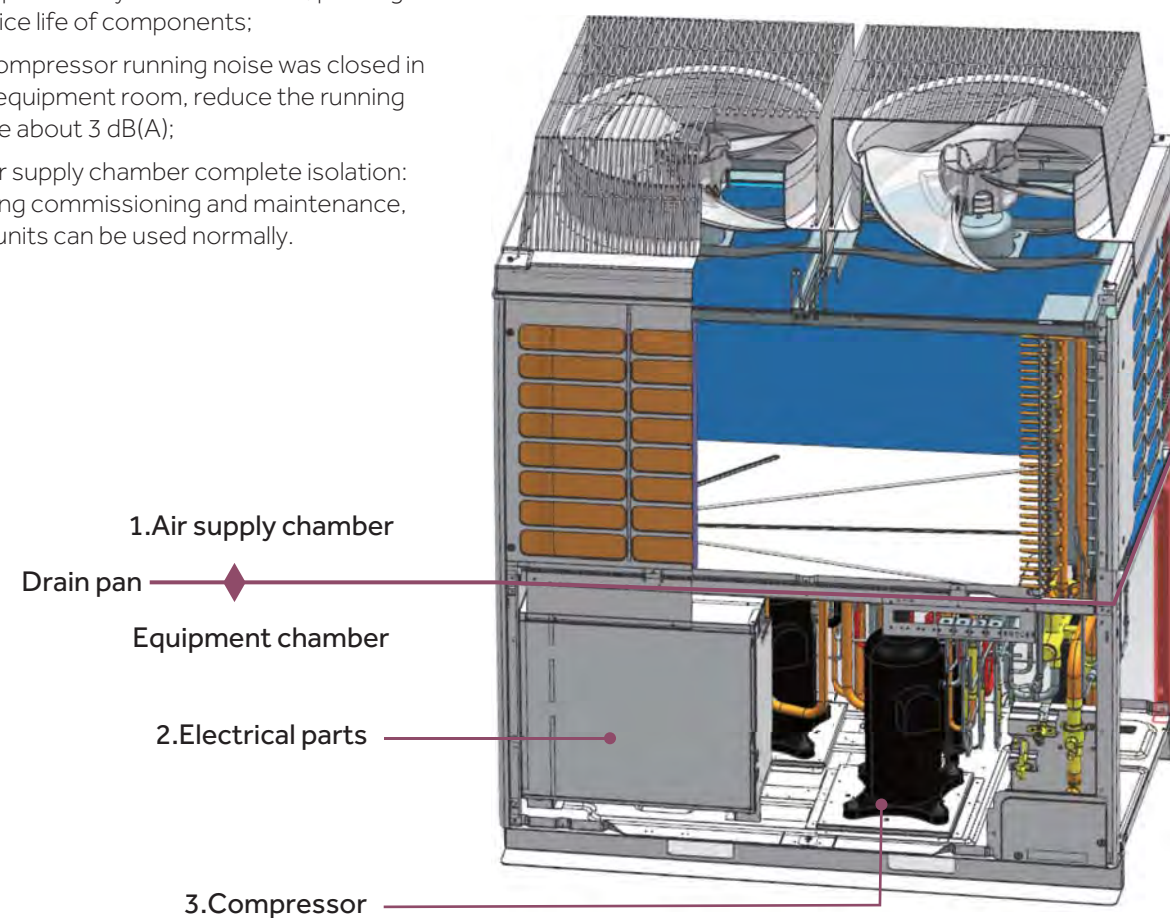


MRVIII-C

Air Supply Chamber and Equipment Chamber Separation Design

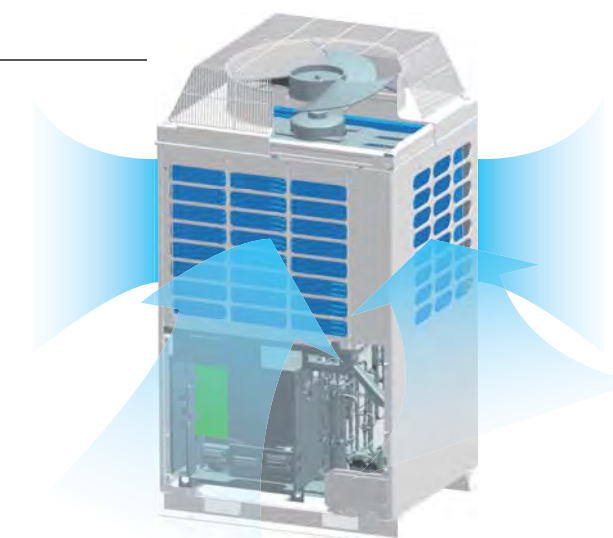
1. Prevent electrical parts and the main functional components by the rain Erosion, prolong the service life of components;
2. Compressor running noise was closed in the equipment room, reduce the running noise about 3 dB(A);
3. Air supply chamber complete isolation: During commissioning and maintenance, the units can be used normally.



Special Heat Exchanger Design

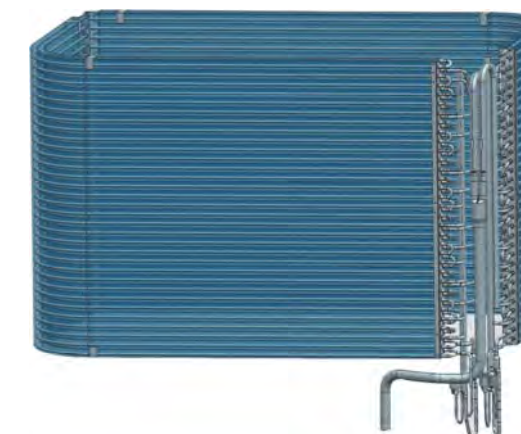
4 way air return heat exchanger design

Reduce the heat exchanger height (650mm), and the upper and lower wind speed uniform and high efficiency.



