

Heat pump

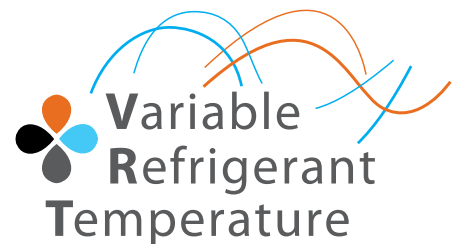
VRV IV heat pump

VRV IV = VRV + 3 REVOLUTIONARY FEATURES

What is the new standard all about? VRV has always set the standard: in the past, in the present, and will continue to do so in the future. Today, VRV IV is setting new standards for seasonal efficiency for building owners, indoor comfort for users, and installation simplicity for installers.

Variable refrigerant temperature

Customize your VRV for best seasonal efficiency & comfort: Revolutionary variable refrigerant temperature control automatically adapts the system to individual building and climate requirements for greater efficiency and comfort.



Continuous heating via heat pump

The new standard in heating comfort: Unique continuous heating technology makes VRV IV the best alternative to traditional heating systems.

VRV configurator

Software for simplified commissioning, configuration and customisation

- Simplified commissioning: graphical interface to configure, commission and upload system settings.
- Simplified servicing: additional 7-segment indicator for easy and quick access to basic functions and error read out.





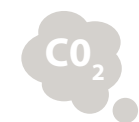
CUSTOMIZE YOUR VRV FOR BEST SEASONAL EFFICIENCY & COMFORT

- Annual cost savings up to 28%
- Optimise the match of building requirements with comfort and efficiency
- Automatic adjustment of refrigerant temperature guarantees customer satisfaction

Daikin leads the way to seasonal efficiency

Daikin again leads the industry by launching a new VRV range that is fully in line with the EU's 20/20/20 policy. VRV IV is up to 28% more efficient on a yearly basis while improving the comfort and flexibility features that make Daikin so unique.

European action plan



-20%
LESS CO₂ EMISSIONS
vs. 1990



20%
MORE RENEWABLE
ENERGY USE



20%
LESS PRIMARY
ENERGY USE vs. BAU*

By the year
2020

*Business As Usual

Daikin leads the market by publishing seasonal performance data

Until the new calculation method is known, Daikin already publishes ESEER values today.

ESEER

The ESEER values provide a clear view on the part-load cooling performance of a VRV system. Thus enabling estimation of the annual power consumption in cooling mode.

The ESEER values published for air-cooled VRV systems allow a comparison with other air-cooled systems only; when comparing with air-cooled chillers, auxiliary power consumption of circulation pumps still needs to be added to the chiller performance.

1 ESEER: formula:

$$ESEER = 0,03 * EER_A + 0,33 * EER_B + 0,41 * EER_C + 0,23 * EER_D$$

condition	load	ambient temperature
A	100%	35°CDB
B	75%	30°CDB
C	50%	25°CDB
D	25%	20°CDB

indoor temperature conditions:
19°CWB/27°CDB

For chillers the outdoor power input is taken into account (excluding pumps and indoor units), for VRV the outdoor power input is taken into account (excluding indoor units).

