

PROJECT VRF R410A FULL DC INVERTER

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XRV PLUS HEAT RECOVERY

Heat recovery - 3 pipes

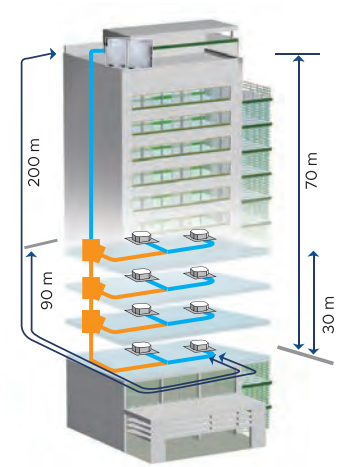


FULL DC INVERTER
 HCSRU 2526 XRV-R
 HCSRU 2806 XRV-R
 HCSRU 3356 XRV-R

FULL DC INVERTER
 HCSRU 4006 XRV-R
 HCSRU 4506 XRV-R
 HCSRU 5006 XRV-R

Splitting and height difference lengths

- Max distance between O.U. and the farthest I.U. = 200 m
- Max distance from the divider to the farthest I.U. = 40 m
- Max distance from the first branch pipe to the farthest I.U. = 90 m
- Max height difference between O.U. (up high) and I.U. = 70 m
- Max height difference between O.U. (down) and the I.U. = 110 m
- Max height difference between I.U. = 30 m
- Maximum length of the pipes = 1000 m



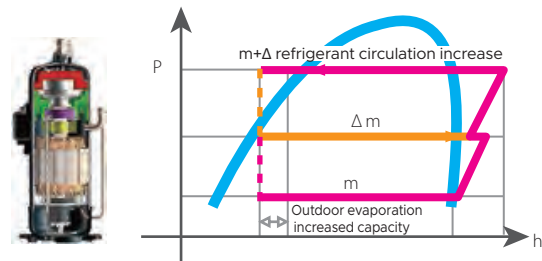
Heating during defrost

XRV Plus remarkably reduces defrost time thanks to the particular structure of the heat exchanger, therefore with non-stop operation.

High performance

Thanks to the steam-injected DC Inverter compressor, HOKKAIDO 3-pipe outdoor units are capable of operating down to -25°C , providing significantly higher heating capacities especially at colder outside temperatures.

The compressor is designed to modulate down to a minimum of 7%, greatly increasing the efficiency of the entire system at partial loads.



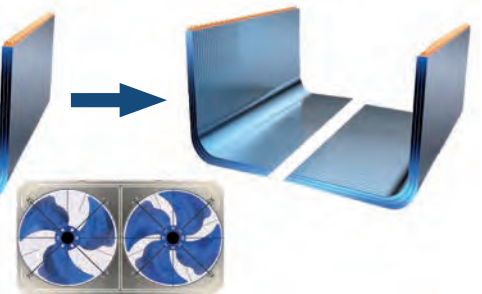
Fan and exchanger

Outdoor unit heat exchangers are divided in two parts: a left and right structure, so that there are two independent circuits in one outdoor unit. Each outdoor unit has two fans, which allow control each heat exchanger structure individually.

2-pipe system



3-pipe system



Branch pipe kit

Branch pipe downstream of the first indoor unit	
Code	A - Capacity of connectable indoor units (kW)
DIS-22-1RI/B	$A < 16.6$
DIS-180-1RI/B	$16.6 \leq A < 33.0$
DIS-371-1RI/B	$33.0 \leq A < 66.0$
DIS-540-1RH Plus	$66.0 \leq A < 92.0$
DIS-1344-1RH Plus	$92.0 \leq A < 135.0$

Branch pipe kit for outdoor unit connection	
Code	Outdoor Units
DOS 2-1RH Plus	2 Outdoor KITS
DOS 3-1RH Plus	3 Outdoor KITS
OH-BAL-KT*	T-shaped fitting for oil parallel pipe

* Included in the KIT DOS 3-1RH Plus.

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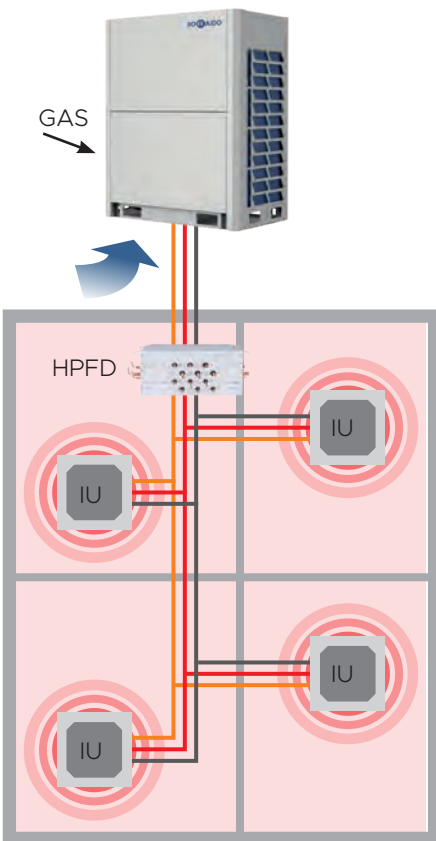
Heat recovery - 3 pipes



