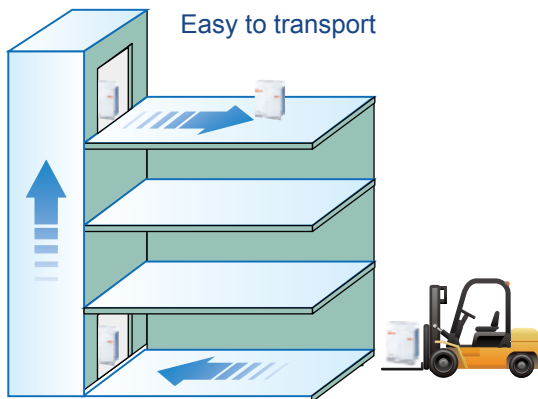
## Auto addressing

Outdoor unit can distribute addresses for indoor unit automatically.

Wireless and wired controllers can query and modify each indoor unit's address.



## Compact design for effective use of space



Compact size and light weight design minimizes the installation footprint, reduces the installation floor load, and is easier for transportation. For some projects the units can even be transported through the elevator or forklift, reduce access problem at the jobsite.

# Mini TVR 5G - Outdoor Unit Specifications

Model			4TVV0028AB000AA	TVV0036AB000AA	4TVV0042AB000AA	4TVV0048AB000AA	4TVV0055AB000AA
Power supply		V/Ph/Hz	220-240/1/50				
Cooling	Capacity	kW	8	10.5	12.3	14	15.5
		RT	2.3	2.9	3.4	3.9	4.3
	Input	kW	2.05	2.68	3.25	3.95	4.52
	EER	kW/kW	3.90	3.92	3.78	3.54	3.43
Heating	Capacity	kW	9	11.5	13.2	15.4	17.0
		RT	2.6	3.2	3.7	4.3	4.8
	Input	kW	2.24	2.90	3.47	4.16	4.77
	COP	kW/kW	4.02	3.97	3.80	3.70	3.56
Connectable indoor unit	Total capacity	%	45-130	45-130	45-130	45-130	45-130
	Max. quantity		4	5	6	6	7
Sound pressure level		dB(A)	56	57	57	57	57
Pipe connections	Liquid pipe	mm	Φ9.53	Φ9.53	Φ9.53	Φ9.53	Φ9.53
	Gas pipe	mm	Φ15.9	Φ15.9	Φ15.9	Φ15.9	Φ19.1
Fan motor	Type		DC	DC	DC	DC	DC
	Quantity		1	1	2	2	2
	Air flow rate	m³/h	5,500	5,500	6,000	6,000	6,000
	Motor output	W	170	170	85x2	85x2	85x2
Rotary compressor	Quantity		1	1	1	1	1
	Capacity	kW	7	7	10	10	14
	Crankcase heater	W	25	25	25	25	25
	Oil type		FV50S	FV50S	FV50S	FV50S	FV50S
	Oil charge	ml	670+200	670+200	870+630	870+630	1400+250
Refrigerant	Type		R410A	R410A	R410A	R410A	R410A
	Factory charging	kg	2.8	2.95	3.3	3.9	3.9
Design pressure (High/Low)		MPa	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6
Net dimension (W×H×D)		mm	1,075×966×396			900×1,327×400	
Packing size (W×H×D)		mm	1,120×1,100×435			1,030×1,456×435	
Net weight		kg	62	74	95	95	100/102
Gross weight (220V/380V)		kg	67	81	106	106	111/113
Operating temperature range	Cooling	°C	-15~48				
	Heating	°C	-15~27				

Notes:  
 Capacities are based on the following conditions:  
 Cooling: Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB.  
 Heating: Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB.  
 Piping length: Interconnecting piping length is 5m, level difference is zero.  
 Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1m above the floor.  
 \*: When the \* is omit, the model stands for 220-240V/1ph/50Hz unit.  
 When the \* is R, the model stands for 380-415V/3ph/50Hz unit.



