



Aqua Tempo Super II Series

Aqua Tempo Super II Series adopt R410A and R32 refrigerant, all of which can operate in cooling mode with ambient temperatures of up to 43° C and with outlet water temperature as low as 5° C. Modular design concept makes the application from single unit to multiple units. Maximum combination air-cooled scroll system's cooling capacity ups to 1440kW. The water flow switch and wired controller are both built-in, making installation more convenient. A hydraulic module with water pump can be added as a customization option to meet special installation situation requirements.

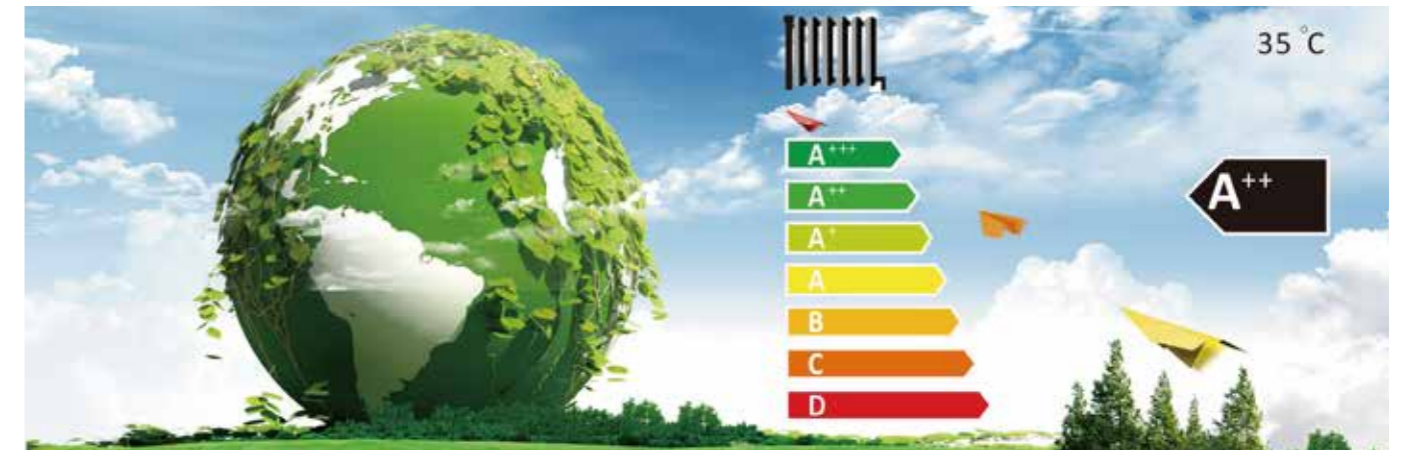
- High Efficiency
- Wide Application Range
- Advanced Technology
- Enhanced Comfort
- Easy Control
- High Reliability
- Easy Installation



High Efficiency

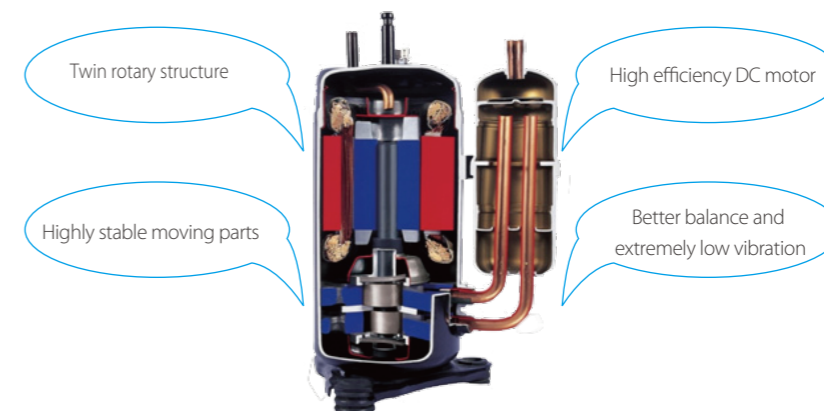
A++ rated energy efficiency

The Aqua Tempo Super II Series DC inverter air-cooled chillers are compliant with the EU's Energy-Related Products Directive (2009/125/EC) and all have A++ or A+ seasonal space heating energy efficiency ratings.

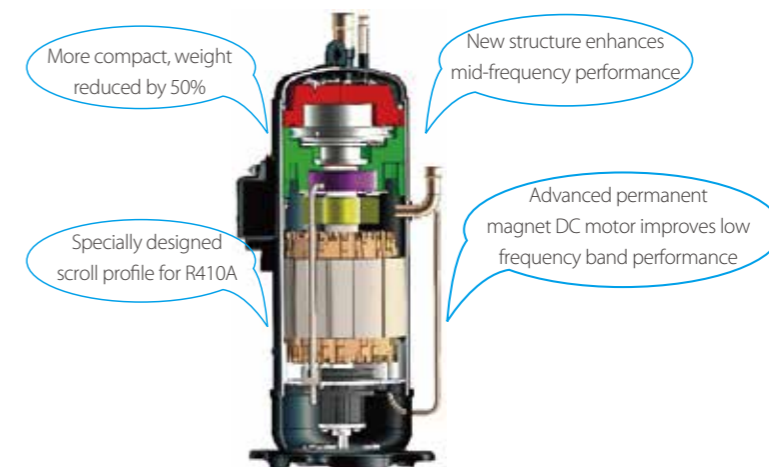


Compressor

At the heart of the chiller lies a world-leading DC inverter compressor. The compressor's innovative design and numerous high performance features reduce power consumption by 25%.