OPERATING MODE

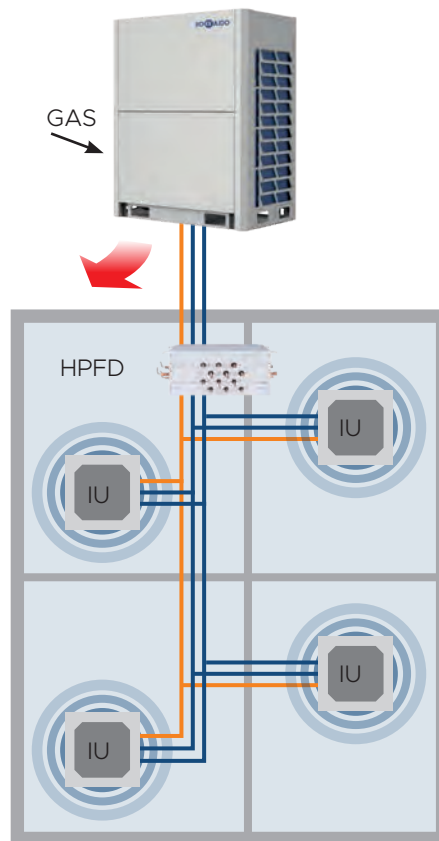
Heating function

The system heats rooms to the desired temperature during the winter.



Cooling function

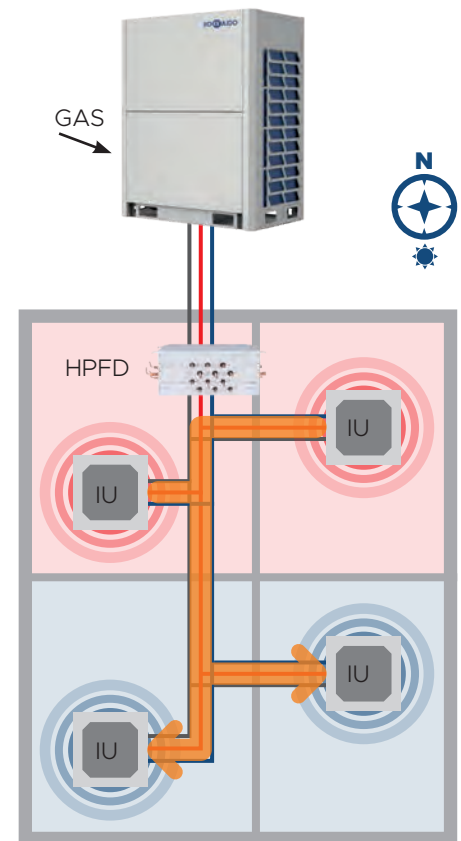
The system cools rooms to the desired temperature during the summer.



Energy recovery

A need to cool and heat simultaneously may arise during mid-seasons or when buildings have different sun exposure.

The XRV Plus Heat Recovery system uses its 3 pipes to recover part of the energy to meet these dual needs.



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Heat recovery - 3 pipes

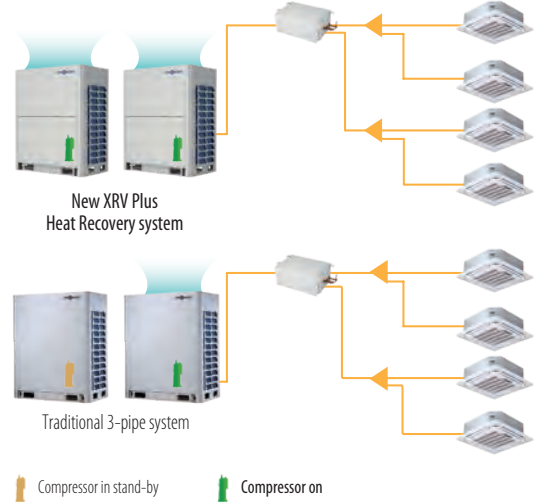


HIGH EFFICIENCY

Independent control of exchangers and compressors

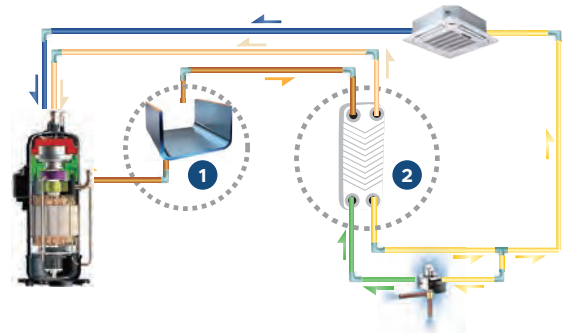
The control of the heat exchangers and compressors is independent, to provide maximum performance in both cooling and heating.