# Mini TVR 5G - Outdoor Unit Specifications

Model			4TVV0042AD000AA	4TVV0048AD000AA	4TVV0055AD000AA	4TVV0060AD000AA
Power supply		V/Ph/Hz	380-415/3/50			
Cooling	Capacity	kW	12.3	14	15.5	17.5
		RT	3.4	3.9	4.3	5.0
	Input	kW	3.25	3.95	4.52	5.30
	EER	kW/kW	3.78	3.54	3.43	3.40
Heating	Capacity	kW	13.2	15.4	17.0	19.0
		RT	3.7	4.3	4.8	5.4
	Input	kW	3.47	4.16	4.77	5.00
	COP	kW/kW	3.80	3.70	3.56	3.80
Connectable indoor unit	Total capacity	%	45-130	45-130	45-130	45-130
	Max. quantity		6	6	7	9
Sound pressure level		dB(A)	57	57	57	59
Pipe connections	Liquid pipe	mm	Φ9.53	Φ9.53	Φ9.53	Φ9.53
	Gas pipe	mm	Φ15.9	Φ15.9	Φ19.1	Φ19.1
Fan motor	Type		DC	DC	DC	DC
	Quantity		2	2	2	2
	Air flow rate	m <sup>3</sup> /h	6,000	6,000	6,000	6,800
	Motor output	W	85x2	85x2	85x2	85x2
Rotary compressor	Quantity		1	1	1	1
	Capacity	kW	10	10	14	14
	Crankcase heater	W	25	25	25	25
	Oil type		FV50S	FV50S	FV50S	FV50S
	Oil charge	ml	870+630	870+630	1400+250	1400+250
Refrigerant	Type		R410A	R410A	R410A	R410A
	Factory charging	kg	3.3	3.9	3.9	4.5
Design pressure (High/Low)		MPa	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6
Net dimension (W×H×D)		mm	900×1,327×400			
Packing size (W×H×D)		mm	1,030×1,456×435			
Net weight		kg	95	95	100/102	107
Gross weight (220V/380V)		kg	106	106	111/113	118
Operating temperature range	Cooling	°C	-15~48			
	Heating	°C	-15~27			

Notes:

Capacities are based on the following conditions:

Cooling: Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB.

Heating: Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB.

Piping length: Interconnecting piping length is 5m, level difference is zero.

Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1m above the floor.

\*: When the \* is omit, the model stands for 220-240V/1ph/50Hz unit.

When the \* is R, the model stands for 380-415V/3ph/50Hz unit.

# Mini TVR 5G - Outdoor Unit Specifications

Model			4TVV0068AD000AA	4TVV0077AD000AA	4TVV0089AD000AA	
Power supply		V/Ph/Hz	380-415/3/50			
Cooling	Capacity	kW	61.5	67.0	85.0	
		RT	17.5	19.0	24.1	
	Power input	kW	18.8	20.8	26.6	
		EER	kW/kW	3.27	3.22	3.20
Heating	Capacity	kW	69.0	75.0	95.0	
		RT	19.6	21.3	27.0	
	Power input	kW	17.9	19.8	24.4	
		COP	kW/kW	3.86	3.79	3.89
Connectable indoor unit	Total capacity	%	50-130	50-130	50-130	
	Max. quantity		36	39	32	
Sound pressure level		dB(A)	63		64	
Pipe connections	Liquid pipe	mm	Φ19.1		Φ22.2	
	Gas pipe	mm	Φ31.8		Φ38.1	
Fan motor	Type		DC+AC		DC×2+AC×2	
	Quantity		2		4	
	Air flow rate	m <sup>3</sup> /h	23,000		27,900	
	Motor output		W		625+450	750+450+380×2
	ESP	Pa	0~20 (default)			
Pa		20~40 (customized)				
DC inverter compressor	Quantity		1			
	Capacity	kW	31.59		11.8	
	Crankcase heater	W	30×2		27.6×3	
	Oil type		FVC68D			
	Oil charge	ml	500			
Fixed inverter scroll compressor	Quantity		2		5	
	Capacity	kW	17.1×2	20.9×2	17.1×5	
	Crankcase heater	W	33×2	33×2	27.6×4	
	Oil type		FVC68D	FVC68D	FVC68D	
	Oil charge	ml	500×2	1100×2	500×5	
Refrigerant	Type		R410A		R410A	
	Factory charging	kg	18.5	18.5	21	
Design pressure (High/Low)		MPa	4.4/2.6			
Net dimension (W×H×D)		mm	1,585×1,615×765		2,540×1,615×765	
Packing size (W×H×D)		mm	1,650×1,810×840		2,600×1,800×825	
Net weight		kg	385	390	655	
Gross weight		kg	400	405	690	
Operating temperature range	Cooling	°C	-50~48			
	Heating	°C	-200~27			

**Notes:**

Capacities are based on the following conditions:

Cooling: Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB.

Heating: Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB.

Piping length: Interconnecting piping length is 7.5m, level difference is zero.