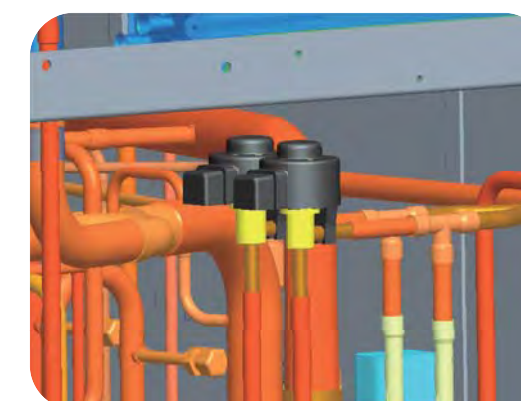
Two stages heat exchanger design

Two stages heat exchanger can separate control and adjust heat exchanger size, effectively cope with small load operation, to ensure the reliable operation range.



Double EEV design

The two stage heat exchanger are respectively controlled by a electronic expansion valve control, which can adjust the condenser volume.



PERFECT OUTDOOR STRUCTURE

Special Heat Exchanger Design

Aviation noise reduction patent fan design

Streamline vortex fan, sharp fan blade edge, and a certain degree of curvature, reduce the vibration, and pressure loss.

DC fan motor

DC inverter technology
High efficiency
Low noise



Electric Control Box Heat Dissipation Design

Streamline vortex fan forced heat dissipation fan inside the electric control box, to ensure the stable internal temperature and stable system operationn, sharp fan blade edge, and a certain degree of curvature, reduce the vibration, and pressure loss.



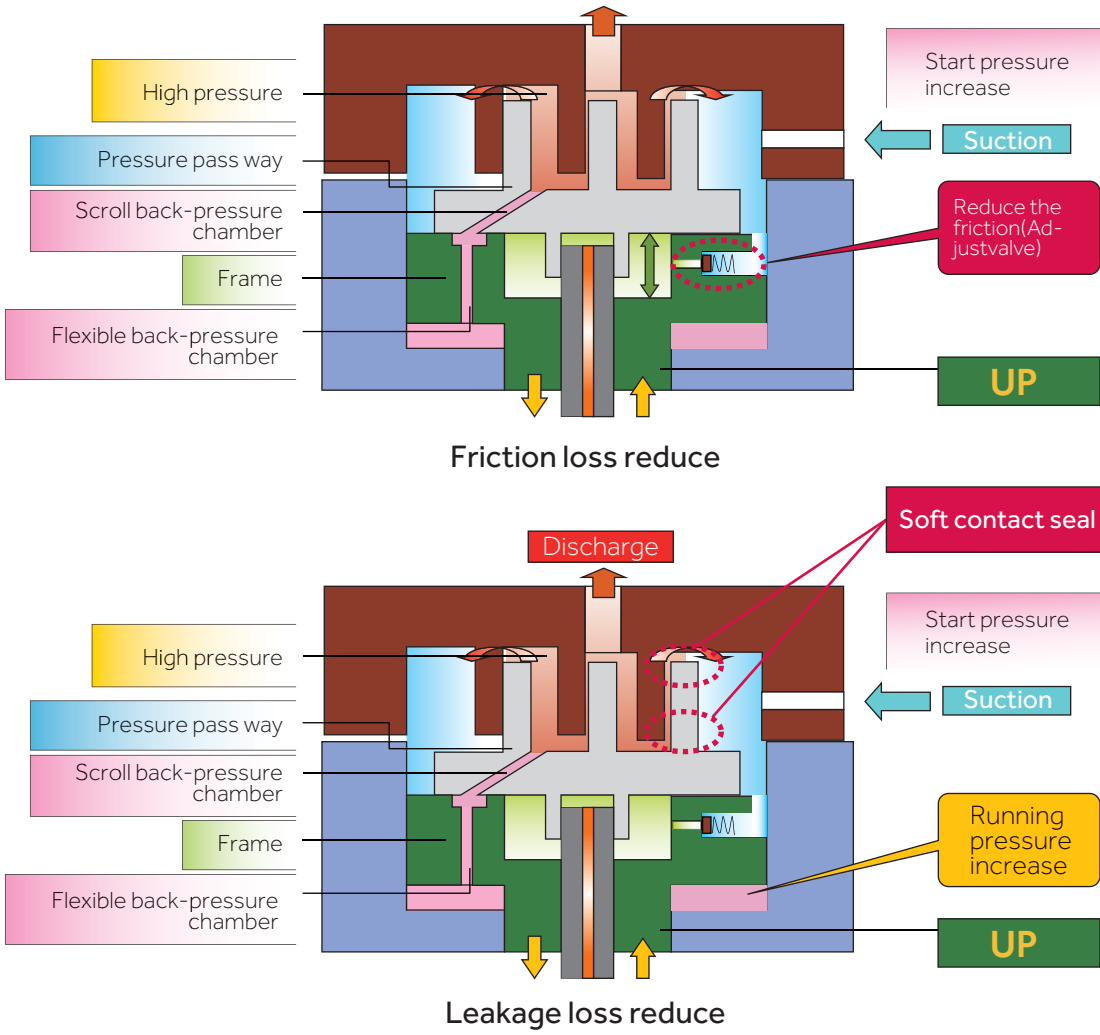
ENERGY EFFICIENT



High Efficiency DC Inverter Scroll Compressor

DC inverter scroll compressor imported from mitsubishi electric.

Equipped with a "Frame Compliance Mechanism" that allows movement in the axial direction of the frame supporting the cradle scroll. This greatly reduces both leakage and friction loss, ensuring very high efficiency throughout the whole speed range.

