

# VRV IV heat recovery

Best efficiency and comfort solution

Efficient  
**3-pipe**  
system



## VRV IV standards:

### Variable refrigerant temperature

Customize your VRV for best seasonal efficiency & comfort

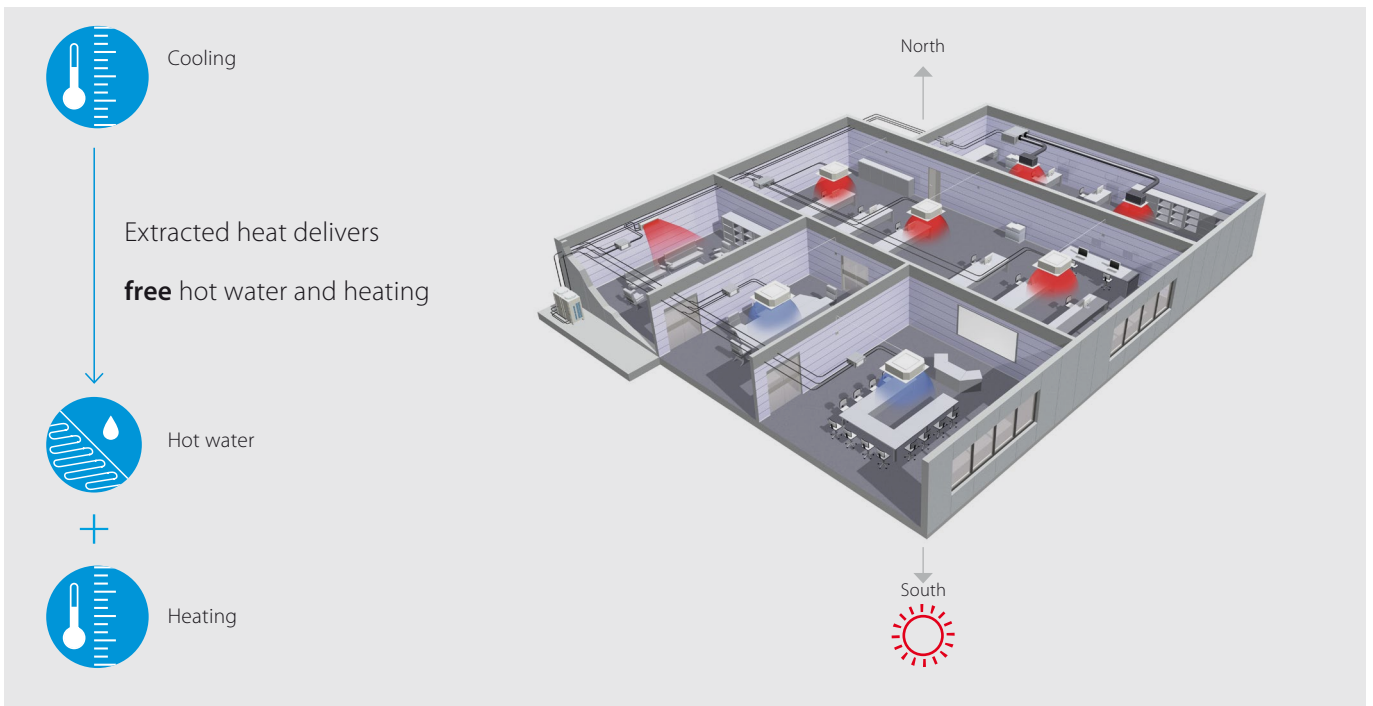
### Continuous heating

The new standard in heating comfort

### VRV configurator

Software for simplified commissioning, configuration and customisation

- › 7 segment display
- › Automatic refrigerant charge
- › Refrigerant containment check
- › Night quiet mode
- › Low noise function
- › Connectable to LT hydrobox for hot water
- › Connectable to HT hydrobox for hot water
- › Full inverter compressors
- › Gas cooled PCB
- › 4 side heat exchanger
- › Reluctance brushless DC compressor
- › Sine wave DC inverter
- › DC fan motor
- › E-pass heat exchanger
- › I demand function
- › Manual demand function



## “Free” heat and hot water production

Until now, most commercial buildings have relied on separate systems for cooling, heating, hot water and so on, which results in a lot of wasted energy.

An integrated heat recovery system reuses heat from offices, server rooms, to warm other areas or create hot water.

## Improved efficiency

In heat-recovery operation the VRV IV is up to 15% more efficient compared to VRV III. In single mode operation, the seasonal efficiency of the system can be even as much as 28% higher - thanks to the variable refrigerant temperature technology - compared to a conventional VRF system.

## Optimised Partition of Heat Exchanger for highest seasonal efficiency in heat recovery mode

Vertically divided heat exchanger with an optimized ratio for mix mode operation. This improves heat recovery efficiency by reducing radiation losses.