Connection piping diameter is based on the condition that the total equivalent liquid length is less than 90m. When the total equivalent liquid length is more than 90m, please refer to technical manual to choose the connection piping diameter.

Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1.3m above the floor.

# TVR 5G (All Inverter) - Outdoor Unit Specifications

Model			4TVV0086BD000AA	4TVV0096BD000AA	4TVV0115BD000AA
Power supply		V/Ph/Hz	380-415/3/50		
Cooling	Capacity	kW	25.2	28.0	33.5
		RT	7.2	8.0	9.5
	Power input	kW	5.88	7.05	8.79
	EER	kW/kW	4.29	3.97	3.81
Heating	Capacity	kW	27	31.5	37.5
		RT	7.7	9.0	10.7
	Power input	kW	6.15	7.55	8.99
	COP	kW/kW	4.39	4.17	4.17
Connectable indoor unit	Total capacity	%	50-130	50-130	50-130
	Max. quantity		13	16	20
Sound pressure level		dB(A)	57		59
Pipe connections	Liquid pipe	mm	Φ9.53		Φ12.7
	Gas pipe	mm	Φ22.2		Φ25.4
	Oil balance pipe	mm	Φ6		Φ6
Fan motor	Type		DC		DC
	Quantity		1		2
	Outdoor air flow	m <sup>3</sup> /h	11,242		13,000
	Motor output	W	750		560+380
	ESP	Pa	0-20 (default)		0-20 (default)
		Pa	20-40 (customized)		20-40 (customized)
DC inverter compressor	Quantity		1		2
	Capacity	kW	31.59		31.59+11.80
	Crankcase heater	W	27.6×2		27.6×4
	Oil type		FVC68D		FVC68D
	Oil charge	ml	500		500+500
Refrigerant	Type		R410A		R410A
	Factory charging	kg	10		12
Design pressure (High/Low)		MPa	4.4/2.6		4.4/2.6
Net dimension (W×H×D)		mm	960×1,615×765		1,250×1,615×765
Packing size (W×H×D)		mm	1,025×1,790×830		1,305×1,790×820
Net/Gross weight		kg	212		288
Gross weight		kg	227		308
Operating temperature range	Cooling	°C	-5~48		
	Heating	°C	-20~24		

**Notes:**

Capacities are based on the following conditions:

Cooling: Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB.

Heating: Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB.

Piping length: Interconnecting piping length is 7.5m, level difference is zero.

Connection piping diameter is based on the condition that the total equivalent liquid length is less than 90m. When the total equivalent liquid length is more than 90m, please refer to technical manual to choose the connection piping diameter.

Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1.3m above the floor.

# TVR 5G (All Inverter) - Outdoor Unit Specifications

Model			4TVV0140BD000AA	4TVV0155BD000AA	4TVV0182BD000AA
Power supply		V/Ph/Hz	380-415/3/50		
Cooling	Capacity	kW	40.0	45.0	50.0
		RT	11.4	12.8	14.2
	Power input	kW	11.30	13.25	14.79
	EER	kW/kW	3.54	3.50	3.45
Heating	Capacity	kW	45.0	50.0	56.0
		RT	12.8	14.2	15.9
	Power input	kW	11.19	12.79	14.40
	COP	kW/kW	4.02	3.91	3.89
Connectable indoor unit	Total capacity	%	50-130	50-130	50-130
	Max. quantity		23	26	29
Sound pressure level		dB(A)	61	62	62
Pipe connections	Liquid pipe	mm	Φ12.7	Φ12.7	Φ15.9
	Gas pipe	mm	Φ25.4	Φ28.6	Φ28.6
	Oil balance pipe	mm	Φ6	Φ6	Φ6
Fan motor	Type		DC		
	Quantity		2		
	Outdoor air flow	m <sup>3</sup> /h	15,620		
	Motor output	W	560+380		
	ESP	Pa	0-20 (default)		
		Pa	20-40 (customized)		
DC inverter compressor	Quantity		2		
	Capacity	kW	31.59+11.80		
	Crankcase heater	W	27.6×4		
	Oil type		FVC68D		
	Oil charge	ml	500+500		
Refrigerant	Type		R410A		
	Factory charging	kg	15	15	17
Design pressure (High/Low)		MPa	4.4/2.6		
Net dimension (W×H×D)		mm	1,250×1,615×765		
Packing size (W×H×D)		mm	1,305×1,790×820		
Net/Gross weight		kg	288	288	310
Gross weight		kg	308	308	330
Operating temperature range	Cooling	°C	-5~48		
	Heating	°C	-20~24		

Notes: Capacities are based on the following conditions:  
Cooling: Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB.  
Heating: Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB. Piping length: Interconnecting piping length is 7.5m, level difference is zero.  
Connection piping diameter is based on the condition that the total equivalent liquid length is less than 90m. When the total equivalent liquid length is more than 90m, please refer to technical manual to choose the connection piping diameter. Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1.3m above the floor. \*18HP can be customized.