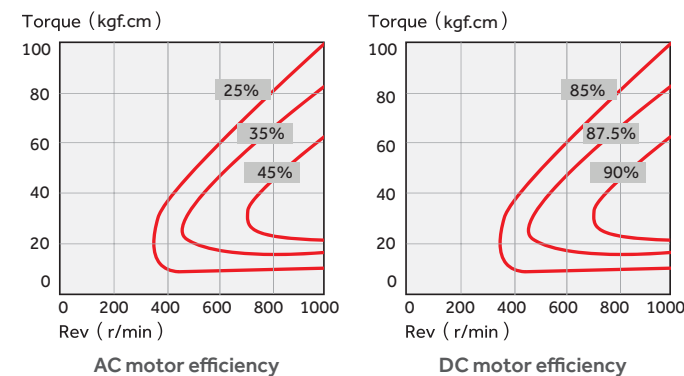




64 Stage Speed Adjustment DC Fan Motor

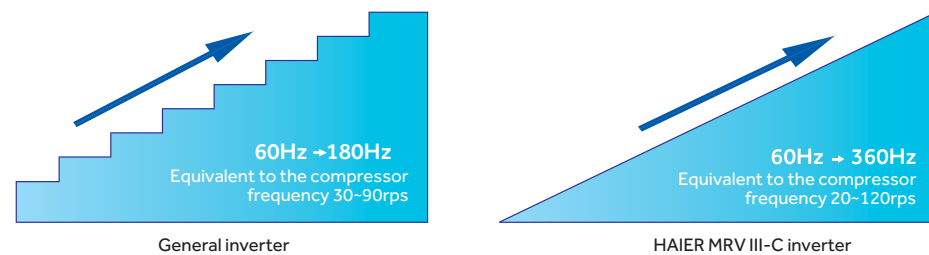
Efficiency increase 45% comparing with AC motor and power input largely decrease.

64 stage speed adjustment plus DC inverter drive, stabilizing compressor discharge pressure and suction pressure to ensure high system reliability.

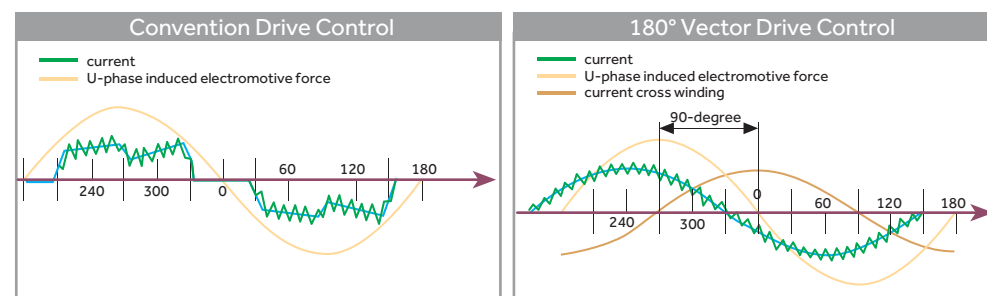


Stepless DC Inverter Control Technology

High precision control, variable frequency drive from 0 to 360Hz.



180° vector DC inverter drive technology: Sine wave current drive, efficiency improve 17% comparing to conventional rectangle wave.

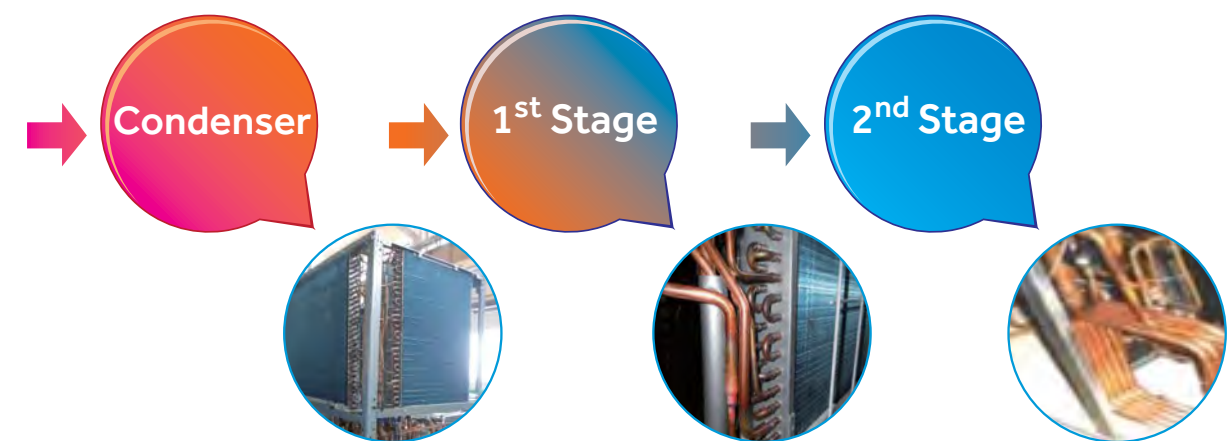


Two Stage Deep Sub Cooling Technology

1st stage sub cooling added a sub cooling coil to condenser.

2nd stage sub cooling added a stand alone sub cooler.

After further cooling, sub-cooling degree can be up to 30°C, with the heat exchanging capacity per unit mass of refrigerant improved by 46% and flow resistance reduced by 55%, and running efficiency improved by 9%.



Energy Management Technology

There is energy saving dip switch (SW8-3) in the indoor unit which can be lock the temperature at 26°C in summer and 20°C in winter, to avoid the energy waste and realize the centralized management.

The temperature lock function also can be realized through the new wired controller YR-E16.