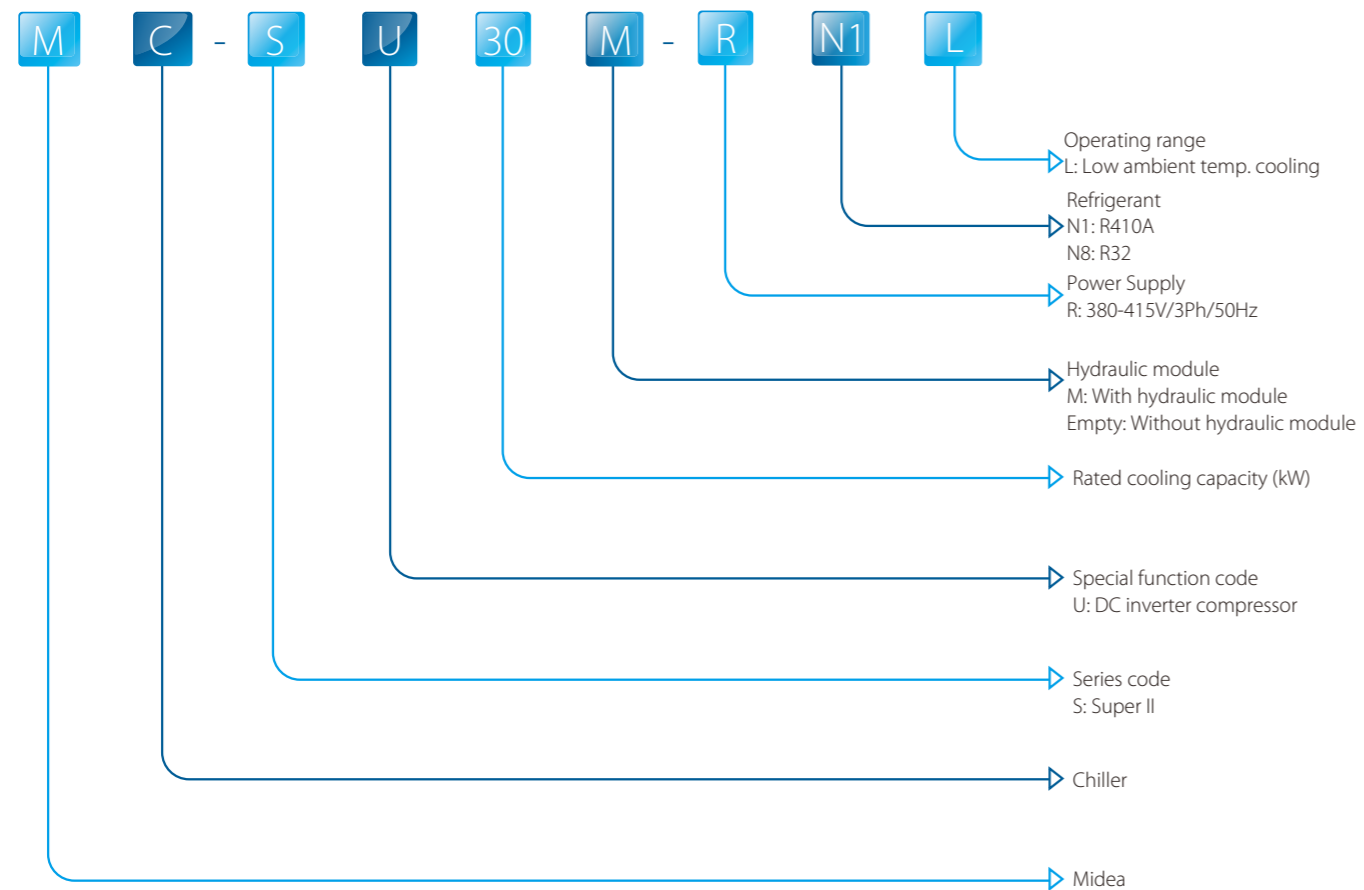


Compressor for MC-SU30(M)-RN1L, MC-SU60(M)-RN1L, MC-SU30(M)-RN8L and MC-SU60(M)-RN8L



Compressor for MC-SU90(M)-RN1L

Nomenclature



Product lineup

Capacity(kW)	30	60	90
Appearance			
380-415V/3Ph/50Hz	● ●	● ●	●

● R410A (With/Without hydraulic module)
● R32 (With/Without hydraulic module)

High efficiency plate heat exchanger

Plate heat exchanger uses metal plates to transfer heat between refrigerant and water. The fluids are exposed to a much larger surface area because the fluids spread out over the plates, so both heat transfer efficiency and heat exchanger speed are greatly improved. Multi protections including voltage protection, current protection, anti-freezing protection and water flow protection ensure system safety running.

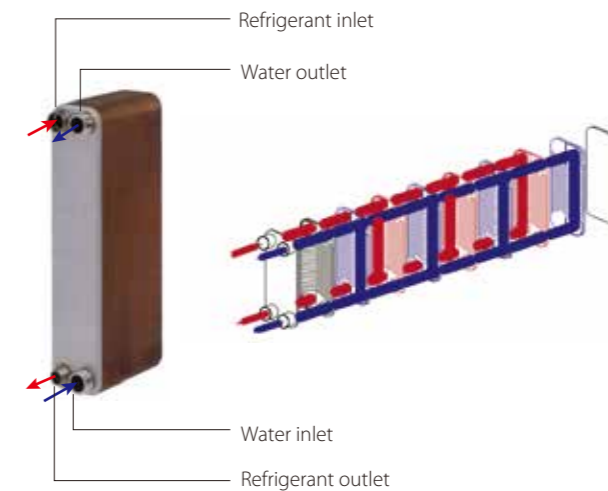
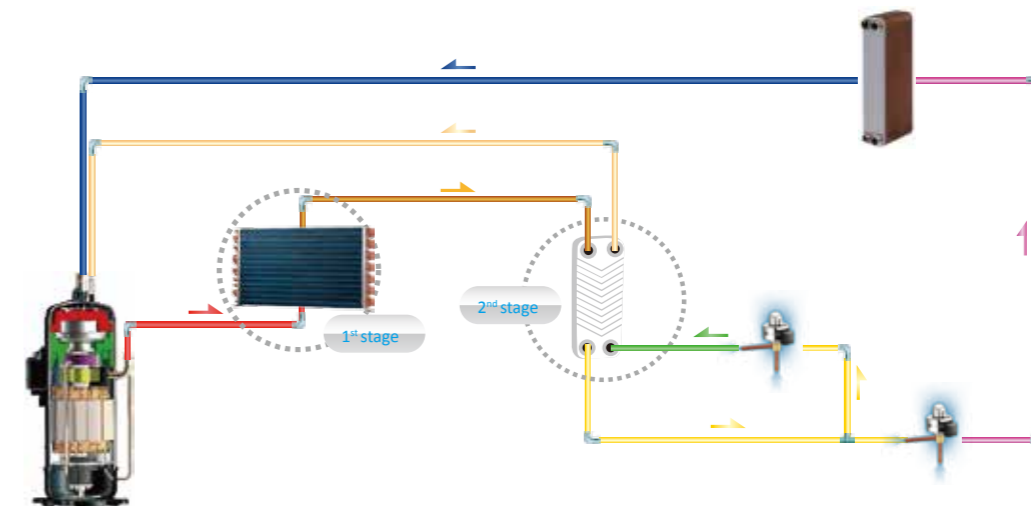


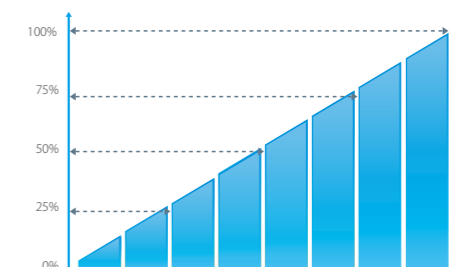
Plate Heat Exchanger Subcooling

For MC-SU90(M)-RN1L, Plate Heat Exchanger as a secondary intercooler boosts up refrigerant subcooling and improves 10% energy efficiency.



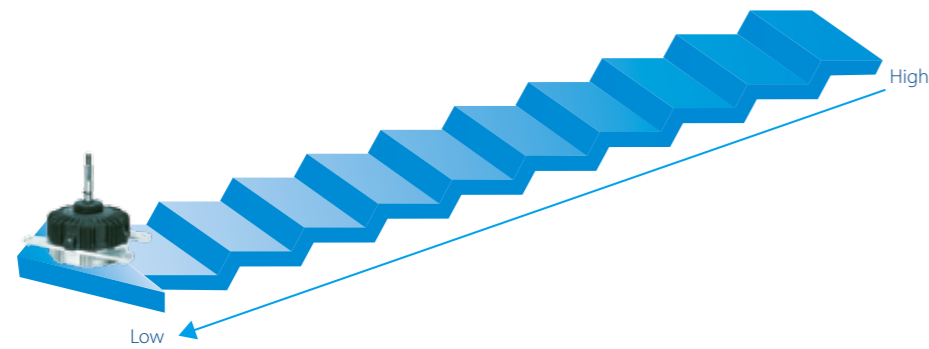
Precisely flow control

Patented liquid distribution components maximize performance and minimize impact of defrosting operation. 500-step EXV with capillary tube allows stable and accurate gas flow control. Fast response results in higher efficiency and improved reliability.