# TVR 5G (Heat Recovery/3pipes) Outdoor Unit Specifications

Model			4TVR0086BD000AA	4TVR0096BD000AA	4TVR0115BD000AA	4TVR0140BD000AA	4TVR0155BD000AA
Power supply		V/Ph/Hz	380-415/3/50				
Cooling	Capacity	kW	25.2	28.0	33.5	40.0	45.0
		RT	7.2	8.0	9.5	11.4	12.8
	Power input	kW	5.73	6.67	8.07	11.30	13.24
	EER	kW/kW	4.40	4.20	4.15	3.54	3.40
Heating	Capacity	kW	27.0	31.5	37.5	45.0	50.0
		RT	7.7	8.9	10.7	12.8	14.2
	Power input	kW	6.00	7.33	8.72	11.19	12.79
	COP	kW/kW	4.50	4.30	4.30	4.02	3.91
Connectable indoor unit	Total capacity	%	50-130	50-130	50-130	50-130	50-130
	Max. quantity		13	16	20	23	26
Sound pressure level		dB(A)	57	57	58	60	60
Pipe connections	Liquid pipe	mm	Φ9.53	Φ12.7	Φ12.7	Φ15.9	Φ15.9
	Low pressure gas pipe	mm	Φ22.2	Φ22.2	Φ25.4	Φ28.6	Φ28.6
	High pressure gas pipe	mm	Φ19.1	Φ19.1	Φ19.1	Φ22.2	Φ22.2
	High pressure gas balance pipe	mm	Φ19.1	Φ19.1	Φ19.1	Φ19.1	Φ19.1
	Oil balance pipe	mm	Φ6	Φ6	Φ6	Φ6	Φ6
Fan motor	Type		DC	DC	DC	DC	DC
	Quantity		2	2	2	2	2
	Air flow rate	m <sup>3</sup> /h	12,000	12,000	13,000	15,000	15,000
	Motor output	W	420	420	420	750	750
	ESP	Pa	0-20 (default)			0-20 (default)	
		Pa	20-40 (customized)			20-40 (customized)	
DC inverter compressor	Quantity		1	1	1	2	2
	Capacity	kW	31.59	31.59	31.59	31.59+11.8	31.59+11.8
	Crankcase heater	W	30×2	30×2	30×2	30×4	30×4
	Oil type		FVC68D	FVC68D	FVC68D	FVC68D	FVC68D
	Oil charge	ml	500	500	500	500+500	500+500
Refrigerant	Type		R410A	R410A	R410A	R410A	R410A
	Factory charging	kg	10	10	10	13	13
Design pressure (High/Low)		MPa	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6
Net dimension (W×H×D)		mm	1,250×1,615×765				
Packing size (W×H×D)		mm	1,305×1,790×820				
Net weight		kg	255	255	255	303	303
Gross weight		kg	273	273	273	322	322
Operating temperature range	Cooling	°C	-5~48				
	Heating	°C	-20~24				
	Simultaneous cooling and heating	°C	-5~24				

**Notes:**

Capacities are based on the following conditions:

Cooling: Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB.

Heating: Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB.

Piping length: Interconnecting piping length is 7.5m, level difference is zero.

Connection piping diameter is based on the condition that the total equivalent liquid length is less than 90m. When the total equivalent liquid length is more than 90m, please refer to technical manual to choose the connection piping diameter.

Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1.3m above the floor.

