

COMMERCIAL AIR CONDITIONERS

Air cooled chillers 50Hz



GD Midea Heating & Ventilating Equipment Co., Ltd.
Is certified under the ISO 9001 International standard
for quality assurance.
NO.01 100 019209



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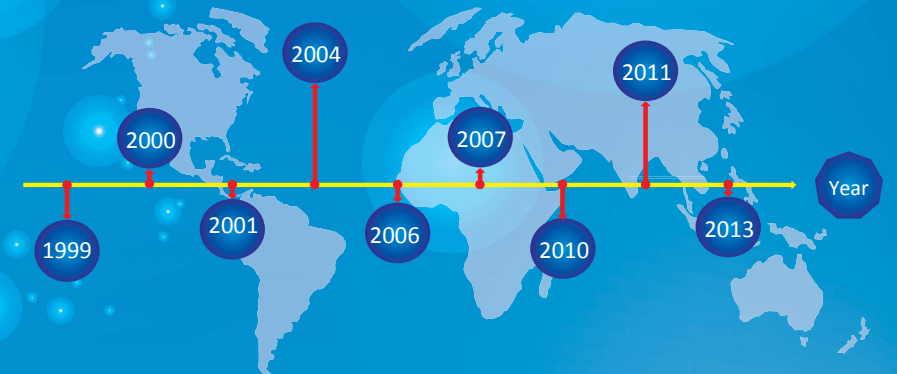


Midea CAC (MCAC)

As a key subsidiary of Midea Group, the Midea Central Air Conditioner (MCAC) business unit has emerged as a leading supplier of commercial solutions. Since 1999 MCAC has contributed to the R&D and innovation of technologically-based commercial solutions. Cooperation with leading global enterprises coupled with independent R&D has enabled MCAC to implement thousands of commercial air-conditioning projects worldwide.

At present, MCAC is one of the globally leading product suppliers, underpinned by a mature marketing, sales, and project design framework.

There are three production bases in Shunde, Chongqing and Hefei.
 MCAC Shunde: 38 product lines focusing on VRF (DC inverters and digital scroll products), split products, heat pump water heaters, and AHU/FCU.
 MCAC Chongqing: 14 product lines focusing on water cooled centrifugal/screw/scroll chillers, air cooled screw/scroll chillers, and AHU/FCU.
 MCAC Hefei: 11 product lines focusing on VRF, chillers, and heat pump water heaters.



- 2013 Launched the super high efficiency centrifugal chiller with full falling film technology
- 2011 Launched the DC inverter V4 Plus globally
- 2010 Built the 3rd manufacturing base in Hefei
- 2007 Won the first Midea centrifugal chiller project oversea
- 2006 Launched the first VSD centrifugal chiller
- 2004 Acquired MGRE entered the chiller industry
- 2001 Partnered with Copeland to develop the digital scroll VRF system
- 2000 Developed the first inverter VRF With Toshiba
- 1999 Entered the CAC field



Midea air cooled chillers

Midea air-cooled chillers adopt air as the cooling/heating source and water as the cooling/heating medium to cooling/heating the indoor ambient temperatures through the indoor terminals (AHU/FCU). It includes air cooled scroll chiller and air cooled screw chiller. The capacity range is from 25kW to 1420kW for one unit. The maximum capacity output is up to 2000kW for combined air cooled scroll chiller, 11360kW for combined air screw chiller. The chillers can be used in all types of climate, the wide selection of module makes it possible to build a system for any of the customers requirements.