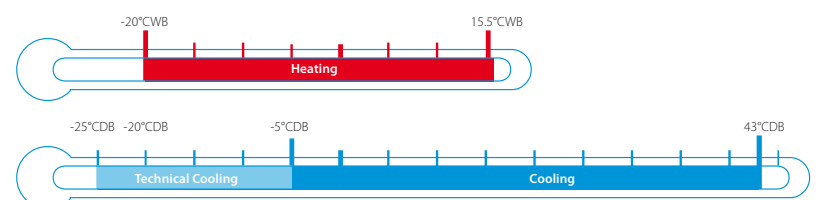
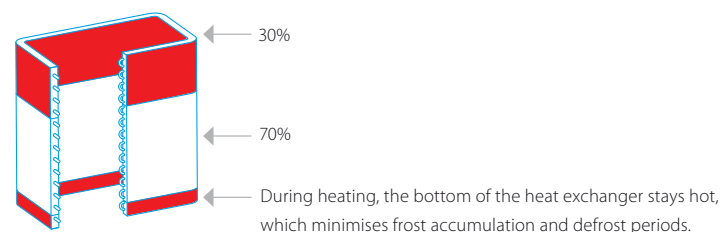
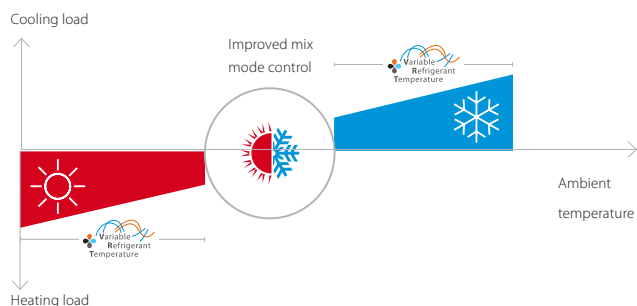
## Wide heating operation range

VRV IV heat recovery has a standard operation range down to  $-20^{\circ}\text{CWB}$  in heating. It can also provide cooling down to  $-20^{\circ}\text{CDB}$  for technical server rooms (field setting).

## Maximum comfort

A VRV heat-recovery system allows simultaneous cooling and heating.

- › For hotel owners, this means a perfect environment for guests as they can freely choose between cooling or heating.
- › For offices, it means a perfect working indoor climate for both north and south-facing offices.

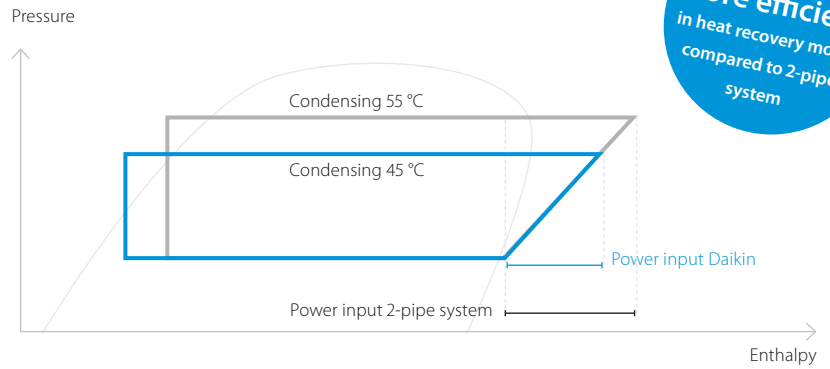


# Advantages of 3-pipe technology

## More “free” heat

Daikin 3-pipe technology needs less energy to recover heat, meaning significantly higher efficiency during heat recovery mode. Our system can recover heat at a low condensing temperature because it has dedicated gas, liquid and discharge pipes.

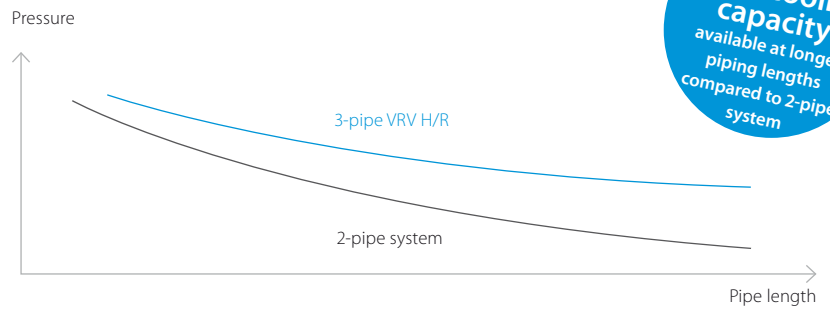
In a 2-pipe system, gas and liquid travel as a mixture so the condensing temperature needs to be higher in order to separate the mixed gas and liquid refrigerant. The higher condensing temperature means more energy is used to recover heat resulting in lower efficiency.



**5 to 15% more efficient** in heat recovery mode compared to 2-pipe system

## Lower pressure drop means more efficiency

- › Smooth refrigerant flow in 3-pipe system thanks to 2 smaller gas pipes results in higher energy efficiency
- › Disturbed refrigerant flow in large gas pipe on 2-pipe system results in bigger pressure drop