# TVR 5G (Heat Recovery/3pipes) TMS Specifications

## TMS equipment which can be connected multiple indoor units

Model			TMSBOX01A	TMSBOX02A	TMSBOX04A	TMSBOX06A	
Max. indoor unit groups			1	2	4	6	
Max. number of each group indoor units			4	4	4	4	
Max. number of all downstream indoor units			4×1=4	4×2=8	4×4=16	4×6=24	
Max. capacity of each group indoor units		kW	16	16	16	16	
Total capacity of all downstream indoor units		kW	≤16	≤28	≤45	≤45	
Piping connections	Connect to outdoor unit	Liquid pipe	mm	Φ9.53	Φ12.7	Φ15.9	Φ15.9
		High pressure gas pipe	mm	Φ15.9	Φ19.1	Φ22.2	Φ22.2
		Low pressure gas pipe	mm	Φ19.1	Φ25.4	Φ31.8	Φ31.8
	Connect to indoor unit	Liquid pipe	mm	Φ9.53	Φ9.53	Φ9.53	Φ9.53
		Gas pipe	mm	Φ15.9	Φ15.9	Φ15.9	Φ15.9
	Sound pressure level		dB(A)	33	33	33	40
Net dimension (W×H×D)		mm	630×225×600	630×225×600	960×225×600	960×225×600	
Packing size (W×H×D)		mm	725×325×685	725×325×685	1055×325×685	1055×325×685	
Net weight		kg	18	19.5	31	35	
Gross weight		kg	25	27	40	44.5	

## TMS equipment which can be connected only one indoor unit

Model			TMSEBOX02A	TMSEBOX04A	
Max. number of all downstream indoor units			1	1	
Capacity of downstream indoor unit		kW	20~28	40~56	
Piping connections	Connect to outdoor unit	Liquid pipe	mm	Φ12.7	Φ15.9
		High pressure gas pipe	mm	Φ19.1	Φ22.2
		Low pressure gas pipe	mm	Φ25.4	Φ31.8
	Connect to indoor unit	Liquid pipe	mm	Φ9.53	Φ9.53
		Gas pipe	mm	Φ15.9	Φ15.9
	Sound pressure level		dB(A)	33	33
Net dimension (W×H×D)		mm	630×225×600	960×225×600	
Packing size (W×H×D)		mm	725×325×685	1055×325×685	
Net weight		kg	19.5	31	
Gross weight		kg	27	40	

Note:  
Sound values are measured in a semi-anechoic room, at a position 1m below the MS equipment in mode switch condition.  
It is not recommended to install in the place where high noise performance is required.

# TVR 5G (Inverter+Fixed) - Outdoor Unit Specifications

Model		4TVV0086AD000AA	4TVV0096AD000AA	4TVV0115AD000AA	4TVV0140AD000AA	4TVV0155AD000AA	
Power supply		V/Ph/Hz	380-415/3/50				
Cooling	Capacity	kW	25.2	28	33.5	40	45
		RT	7.2	8	9.5	11.4	12.8
	Input	kW	5.87	7.2	9.05	12.31	14.02
	EER	kW/kW	4.29	3.89	3.7	3.42	3.40
Heating	Capacity	kW	27	31.5	37.5	45	50
		RT	7.7	8.9	10.7	12.8	14.2
	Input	kW	6.15	7.61	8.99	11.19	12.79
	COP	kW/kW	4.39	4.14	4.17	4.02	3.91
Connectable indoor unit	Total capacity	%	50-130	50-130	50-130	50-130	50-130
	Max. quantity		17	21	26	30	34
Sound pressure level		dB(A)	57	57	58	60	60
Pipe connections	Liquid pipe	mm	Φ12.7	Φ12.7	Φ12.7	Φ15.9	Φ15.9
	Gas pipe	mm	Φ22.2	Φ25.4	Φ28.6	Φ28.6	Φ28.6
	Oil balance pipe	mm	Φ6	Φ6	Φ6	Φ6	Φ6
Fan motor	Type		DC	DC	DC	DC	DC
	Quantity		1	1	2	2	2
	Air flow rate	m <sup>3</sup> /h	11,700	11,700	15,600	15,600	15,600
	Motor output	W	420	420	360×2	360×2	360×2
	ESP	Pa	0-20 (default)		0-20 (default)	0-20 (default)	
		Pa	20-40 (customized)		20-40 (customized)	20-40 (customized)	
DC inverter compressor	Quantity		1	1	1	1	1
	Capacity	kW	11.8	11.8	11.8	11.8	11.8
	Crankcase heater	W	27.6×2	27.6×2	27.6×2	27.6×2	27.6×2
	Oil type		FVC68D	FVC68D	FVC68D	FVC68D	FVC68D
	Oil charge	ml	500	500	500	500	500
Fixed scroll compressor	Quantity		1	1	1	2	2
	Capacity	kW	15.39	17.1	17.1	15.39×2	17.1×2
	Crankcase heater	W	27.6	27.6	27.6	27.6×2	27.6×2
	Oil type		FVC68D	FVC68D	FVC68D	FVC68D	FVC68D
	Oil charge	ml	500	500	500	500×2	500×2
Refrigerant	Type		R410A	R410A	R410A	R410A	R410A
	Factory charging	kg	10	10	12	15	15
Design pressure (High/Low)		MPa	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6
Net dimension (W×H×D)		mm	960×1,615×765			1,250×1,615×765	
Packing size (W×H×D)		mm	1,025×1,790×830			1,305×1,790×820	
Net weight		kg	245	245	275	325	325
Gross weight		kg	260	260	295	345	345
Operating temperature range	Cooling	°C	-5~48				
	Heating	°C	-20~24				