Aqua Tempo Power Series

Air cooled scroll chiller 25~250kW



Refrigerate: R410A
Compressor type: Digital scroll+ fixed scroll
Max combined quantity: 16
Max combined capacity output: 2000kW
Evaporator type: Double-pipe & shell-tube

Aqua Force Series

Air cooled screw chiller 380~1420kW



Refrigerate: R134a
Compressor type: Screw
Max combined quantity: 8
Max combined capacity output: 11360kW
Evaporator type: Shell-tube

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Air cooled scroll chiller

► 45 Aqua Force Series

Air cooled screw chiller

Aqua Tempo Power Series

Air cooled scroll chiller

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Product introduction

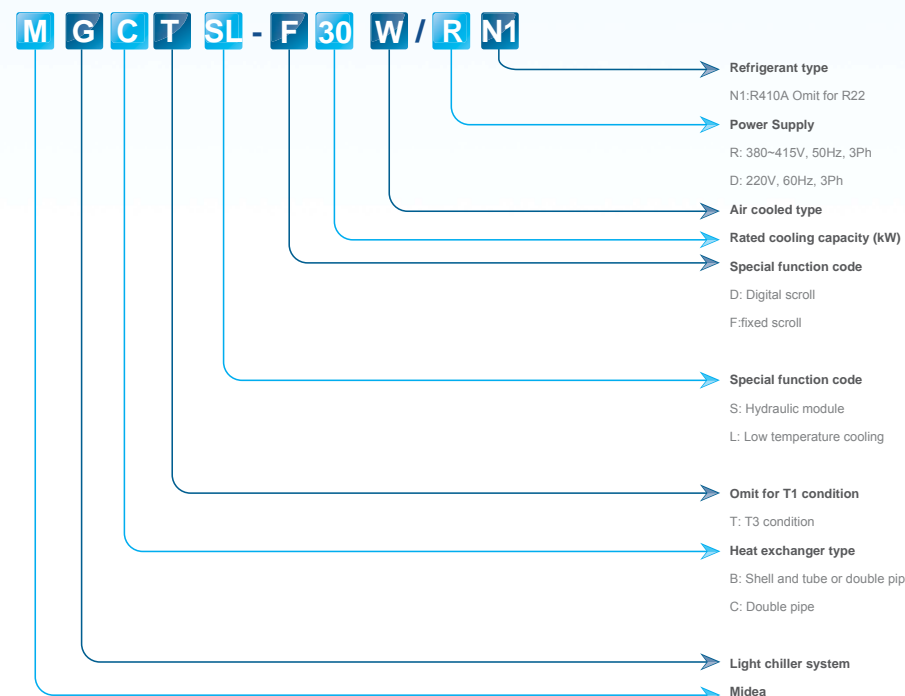
Midea air-cooled scroll chiller adopts air as the cooling/heating source and water as the cooling/heating medium to cooling/heating the indoor ambient temperatures through the indoor terminal (AHU/FCU). Air cooled chiller typically have a lower initial investment and maintenance cost than water cooled system, it does not require a cooling tower, condenser water pump and associated condenser water chemical treatment system.

Modular design concept makes the application from single unit to multiple form systems to several thousand tons of installed capacity. Adopting high reliable and excellent efficiency system, Midea air cooled Modular chiller becomes one of the best choice for all kinds of air cooled projects. With the latest Modular design technology, high efficiency V shape heat exchanger and precise gas flow control technology and digital compressor application, Midea air cooled scroll chiller system always work at the most high efficiency stage. Modular and compressor operation are adjusted by the real load requirement intelligently to keep the most economical working status. They are widely applied in school, hospital, shopping mall, office as well as the factory and manufacturing processing area.