**Up to 5% more cooling capacity** available at longer piping lengths compared to 2-pipe system

## Save on refrigerant

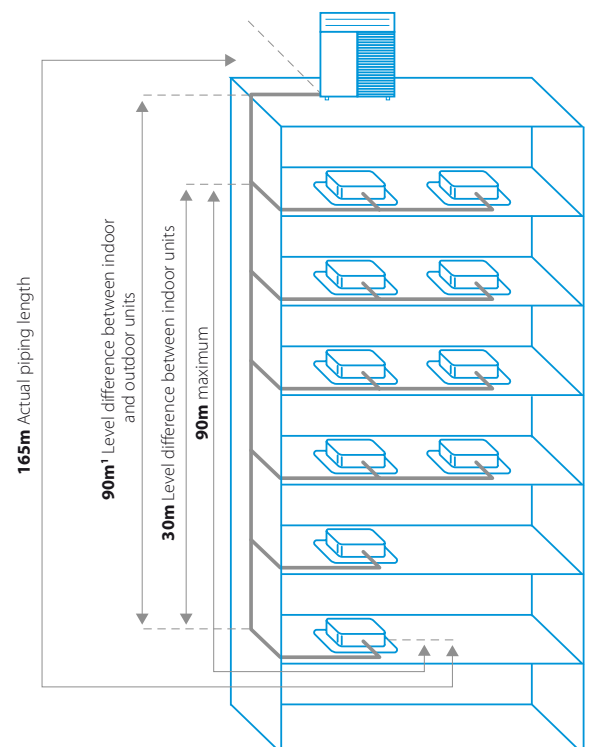
- › Smaller diameter pipes and 3-pipe system results in up to 36% less refrigerant charge compared to 2-pipe systems, saving on refrigerant cost and reducing environmental impact

## Freely combine outdoor units

Combine outdoor units flexibly to reduce your carbon footprint, optimise your system for continuous heating, and achieve the highest efficiency.

## Flexible piping design

Total piping length	1000m
Longest length actual (Equivalent)	165m (190m)
Longest length after first branch	90m <sup>1</sup>
Level difference between indoor and outdoor units	90m <sup>1</sup>
Level difference between indoor units	30m



<sup>1</sup> Outdoor unit in highest position. Consult your local sales representative for restrictions on piping lengths

# Fully redesigned BS boxes

## Maximum design flexibility and installation speed

- › Quickly and flexibly design your system with a unique range of single and multi BS boxes.
- › A wide variety of compact and lightweight multi BS boxes greatly reduces installation time.
- › Free combination of single and multi BS boxes

### Single port

- › Unique to the market
- › Compact and light to install
- › No drain piping needed
- › Ideal for remote rooms
- › Technical cooling function
- › Connect up to 250 class unit (28 kW)
- › Allows multi-tenant applications



BS1Q 10, 16, 25 A

### Multi port: 4 – 6 – 8 – 10 – 12 – 16

- › Up to 55% smaller and 41% lighter than previous range
- › Faster installation thanks to a reduced number of brazing points and wiring
- › All indoor units connectable to one BS box
- › Fewer inspection ports needed
- › Up to 16 kW capacity available per port
- › Connect up to 250 class unit (28kW) by combining 2 ports
- › No limit on unused ports, permitting phased installation
- › Allows multi-tenant applications



BS 4 Q14 AV1

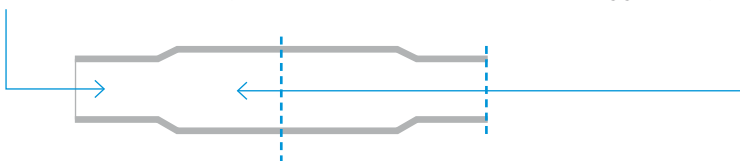
BS 6, 8 Q14 AV1

BS 10, 12 Q14 AV1

BS 16 Q14 AV1

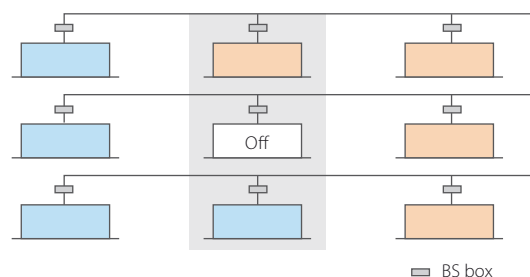
### Faster installation thanks to open connection

- › No need to cut the pipe before brazing – for indoor units smaller or equal to 5.6 kW (50 class)
- › Cut and braise the pipe – for indoor units bigger or equal to 7.1 kW (63 class)



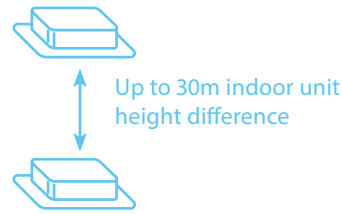
## Maximum comfort at all times

With the VRV BS box, any indoor unit not being used to switch between heating and cooling maintains the constant desired temperature. This is because our heat recovery system does not need to equalise pressure over the entire system after a change-over.