Notes: Capacities are based on the following conditions:

Cooling: Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB.

Heating: Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB.

Piping length: Interconnecting piping length is 7.5m, level difference is zero.

Connection piping diameter is based on the condition that the total equivalent liquid length is less than 90m. When the total equivalent liquid length is more than 90m, please refer to technical manual to choose the connection piping diameter.

Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1.3m above the floor.

# TVR 5G (All Inverter-T3/High Ambient)- Outdoor Unit Specifications

Model			4TVVT086BD000AA	4TVVT096BD000AA	4TVVT115BD000AA	4TVVT140BD000AA	4TVVT155BD000AA	4TVVT182BD000AA
Power supply		V/Ph/Hz	380-415/3/50					
Cooling(*1)	Capacity*	kW	25.2	28.0	33.5	40.0	45.0	50.0
	Capacity**	kW	23.6	26.3	30.7	37.6	41.2	45.8
	Input*	kW	5.88	7.05	8.79	11.30	12.85	14.49
	Input**	kW	6.37	7.64	11.25	12.24	16.46	18.55
	EER*	kW/kW	4.29	3.97	3.81	3.54	3.50	3.45
	EER**	kW/kW	3.72	3.45	2.73	3.07	2.51	2.47
Heating(2*)	Capacity*	kW	27.0	31.5	37.5	45.0	50.0	56.0
	Input*	kW	6.15	7.55	8.99	11.19	12.79	14.40
	COP*	kW/kW	4.39	4.17	4.17	4.02	3.91	3.89
Connectable indoor unit	Total capacity	%	50~130					
	Max. quantity		13	16	20	23	26	29
Sound pressure level		dB(A)	57	57	59	61	62	62
Pipe connections	Liquid pipe	mm	Φ12.7	Φ12.7	Φ15.9	Φ15.9	Φ15.9	Φ19.1
	Gas pipe	mm	Φ25.4	Φ25.4	Φ31.8	Φ31.8	Φ31.8	Φ31.8
	Oil balance pipe	mm	Φ6.4	Φ6.4	Φ6.4	Φ6.4	Φ6.4	Φ6.4
Fan motor	Type		DC	DC	DC	DC	DC	DC
	Quantity		1	1	2	2	2	2
	Air flow rate	m <sup>3</sup> /h	11,242	11,242	15,620	15,620	15,620	15,770
	Motor output	W	454	454	232x2	383x2	383x2	560x2
	ESP	Pa	0~20 (default)					
		Pa	20~40 (optional)					
DC inverter compressor	Quantity		1	1	1+1	1+1	1+1	1+1
	Capacity	kW	31.59	31.59	31.59+11.8	31.59+11.8	31.59+11.8	31.59+31.59
	Crankcase heater	W	27.6×2	27.6×2	27.6×2x2	27.6×2	27.6×2	27.6x2
	Oil type		FVC68D	FVC68D	FVC68D+FVC68D	FVC68D+FVC68D	FVC68D+FVC68D	FVC68D+FVC68D
	Oil charge	ml	500	500	500+500	500+500	500+500	500+500
Refrigerant	Type		R410a	R410a	R410a	R410a	R410a	R410a
	Factory charging	kg	10	10	12	15	15	16
Design pressure (High/Low)	MPa	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6	4.4/2.6	
Net dimension (W×H×D)	mm	960×1,615×765			1,250×1,615×765			
Packing size (W×H×D)	mm	1,025×1,790×830			1,305×1,790×820			
Net weight	kg	212	212	288	288	288	310	
Gross weight	kg	220	220	300	308	308	330	
Operating temperature range	Cooling	°C	-5~54					
	Heating	°C	-20~24					

**Notes:**

1. Cooling\*: Indoor temperature 27°C(80.6°F) DB/19°C(66.2°F) WB; Outdoor temperature 35°C(95°F) DB/24°C(75.2°F) WB

Cooling\*\*: Indoor temperature 29°C(84.2°F) DB/19°C(66.2°F) WB; Outdoor temperature 46°C(114.8°F) DB/24°C(75.2°F) WB  
equivalent pipe length: 5m, drop length: 0m.