School Factory Hotel Hospital Office

Nomenclature



Product lineup

No	Model	Heat exchanger type	Compressor quantity (pcs)		Electrical controller no.	Maximum combinations	Maximum capacity (kW)	Wired controller
			Digital	Fixed				
1	MGB-F25W/RN1	Double pipe	0	2	1	16	400	KJRM-120D/BMK-E
2	MGB-D25W/RN1	Double pipe	1	1	1	16	400	KJRM-120D/BMK-E
3	MGB-F30W/RN1	Double pipe	0	2	1	16	480	KJRM-120D/BMK-E
4	MGB-D30W/RN1	Double pipe	1	1	1	16	480	KJRM-120D/BMK-E
5	MGCSL-F30W/RN1	Double pipe	0	2	1	1	30	KJRM-120D/BMK-E
6	MGCSL-D30W/RN1	Double pipe	1	1	1	1	30	KJRM-120D/BMK-E
7	MGCL-F30W/RN1	Double pipe	0	2	1	16	480	KJRM-120D/BMK-E
8	MGCL-D30W/RN1	Double pipe	1	1	1	16	480	KJRM-120D/BMK-E
9	MGB-F55W/RN1	Shell and tube	0	2	1	16	880	KJRM-120D/BMK-E
10	MGB-F60W/RN1	Shell and tube	0	2	1	16	960	KJRM-120D/BMK-E
11	MGB-F65W/RN1	Shell and tube	0	2	1	16	1040	KJRM-120D/BMK-E
12	MGB-D65W/RN1	Shell and tube	1	2	1	16	1040	KJRM-120D/BMK-E
13	MGBL-F65W/RN1	Shell and tube	0	2	1	16	1040	KJRM-120D/BMK-E
14	MGBL-D65W/RN1	Shell and tube	1	2	1	16	1040	KJRM-120D/BMK-E
15	MGB-F130W/RN1	Shell and tube	0	4	2	8	1040	KJRM-120D/BMK-E
16	MGBL-F130W/RN1	Shell and tube	0	4	2	8	1040	KJRM-120D/BMK-E
17	MGB-F200W/RN1	Shell and tube	0	6	3	5	1040	KJRM-120D/BMK-E
18	MGBL-F200W/RN1	Shell and tube	0	6	3	5	1000	KJRM-120D/BMK-E
19	MGBT-F250W/RN1	Shell and tube	0	8	2	8	2000	KJRM-120D/BMK-E
20	MGBL-F250W/RN1	Shell and tube	0	8	2	8	2000	KJRM-120D/BMK-E

External appearance

25/30kW module



30kW module(integrated)



55/60/65kW module



130kW module



200kW module



250kW module



Features

Modular design

The freely configurable five-module design simplifies installation and features a DIP switch that enables any module to be selected as the master unit.

The modular design facilitates easy expansion in stages to respond to additional cooling requirements.

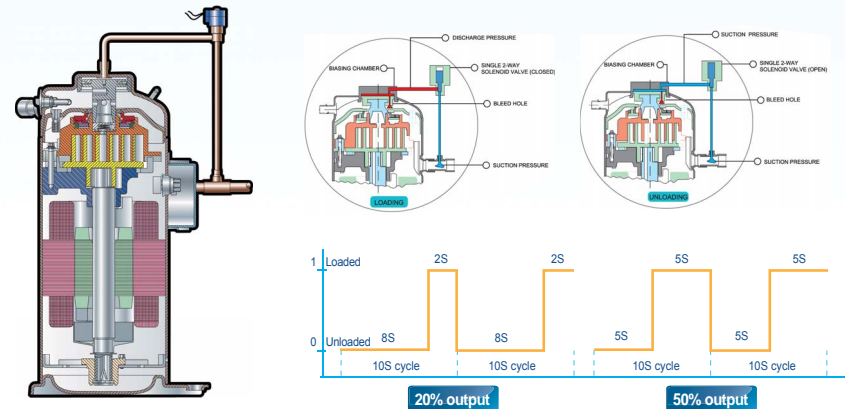
This solution provides excellent partial load facility, significant cost-savings, and easy transportation and installation. As distributors stock all modules, rapid delivery is guaranteed.



Digital scroll technology

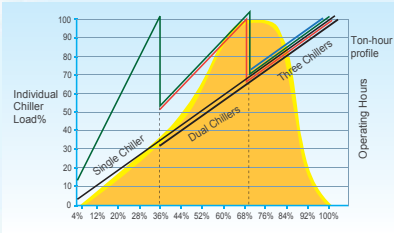
Digital scroll technology, provide maximum reliability, high efficiency and quiet operation. The widest capacity output can be achieved, comfort room temperature, efficiency of the whole system can be improved significantly.

Advanced digital scroll technology for small modules (25/30/65kW) maximizes reliability, ensures efficient and silent operations, optimizes capacity output, and provides a comfortable room temperature.