# VRV IV heat recovery

## Best efficiency & comfort solution

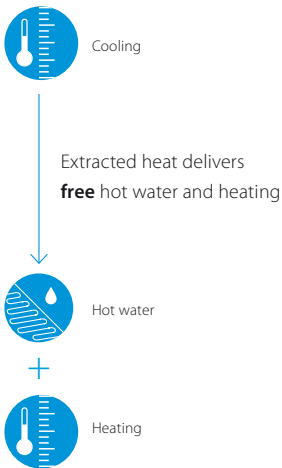


- › Fully integrated solution with heat recovery for maximum efficiency with COPs of up to 8 !
- › Covers all thermal needs of a building via a single point of contact: accurate temperature control, ventilation, hot water, air handling units and Biddle air curtains
- › „Free“ heating and hot water production provided by transferring heat from areas requiring cooling to areas requiring heating or hot water
- › The perfect personal comfort for guests/tenants via simultaneous cooling and heating

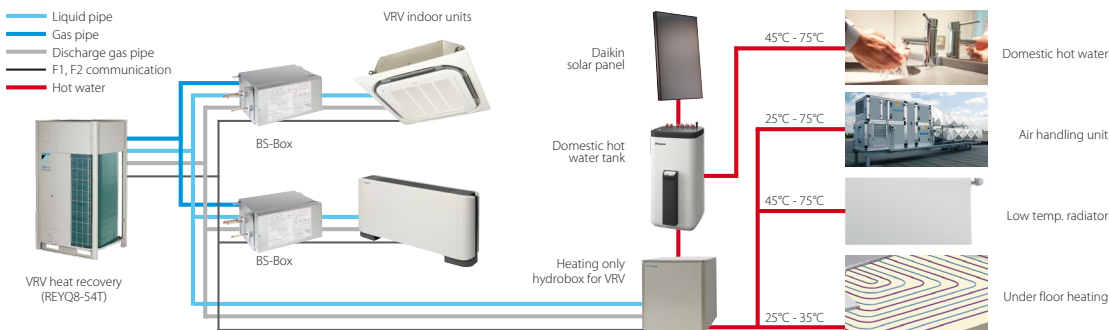
- › Incorporates VRV IV standards & technologies: Variable Refrigerant Temperature, continuous heating, VRV configurator, 7 segment display and full inverter compressors, 4-side heat exchanger, refrigerant cooled PCB, new DC fan motor
- › Free combination of outdoor units to meet installation space or efficiency requirements
- › Possibility to extend the operation range in cooling down to -20°C for technical cooling operation such as server rooms
- › Contains all standard VRV features

Outdoor system				REYQ	8T	10T	12T	14T	16T	18T	20T
Capacity range				HP	8	10	12	14	16	18	20
Cooling capacity	Nom.	35°CDB		kW	22.4 (1)	28.0 (1)	33.5 (1)	40.0 (1)	45.0 (1)	50.4 (1)	56.0 (1)
	Max.	6°CWB		kW	25.0 (2)	31.5 (2)	37.5 (2)	45.0 (2)	50.0 (2)	56.5 (2)	63.0 (2)
Heating capacity	Nom.	6°CWB		kW	22.4 (2)	28.0 (2)	33.5 (2)	40.0 (2)	45.0 (2)	50.4 (2)	56.0 (2)
	Max.	6°CWB		kW	25.0 (2)	31.5 (2)	37.5 (2)	45.0 (2)	50.0 (2)	56.5 (2)	63.0 (2)
Power input - 50Hz	Cooling	Nom.	35°CDB	kW	5.31 (1)	7.15 (1)	9.23 (1)	10.7 (1)	12.8 (1)	15.2	18.6
	Heating	Nom.	6°CWB	kW	4.75 (2)	6.29 (2)	8.05 (2)	9.60 (2)	11.2 (2)	12.3	14.9
		Max.	6°CWB	kW	5.51 (2)	7.38 (2)	9.43 (2)	11.3 (2)	12.9 (2)	14.3	17.5
EER at nom. capacity	35°CDB			kW/kW	4.22 (1)	3.92 (1)	3.63 (1)	3.74 (1)	3.52 (1)	3.32	3.01
COP at nom. capacity	6°CWB			kW/kW	4.72 (2)	4.45 (2)	4.16 (2)	4.17 (2)	4.02 (2)	4.10	3.76
COP at max. capacity	6°CWB			kW/kW	4.54 (2)	4.27 (2)	3.98 (2)		3.88 (2)	3.95	3.60
ESEER - Automatic					7.41	7.37	6.84	7.05	6.63	6.26	5.68
Maximum number of connectable indoor units					64 (3)						
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	HeightxWidthxDepth		mm	1,685x930x765			1,685x1,240x765			
Weight	Unit			kg	210	218		304	305	337	
Fan	Air flow rate	Cooling	Nom.	m³/min	162	175	185	223	260	251	261
Sound power level	Cooling	Nom.		dBA	78	79	81		86		88
Sound pressure level	Cooling	Nom.		dBA	58		61		64		66
Operation range	Cooling	Min.-Max.		°CDB	-5.0~43.0						
	Heating	Min.-Max.		°CWB	-20~-15.5						
Refrigerant	Type				R-410A						
	GWP				2,087.5						
	Charge			TCO <sub>2</sub> eq	20.2	20.5	20.7			24.6	
				kg	9.7	9.8	9.9			11.8	
Piping connections	Liquid	OD		mm	9.52		12.7				15.9
	Gas	OD		mm	19.1	22.2			28.6		
	Total piping length	System	Actual	m	1,000						
	Discharge gas	OD		mm	15.9	19.1		22.2		28.6	
Power supply	Phase/Frequency/Voltage			Hz/V	3N~/50/380-415						
Current - 50Hz	Maximum fuse amps (MFA)			A	20	25		32	40		50