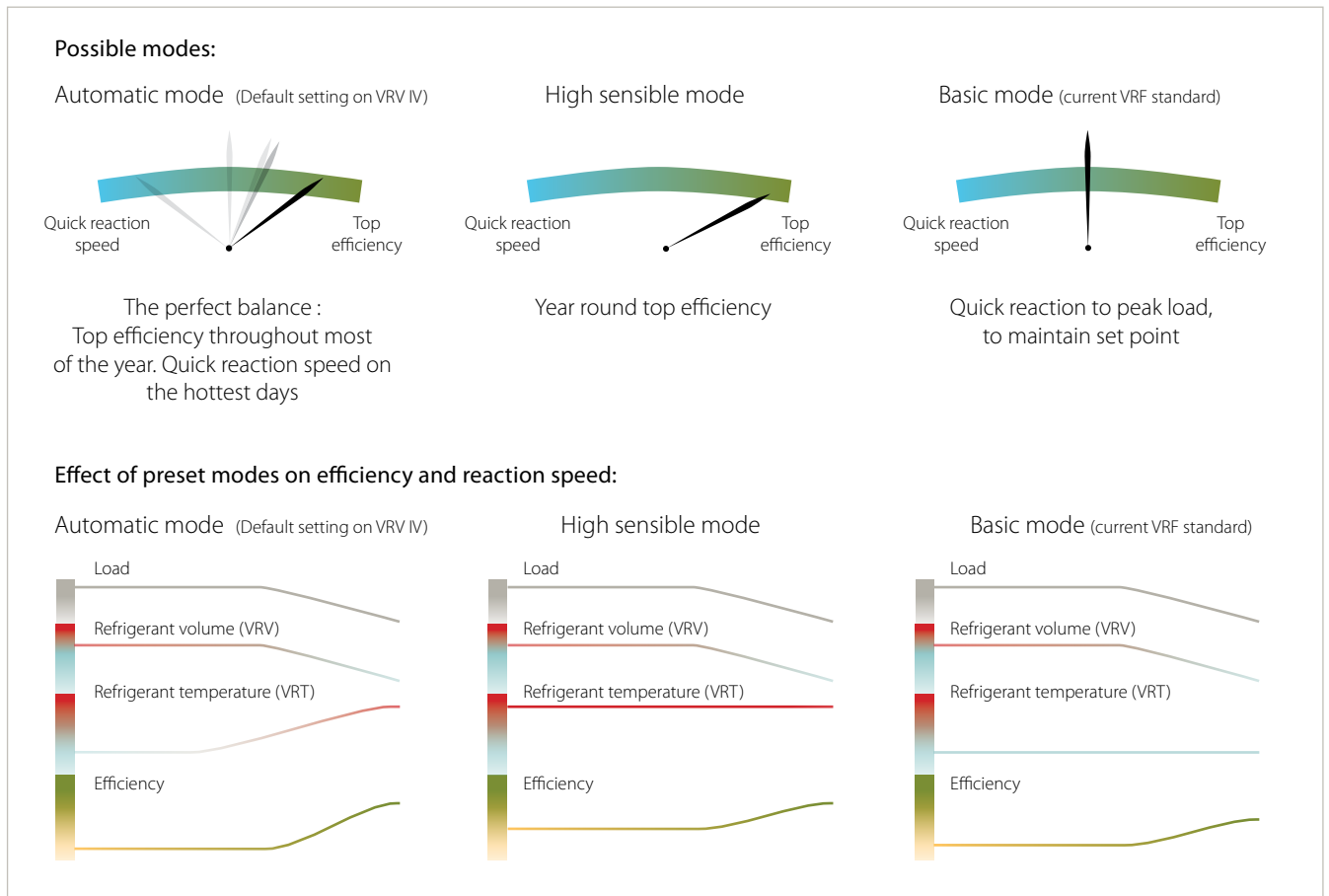
Customize your VRV for optimal seasonal efficiency

Revolutionary variable refrigerant temperature (VRT) control automatically adapts your VRV to your individual building and climate requirements for comfort and efficiency, thus drastically reducing operational running costs.

The system can be easily customised via the VRT technology preset modes. With the modes you choose to optimise the system towards your required balance between comfort and efficiency.