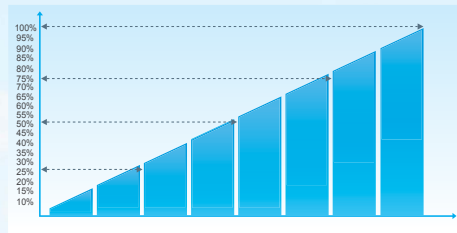


Save energy

In chiller system the output capacity is proportional to the load of the building. In the partial load condition the single chiller system will operate at 10% to 70% which is a very low efficiency for a system and lead to a very low IPLV/NPLV. In a multiple system the system output capacity is not proportion to the load of the building and only one chiller will operate in the low efficiency area and other chiller will work in the high efficiency area. The IPLV/NPLV will be increased significantly by the scroll design.



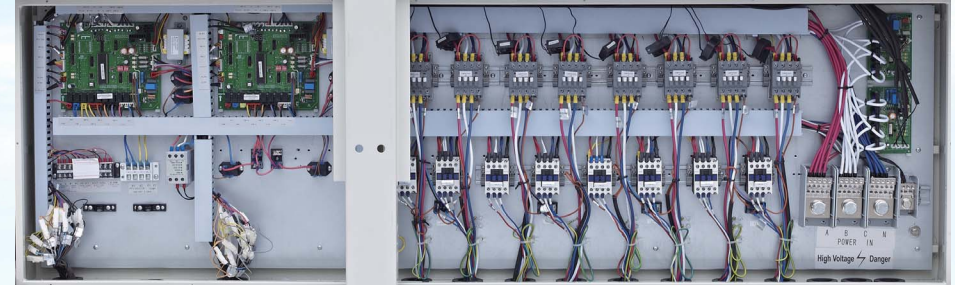
Example of three chillers operation profile



Stepless capacity control

Optimized electrical design

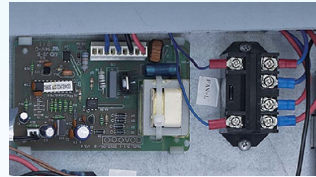
The standardized hardware and program design efficiently manages raw materials via programming parameters written onto a EEPROM chip, which enables after-sales modifications, customization and troubleshooting. The electrical panels provide a clear visual representation of the wiring scheme completed during assembly.



Wide range of ambient temperature

The ambient temperature can go down to -10°C in cooling mode. The wide ambient temperature range is optional, and can be adjusted to meet different requirements.

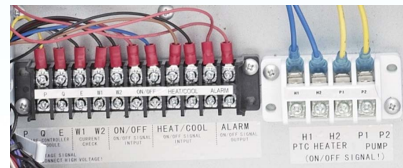
Mode		Ambient temp.
Cooling	Normally (S8 address OFF)	10~46°C
	+Low temp. (S8 address ON)	-10~46°C
Heating		-10~21°C



User friendly remote control

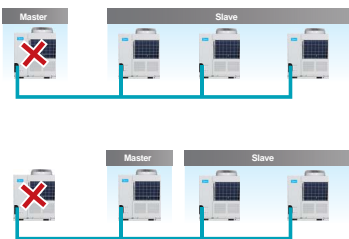
Switch the S7 address on the PCB to ON to enable the following remote control operations:

- Remote ON/OFF.
- Remote mode selection: heating or cooling.
- Remote alarm.



Note:
When use the remote control function, the wired controller will be invalid.