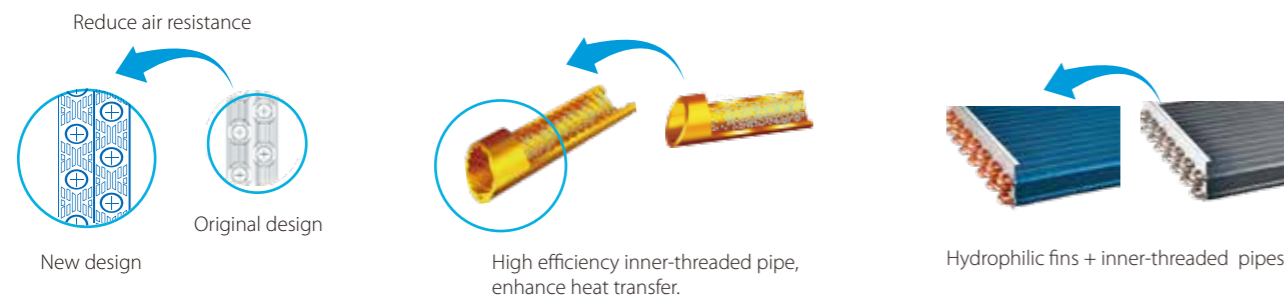


DC fan motors

Fan speed is controlled according to the system pressure and system load, reducing power consumption by 30%. There are 32-step vector control for Super II models.



High performance heat exchanger



Chillers use new structure design "I shape" condenser. The manufacturing process of I shape heat exchanger is simple, which increases production efficiency and product reliability. The new designed window fins enlarge the heat-exchanging area, decrease the air resistance, save more power and enhance heat exchange performance. Hydrophilic film fins and inner-threaded copper pipes optimize heat exchange efficiency. The specially coated blue fins enhance durability and protect against corrosion from air, water and other corrosive agents, assures a longer coil service life.

High performance heat exchanger design

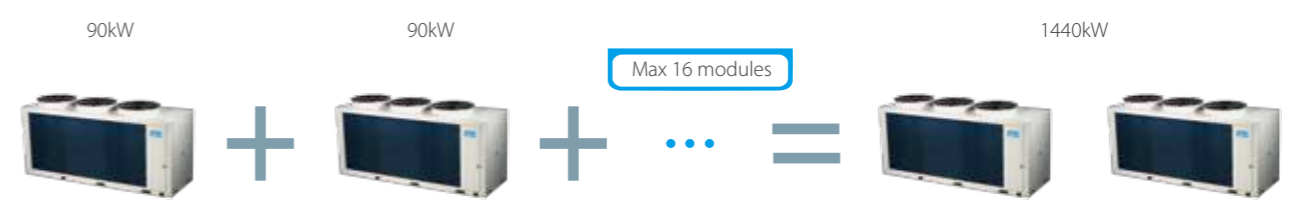


Efficient fan motor, well-designed air duct and uniform wind field make heat exchange of the whole system more thorough.

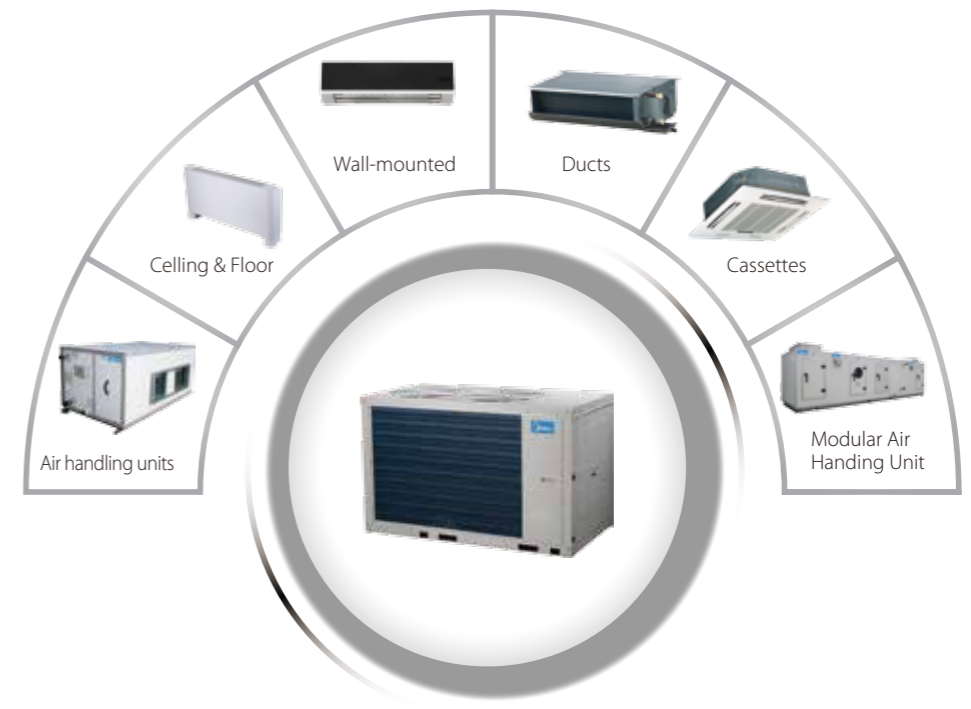
Wide Application Range

Flexibility

Modular design allows up to 16 units to be connected together, giving a system cooling/heating capacity range of 30kW to 1440kW.

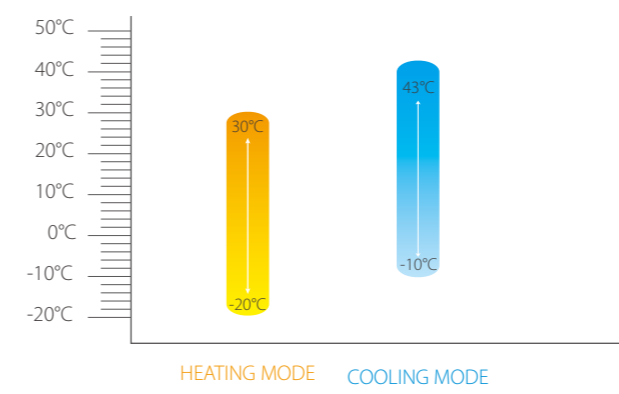


Compatible with fan coil units and air handling units.



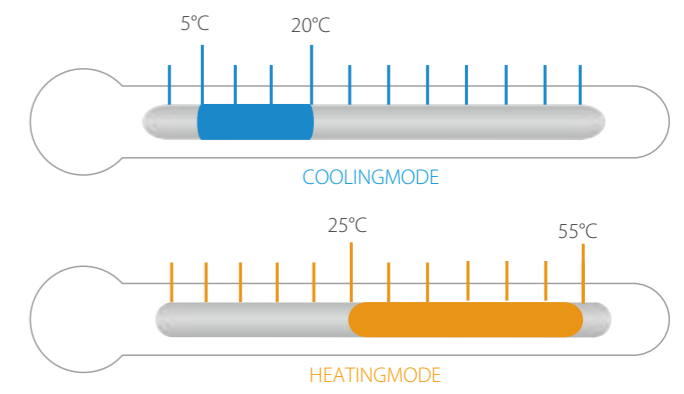
Ambient temperature

Stable operation even under extreme conditions: -20°C to 43°C.



Outlet water temperature

Wide outlet water temperature range with lowest outlet temperature in cooling mode of 5°C.



Refrigerant

MC-SU30(M)-RN8L and MC-SU60(M)-RN8L use R32 refrigerant, which is a kind of environmentally friendly refrigerant.