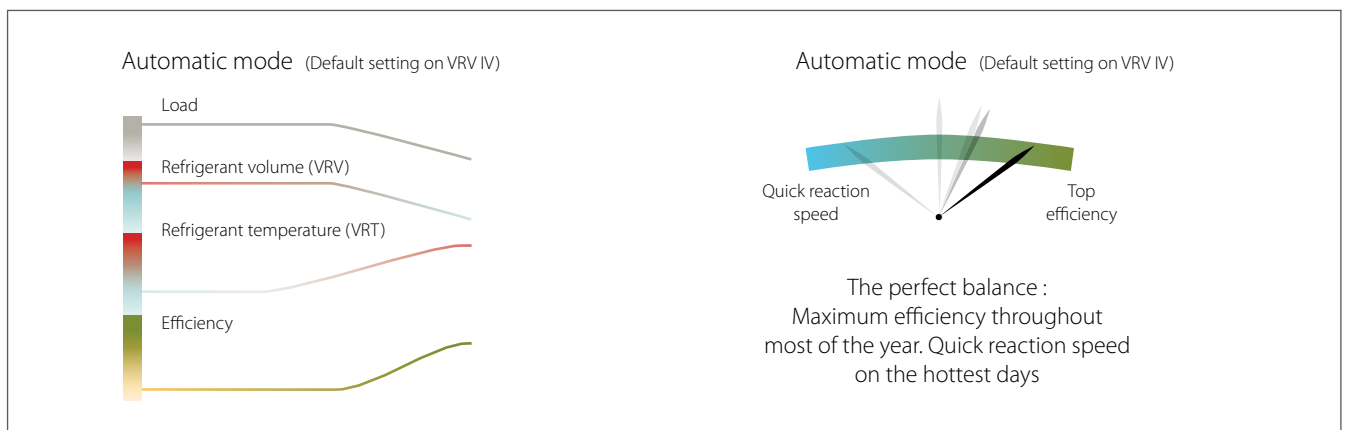


With this new technology Daikin has invented the VRV system once again. By looking at the core of the system it enables us to improve seasonal efficiency up to 28%!



Unique VRT automatic mode leads to 28% increase in seasonal efficiency

In automatic mode the system will go for maximum efficiency throughout most of the year and for quick reaction speed on the hottest days, ensuring comfort at all times while still resulting in an increased seasonal efficiency up to 28%.



How is this 28% increase of seasonal efficiency achieved?

In automatic mode, the system constantly adjusts both refrigerant temperature and volume, according to the total required capacity and weather conditions.

For example, in mid season when there is little cooling needed and the room temperature is close to the setpoint, the system will adjust its refrigerant temperature to a higher temperature so less energy is needed, leading to major savings in seasonal efficiency.

Control exactly how your system reacts in automatic mode

The submodes available allow the installer to easily finetune the way the system reacts to changes in indoor or outdoor temperature.

Powerful

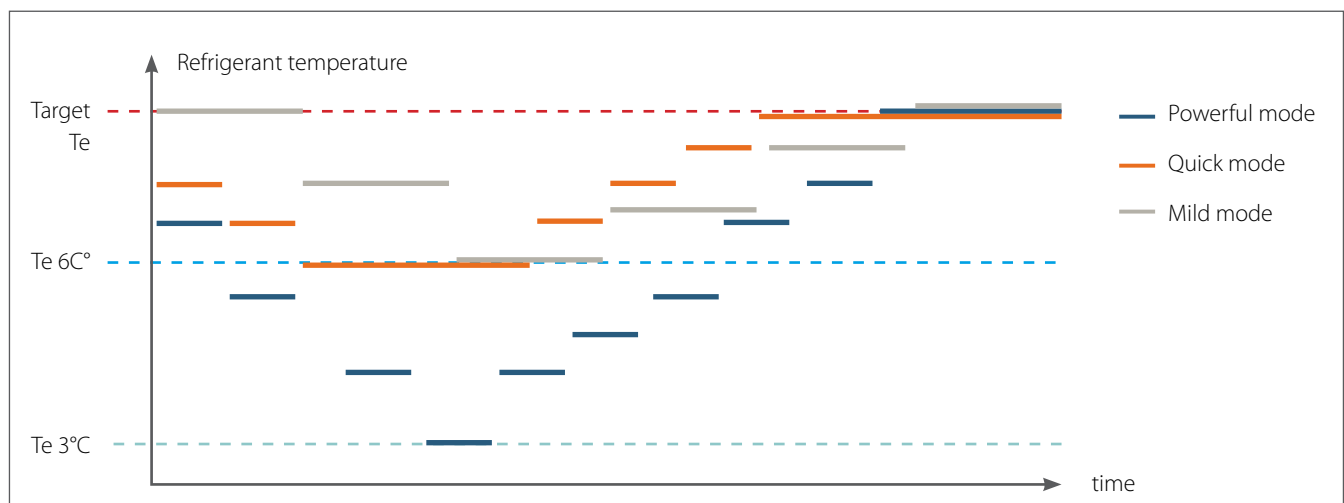
- Can boost capacity above 100% if needed.
The refrigerant temperature can go lower in cooling (higher in heating) than the set minimum (maximum in heating).
- Gives priority to fast reaction speed
The refrigerant temperature goes down (or up in heating) fast to keep the room setpoint stable