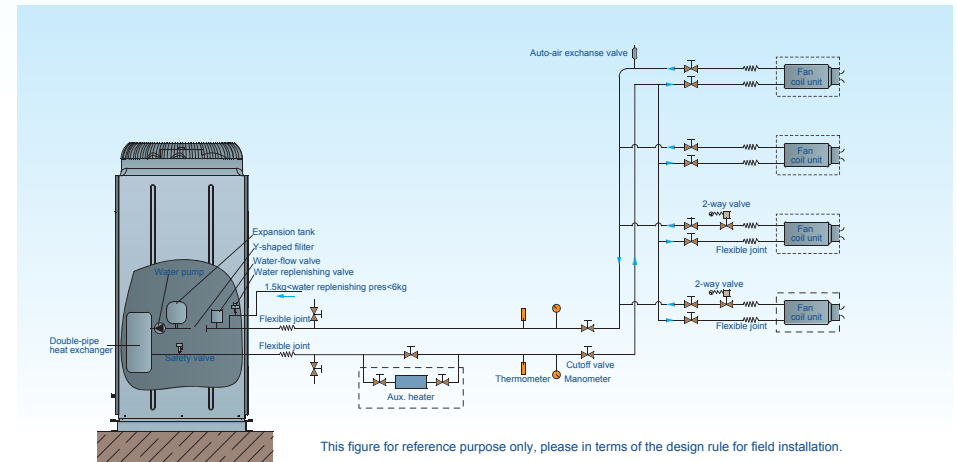
Backup functions



- When unit is failed.
 - If master unit fails, all the units will stop.
 - If one slave unit fails, this unit will stop but the others will keep running.
- When the master unit fails, any of the slave one can be set as the master unit by manual setting.
 - When unit is under protection.
 - If master unit's protection occurs, this unit will stop but the others will keep running.
 - If slave unit's protection occurs, this unit will stop but the others will keep running.
- (Except PE, P9 protection happens)
 - PE: Low-temperature protection of evaporator.
 - P9: Outlet and inlet water temperature difference protection.

Built-in hydraulic module

The unit's in-built hydraulic module simplifies installation, saves space, improves aesthetics, and cuts costs. (Available for MGCSL-F(D)30W/RN1.)



This figure for reference purpose only, please in terms of the design rule for field installation.