As a result, if the compressor of one unit in a system made up of several modules is not running due to a lower load demand, the respective heat exchanger stays active to maximise the exchange surface and therefore the efficiency of the system.



Additional exchanger for sub-cooling control

The addition of a plate heat exchanger as a secondary intercooler increases refrigerant sub-cooling and improves energy efficiency by 10%.



WIDE RANGE OF APPLICATION

Combinable system

The new HCSRU XRV-R series supplies up to 18HP of capacity in a single unit and up to a maximum of 54HP in a combination of 3 modules, covering all types of applications and building extensions.



8-10-12HP
(single fan)



14-16-18HP
(dual fan)



20-36HP

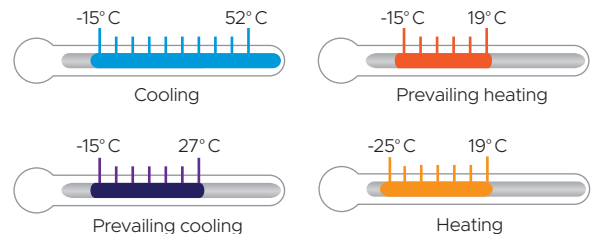


38-54HP

Broad operating range

HCSRU XRV-R offers a wide range of guaranteed operation. It can operate stably at outside temperatures from -15° C to 52° C in cooling mode and from -25° C to 19° C in heating mode.

Simultaneous cooling and heating is guaranteed from -15° C to 27° C in prevailing cooling mode and from -15° C to 19° C in prevailing heating mode.



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Heat recovery - 3 pipes



HIGHLY RELIABLE

Outdoor unit rotation cycle

In systems with several outdoor units, the operating logic of the compressors correctly rotates and distributes the operating hours, optimising the use of each component and extending the useful life of the entire system.



cycle 1



cycle 2



cycle 3

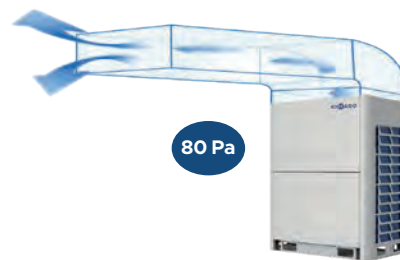
Compressor backup

In multi-module systems, if a single unit is in alarm conditions and fails, it is compensated for by the other units and allows continuity of service until the failed unit is repaired.



Fan static pressure

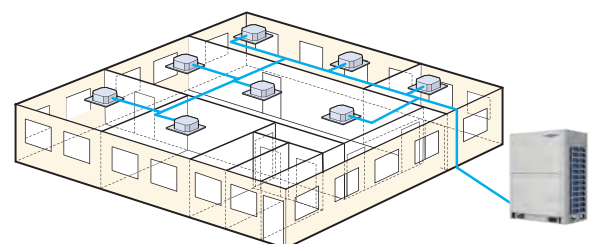
The fan can be set to provide up to 80 Pa of useful static pressure. In this way, the outdoor unit can be installed in technical rooms or in areas where the correct natural flow of air cannot be guaranteed, channelling the expulsion of air from the unit to the outside.



EASY INSTALLATION AND MAINTENANCE

Automatic addressing

The outdoor unit can assign the addresses of the indoor units automatically. The wireless and wired controls can check and change the address of each indoor unit.



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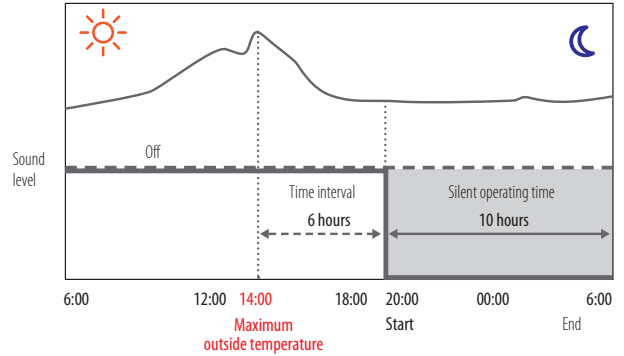
Heat recovery - 3 pipes



UNPARALLELED COMFORT

Silent mode

Multiple sound power attenuation modes are available depending on the specific needs, if discrete unit operation is required: night hours only or continuously, and with different degrees of attenuation, limiting only the maximum fan frequency or also the compressor frequency.