ENERGY EFFICIENT

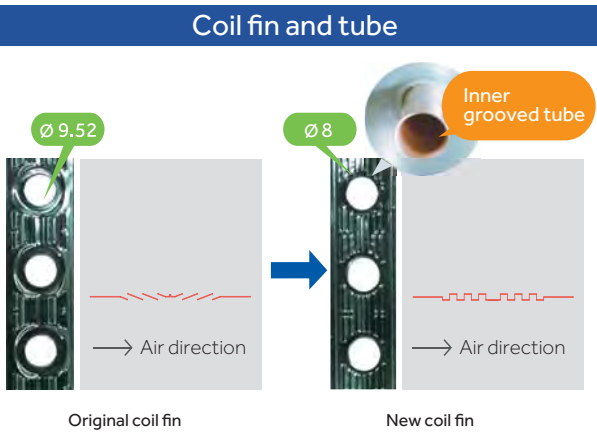
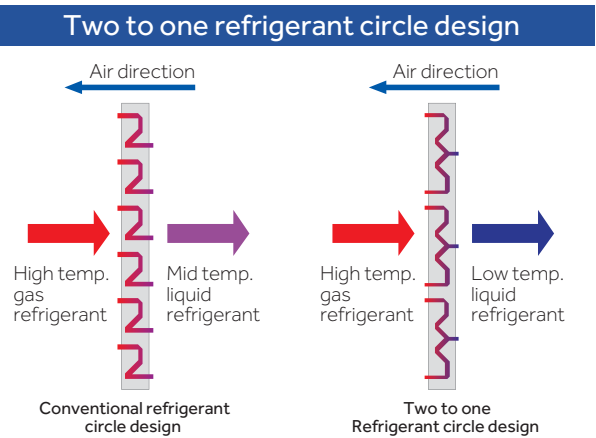
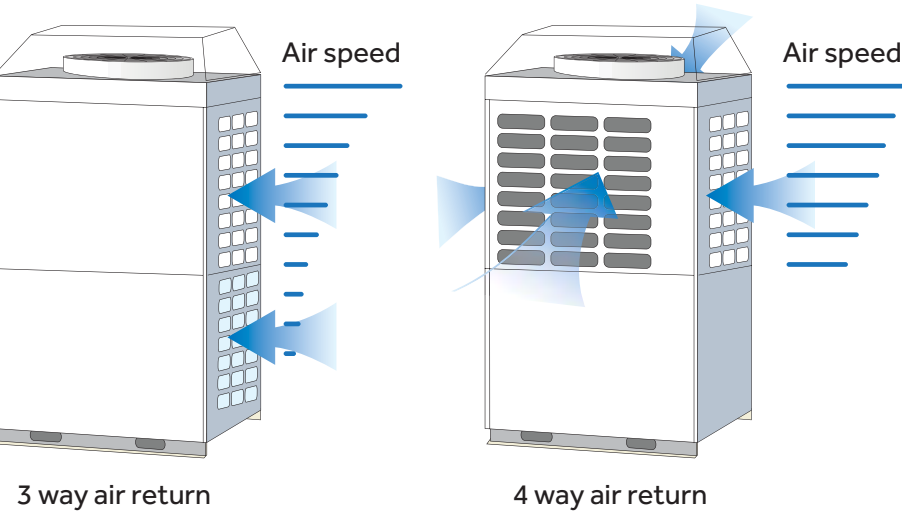
High Efficiency Heat Exchanging Technology

Outdoor high efficiency four way air return heat exchanger design.

The compressor and condenser are placed in separated chamber.

High efficiency heat exchanger design.

Efficient $\varnothing 8$ inner grooved tube and 0.11 hydrophilic aluminum coil fin, corrosion and oxidation resistance treatment.

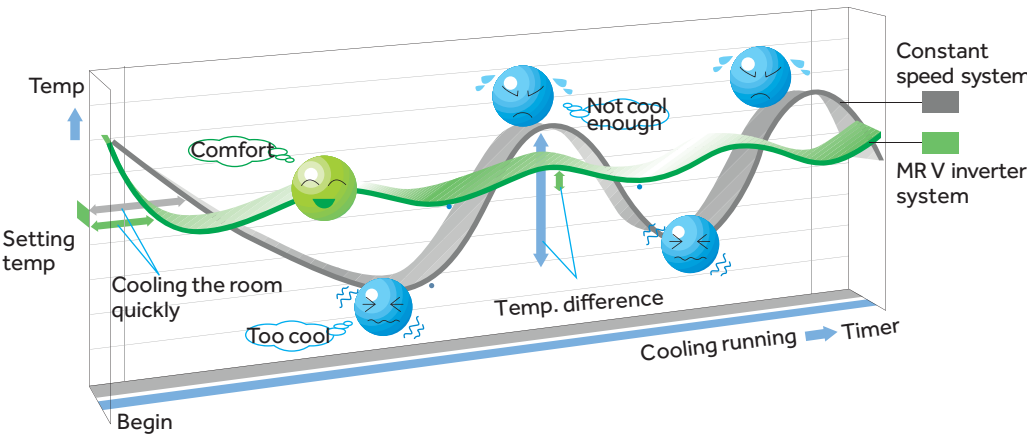


COMFORT

MRVIII-C

Precise Control

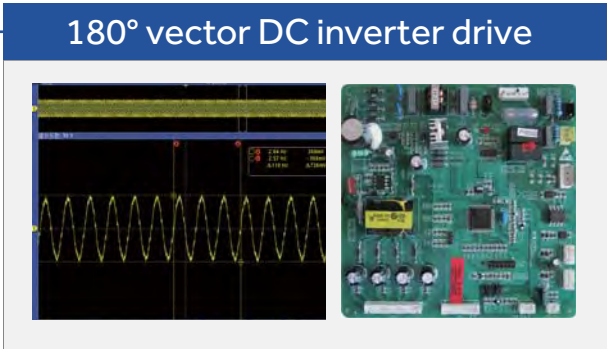
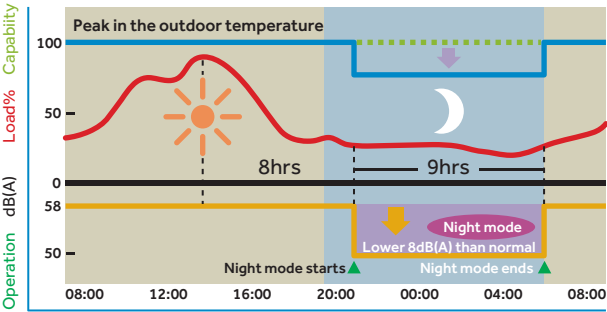
Adopt the inverter control, the temperature could be control precisely within the range of $\pm 0.5^{\circ}\text{C}$.



Low Noise and Night Silent Running

Machinery chamber is separated from air supply chamber; Built-in high efficient muffler in the machinery chamber greatly reduce the compressor noise.