Outdoor system				REYQ	10T	13T	16T	18T	20T	22T	24T	26T	28T	30T	32T
System	Outdoor unit module 1				REM05T		REYQ8T		REYQ10T	REYQ8T	REYQ12T		REYQ16T		
	Outdoor unit module 2				REM05T	REYQ8T	REYQ10T	REYQ12T	REYQ16T	REYQ14T	REYQ16T	REYQ18T	REYQ16T	REYQ16T	
Capacity range				HP	10	13	16	18	20	22	24	26	28	30	32
Cooling capacity	Nom.	35°CDB		kW	28.0 (1)	36.4 (1)	44.8 (1)	50.4 (1)	55.9 (1)	61.5 (1)	67.4 (1)	73.5 (1)	78.5 (1)	83.9 (1)	90.0 (1)
	Max.	6°CWB		kW	32.0 (2)	41.0 (2)	50.0 (2)	56.5 (2)	62.5 (2)	69.0 (2)	75.0 (2)	82.5 (2)	87.5 (2)	94.0 (2)	100.0 (2)
Power input - 50Hz	Cooling	Nom.	35°CDB	kW	6.34	8.48	10.62	12.46	14.54	16.38	18.11	19.93	22.03	24.43	25.6
	Heating	Nom.	6°CWB	kW	5.42	7.46	9.50	11.04	12.80	14.34	15.95	17.65	19.25	20.35	22.4
		Max.	6°CWB	kW	6.50	8.76	11.02	12.89	14.94	16.81	18.41	20.73	22.33	23.73	25.8
EER at nom. capacity	35°CDB			kW/kW	4.42	4.29	4.22	4.04	3.84	3.75	3.72	3.69	3.56	3.43	3.52
COP at nom. capacity	6°CWB			kW/kW	5.17	4.88	4.72	4.57	4.37	4.29	4.23	4.16	4.08	4.12	4.02
COP at max. capacity	6°CWB			kW/kW	4.92	4.68	4.54	4.38	4.18	4.10	4.07	3.98	3.92	3.96	3.88
ESEER - Automatic					7.77	7.54	7.41	7.38	7.06	7.07	6.87	6.95	6.72	6.48	6.63
ESEER - Standard					6.55	6.36	6.25	5.98	5.68	5.54	5.46	5.41	5.23	5.03	5.14
Maximum number of connectable indoor units					64 (3)										
Indoor index connection	Min.				125	162.5	200	225	250	275	300	325	350	375	400
	Nom.				250	325.0	400	450	500	550	600	650	700	750	800
	Max.				325	422.5	520	585	650	715	780	845	910	975	1,040
Piping connections	Liquid	OD		mm	9.52	12.7		15.9				19.1			
	Gas	OD		mm	22.2			28.6				34.9			
	Total piping length	System	Actual	m	500							1,000			
	Discharge gas	OD		mm	19.1		22.2				28.6				
Current - 50Hz	Maximum fuse amps (MFA)			A	40				50		63		80		
Continuous heating					v										