Continuous heating

As an alternative to the traditional reverse cycle defrosting technology, it is possible for systems consisting of several HCSRU XRV-R modules to keep the space heating active by defrosting the exchangers of the modules alternately and independently. In this way, heat can be supplied continuously without the system stopping during defrosting.



FLOW CONTROLLER

Single HPDF

- Extended cooling mode operation down to -15° C.
- Management of any third-party leak detectors and isolation of any leakage downstream of the MS box by means of a suitable shut-off valve.
- Possible management of up to 8 indoor units with a total capacity of up to 32 kW (operating in the same mode).
- Compact and lightweight for installation.
- No condensate drain required.
- Extremely precise control via 3200-step electronic valve.
- Silent operation.

Multiple HPDF

- Versions with 4, 6, 8, 10 and 12 connections available.
- Up to 5 indoor units can be connected for each connection (operating in the same mode), for a total of up to 47 indoor units per HPDF box in the 12 connections version.
- Up to 16 kW manageable per connection, or 28 kW by connecting 2 connections.



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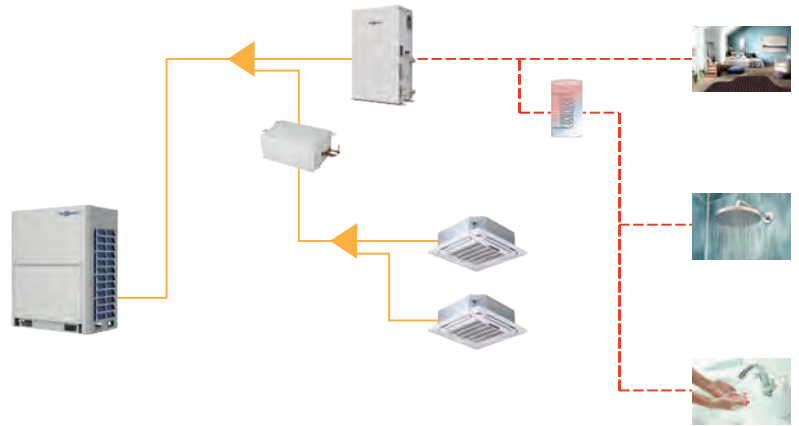
Heat recovery - 3 pipes