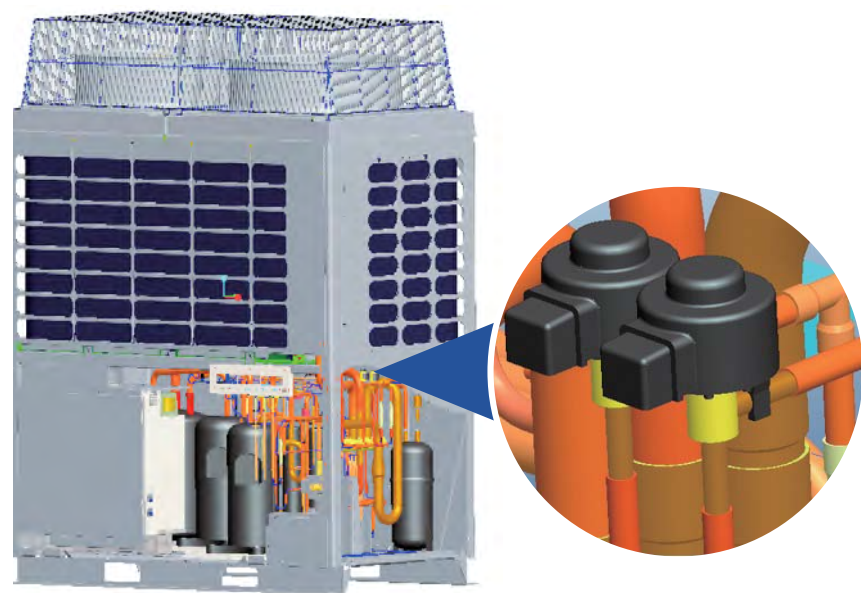
The night silent running function can be set on the outdoor PCB. The noise can be reduced by 8 dB(A) at most.



COMFORT

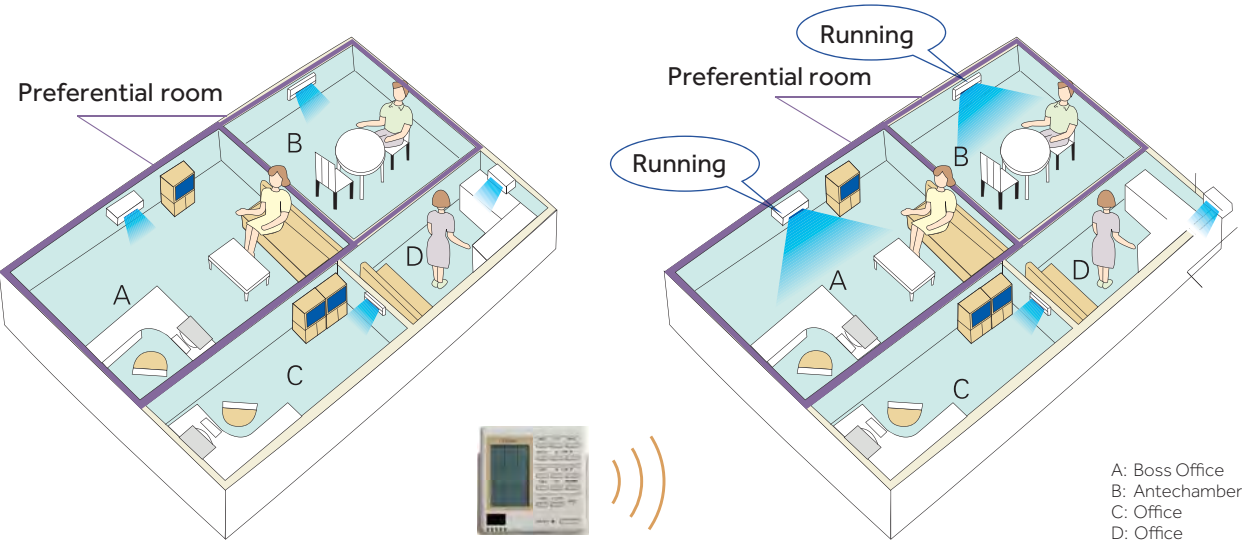
Double EEV Control

Make sure the refrigerant flow equally, to provide more comfort temperature.



Priority Setting

With the human design, you can set different preferential steps of some indoor units according to the room functions, so that it will ensure that the most important room gains high priority.

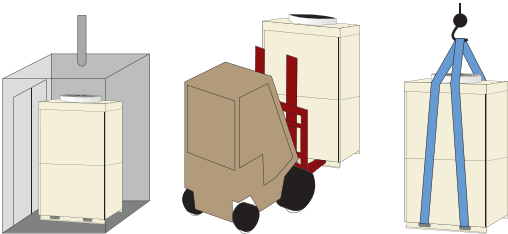


CONVENIENT INSTALLATION

Easy Transportation

Outdoor footprint only occupy 0.74m²(8/10HP) and 1.04m² (12/14/16HP) .

Can lift with elevators and save lots of transport cost and time.



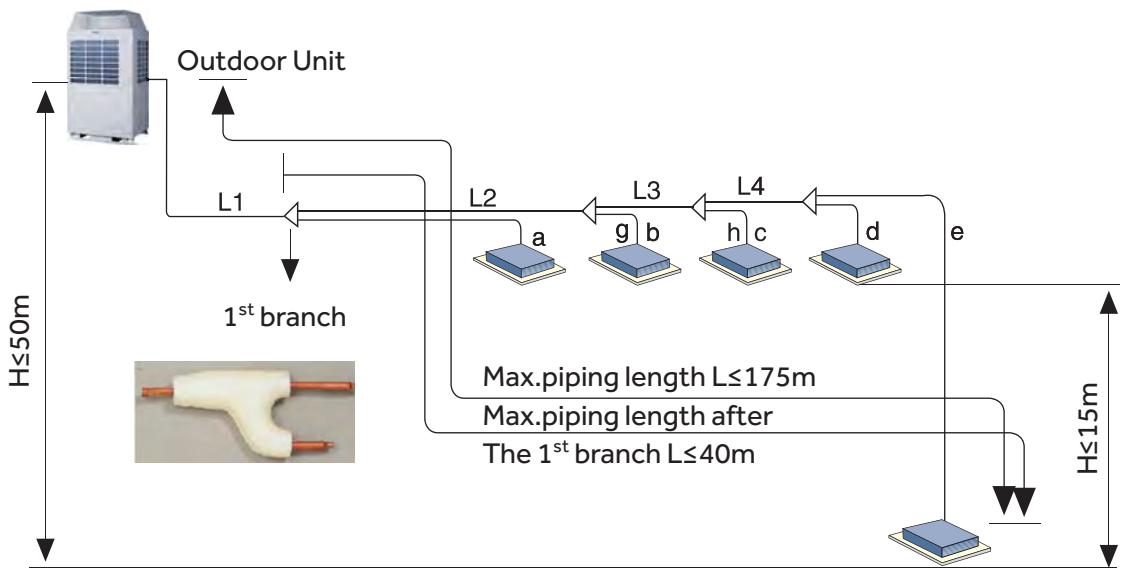
Long Pipe Length, High Height Drop

Total 300m refrigerant piping length.