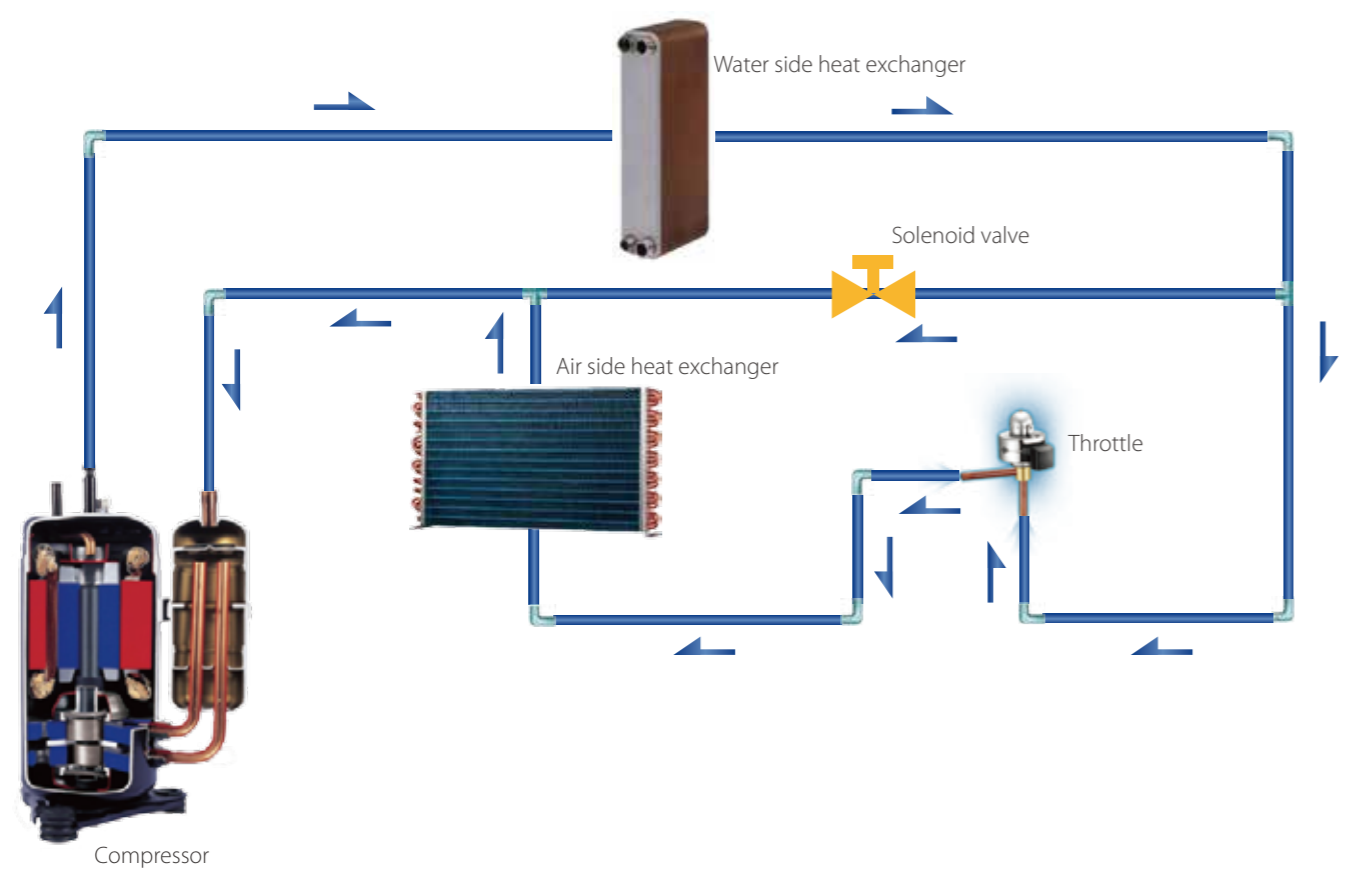


- Low GWP and carbon emission
- Better performance under severe conditions
- Less charged volume is needed in the system
- Lowcost and higher coefficient of heat transfer

Abbreviations:
GWP: Global warming potential

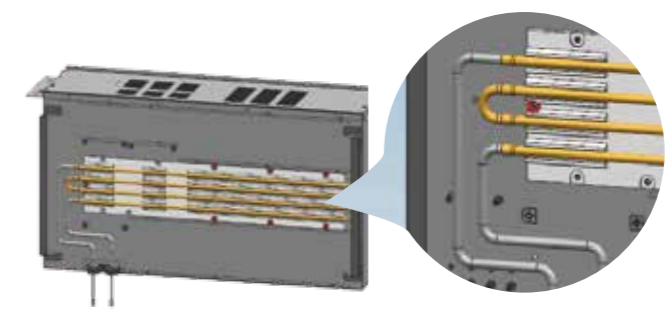
Spray liquid cooling control

Spray liquid cooling control, which is used for enhancing heating capacity in low temperature condition, only applies to MC-SU30(M)-RN8L and MC-SU60(M)-RN8L.



Refrigerant Cooling PCB

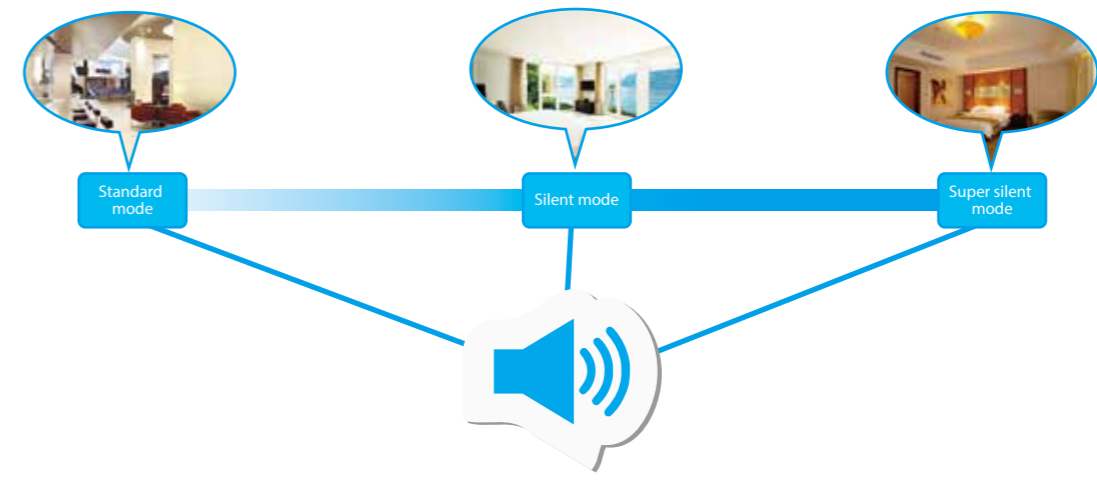
The MC-SU90(M)-RN1L uses refrigerant cooling technology to cool the electric control box. It decreases the average temperature of electrical control components by about 8 degrees, guaranteeing the stable and safe running of the control system.



Enhanced Comfort

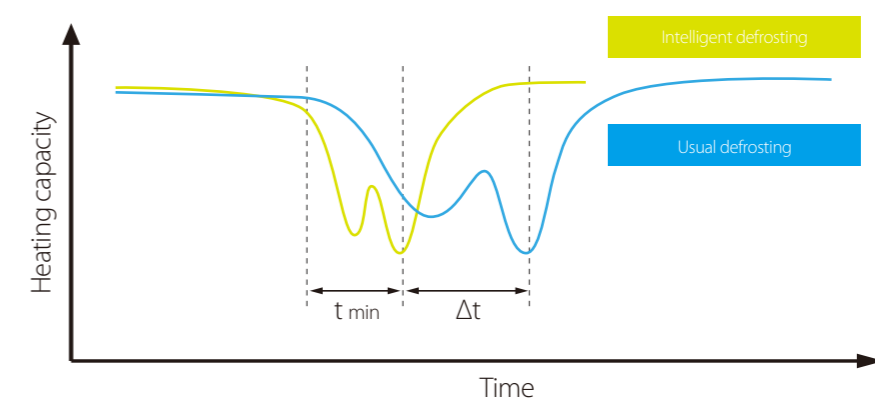
Multiple silent modes

Different silent modes enable noise reduction to suit time of day and ambient noise levels.