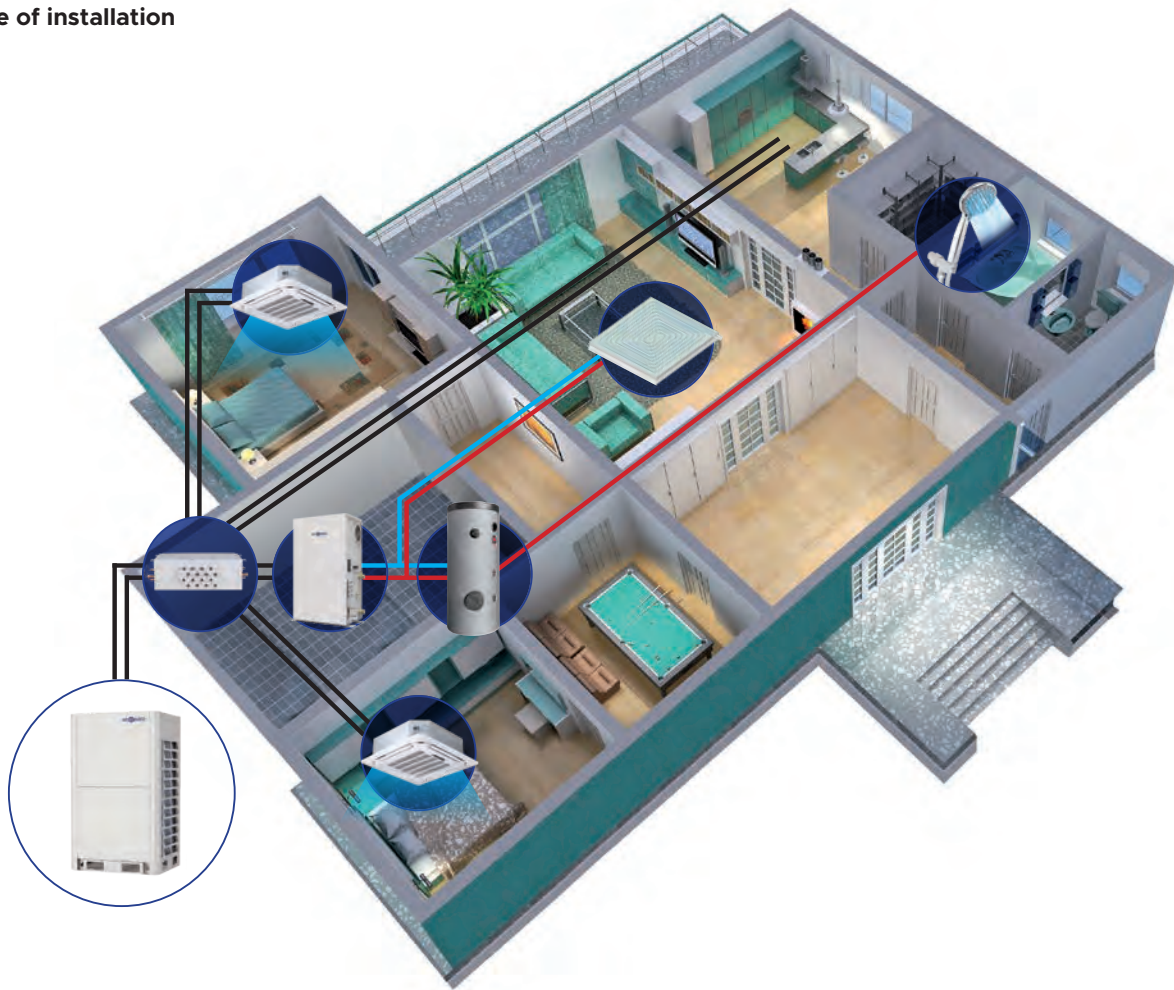
HOT WATER AND HEATING

Maximum flexibility of use

In addition to the simultaneous supply of cooling and heating through indoor units belonging to the same system, the HCSRU XRV-R series can manage high-temperature hydronic modules for hot water production up to 80°C and low-temperature heating (radiant floor or high-efficiency radiators).



Example of installation



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Model / Combination			HCSRU 2526 XRV-R	HCSRU 2806 XRV-R	HCSRU 3356 XRV-R	HCSRU 4006 XRV-R	HCSRU 4506 XRV-R	HCSRU 5006 XRV-R
Power	HP		8	10	12	14	16	18
Rated capacity ¹ Rated absorbed power Energy efficiency coefficient (rated) Seasonal energy efficiency (η _{s,c})	Cooling	kW	22.40	28.00	33.50	40.00	45.00	50.00
		kW	5.25	7.18	8.64	9.83	12.00	13.81
		EER	4.27	3.90	3.88	4.07	3.75	3.62
		%	306	299	289	265	264	272
Rated capacity ² Rated absorbed power Energy performance coefficient (rated) Seasonal energy efficiency (η _{s,c}) average	Heating	kW	22.40	28.00	33.50	40.00	45.00	50.00
		kW	3.96	5.46	6.57	8.26	9.78	11.90
		COP	5.66	5.13	5.10	4.84	4.60	4.20
		%	164	167	181	171	170	165
Electrical data								
Power supply	Ph-V-Hz		3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz
Maximum current	A		18.00	22.00	24.00	28.00	34.00	36.00
Refrigerant circuit								
Refrigerant (GWP)			R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)
Quantity refrigerant pre-load ³	Kg		8	8	8	10	10	10
Tons of CO ₂ equivalent	t		16.704	16.704	16.704	20.880	20.880	20.880
DC Inverter compressor	no. / type		1 / Scroll DC inverter	1 / Scroll DC inverter	1 / Scroll DC inverter	1 / Scroll DC inverter	1 / Scroll DC inverter	1 / Scroll DC inverter
Pipe diameter ⁴	Liquid	Ø mm (inch)	9.53 (3/8")	9.53 (3/8")	12.7 (1/2")	12.7 (1/2")	12.7 (1/2")	15.9 (5/8")
	High pressure gas		19.1 (3/4")	22.2 (7/8")	28.6 (9/8")	28.6 (9/8")	28.6 (9/8")	28.6 (9/8")
	Low pressure gas		15.9 (5/8")	19.1 (3/4")	19.1 (3/4")	22.2 (7/8")	22.2 (7/8")	22.2 (7/8")
Product Specifications								
Dimensions ⁵	LxHxD	mm	990x1635x790	990x1635x790	990x1635x790	1340x1635x825	1340x1635x825	1340x1635x825
Net weight	Kg		232	232	232	300	300	300
Sound pressure level at 1 m	dB(A)		58	58	60	61	64	65
Sound power level	dB(A)		78	78	81	81	88	88
Fan air flow	m ³ /h		9000	9500	10000	14000	14900	15800
Fan static pressure	Std/Max	Pa	0/80	0/80	0/80	0/80	0/80	0/80
Operating limits (outside temperature)	Cooling ⁶	°C (DB)	-15~-52	-15~-52	-15~-52	-15~-52	-15~-52	-15~-52
	Heating	°C (WB)	-25~-19	-25~-19	-25~-19	-25~-19	-25~-19	-25~-19
Max. connectable I.U.	no.		20	25	30	36	40	45
Capacity of connectable indoor units ⁷	%		50-200:	50-200:	50-200:	50-200:	50-200:	50-200:

Model / Combination			HCSRU 4506 XRV-R HCSRU 4506 XRV-R	HCSRU 4506 XRV-R HCSRU 5006 XRV-R	HCSRU 5006 XRV-R HCSRU 5006 XRV-R	HCSRU 3356 XRV-R HCSRU 3356 XRV-R HCSRU 4006 XRV-R	HCSRU 3356 XRV-R HCSRU 3356 XRV-R HCSRU 4506 XRV-R	HCSRU 3356 XRV-R HCSRU 4006 XRV-R HCSRU 4506 XRV-R
Power	HP		32 (16+16)	34 (16+18)	36 (18+18)	38 (12+12+14)	40 (12+12+16)	42 (12+14+16)
Rated capacity ¹ Rated absorbed power Energy efficiency coefficient (rated) Seasonal energy efficiency (η _{s,c})	Cooling	kW	90.00	95.00	100.00	107.00	112.00	118.50
		kW	24.00	25.81	28.72	27.10	29.27	30.46
		EER	3.75	3.68	3.48	3.95	3.83	3.89
		%	264	268	272	281	280.7	272.7
Rated capacity ² Rated absorbed power Energy performance coefficient (rated) Seasonal energy efficiency (η _{s,c}) average	Heating	kW	90.00	95.00	100.00	107.00	112.00	118.50
		kW	19.57	21.69	21.83	21.4	22.92	24.62
		COP	4.60	4.38	4.58	5.00	4.89	4.81
		%	170	167.5	165	177.7	177.3	174
Electrical data								
Power supply	Ph-V-Hz		3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz
Maximum current	A		68.00	70.00	72.00	76.00	82.00	86.00
Refrigerant circuit								
Refrigerant (GWP)			R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)
Quantity refrigerant pre-load ³	Kg		20	20	20	26	26	28
Tons of CO ₂ equivalent	t		41.760	41.760	41.760	54.288	54.288	58.464
DC Inverter compressor	no. / type		2 / Scroll DC inverter	2 / Scroll DC inverter	2 / Scroll DC inverter	3 / Scroll DC inverter	3 / Scroll DC inverter	3 / Scroll DC inverter
Pipe diameter ⁴	Liquid	Ø mm (inch)	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")
	High pressure gas		34.9 (1" 3/8")	34.9 (1" 3/8")	41.3 (1" 5/8")	41.3 (1" 5/8")	41.3 (1" 5/8")	41.3 (1" 5/8")
	Low pressure gas		28.6 (9/8")	28.6 (9/8")	28.6 (9/8")	34.9 (1" 3/8")	34.9 (1" 3/8")	34.9 (1" 3/8")
Product Specifications								
Dimensions ⁵	LxHxD	mm	2780x1635x825	2780x1635x825	2780x1635x825	3520x1635x825	3520x1635x825	3870x1635x825
Net weight	Kg		600	600	600	764	764	832
Sound pressure level at 1 m	dB(A)		67	68	68	65	67	67
Sound power level	dB(A)		91	91	91	86	89	89
Fan air flow	m ³ /h		29800	30700	31600	34000	34900	38900
Fan static pressure	Std/Max	Pa	0/80	0/80	0/80	0/80	0/80	0/80
Operating limits (outside temperature)	Cooling ⁶	°C (DB)	-15~-52	-15~-52	-15~-52	-15~-52	-15~-52	-15~-52
	Heating	°C (WB)	-25~-19	-25~-19	-25~-19	-25~-19	-25~-19	-25~-19
Max. connectable I.U.	no.		64	64	64	64	64	64
Capacity of connectable indoor units ⁷	%		50-200:	50-200:	50-200:	50-200:	50-200:	50-200:

- Cooling capacity tested in accordance with ISO 5151 Standards; outside temperature 35° C DB, 24° C WB and inside temperature 27° C DB, 19° WB.
- Heating capacity tested in accordance with ISO 5151 Standards; outside temperature 7° C DB, 6° C WB and inside temperature 20° C DB, 15° C WB.
- Refer to the label inside the unit to calculate the additional refrigerant charge.

- When several outdoor units are paired the diameters indicated refer to the section up to the first branch, with a length equivalent or less than 90m.
- Space between the paired units = 100 mm.
- Operation between -15° C and -5° C only possible in combination with single HPFD.
- The maximum percentage varies depending on the type of indoor units connected. Please refer to the technical manual for specific information.