Quick

- Gives priority to fast reaction speed
The refrigerant temperature goes down (or up in heating) fast to keep the room setpoint stable

Mild

- Gives priority to efficiency
The refrigerant temperature goes down (or up in heating) gradually giving priority to the efficiency of the system instead of the reaction speed



THE NEW STANDARD IN HEATING COMFORT

- Unique continuous heating technology
- The best alternative to traditional heating systems



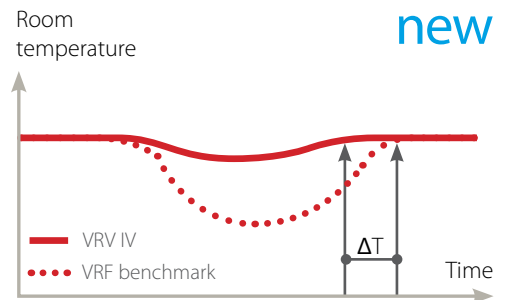
VRV IV for continuous comfort, also during defrost

Because the VRV IV continues to provide heating even when in defrost mode, it provides the answer to any perceived disadvantages of specifying a heat pump for monovalent heating.

Heat pumps are known for their high energy efficiency in heating, but they accumulate ice during heating operation and this must be melted periodically using a defrost function that reverses the refrigeration cycle. This causes a temporary temperature drop and reduced comfort levels inside the building.

Defrosting can take over 10 minutes (depending on the size of the system) and occurs most frequently between -7 and +7°C when there is most humidity in the air, which freezes to the coil, and this has a significant impact on the perceived indoor comfort levels.

The VRV IV has changed the heating paradigm by providing heat even during defrost operation thus eliminating the temperature drop inside and providing comfort at all times.



How does it work?