Intelligent defrosting technology

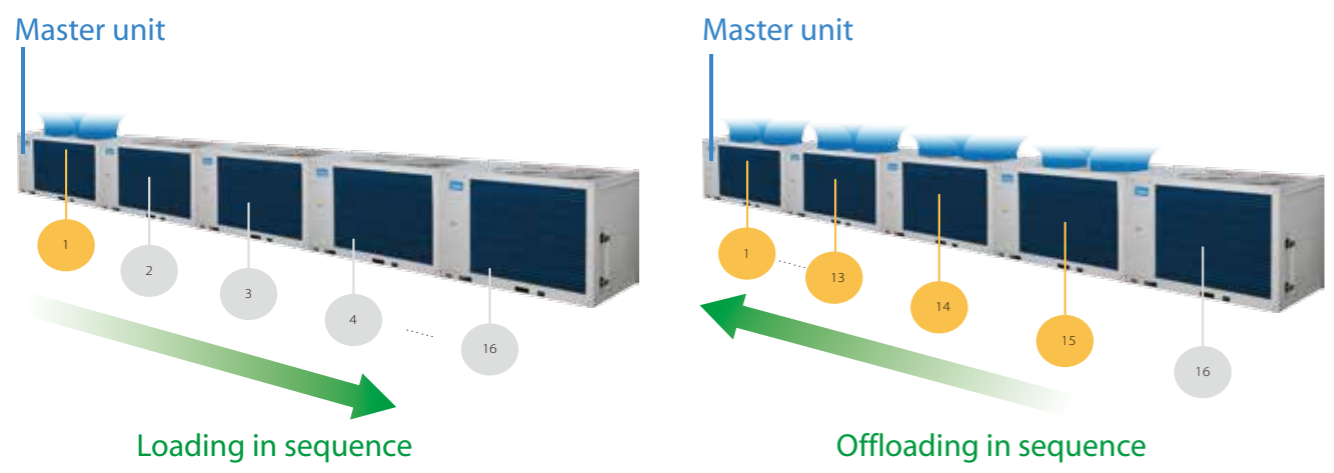
The intelligent defrosting program calculates the time required for defrosting according to the actual system status, eliminating heat losses from unnecessary defrosting. A specialized defrosting valve reduces time required for defrosting to as little as four minutes.



Advanced Technology

Loading and offloading

Loading and offloading for multiple units system



Back up

In a multi-unit system, if one module fails, the other modules provide backup so that the system can continue operating.

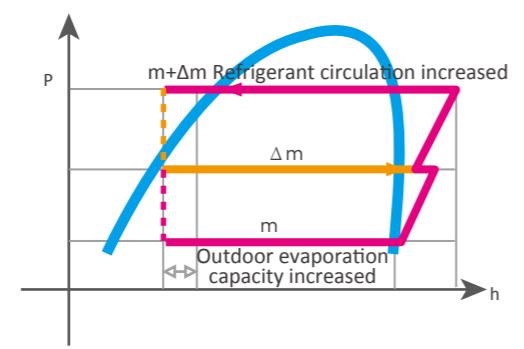



Enhanced Vapor Injection (EVI) Compressor

Thanks to the vapor injection DC inverter compressor, the MC-SU90(M)-RN1L can run heating mode stably down to -20 ° C, and the heating capacity can be improved greatly.



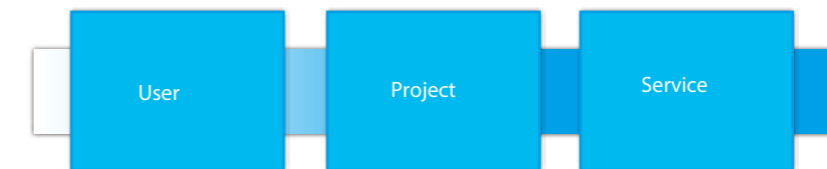
EVI compressor



Model	KJRM-120H/BMWK03-E
Appearance	
Main Functions	<ul style="list-style-type: none"> Touch key operation Parameter setting an LCD display Real-time clock function Multiple timer Power-off memory function Modbus Address setting Parallel function Buzzer prompt tone and alarm functions Weekly schedule Double set point function
Max. connection PCBs	16

Three user levels

Three different user levels ensure users can easily access control functions and allow engineers convenient access to operating parameters.



Additional control

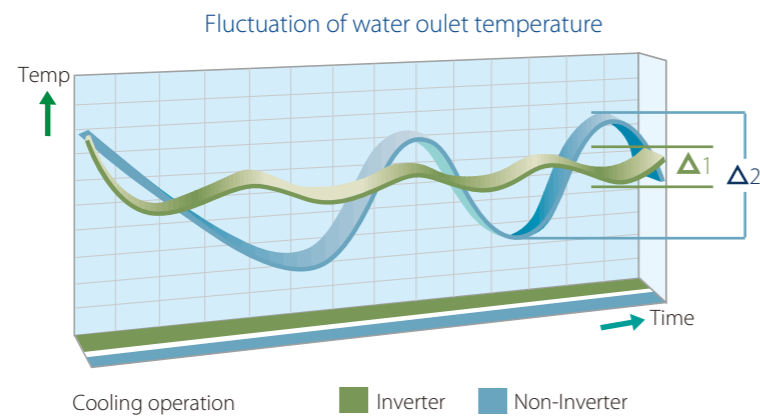
ON/OFF, Cool/Heat and Alarm ports on chiller PCBs allow switches to be connected to enable additional remote control functionality.



Note: When the additional control functionality is added, the ON/OFF control and mode selection functionality of the wired controller is disabled.

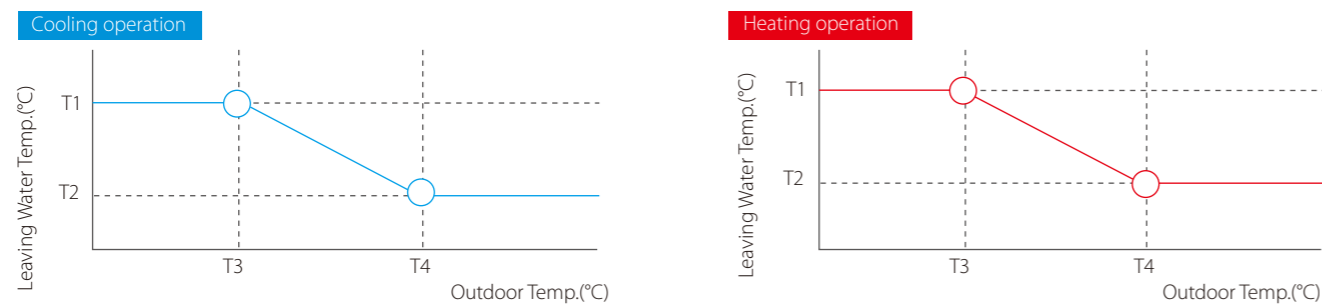
Rapid cooling or heating

The DC inverter compressor reaches full capacity rapidly, providing quicker cooling or heating with lower levels of temperature fluctuation during the cooling/heating operation.



Temperature Compensation

Weather dependent operation with climate correlation to ensure absolute comfort. Once parameters are selected, the unit set the outlet water temperature automatically according to the outdoor ambient temperature.