Max.175m refrigerant piping length.

Max.50m height drop between indoor and outdoor units.

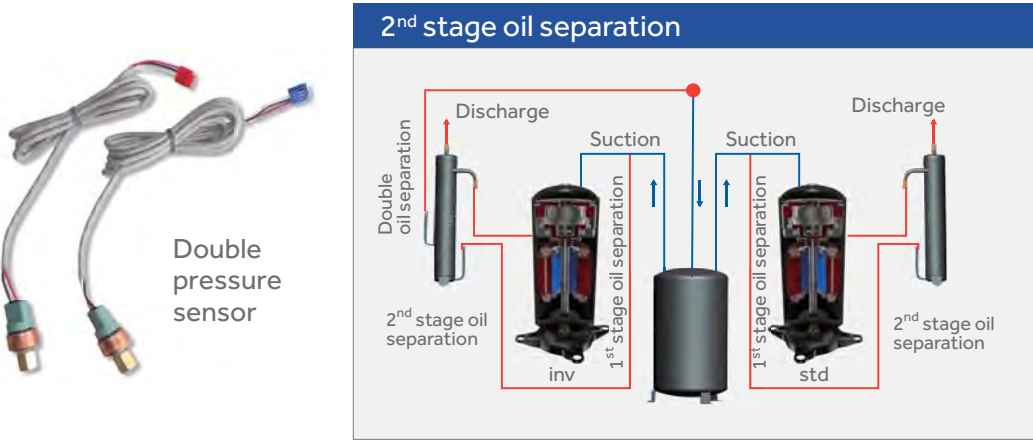
Max.15m height drop between indoor units.



The First 2-stages Oil Separation and Cross Oil Return Technology in The Industry

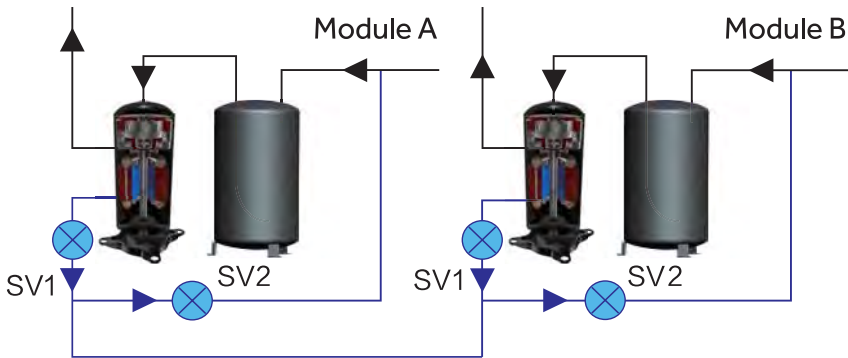
1st stage oil separation: built-in oil separating unit, greatly reduced the oil from the compressor discharge.

2nd stage oil separation: external oil separator to separate the small amount oil from discharge.



High Pressure Difference Oil Equalization

Using the pressure difference between suction and discharge, to realize fast oil balance between module.



Flow	a → b		b → a	
ON	SV1a	SV2b	SV1b	SV2a
OFF	SV1b	SV2a	SV1a	SV2b

Duty Cycle Operation to Extend the System Lifetime (Combination Model)

The outdoor units priority operating changes every 24 hours.

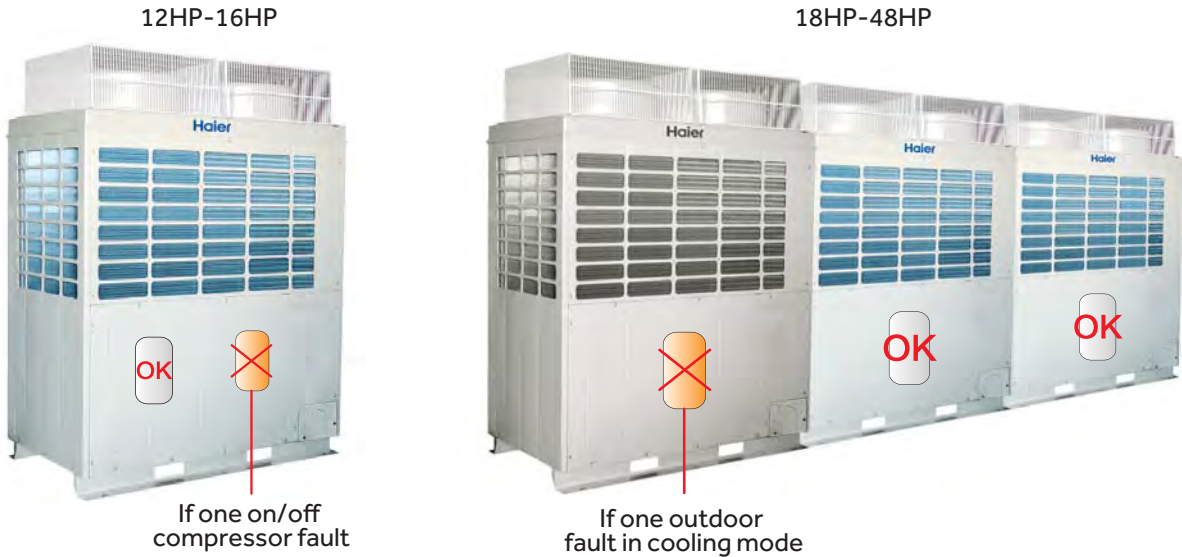
Outdoor units start in turn and operation time can be balanced.

Inverter compressor lifetime can be extend maximum 3 times.



Backup Operation

If one outdoor unit get into malfunction, the other units continue to operate without affecting the whole system.