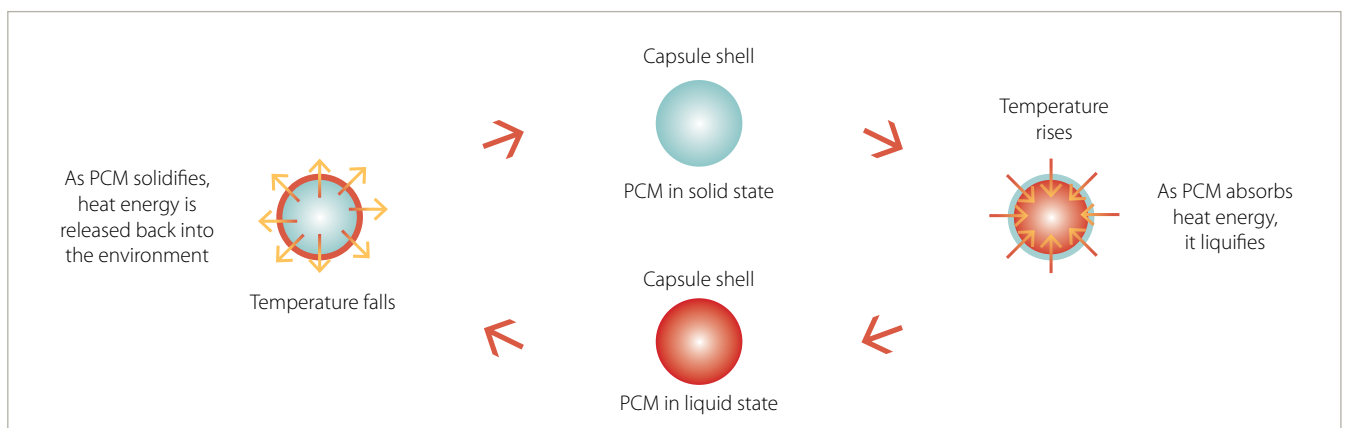
VRV IV features a unique heat-accumulating element, based upon phase change materials, which provides energy to defrost the outdoor unit while continuing to provide indoor heating to maintain a comfortable indoor climate. The energy needed for defrosting is stored in the element during normal heating operations.

- The outdoor unit coil is defrosted ... →
- ... with the energy stored in the heat accumulating element ... →
- ... while indoors a comfortable temperature is maintained. →



How phase change material works?

A phase change material (PCM) will store or release energy when it changes phase from solid to liquid or liquid to solid.



Continuous heating function is only available on RYYQ-T units.

VRV CONFIGURATOR SOFTWARE

- Less time needed for commissioning
- Manage multiple systems in exactly the same way
- Retrieve initial system settings

Simplified commissioning

The VRV configurator is an advanced software solution that allows for easy system configuration and commissioning:

- less time is required on the roof configuring the outdoor unit
- multiple systems at different sites can be managed in exactly the same way, thus offering simplified commissioning for key accounts
- Initial settings on the outdoor unit can be easily retrieved

Simplified servicing

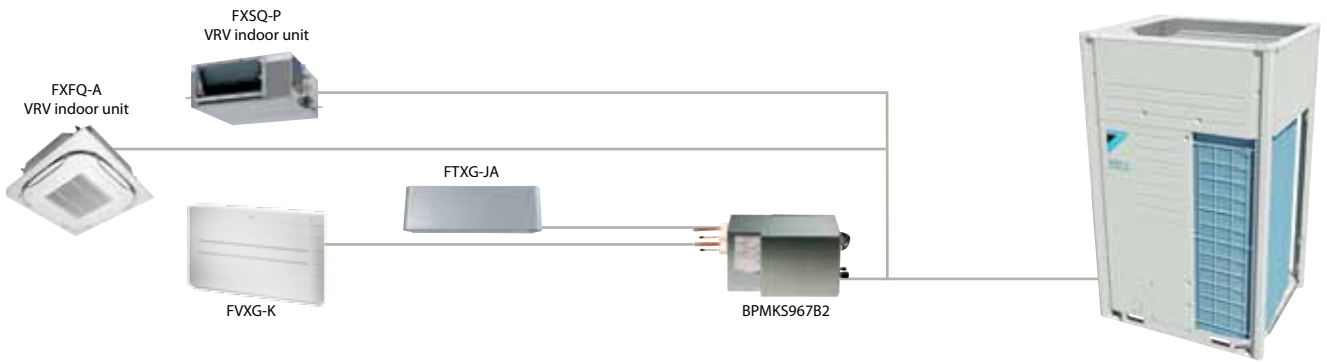
Outdoor unit display for quick on-site settings and easy read out of errors together with the indication of service parameters for checking basic functions.

The 7-segment indicator saves time through:

- easy-to-read error report
- indication of basic service parameters to quickly check basic functions
- clear menu indicating quick and easy on-site settings



WIDE RANGE OF INDOOR UNITS:
 POSSIBILITY TO COMBINE VRV WITH STYLISH INDOOR UNITS
 (DAIKIN EMURA, NEXURA, ...)