Easy Control

Easy control

- Touch key wire controller as standard accessory to control the chillers.



Anti-corrosion Protection

Outdoor units are given anti-corrosion treatment for non-extreme conditions as standard and can also be customized with heavy anti-corrosion treatment on main components for surface protection against corrosive air, acid rain and saline air (for installations in coastal regions) to extend overall useful life. The integrity of the anti-corrosion treatment is ensured by subjecting major components and parts to salt mist testing, moisture and heating testing and light aging testing.

<p>Fan motor Standard products: 72h of neutral salt mist</p> <p>Heavy anti-corrosion products: 240h of neutral salt mist</p>		<p>Heat exchanger aluminum foil Standard products: 72h of neutral salt mist</p> <p>Heavy anti-corrosion products: 1000h of neutral salt mist 140h of acid salt mis</p>
<p>Painted sheet metal Standard products: 500h of neutral salt mist 1000h of moisture and heating test 500h of light aging test</p> <p>Heavy anti-corrosion products: 1000h of neutral salt mist 2000h of moisture and heating test 720h of light aging test</p>		<p>Heat exchanger copper pipe Standard products: 24h of neutral salt mist</p> <p>Heavy anti-corrosion products: 120h of neutral salt mist</p>
<p>Screws / bolts / gaskets Standard products: 300h of neutral salt mist</p> <p>Heavy anti-corrosion products: 720h of neutral salt mist</p>	<p>Electric control box case Standard products: 96h of neutral salt mist</p> <p>Heavy anti-corrosion products: 240h of neutral salt mist</p>	

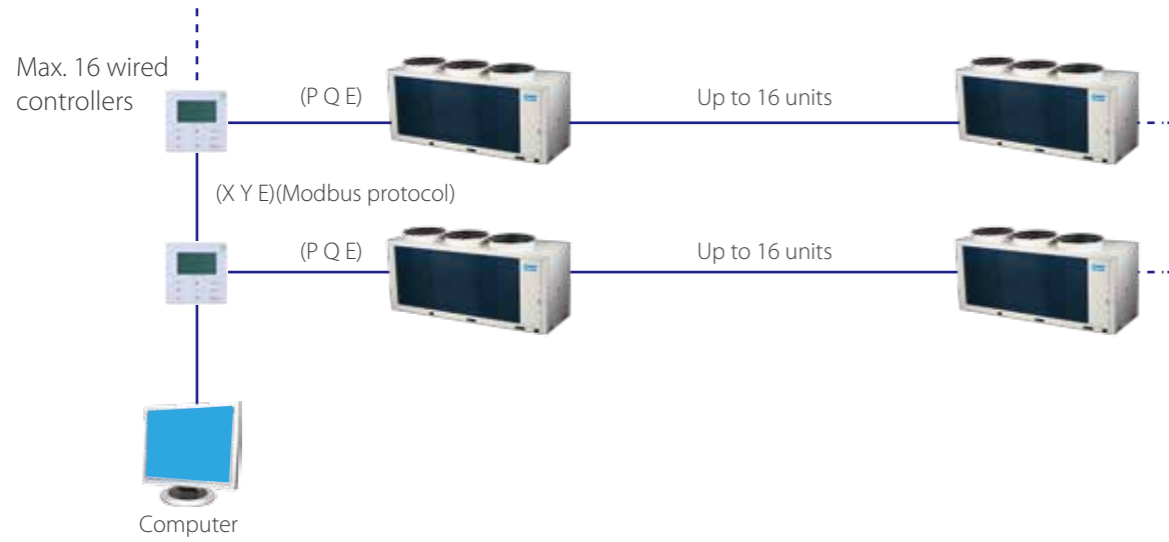
Anti-snow mode (R32 Series only)

In snowy weather, with the help of Anti-snow mode, units intermittently turns on fans to stop snow from accumulating on the top of units to guarantee normal operation next time.



Modbus function

Modbus is an open protocol that is widely used, especially in BMS building control systems. It can connect Max. 16 wired controllers and each controller can control Max. 16 units.

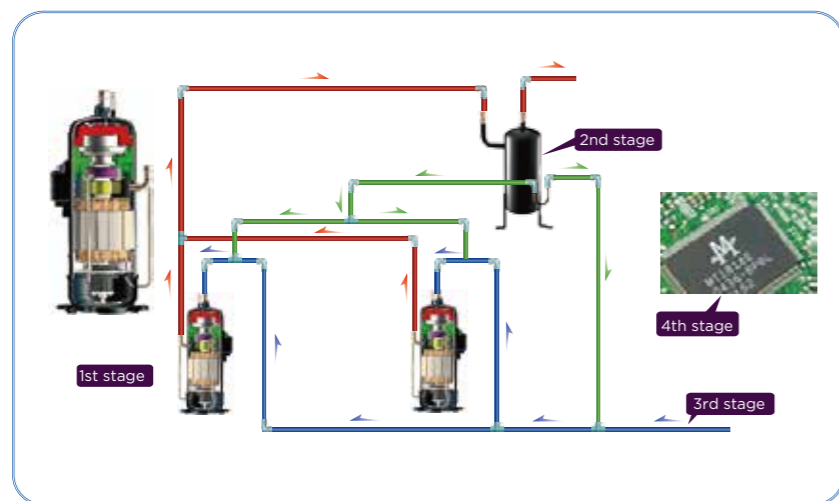


High Reliability

Precise Oil Control Technology

Four stages of oil control technology ensure all outdoor compressor oil is always kept at a safe level, eliminating any compressor oil shortage problems.

- Compressor internal oil separation.
- High-efficiency centrifugal oil separator (with separation efficiency of up to 99%) ensures that oil is separated from the discharge gas and returned to the compressors in a timely fashion.
- Oil balance pipe ensures oil distribution to keep compressor running normally.
- Auto oil return program monitors the running time and system status to ensure reliable oil return.

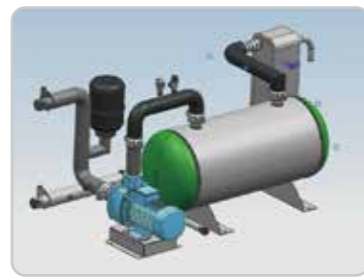


Easy Installation & Maintenance

Built-in components



hydraulic module
(customization option)



hydraulic module with water tank
(customization option)*



water flow switch

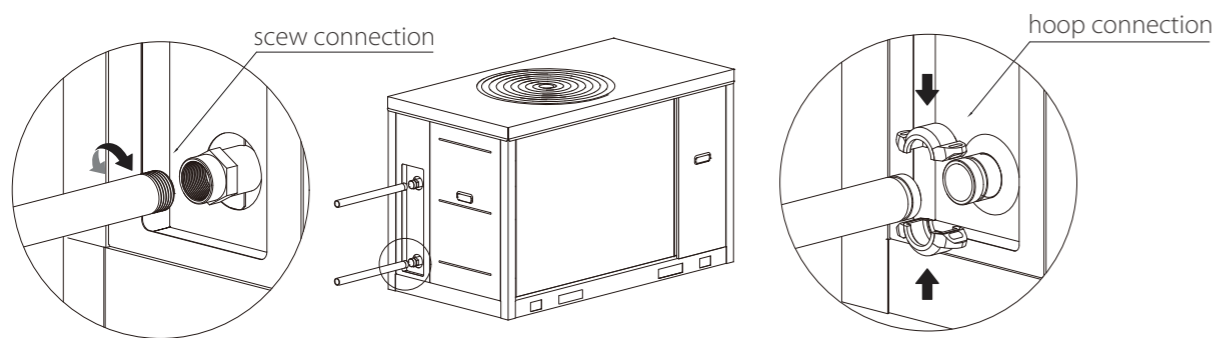


wired controller
KJRM-120H/BMWKO3-E

* Notes:
Available on 30kW model with 145L water tank
Available on 60kW model with 180L water tank