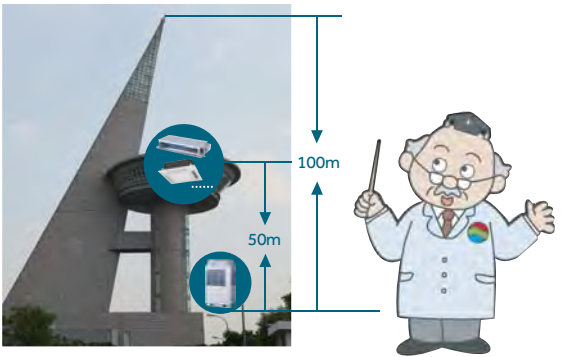


HIGH RELIABILITY



Field Test

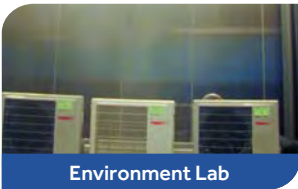
The system has been running for over 3 years at the jobsite where the vertical height approximately to 100m.



Test Lab.



Artificial Climate Lab



Environment Lab



Emc Lab



Enthalpy Difference Lab



Noise Lab



Central Control Room



High Height Drop Test Tower



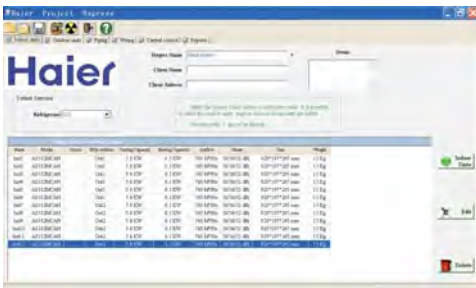
Supporting Tools

MRV design express

This software supply a solution of piping & wiring design, can help the designer select the right material lists, basic wiring diagram and control wiring diagram etc., most important thing is to save lots of time during design procedure.

On-site service software

Features:
Save the installation and maintenance people time.
More precise than normal checking method.

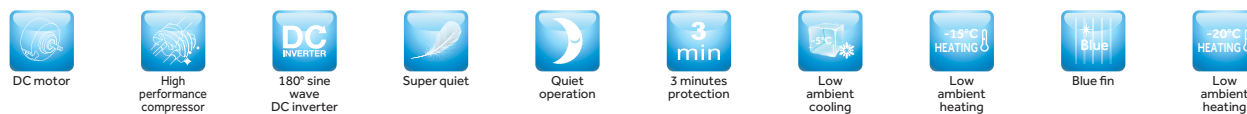


MRVIII-C(T1)

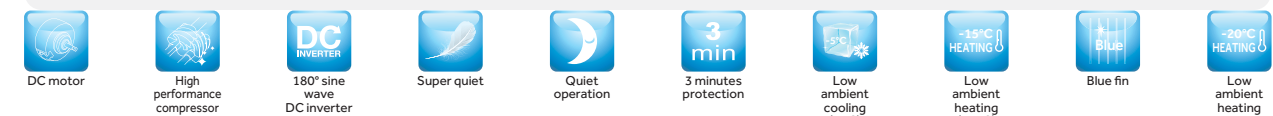


50/60Hz-380~400V-3Ph

Dual Frequency 50/60Hz-380~400V-3Ph
DC Inverter Scroll Compressor & BLDC Fan
New Basic Modular Units: 12HP, 14HP, 16HP
Free Combination up to 48HP with Incremental 2HP
Max. Indoor Units up to 64



Model		AV08NMVESA	AV10NMVESA	AV12IMVESA	AV14IMVESA	AV16IMVESA	AV18IMVESA	AV20IMVESA	AV22IMVESA	AV24IMVESA
Combination model		/	/	/	/	/	AV08NMVESA	AV10NMVESA	AV10NMVESA	AV10NMVESA
		/	/	/	/	/	AV10NMVESA	AV10NMVESA	AV12IMVESA	AV14IMVESA
		/	/	/	/	/	/	/	/	/
Capacity	Capacity range	HP	8	10	12	14	16	20	22	24
	Cooling	kW	22.6	28	33.5	40	45	50.6	56	61.5
	Heating	kW	25	31.5	37.5	45	50	56.5	63	69
Electrical parameters	Power supply	Ph/V/Hz	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60
	Cooling	Rated power input	kW	5.27	7.36	10	11.4	13.4	12.63	14.72
		Max power input	kW	12.37	14.7	17.54	18.55	20.48	27.07	29.91
		Rated current	A	8.7	11.1	14.2	19.05	20.3	22.2	25.3
	Heating	Max current	A	19.85	23.4	27.9	29.5	32.37	43.25	46.8
		Rated power input	kW	5.89	7.97	10	11.6	13.5	13.86	15.94
		Max power input	kW	9.77	11.9	14.6	16.6	17.8	21.67	23.8
		Rated current	A	9.7	12.5	15.1	17.96	19.3	22.2	25
		Max current	A	15.7	19	23.3	26.5	28.4	34.7	39
	EER		4.29	3.80	3.35	3.51	3.36	4.01	3.80	3.54
	COP		4.24	3.95	3.75	3.88	3.70	4.08	3.95	3.84
Performance	Air flow (H)	m³/h	11000	11000	14100	14100	14100	22200	22200	25200
	Sound pressure level (H)	dB(A)	57	57	60	60	60	60	61	61
	Sound power level (H)	dB(A)	73	73	76	76	76	77	77	78
Installation	External dimensions (W/D/H)	mm	990/750/1808	990/750/1808	1390/750/1808	1390/750/1808	1390/750/1808	990/750/1808+	990/750/1808+	990/750/1808+
	Shipping dimensions (W/D/H)	mm	1090/860/1990	1090/860/1990	1490/860/1990	1490/860/1990	1490/860/1990	1090/860/1990+	1090/860/1990+	1090/860/1990+
	Net/Shipping weight	kg	240/255	240/255	360/378	360/378	368/386	480/510	480/510	600/633
	Compressor type		DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL
	Compressor brand		MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC
	Compressor quantity		1 INV	1 INV	1 INV+1 FIX	1 INV+1 FIX	1 INV+1 INV	1 INV+1 INV	(1 INV)+1 INV+1 FIX	(1 INV)+1 INV+1 FIX
	Refrigerant type		R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
	Refrigerant charge	kg	10	10	10	10	10	20	20	20
	Refrigerant liquid pipe	mm	9.52	9.52	12.7	12.7	12.7	15.88	15.88	15.88
	Refrigerant gas pipe	mm	19.05	22.22	25.4	25.4	28.58	28.58	28.58	28.58
	Oil equalization pipe	mm	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52
	Total pipe length	m	300	300	300	300	300	300	300	300
	Max pipe length (Equivalent/Actual)	m	175/135	175/135	175/135	175/135	175/135	175/135	175/135	175/135
	Max drop between I.U. & O.U.	m	50/40	50/40	50/40	50/40	50/40	50/40	50/40	50/40
	External static pressure	Pa	50	50	50	50	50	50	50	50
Connection ratio	Connectable indoor unit ratio	%	50-130	50-130	50-130	50-130	50-130	50-130	50-130	50-130
Working temp.	Maximum number of indoor units		13	16	19	23	26	29	33	39
	Cooling	°C	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43
Working temp.	Heating	°C	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21