Connectable indoor units

	15 CLASS	20 CLASS	25 CLASS	35 CLASS	42 CLASS	50 CLASS	60 CLASS	71 CLASS
Daikin Emura – Wall mounted unit			FTXG25JW FTXG25JA	FTXG35JW FTXG35JA		FTXG50JW FTXG50JA		
Wall mounted unit	CTXS15K	FTXS20K	FTXS25K	FTXS35K CTXS35K	FTXS42K	FTXS50K	FTXS60G	FTXS71G
Nexura – Floor standing unit			FVXG25K	FVXG35K		FVXG50K		
Floor standing unit			FVXS25F	FVXS35F		FVXS50F		
Flexi type unit			FLXS25B	FLXS35B		FLXS50B	FLXS60B	

BPMKS box needed to connect RA indoors to VRV IV (RYYQ-T and RXYQ-T)

FLEXIBLE PIPING DESIGN

VRV IV offers an extended piping length of 165m (190m equivalent piping length) with a total system piping length of 1,000m. When hydroboxes, RA indoor units or air handling units are connected restrictions apply.

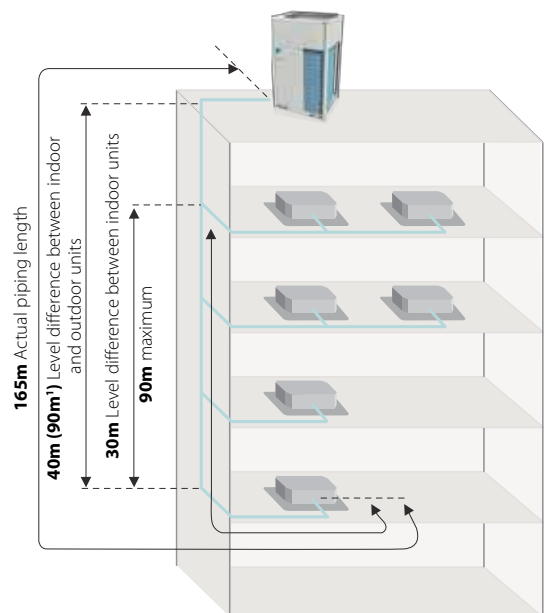
The height difference between indoor and outdoor units is 90m (note 1) both if the outdoor unit is located above or below the indoor units. **The level difference between the indoor units has been increased up to 30m.**

After the first branch, the difference between the longest piping length and the shortest piping length can be maximum 40m, provided that the longest piping length amounts to maximum 90m.

Better use of space

The small refrigerant pipes take up less space in shafts and ceilings leaving maximum space for commercial use of the space.

If not all conditions are met, the height difference can be lower.