Hydraulic module

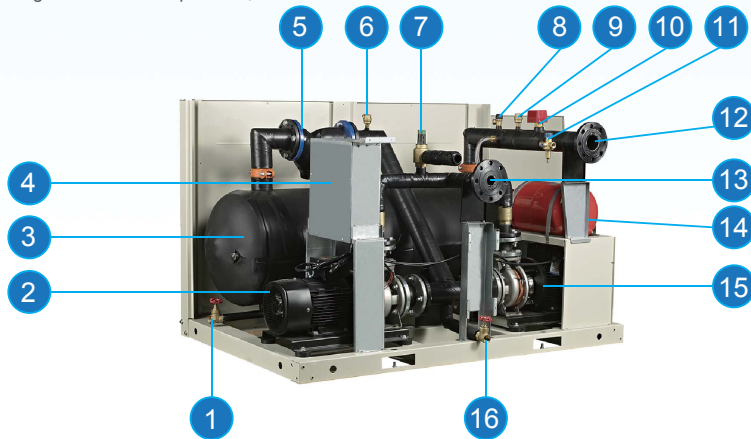


HM/II-65S
HM/II-130S



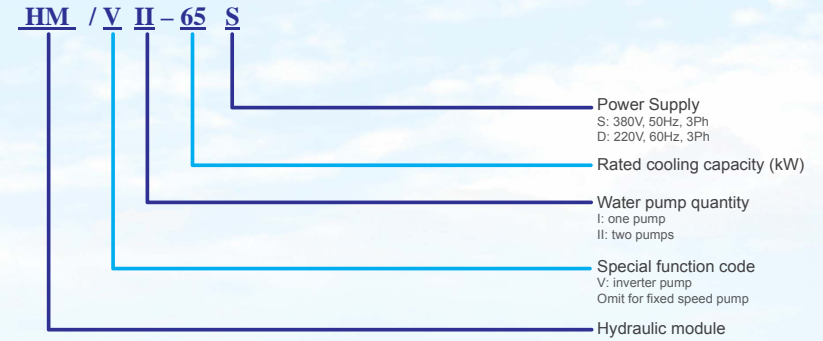
Feature

- Highly reliable quality
Whole stainless steel or metal with special coating and anti-rust treatment. High-class main component, dustproof and waterproof.
- Good performance, stable and reliable
Built-in two pumps, one is backup to ensure the system uninterrupted operation.
- Intelligent control, energy security
The control cabinet can achieve linkage control with any formal air-condition mainframe through active or passive junction.
- Easy installation, low malfunction
Integrated design, much faster and easier to finish the installation, the installation quality is much better than traditional machine.
- Save the installation space and cost
Compact design, it will reduce 80% labor cost and 40% material contrasted with other same grade system.
- Wide range of ambient temperature, from -15°C to 46°C.

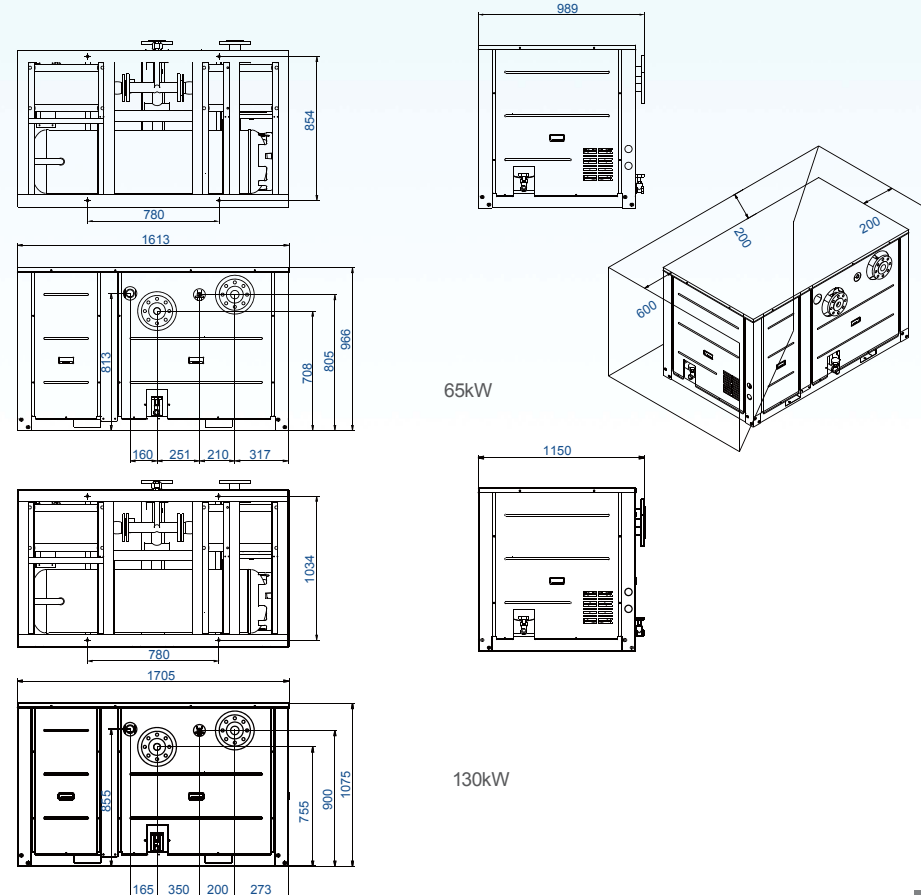


No.	Name	No.	Name
1	Pumping rod type brass gate valves	9	Exhaust valve
2	Pump	10	Water flow controller
3	Water box	11	Water replenishing valve
4	Electrical box	12	Water inlet assembly
5	Y-shape filter	13	Water outlet assembly
6	Exhaust valve	14	Expansion tank
7	Pressure different by-pass valve	15	Pump
8	Safety valve(There is change,goods in kind prevail.)	16	Pumping rod type brass gate valves