2. Heating: indoor temperature: 20°CDB (68°F), 15°CWB (59°F) outdoor temperature: 7°CDB (44.6°F) equivalent pipe length: 5m drop length: 0m.

3. Sound level: Anechoic chamber conversion value, measured at a point 1 m in front of the unit at a height of 1.5 m. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

4. The farthest equivalent pipe length should be equal to or shorter than 40m, but it can be up to 90m if meet the required conditions following part 4 installation sections.

5. The above data may be changed without notice for future improvement on quality and performance.



# Indoor Units Range

Model number	TYPE OF UNITS	BTU/H	Capacity (kW)
4TVL0007CB0WEAA	New Ducted -Low Static Pressure	7 500	2.2
4TVL0009CB0WEAA	New Ducted -Low Static Pressure	9 500	2.8
4TVL00012CB0WEAA	New Ducted -Low Static Pressure	12 500	3.6
4TVL00015CB0WEAA	New Ducted -Low Static Pressure	15 000	4.5
4TVL00019CB0WEAA	New Ducted -Low Static Pressure	19 000	5.6
4TVD0007CB0WEAA	Ducted -Medium Static Pressure	7 500	2.2
4TVD0009CB0WEAA	Ducted -Medium Static Pressure	9 500	2.8
4TVD0012CB0WEAA	Ducted -Medium Static Pressure	12 300	3.6
4TVD0015CB0WEAA	Ducted -Medium Static Pressure	15 000	4.5
4TVD0019CB0WEAA	Ducted -Medium Static Pressure	19 000	5.6
4TVD0024CB0WEAA	Ducted -Medium Static Pressure	24 300	7.1
4TVD0027CB0WEAA	Ducted -Medium Static Pressure	24 700	8.0
4TVD0031CB0WEAA	Ducted -Medium Static Pressure	31 000	9.0
4TVD0038CB0WEAA	Ducted -Medium Static Pressure	38 000	11.2
4TVD0048CB0WEAA	Ducted -Medium Static Pressure	48 000	14.0
4TVH0024CB0WEAA	Ducted -High Static Pressure	24 200	7.1
4TVH0027CB0WEAA	Ducted -High Static Pressure	27 300	8.0
4TVH0030CB0WEAA	Ducted -High Static Pressure	30 700	9.1
4TVH0038CB0WEAA	Ducted -High Static Pressure	38 200	11.2
4TVH0048CB0WEAA	Ducted -High Static Pressure	48 000	14.0
4TVH0055CB0WEAA	Ducted -High Static Pressure	55 000	16.0
4TVH0075CB0WEAA	Ducted -High Static Pressure	75 000	20.0
4TVH0085CB0WEAA	Ducted -High Static Pressure	85 300	25.0
4TVH0096CB0WEAA	Ducted -High Static Pressure	95 500	28.0
4TVH0140CB0WEAA	Ducted -High Static Pressure	140 000	40.0
4TVH0155CB0WEAA	Ducted -High Static Pressure	155 000	45.0
4TVH0190CB0WEAA	Ducted -High Static Pressure	190 000	56.0
4TVF0042CB0WEAA	Ducted -Full Fresh Air	42 000	12.5
4TVF0048CB0WEAA	Ducted -Full Fresh Air	48 000	14.0
4TVF0075CB0WEAA	Ducted -Full Fresh Air	75 000	20.0
4TVF0085CB0WEAA	Ducted -Full Fresh Air	85 300	25.2
4TVF0096CB0WEAA	Ducted -Full Fresh Air	95 500	28.0
4TVA0009CB0REAA	1-Way-Cassette	9 500	2.8
4TVA0012CB0REAA	1-Way-Cassette	12 200	3.6
4TVA0015CB0REAA	1-Way-Cassette	15 300	4.5
4TVA0019CB0REAA	1-Way-Cassette	19 000	5.6