SPECIFICATIONS

VRV IV with continuous heating: RYYQ-T VRV IV without continuous heating: RXYQ-T

OUTDOOR SYSTEM				RYYQ8T	RXYQ8T	RYYQ10T	RXYQ10T	RYYQ12T	RXYQ12T	RYYQ14T	RXYQ14T	RYYQ16T	RXYQ16T	RYYQ18T	RXYQ18T	RYYQ20T	RXYQ20T				
Capacity range	HP			8	10	12	14	16	18	20											
Cooling capacity	Nom.			kW	22.4	28.0	33.5	40.0	45.0	50.0	56.0	63.0									
Heating capacity	Nom.			kW	25.0	31.5	37.5	45.0	50.0	56.0	63.0										
Power input - 50Hz	Cooling	Nom.		kW	5.2	7.29	8.98	11.0	13.0	14.7	18.5										
	Heating	Nom.		kW	5.5	7.38	9.10	11.2	12.8	14.4	17.0										
EER					4.30	3.84	3.73	3.64	3.46	3.40	3.03										
ESEER					7.53 ¹	7.20 ¹	6.96 ¹	6.83 ¹	6.50 ¹	6.38 ¹	5.67 ¹										
COP					4.55	4.27	4.12	4.02	3.91	3.89	3.71										
Maximum number of connectable indoor units					17 ²	21 ²	26 ²	30 ²	34 ²	39 ²	43 ²										
Indoor index connection	Min.				100	125	150	175	200	225	250										
	Nom.				200	250	300	350	400	450	500										
	Max.				260	325	390	455	520	585	650										
Dimensions	Unit	HxWxD		mm	1,685x930x765						1,685x1,240x765										
Weight	Unit			kg	261	268	364	398													
Sound power level	Cooling	Nom.		dBA	78	79	81	86	88												
	Sound pressure level			dBA	58				61	64	65	66									
Operation range	Cooling	Min.-Max.		°CDB							-5~43										
	Heating	Min.-Max.		°CWB							-20~-15.5										
Refrigerant	Type				R-410A																
	Liquid	OD		mm	9.52						12.7						15.9				
Piping connections	Gas	OD		mm	19.1			22.2			28.6										
	Piping length	OU - IU		Max.							165 ³										
	Total piping length	System		Actual							1,000 ³										
	Level difference	OU - IU		m	90 ³ Outdoor unit in highest position / 90 ³ Indoor unit in highest position																
Power supply	Phase/Frequency/Voltage			Hz/V	3N~/50/380-415																
Current - 50Hz	Maximum fuse amps (MFA)			A	20	25	32	40	50												

(1) The AUTOMATIC ESEER value corresponds with normal VRV IV Heat Pump operation, taking into account advanced energy saving operation functionality (variable refrigerant temperature control operation) (2) Actual number of connectable indoor units depends on the indoor unit type (VRV indoor, Hydrobox, RA indoor, etc.) and the connection ratio restriction for the system (50% <= CR <= 130%) (3) Refer to technical specifications for more detail

OUTDOOR SYSTEM				RYYQ22T	RXYQ22T	RYYQ24T	RXYQ24T	RYYQ26T	RXYQ26T	RYYQ28T	RXYQ28T	RYYQ30T	RXYQ30T	RYYQ32T	RXYQ32T	RYYQ34T	RXYQ34T	RYYQ36T	RXYQ36T	
System	Outdoor unit module 1			RYYQ10T	RXYQ10T	RYYQ8T	RXYQ8T	RYYQ12T	RXYQ12T	RYYQ12T	RXYQ12T	RYYQ12T	RXYQ12T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	
	Outdoor unit module 2			RYYQ12T	RXYQ12T	RYYQ16T	RXYQ16T	RYYQ14T	RXYQ14T	RYYQ16T	RXYQ16T	RYYQ18T	RXYQ18T	RYYQ16T	RXYQ16T	RYYQ18T	RXYQ18T	RYYQ20T	RXYQ20T	
Capacity range	HP			22	24	26	28	30	32	34	36									
Cooling capacity	Nom.			kW	61.5	67.4	73.5	78.5	83.5	90.0	95.0	101.0								
Heating capacity	Nom.			kW	69.0	75.0	82.5	87.5	93.5	100.0	106.0	113.0								
Power input - 50Hz	Cooling	Nom.		kW	16.3	18.2	20.0	22.0	23.7	26.0	27.7	31.5								
	Heating	Nom.		kW	16.5	18.3	20.3	21.9	23.5	25.6	27.2	29.8								
EER					3.77	3.70	3.68	3.57	3.52	3.46	3.43	3.21								
ESEER					7.07 ¹	6.81 ¹	6.89 ¹	6.69 ¹	6.60 ¹	6.50 ¹	6.44 ¹	6.02 ¹								
COP					4.18	4.10	4.06	4.00	3.98	3.91	3.90	3.79								
Maximum number of connectable indoor units					47 ²	52 ²	56 ²	60 ²	64 ²											
Indoor index connection	Min.				275	300	325	350	375	400	425	450								
	Nom.				550	600	650	700	750	800	850	900								
	Max.				715	780	845	910	975	1,040	1,105	1,170								
Piping connections	Liquid	OD		mm	15.9						19.1									
	Gas	OD		mm	28.6			34.9						41.3						
	Piping length	OU - IU		Max.							165 ³									
	Total piping length	System		Actual							1,000 ³									
Level difference	OU - IU		m	90 ³ Outdoor unit in highest position / 90 ³ Indoor unit in highest position																
Current - 50Hz	Maximum fuse amps (MFA)			A	63						80									