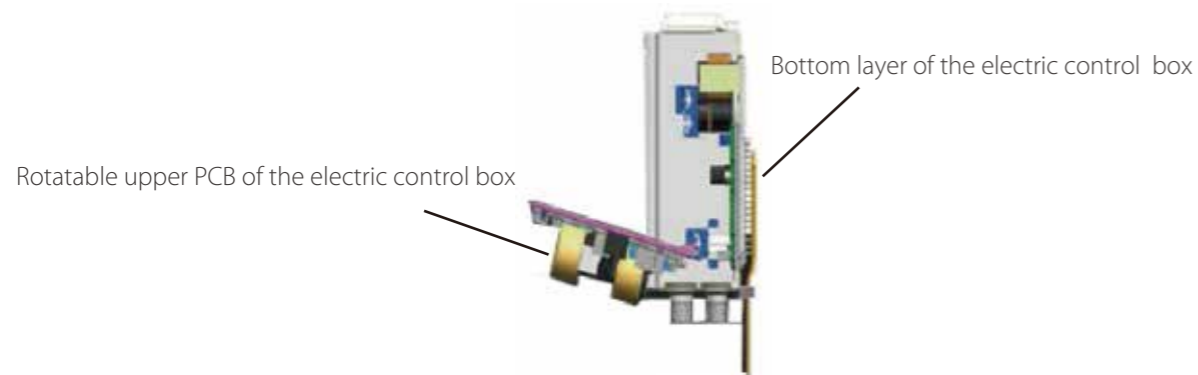
Water pipe connection

Only water piping installation is needed, no need to install refrigerant piping. MC-SU30-RN1L and MC-SU30-RN8L use screwed connection, while MC-SU60-RN1L, MC-SU90-RN1L and MC-SU60-RN8L use hoop connection.



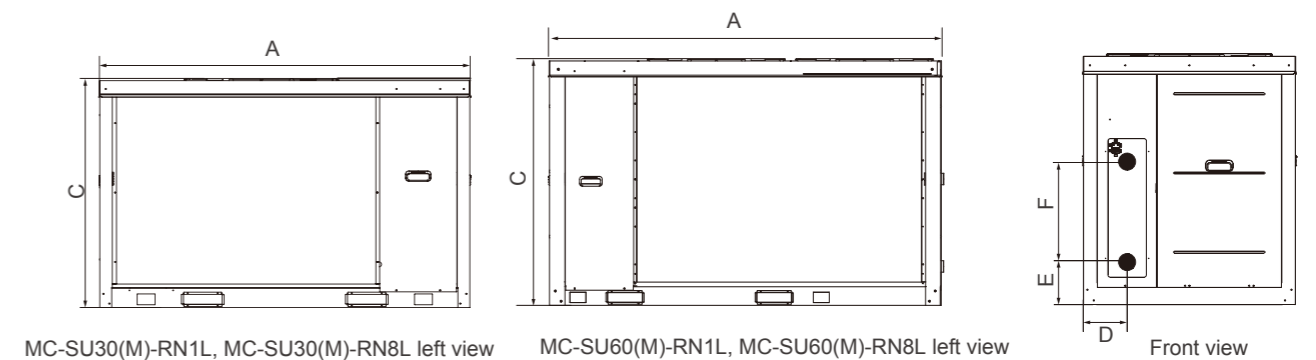
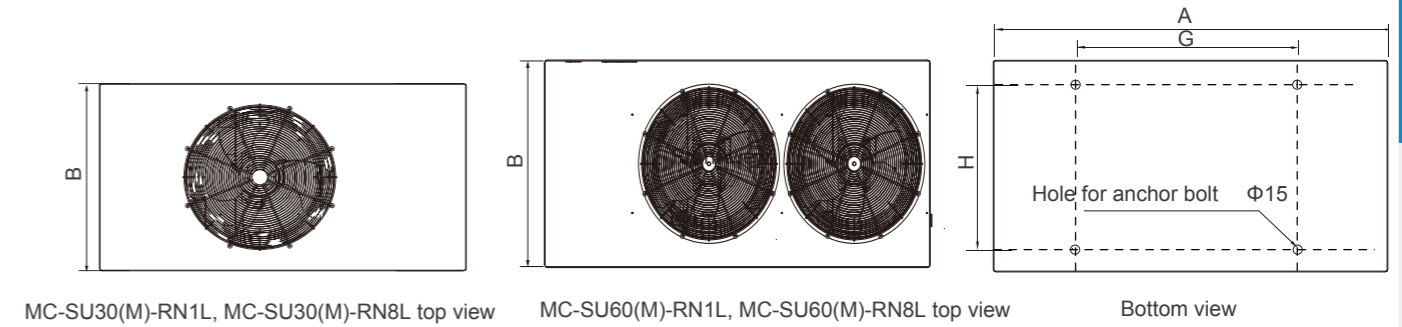
Rotatable PCB

The bottom layer can be easily achieved through the rotatable upper PCB, making the maintenance easier. For R32 series, the electric control box uses explosion-proof design.

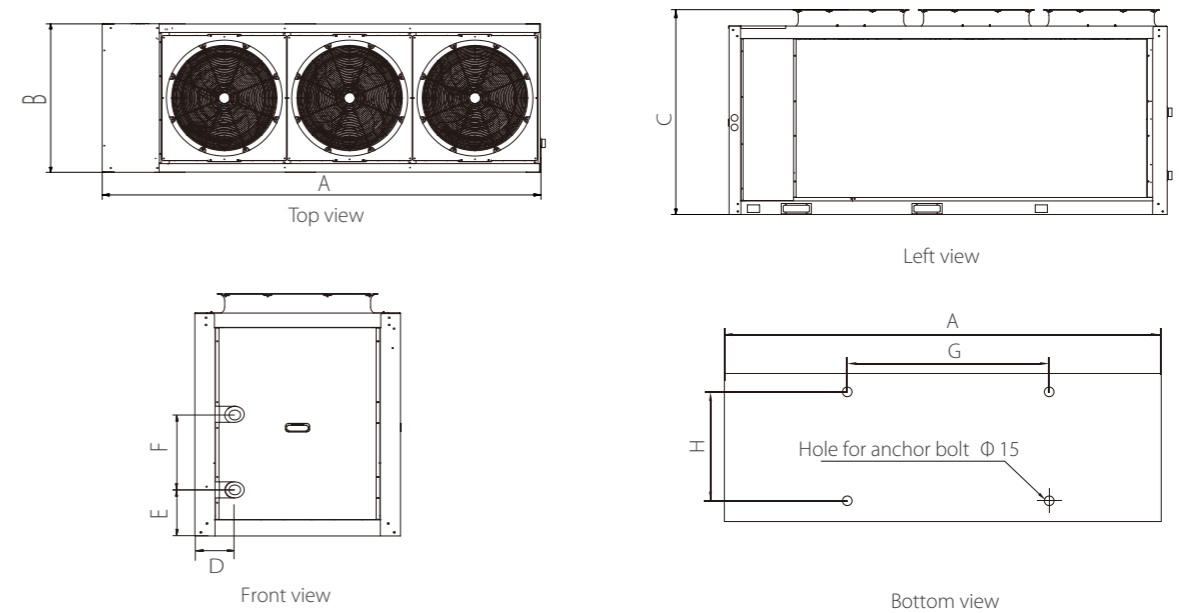


Unit Dimensions (Unit: mm)