REYQ-T



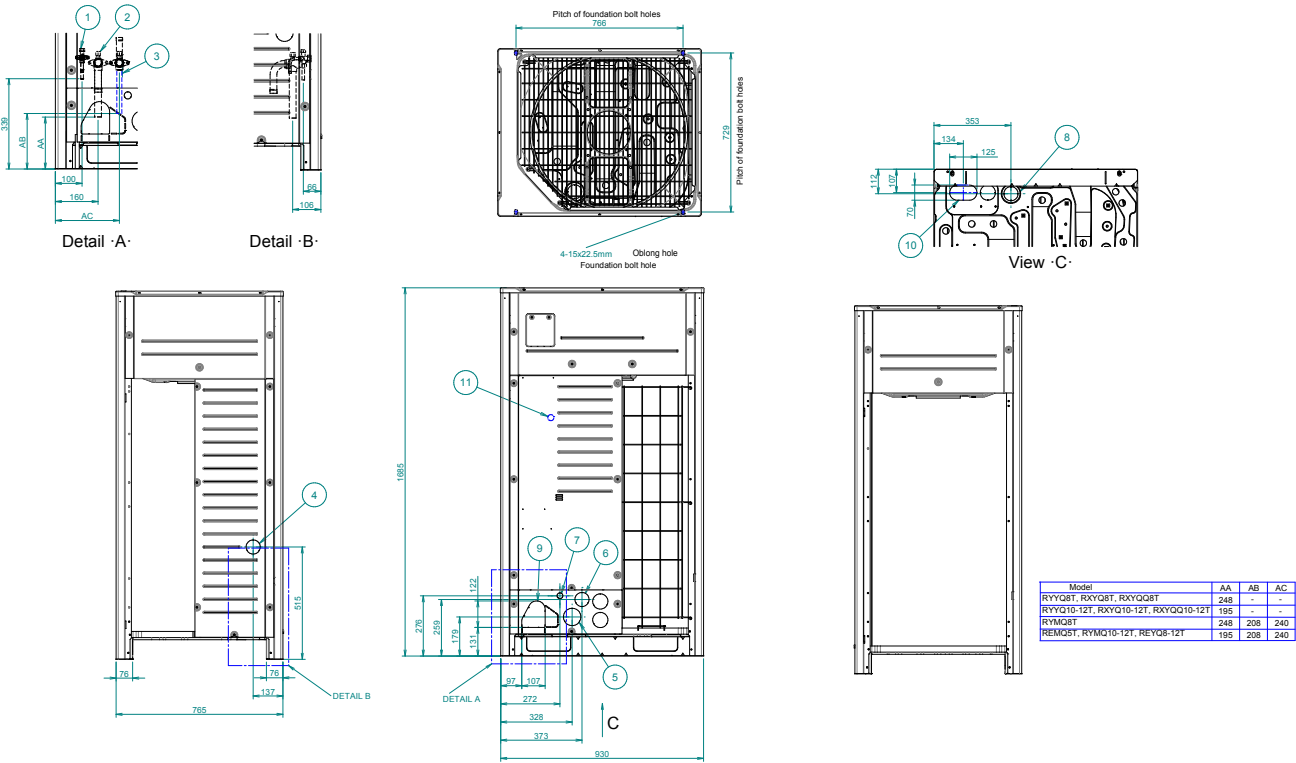
Outdoor system				REYQ																					
System				34T		36T		38T		40T		42T		44T		46T		48T		50T		52T		54T	
Outdoor unit module 1				REYQ16T		REYQ8T		REYQ10T		REYQ12T		REYQ14T		REYQ16T		REYQ18T		REYQ16T		REYQ18T		REYQ18T			
Outdoor unit module 2				REYQ18T		REYQ20T		REYQ12T		REYQ16T		REYQ16T		REYQ16T		REYQ18T		REYQ16T		REYQ18T		REYQ18T			
Outdoor unit module 3				-		REYQ18T		REYQ18T		REYQ16T		REYQ16T		REYQ18T		REYQ18T		REYQ18T		REYQ18T		REYQ18T			
Capacity range			HP	34	36	38	40	42	44	46	48	50	52	54											
Cooling capacity	Nom.	35°CDB	kW	95.4 (1)	101.0 (1)	106.3 (1)	111.9 (1)	118.0 (1)	123.5 (1)	130.0 (1)	135.0 (1)	140.4 (1)	145.8 (1)	151.2 (1)											
Heating capacity	Nom.	6°CWB	kW	95.4 (2)	101.0 (2)	106.3 (2)	111.9 (2)	118.0 (2)	123.5 (2)	130.0 (2)	135.0 (2)	140.4 (2)	145.8 (2)	151.2 (2)											
	Max.	6°CWB	kW	106.5 (2)	113.0 (2)	119.0 (2)	125.5 (2)	131.5 (2)	137.5 (2)	145.0 (2)	150.0 (2)	156.5 (2)	163.0 (2)	169.5 (2)											
Power input - 50Hz	Cooling	Nom.	35°CDB	kW	28.0	31.4	29.74	31.58	32.75	34.83	36.3	38.4	40.8	43.2	45.6										
		Nom.	6°CWB	kW	23.5	26.1	25.10	26.64	28.69	30.45	32.00	33.6	34.7	35.8	36.9										
		Max.	6°CWB	kW	27.2	30.4	29.24	31.11	33.18	35.23	37.1	38.7	40.1	41.5	42.9										
EER at nom. capacity	35°CDB		kW/kW	3.41	3.22	3.57	3.54	3.60	3.55	3.58	3.52	3.44	3.38	3.32											
COP at nom. capacity	6°CWB		kW/kW	4.06	3.87	4.24	4.20	4.11	4.06	4.02	4.05	4.07	4.10												
COP at max. capacity	6°CWB		kW/kW	3.92	3.72	4.07	4.03	3.96	3.90	3.91	3.88	3.90	3.93	3.95											
ESEER - Automatic				6.43	6.06	6.66	6.68	6.79	6.68	6.75	6.63	6.49	6.37	6.26											
Maximum number of connectable indoor units				64 (3)																					
Indoor index connection	Min.			425	450	475	500	525	550	575	600	625	650	675											
	Nom.			850	900	950	1,000	1,050	1,100	1,150	1,200	1,250	1,300	1,350											
	Max.			1,105	1,170	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	34.9	41.3																			
	Total piping length	System	Actual	m	1,000																				
		Discharge gas	OD	mm	28.6								34.9												
Current - 50Hz	Maximum fuse amps (MFA)			80				100				125													
Continuous heating				v																					
Outdoor unit module				REMQ																					
Dimensions				5T																					
Unit	Height/Width/Depth			mm																					
Weight	Unit			kg																					
Fan	Air flow rate	Cooling	Nom.	m <sup>3</sup> /min																					
	External static pressure	Max.		Pa																					
Discharge direction				Vertical																					
Type				Propeller fan																					
Sound power level	Cooling	Nom.		dBA																					
Sound pressure level	Cooling	Nom.		dBA																					
Operation range	Cooling	Min.~Max.		°CDB																					
	Heating	Min.~Max.		°CWB																					
Refrigerant	Type	R-410A																							
	GWP	2,087.5																							
	Charge	TCO <sub>2</sub> eq			kg																				
Power supply	Phase/Frequency/Voltage			Hz/V																					
Current - 50Hz	Maximum fuse amps (MFA)			A																					