(1) The AUTOMATIC ESEER value corresponds with normal VRV IV Heat Pump operation, taking into account advanced energy saving operation functionality (variable refrigerant temperature control operation) (2) Actual number of connectable indoor units depends on the indoor unit type (VRV indoor, Hydrobox, RA indoor, etc.) and the connection ratio restriction for the system (50% <= CR <= 130%) (3) Refer to technical specifications for more detail

OUTDOOR SYSTEM				RYYQ38T	RXYQ38T	RYYQ40T	RXYQ40T	RYYQ42T	RXYQ42T	RYYQ44T	RXYQ44T	RYYQ46T	RXYQ46T	RYYQ48T	RXYQ48T	RYYQ50T	RXYQ50T	RYYQ52T	RXYQ52T	RYYQ54T	RXYQ54T	
System	Outdoor unit module 1			RYYQ10T	RXYQ10T	RYYQ12T	RXYQ12T	RYYQ12T	RXYQ12T	RYYQ14T	RXYQ14T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ18T	RXYQ18T	
	Outdoor unit module 2			RYYQ10T	RXYQ10T	RYYQ12T	RXYQ12T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ18T	RXYQ18T	RYYQ18T	RXYQ18T	
	Outdoor unit module 3			RYYQ20T	RXYQ20T	RYYQ18T	RXYQ18T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ16T	RXYQ16T	RYYQ18T	RXYQ18T	RYYQ18T	RXYQ18T	RYYQ18T	RXYQ18T	
Capacity range	HP			38	40	42	44	46	48	50	52	54										
Cooling capacity	Nom.			kW	106.0	112.0	118.0	124.0	130.0	135.0	140.0	145.0	150.0									
Heating capacity	Nom.			kW	120.0	125.0	132.0	138.0	145.0	150.0	156.0	162.0	168.0									
Power input - 50Hz	Cooling	Nom.		kW	31.0			33.3	35.0	37.0	39.0	40.7	42.4	44.1								
	Heating	Nom.		kW	29.9	30.9	33.0	34.7	36.8	38.4	40.0	41.6	43.2									
EER					3.42	3.61	3.54		3.51	3.46	3.44	3.42	3.40									
ESEER					6.36 ¹	6.74 ¹	6.65 ¹	6.62 ¹	6.60 ¹	6.50 ¹	6.46 ¹	6.42 ¹	6.38 ¹									
COP					4.01	4.05	4.00	3.98	3.94	3.91	3.90	3.89	3.89									
Maximum number of connectable indoor units					64 ²																	
Indoor index connection	Min.				475	500	525	550	575	600	625	650	675									
	Nom.				950	1,000	1,050	1,100	1,150	1,200	1,250	1,300	1,350									
	Max.				1,235	1,300	1,365	1,430	1,495	1,560	1,625	1,690	1,755									
Piping connections	Liquid	OD		mm	19.1																	
	Gas	OD		mm	41.3																	
	Piping length	OU - IU		Max.							165 ³											
	Total piping length	System		Actual							1,000 ³											
Level difference	OU - IU		m	90 ³ Outdoor unit in highest position / 90 ³ Indoor unit in highest position																		
Current - 50Hz	Maximum fuse amps (MFA)			A	100												125					