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HCSRU 2806 XRV-R HCSRU 2806 XRV-R	HCSRU 2806 XRV-R HCSRU 3356 XRV-R	HCSRU 2806 XRV-R HCSRU 4006 XRV-R	HCSRU 3356 XRV-R HCSRU 4006 XRV-R	HCSRU 3356 XRV-R HCSRU 4506 XRV-R	HCSRU 3356 XRV-R HCSRU 5006 XRV-R
20 (10+10)	22 (10+12)	24 (10+14)	26 (12+14)	28 (12+16)	30 (12+18)
56.00	61.50	68.00	73.50	78.50	83.50
14.36	15/82	17.01	18.46	20.64	22.45
3.90	3.89	4.00	3.98	3.80	3.72
299	294	282	277	276.5	280.5
56.00	61.50	68.00	73.50	78.50	83.50
10.92	12.03	13.72	14.83	16.35	18.47
5.13	5.11	4.96	4.96	4.80	4.52
167	174	169	176	175.5	173
3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz
44.00	46.00	50.00	52.00	58.00	60.00
R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)
16	16	18	18	18	18
33.408	33.408	37.580	37.580	37.580	37.580
2 / Scroll DC inverter	2 / Scroll DC inverter	2 / Scroll DC inverter	2 / Scroll DC inverter	2 / Scroll DC inverter	2 / Scroll DC inverter
15.9 (5/8")	15.9 (5/8")	15.9 (5/8")	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")
28.6 (9/8")	28.6 (9/8")	34.9 (1" 3/8")	34.9 (1" 3/8")	34.9 (1" 3/8")	34.9 (1" 3/8")
28.6 (9/8")	28.6 (9/8")	28.6 (9/8")	28.6 (9/8")	28.6 (9/8")	28.6 (9/8")
2080x1635x790	2080x1635x790	2430x1635x825	2430x1635x825	2430x1635x825	2430x1635x825
464	464	532	532	532	532
61	62	63	64	65	66
81	83	83	84	89	89
19000	19500	23500	24000	24900	25800
0/80	0/80	0/80	0/80	0/80	0/80
-15~-52	-15~-52	-15~-52	-15~-52	-15~-52	-15~-52
-25~-19	-25~-19	-25~-19	-25~-19	-25~-19	-25~-19
50	55	61	64	64	64
50-200:	50-200:	50-200:	50-200:	50-200:	50-200:

HCSRU 3356 XRV-R HCSRU 4506 XRV-R HCSRU 4506 XRV-R	HCSRU 4006 XRV-R HCSRU 4506 XRV-R HCSRU 4506 XRV-R	HCSRU 4506 XRV-R HCSRU 4506 XRV-R HCSRU 4506 XRV-R	HCSRU 4506 XRV-R HCSRU 4506 XRV-R HCSRU 5006 XRV-R	HCSRU 4506 XRV-R HCSRU 5006 XRV-R HCSRU 5006 XRV-R	HCSRU 5006 XRV-R HCSRU 5006 XRV-R HCSRU 5006 XRV-R
44 (12+16+16)	46 (14+16+16)	48 (16+16+16)	50 (16+16+18)	52 (16+18+18)	54 (18+18+18)
123.50	130.00	135.00	140.00	145.00	150.00
32.64	33.83	36	37.81	39.62	41.44
3.78	3.84	3.75	3.70	3.66	3.62
272.3	264.3	264	266.7	269.3	272
123.50	130.00	135.00	140.00	145.00	150.00
26.13	27.83	29.35	31.47	33.59	35.71
4.73	4.67	4.60	4.45	4.32	4.20
173.7	170.3	170	168.3	166.7	165
3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz	3-380~415V-50Hz
92.00	96.00	102.00	104.00	106.00	108.00
R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)	R410A (2088)
28	30	30	30	30	30
58.464	62.640	62.640	62.640	62.640	62.640
3 / Scroll DC inverter	3 / Scroll DC inverter	3 / Scroll DC inverter	3 / Scroll DC inverter	3 / Scroll DC inverter	3 / Scroll DC inverter
19.1 (3/4")	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")	19.1 (3/4")
41.3 (1" 5/8")	41.3 (1" 5/8")	41.3 (1" 5/8")	41.3 (1" 5/8")	41.3 (1" 5/8")	41.3 (1" 5/8")
34.9 (1" 3/8")	34.9 (1" 3/8")	34.9 (1" 3/8")	34.9 (1" 3/8")	34.9 (1" 3/8")	34.9 (1" 3/8")
3870x1635x825	4220x1635x825	4220x1635x825	4220x1635x825	4220x1635x825	4220x1635x825
832	900	900	900	900	900
68	68	69	69	69	70
91	91	93	93	93	93
39800	43800	44700	45600	46500	47400
0/80	0/80	0/80	0/80	0/80	0/80
-15~-52	-15~-52	-15~-52	-15~-52	-15~-52	-15~-52
-25~-19	-25~-19	-25~-19	-25~-19	-25~-19	-25~-19
64	64	64	64	64	64
50-200:	50-200:	50-200:	50-200:	50-200:	50-200:

- Cooling capacity tested in accordance with ISO 5151 Standards; outside temperature 35°C DB, 24°C WB and inside temperature 27°C DB, 19° WB.
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XRV PLUS HEAT RECOVERY Flow dividers



Simultaneous cooling and heating within the same system is made possible by special flow dividers (HPFD) placed between the outdoor and indoor units which sort the refrigerant in liquid and gaseous phases between the rooms requiring cooling or heating.

Several versions are available, with single or multiple connections.



Model			HPFD 1-8 XRV-R	HPFD 4-20 XRV-R	HPFD 6-30 XRV-R	HPFD 8-40 XRV-R	HPFD 10-47 XRV-R	HPFD 12-47 XRV-R	
Number of connections			1	4	6	8	10	12	
Max. number of indoor units per each connection ¹			8	5	5	5	5	5	
Max. total number of indoor units per divider ¹			8	20	30	40	47	47	
Max. capacity for each connection ²		kW	32	16	16	16	16	16	
Max. total capacity of indoor units per divider		kW	32	49	63	85	85	85	
Pipe connections	Connection to outdoor unit	Liquid	Ø mm	9.53 / 12.7	9.53 / 12.7 / 15.9 / 19.1	9.53 / 12.7 / 15.9 / 19.1	12.7 / 15.9 / 19.1 / 22.2	12.7 / 15.9 / 19.1 / 22.2	12.7 / 15.9 / 19.1 / 22.2
		Gas-High pressure	Ø mm	15.9 / 19.1 / 22.2	19.1 / 22.2 / 28.6	19.1 / 22.2 / 28.6	22.2 / 28.6 / 34.9	22.2 / 28.6 / 34.9	22.2 / 28.6 / 34.9
		Gas-Low pressure	Ø mm	12.7 / 15.9 / 19.1	15.9 / 19.1 / 22.2 / 28.6	15.9 / 19.1 / 22.2 / 28.6	19.1 / 22.2 / 28.6	19.1 / 22.2 / 28.6	19.1 / 22.2 / 28.6
	Connection to indoor unit	Liquid	Ø mm	6.35 / 9.53	6.35 / 9.53	6.35 / 9.53	6.35 / 9.53	6.35 / 9.53	6.35 / 9.53
		Gas	Ø mm	12.7 / 15.9	12.7 / 15.9	12.7 / 15.9	12.7 / 15.9	12.7 / 15.9	12.7 / 15.9
		External dimensions	LxHxD	mm	440x195x296	668x250x574	668x250x574	974x250x574	974x250x574
Net weight		Kg	10.5	33	36	48	51	54	
Sound pressure level ³		dB(A)	40	44	45	47	47	47	
Sound power level ³		dB(A)	60	63	65	65	65	65	
Power supply		Ph-V-Hz	1-220~240V-50Hz						

- Any indoor units connected to the same connection as the MS box must run in the same mode.
- For MS boxes with 4 to 12 connections, indoor units with a capacity of 16 kW to 28 kW can be connected to 2 connections through connection kit FQZHN-09A.
- The sound levels are measured in a semi-anechoic chamber, 1 m below the MS BOX during the mode change. Avoid installing the MS BOXes in environments with low noise requirements.

Hydromodule



HHNMS 140 XRV-R

Model			HHNMS 140 XRV-R
Rated capacity ¹	Heating	kW	14
Operating limits (outside temperature)	Heating	°C	-20~30
	Domestic water	°C	-20~43
Delivery water temperature adjustment range		°C	25~80
Electrical data			
Power supply		Ph-V-Hz	1-220~240V-50Hz
Maximum current		A	16
Product specifications			
External dimensions	LxHxD	mm	450x795x300
Net weight		Kg	63
Sound pressure level		dB(A)	43
Sound power level		dB(A)	54
Water flow	Std (Min~Max)	m ³ /h	2.4 (1.2~2.9)
Water pressure	Min~Max	bar	1~3
Connections	Freon Liquid/Gas	Ø mm (inch)	9.52 (3/8") / 12.7 (1/2")
	Inlet/outlet water	Ø mm (inch)	25.4 (1")
Serial control		type	Wired remote control

1. Heating capacity tested in accordance with ISO 5151 Standards; outside temperature 7°C DB, 6°C WB and inlet/outlet water temperature 40°C DB, 45°C WB.