MC-SU30(M)-RN1L/MC-SU60(M)-RN1L
MC-SU30(M)-RN8L/MC-SU60(M)-RN8L



MC-SU90(M)-RN1L



Model	A	B	C	D	E	F	G	H
MC-SU30(M)-RN1L MC-SU30(M)-RN8L	1870	1000	1175	204	200	470	800	926
MC-SU60(M)-RN1L MC-SU60(M)-RN8L	2220	1055	1325	234	210	470	1105	958
MC-SU90(M)-RN1L	3220	1095	1513	286	210	470	2116	1008

Specifications

R410A Series

Model			MC-SU30-RN1L	MC-SU30M-RN1L	MC-SU60-RN1L	MC-SU60M-RN1L	MC-SU90-RN1L	MC-SU90M-RN1L
Power supply		V/Ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50
Cooling ¹	Capacity	kW	27	27.6	55	55	82	82
	Rated input	kW	10.8	11.4	22	23.2	36.8	38
	EER		2.5	2.42	2.5	2.37	2.23	2.16
	SEER		4.08	3.93	3.93	4.28	4.08	3.83
Heating ²	Capacity	kW	31	31	61	61	90	90
	Rated input	kW	10.5	11.2	20.3	21.5	32.8	34
	COP		2.95	2.77	3.00	2.84	2.74	2.65
	SCOP		4.01	3.28	3.85	3.45	3.99	3.75
Seasonal space heating energy efficiency class			A++	A+	A++	A+	A++	/
Max. running current		A	18.0	18.7	36.8	39.8	60	68.4
Compressor	Type		Rotary	Rotary	Rotary	Rotary	Scroll	Scroll
	Quantity		1	1	2	2	2	2
Air side heat exchanger		Type	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube
Fan motor	Type		DC motor	DC motor	DC motor	DC motor	DC motor	DC motor
	Quantity		1	1	2	2	3	3
	Air flow rate	m ³ /h	12,500	12,500	24,000	24,000	38,000	38,000
Water side heat exchanger	Type		Plate	Plate	Plate	Plate	Plate	Plate
	Volume	L	2.44	2.44	5.17	5.17	7.05	7.05
	Water flow	m ³ /h	5	5	9.8	9.8	15	15
	Water pressure drop	kPa	55	55	61	61	75	75
Pump head		m	/	15	/	15	/	15
Refrigerant system	Type		R410A	R410A	R410A	R410A	R410A	R410A
	Charged volume	kg	10.5	10.5	17.0	17.0	27.0	27.0
Throttle		Type	EXV	EXV	EXV + Capillary	EXV + Capillary	EXV	EXV
Sound power level		dB(A)	78	78	87	86	89	89
Sound pressure level ³		dB(A)	65.8	68	72.1	73	80.1	80.1
Net dimensions (WxHxD)		mm	1870x1175x1000	1870x1175x1000	2220x1325x1055	2220x1325x1055	3220x1513x1095	3220x1513x1095
Packed dimensions (WxHxD)		mm	1910x1225x1035	1910x1225x1035	2250x1370x1090	2250x1370x1090	3275x1540x1130	3275x1540x1130
Net/Gross weight		kg	300/310	315/325	480/490	515/525	710/739	710/739
Water pipe connections		mm	DN40	DN40	DN50	DN50	DN50	DN50
Wired Controller			KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E
Operating temperature range	Cooling	°C	-10 to 43	-10 to 43	-10 to 43	-10 to 43	-10 to 43	-10 to 43
	Heating	°C	-15 to 30	-15 to 30	-15 to 30	-15 to 30	-20 to 30	-20 to 30
Water outlet temperature range	Cooling ⁴	°C	5 to 20	5 to 20	5 to 20	5 to 20	5 to 20	5 to 20
	Heating	°C	25 to 55	25 to 55	25 to 55	25 to 55	25 to 55	25 to 55

Note:

- Cooling: Chilled water inlet/outlet temp. 12/7°C; outdoor ambient temp. 35°C DB.
- Heating: Warm water inlet/outlet temp. 40/45°C; outdoor ambient temp. 7°C DB/6°C WB.
- Sound pressure level is measured at a position 1m in front of the unit and 1.1m above the floor in a semi-anechoic chamber.
- Capacity and efficiency data calculated in accordance with EN14511; EN14825

R32 Series

Model			MC-SU30-RN8L	MC-SU30M-RN8L	MC-SU60-RN8L	MC-SU60M-RN8L
Power supply		V/Ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50
Cooling ¹	Capacity	kW	27.5	27.5	55	55
	Rated input	kW	10.3	11	21.5	23
	EER		2.67	2.5	2.56	2.39
	SEER		4.62	4.25	4	4.03
Heating ²	Capacity	kW	32	32	62	62
	Rated input	kW	10	10.7	20	21.5
	COP		3.2	2.99	3.1	2.88
	SCOP		4.24	3.99	3.86	3.72
Seasonal space heating energy efficiency class			A++	A++	A++	A+
Max. running current		A	20	21.5	40.5	43.5
Compressor	Type		Rotary	Rotary	Rotary	Rotary
	Quantity		1	1	2	2
Air side heat exchanger		Type	Finned tube	Finned tube	Finned tube	Finned tube
Fan motor	Type		DC motor	DC motor	DC motor	DC motor
	Quantity		1	1	2	2
	Air flow rate	m ³ /h	12,500	12,500	24,000	24,000
Water side heat exchanger	Type		Plate	Plate	Plate	Plate
	Volume	L	2.44	2.44	5.17	5.17
	Water flow	m ³ /h	5	5	9.8	9.8
	Water pressure drop	kPa	55	55	61	61
Pump head		m	/	15	/	15
Refrigerant system	Type		R32	R32	R32	R32
	Charged volume ³	kg	7.9	7.9	14	14
Throttle		Type	EXV	EXV	EXV + Capillary	EXV + Capillary
Sound power level		dB(A)	78	78	86	86
Sound pressure level ⁴		dB(A)	64.8	65.1	71.3	71.4
Net dimensions (WxHxD)		mm	1870x1175x1000	1870x1175x1000	2220x1325x1055	2220x1325x1055
Packed dimensions (WxHxD)		mm	1910x1225x1035	1910x1225x1035	2250x1370x1090	2250x1370x1090
Net/Gross weight		kg	300/310	315/325	480/490	515/525
Water pipe connections		mm	DN40	DN40	DN50	DN50
Wired Controller			KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E	KJRM-120H/BMWKO3-E
Operating temperature range	Cooling	°C	-10 to 43	-10 to 43	-10 to 43	-10 to 43
	Heating	°C	-14 to 30	-14 to 30	-14 to 30	-14 to 30
Water outlet temperature range	Cooling ⁵	°C	5 to 20	5 to 20	5 to 20	5 to 20
	Heating	°C	25 to 54	25 to 54	25 to 54	25 to 54

Note:

- Cooling: Chilled water inlet/outlet Temp. 12/7°C, outdoor ambient Temp. 35°C DB.
- Heating: Warm water inlet/outlet Temp. 40/45°C, outdoor ambient Temp. 7°C DB/6°C WB.
- For MC-SU60-RN8L, MC-SU60M-RN8L the total amount of refrigerant is 14 kg, including the 11.5 kg already charged before delivery and the 2.5 kg to be charged.
- Sound pressure level is measured at a position 1m in front of the unit and 1.1m above the floor in a semi-anechoic chamber.
- Capacity and efficiency data in accordance with EN14511, EN14825.