AV26IMVESA	AV28IMVESA	AV30IMVESA	AV32IMVESA	AV34IMVESA	AV36IMVESA	AV38IMVESA	AV40IMVESA	AV42IMVESA	AV44IMVESA	AV46IMVESA	AV48IMVESA
AV10NMVESA	AV14IMVESA	AV14IMVESA	AV16IMVESA	AV16IMVESA	AV10NMVESA	AV10NMVESA	AV10NMVESA	AV10NMVESA	AV10NMVESA	AV12IMVESA	AV14IMVESA
AV16IMVESA	AV14IMVESA	AV16IMVESA	AV16IMVESA	AV10NMVESA	AV10NMVESA	AV14IMVESA	AV16IMVESA	AV16IMVESA	AV16IMVESA	AV16IMVESA	AV16IMVESA
/	/	/	/	AV14IMVESA	AV16IMVESA	AV14IMVESA	AV16IMVESA	AV16IMVESA	AV16IMVESA	AV16IMVESA	AV16IMVESA
26	28	30	32	34	36	38	40	42	44	46	48
73	80	85	90	96	101	108	113	118	123.5	130	135
81.5	90	95	100	108	113	121.5	126.5	131.5	137.5	145	150
3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60
20.76	22.8	24.8	26.8	26.12	28.12	30.16	32.16	34.16	36.8	38.2	40.2
35.18	37.1	39.03	40.96	47.95	49.88	51.8	53.73	55.66	58.5	59.51	61.44
31.4	38.1	39.35	40.6	41.25	42.5	49.2	50.45	51.7	54.8	59.65	60.9
55.77	59	61.87	64.74	76.3	79.17	82.4	85.27	88.14	92.64	94.24	97.11
21.47	23.2	25.1	27	27.54	29.4	31.17	33.07	34.97	37	38.6	40.5
29.7	33.2	34.4	35.6	40.4	41.6	45.1	46.3	47.5	50.2	52.2	53.4
31.8	35.92	37.26	38.6	42.96	44.3	48.42	49.76	51.1	53.7	56.56	57.9
47.4	53	54.9	56.8	64.5	66.4	72	73.9	75.8	80.1	83.3	85.2
3.52	3.51	3.43	3.36	3.68	3.59	3.58	3.51	3.45	3.36	3.40	3.36
3.80	3.88	3.78	3.70	3.92	3.84	3.90	3.83	3.76	3.72	3.76	3.70
25200	28200	28200	28200	36300	36300	39300	39300	39300	42300	42300	42300
61	62	62	62	63	63	63	63	63	64	64	64
78	79	79	79	81	81	81	81	81	82	82	82
990/750/1808+	1390/750/1808+	1390/750/1808+	1390/750/1808+	990/750/1808+	990/750/1808+	990/750/1808+	990/750/1808+	990/750/1808+	1390/750/1808+	1390/750/1808+	1390/750/1808+
1390/750/1808	1390/750/1808	1390/750/1808	1390/750/1808	990/750/1808+	990/750/1808+	1390/750/1808	1390/750/1808	1390/750/1808	1390/750/1808	1390/750/1808	1390/750/1808
1090/860/1990+	1490/860/1990+	1490/860/1990+	1490/860/1990+	1090/860/1990+	1090/860/1990+	1090/860/1990+	1090/860/1990+	1090/860/1990+	1490/860/1990+	1490/860/1990+	1490/860/1990+
1490/860/1990	1490/860/1990	1490/860/1990	1490/860/1990	1090/860/1990	1090/860/1990	1490/860/1990	1490/860/1990	1490/860/1990	1490/860/1990	1490/860/1990	1490/860/1990
608/641	720/756	728/764	736/772	840/888	848/896	960/1011	968/1019	976/1027	1096/1150	1096/1150	1104/1158
DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL	DC INV SCROLL
MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC
(1 INV)	(1 INV+1 FIX)	(1 INV+1 FIX)	(1 INV+1 FIX)	(1 INV+1 INV)	(1 INV+1 INV)	1 INV	1 INV	1 INV	(1 INV+1 FIX)	(1 INV+1 FIX)	(1 INV+1 FIX)
+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX	+1 INV+1 FIX
R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
20	20	20	20	30	30	30	30	30	30	30	30
19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05
31.8	31.8	31.8	31.8	31.8	38.1	38.1	38.1	38.1	38.1	38.1	38.1
9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52
300	300	300	300	300	300	300	300	300	300	300	300
175/135	175/135	175/135	175/135	175/135	175/135	175/135	175/135	175/135	175/135	175/135	175/135
50/40	50/40	50/40	50/40	50/40	50/40	50/40	50/40	50/40	50/40	50/40	50/40
50	50	50	50	50	50	50	50	50	50	50	50
50-130	50-130	50-130	50-130	50-130	50-130	50-130	50-130	50-130	50-130	50-130	50-130
43	46	50	53	56	59	63	64	64	64	64	64
-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43	-5~43
-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21	-15~21

* 1 outdoor above 50m outdoor below 40m.
* All the specifications are tested under normal condition (cooling, indoor temp is 27°C DB/19°C WB; Outdoor temp 35°C DB/24°C WB; In heating, indoor temp is 20°C DB, Outdoor temp is 7°C DB/6°C WB).