(1) Nominal cooling capacities are based on: indoor temperature: 27°CDB, 19°CWB, outdoor temperature: 35°CDB, equivalent refrigerant piping: 5m, level difference: 0m. Data for standard efficiency series  
 (2) Nominal heating capacities are based on: indoor temperature: 20°CDB, outdoor temperature: 7°CWB, equivalent refrigerant piping: 5m, level difference: 0m. Data for standard efficiency series  
 (3) 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%) | REMQ5 unit cannot be used as standalone unit. | Technical cooling setting, refer to the installation manual for more information



Detailed technical drawings

REM05T / REY08-12T



Model	AA	AB	AC
RYYQ8T, RXYQ8T, RXYQ8BT	248	-	-
RYYQ12T, RXYQ12T, RXYQ12BT, RXYQ12BT	195	-	-
RYMQ5T	245	208	240
REM05T, RYMQ10-12T, REY08-12T	195	208	240

Notes

- Detail A and detail B indicate the dimensions after fixing the attached piping.
- Items 4 - 10: Knockout hole.
- Gas pipe
  - RYYQ8T, RYMQ8T, RXYQ8T, RXYQ8BT:  $\varnothing$  19.1: brazing connection
  - RYYQ10T, RYMQ10T, RXYQ10T, RXYQ10BT:  $\varnothing$  22.2: brazing connection
  - REM05T, REY08-12T:  $\varnothing$  25.4: brazing connection
  - RYYQ12T, RYMQ12T, RXYQ12T, RXYQ12BT:  $\varnothing$  28.6: brazing connection

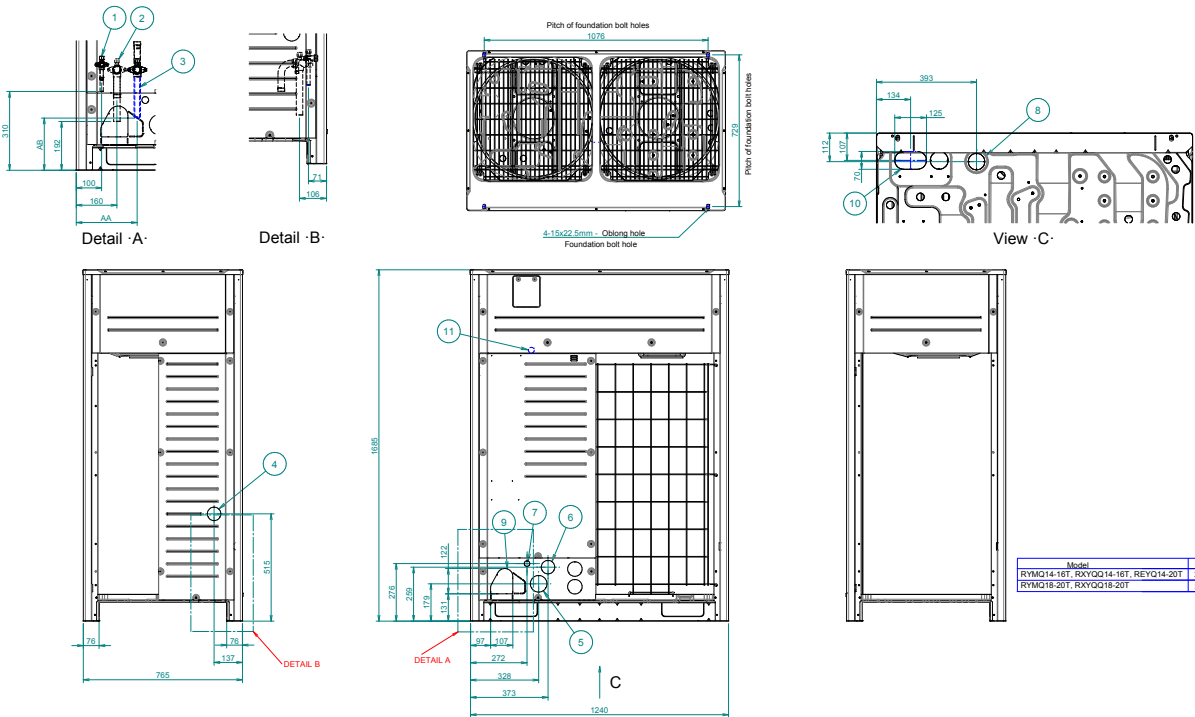
Liquid pipe

- RYYQ8-10T, RYMQ8-10T, RXYQ8-10T, RXYQ8-10BT, REM05T, REY08-12T:  $\varnothing$  9.5: brazing connection
  - RYYQ12T, RYMQ12T, RXYQ12T, RXYQ12BT:  $\varnothing$  12.7: brazing connection
- Equalising pipe
- RYMQ8-10T:  $\varnothing$  19.1: brazing connection
  - RYMQ12T:  $\varnothing$  22.2: brazing connection
- High pressure/low pressure gas pipe
- REM05T, REY08-12T:  $\varnothing$  19.1: brazing connection