# Indoor Units Range

Model number	TYPE OF UNITS	BTU/H	Capacity (kW)
4TVE0007CB0REAA	2-Way-Cassette	7 500	2.2
4TVE0009CB0REAA	2-Way-Cassette	9 500	2.8
4TVE0012CB0REAA	2-Way-Cassette	12 200	3.6
4TVE0015CB0REAA	2-Way-Cassette	15 300	4.5
4TVE0018CB0REAA	2-Way-Cassette	18 900	5.6
4TVE0024CB0REAA	2-Way-Cassette	24 200	7.1
4TVB0007CB0REAA	4 Way-Cassette Compact 360°	7 500	2.2
4TVB0009CB0REAA	4 Way-Cassette Compact 360°	9 550	2.8
4TVB0012CB0REAA	4 Way-Cassette Compact 360°	12 300	3.6
4TVB0015CB0REAA	4 Way-Cassette Compact 360°	15 300	4.5
4TVC0009CB0REAA	4 Way-Cassette Standard	9 500	2.8
4TVC0012CB0REAA	4 Way-Cassette Standard	12 200	3.6
4TVC0015CB0REAA	4 Way-Cassette Standard	15 300	4.5
4TVC0018CB0REAA	4 Way-Cassette Standard	18 900	5.6
4TVC0024CB0REAA	4 Way-Cassette Standard	24 200	7.1
4TVC0027CB0REAA	4 Way-Cassette Standard	27 300	8.0
4TVC0030CB0REAA	4 Way-Cassette Standard	30 700	9.0
4TVC0034CB0REAA	4 Way-Cassette Standard	34 100	10.0
4TVC0038CB0REAA	4 Way-Cassette Standard	38 200	11.2
4TVC0048CB0REAA	4 Way-Cassette Standard	48 000	14.0
4TVW0007CB0REBA	Hi Wall S series	7 500	2.2
4TVW0009CB0REBA	Hi Wall S series	9 500	2.8
4TVW0012CB0REBA	Hi Wall S series	12 300	3.6
4TVW0015CB0REBA	Hi Wall S series	15 400	4.5
4TVW0018CB0REBA	Hi Wall S series	19 000	5.6
4TVW0007CBHREBA	Hi Wall S series with Electric Heat	7 500	2.2
4TVW0009CBHREBA	Hi Wall S series with Electric Heat	9 500	2.8
4TVW0012CBHREBA	Hi Wall S series with Electric Heat	12 300	3.6
4TVW0015CBHREBA	Hi Wall S series with Electric Heat	15 400	4.5
4TVW0018CBHREBA	Hi Wall S series with Electric Heat	19 000	5.6
4TVW0007CB0REAA	Hi Wall C series	7 500	2.2
4TVW0009CB0REAA	Hi Wall C series	9 600	2.8
4TVW0012CB0REAA	Hi Wall C series	12 300	3.6
4TVW0015CB0REAA	Hi Wall C series	15 500	4.5
4TVW0018CB0REAA	Hi Wall C series	19 000	5.6



# Indoor Units Range

Model number	TYPE OF UNITS	BTU/H	Capacity (kW)
4TVW0007CBHREAA	Hi Wall C series with Electric Heat	7 500	2.2
4TVW0009CBHREAA	Hi Wall C series with Electric Heat	9 600	2.8
4TVW0012CBHREAA	Hi Wall C series with Electric Heat	12 300	3.6
4TVW0015CBHREAA	Hi Wall C series with Electric Heat	15 500	4.5
4TVW0018CB0REAA	Hi Wall C series with Electric Heat	19 000	5.6
4TVW0024CB0REAA	Hi Wall R series	24 200	8.0
4TVW0027CB0REAA	Hi Wall R series	27 300	9.0
4TVW0031CB0REAA	Hi Wall R series	31 800	10.0
4TVX0012CB0REAA	Convertible	12 200	3.6
4TVX0015CB0REAA	Convertible	15 300	4.5
4TVX0018CB0REAA	Convertible	19 100	5.6
4TVX0024CB0REAA	Convertible	24 200	7.1
4TVX0027CB0REAA	Convertible	27 300	8.0
4TVX0030CB0REAA	Convertible	30 700	9.0
4TVX0038CB0REAA	Convertible	38 200	11.2
4TVX0048CB0REAA	Convertible	48 000	14.0
4TVX0055CB0REAA	Convertible	54 600	16.00
4TVG0007CB0REAA	Console	7 500	2.2
4TVG0009CB0REAA	Console	9 500	2.8
4TVG0012CB0REAA	Console	12 300	3.6
4TVG0015CB0REAA	Console	15 300	4.5





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