No.	Part name	Inside of the switch box (MB)
11	Grounding terminal	
10	Pipe routing hole (bottom)	
9	Pipe routing hole (front)	
8	Power cord routing hole (bottom)	$\varnothing$ 65
7	Power cord routing hole (front)	$\varnothing$ 27
6	Power cord routing hole (front)	$\varnothing$ 65
5	Power cord routing hole (front)	$\varnothing$ 80
4	Power cord routing hole (side)	$\varnothing$ 65
3	Equalising pipe connection port	See note -3-
	High pressure/low pressure gas pipe	See note -3-
2	Gas pipe connection port	See note -3-
1	Liquid pipe connection port	See note -3-
No.	Part name	Remark

2D079532B

REYQ14-20T



Model	AA	AB
RYMQ14-16T, RXYQ14-16T, REYQ14-20T	240	205
RYMQ18-20T, RXYQ18-20T	240	210

Notes

- Detail A and detail B indicate the dimensions after fixing the attached piping.
- Items 4 - 10: Knockout hole.
- Gas pipe
  - REYQ14-20T:  $\varnothing$  25.4: brazing connection
  - RYYQ14-20T, RYMQ14-20T, RXYQ14-20T, RXYQ14-20BT:  $\varnothing$  28.6: brazing connection

Equalising pipe

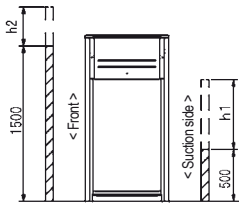
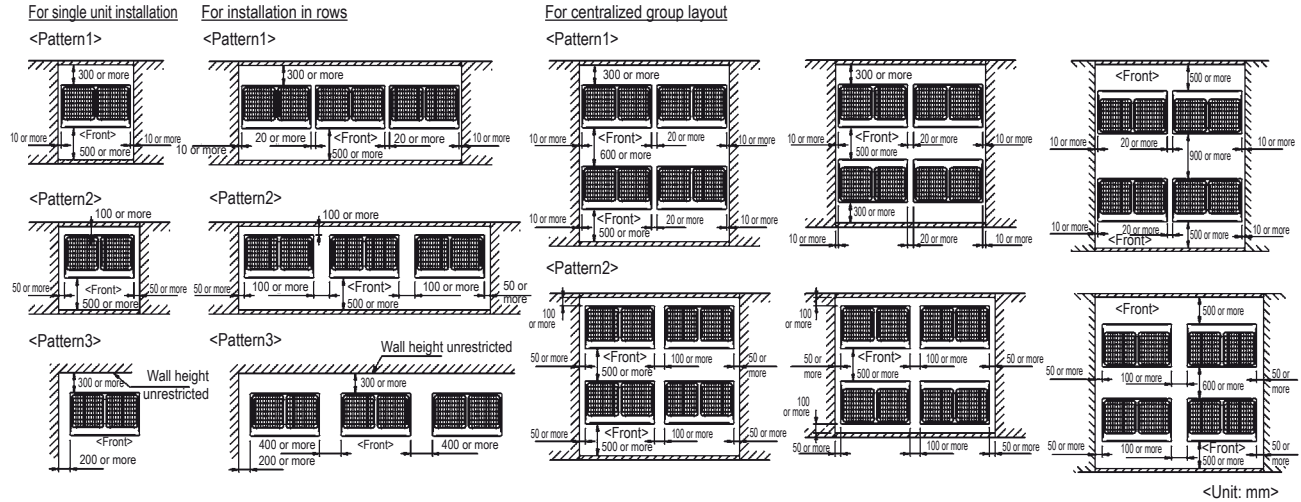
- RYMQ14-16T:  $\varnothing$  22.2: brazing connection
  - RYMQ18-20T:  $\varnothing$  28.6: brazing connection
- High pressure/low pressure gas pipe
- REYQ14-20T:  $\varnothing$  22.2: brazing connection

No.	Part name	Inside of the switch box (MB)
11	Grounding terminal	
10	Pipe routing hole (bottom)	
9	Pipe routing hole (front)	
8	Power cord routing hole (bottom)	$\varnothing$ 65
7	Power cord routing hole (front)	$\varnothing$ 27
6	Power cord routing hole (front)	$\varnothing$ 65
5	Power cord routing hole (front)	$\varnothing$ 80
4	Power cord routing hole (side)	$\varnothing$ 65
3	Equalising pipe connection port	See note -3-
	High pressure/low pressure gas pipe	See note -3-
2	Gas pipe connection port	See note -3-
1	Liquid pipe connection port	See note -3-
No.	Part name	Remark

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NOTES

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- Heights of walls in case of patterns 1 and 2:  
Front: 1500mm  
Suction side: 500mm  
Side: Height unrestricted  
Installation space as shown on this drawing is based on the cooling operation at 35 degrees outdoor air temperature.  
When the design outdoor air temperature exceeds 35 degrees or the load exceeds maximum ability of much generation load of heat in all outdoor unit, take the suction side space more broadly than the space as shown on this drawing.
- If the above wall heights are exceeded then  $h2/2$  and  $h1/2$  should be added to the front and suction side service spaces respectively as shown in the figure on the right.
- When installing the units most appropriate pattern should be selected from those shown above in order to obtain the best fit in the space available always bearing in mind the need to leave enough space for a person to pass between units and wall and for the air to circulate freely. (If more units are to be installed than are catered for in the above patterns your layout should take account of the possibility of short circuits.)
- The units should be installed to leave sufficient space at the front for the on site refrigerant piping work to be carried out comfortably.