Nomenclature



Installation Dimension



Specifications

Model		HM/II-65S	HM/II-130S
Cooling Capacity	kW	(65)	(130)
Electrical Data			
Voltage, Frequency, Phase	V/Hz/Ph	380/50/3	380/50/3
Performance			
Motor power input	kW	1.8	3.5
Water pump head	m	16	17
Water flow	m ³ /h	11	22
Water pressure drop	kPa	16	17
Safety valve return pressure	kPa	600	600
Protection class		IP24	IP24
Electric shock protection class		F	F
Noise Level	dB(A)	68	68
Dimension & weight			
Water inlet&outlet pipe dim.	mm	DN65	DN65
Net Dimension	D×H×W mm	1615×990×965	1705×1120×1050
Packing Size	D×H×W mm	1640×1026×1120	1721×1160×1225
NetWeight	kg	290	400
Operation Weight	kg	310	420

Note: Specifications are based on the following conditions: Water side fouling factor: 0.086m² °C /kW.

Mechanical specifications

A. General information

All Midea air-cooled scroll chillers are factory tested by computer for ambient and water conditions and control operations.

Units are shipped with a full load of Zero Ozone Depletion Potential refrigerant R410A and oil.

Compressors, heat exchangers, condenser fans, piping and the control unit must be mounted on a heavy-gauge steel frame. Electrical controls, contactors, and relays are installed in each module.

Exposed steel surfaces are finished with a coat of powder paint, and all modules come with a heavy-gauge, galvanized steel power enclosure for outdoor installation.



R-410A



COOLING HEATING



EXV CONTROL

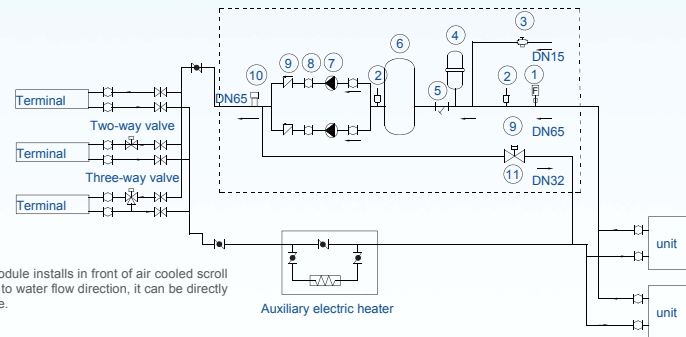


HERMETIC SCROLL

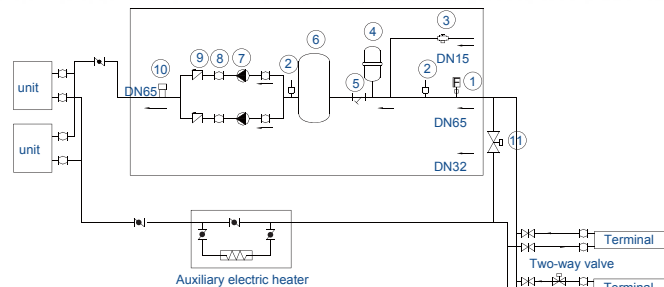


RELIABILITY

System Pipeline Installation



The hydraulic module installs in front of air cooled scroll chiller according to water flow direction, it can be directly used in this figure.



The hydraulic module installs back of air cooled scroll chiller according to water flow direction, it must change the by-pass valve of pressure difference to the position displayed in this figure.

No.	Name	No.	Name	No.	Name
1	Water flow switch	5	Y-shape filter	9	Check valve
2	Automatic discharge valve	6	Water storage tank	10	Pressure relief valve
3	Water replenishment valve	7	Circulating pump	11	Pressure by-pass valve
4	Expansion tank	8	Flexible joint		

B. Unit casing & construction

Unit cases are made from fabricated heavy-gauge galvanized steel. Each steel sheet panel is zinc coated and galvanized using the hot dip process to reach a lock-forming quality that complies with ASTM A 653 commercial weight G-90, and is then backed with an electrostatic polyester dry powder coat.

Condensing units come installed with refrigerant compressors, a condenser coil, propeller fans, control wiring, and piping.

The unit includes a weather-resistant control panel ready for field connection to enable remote control functionality.

C. Compressors

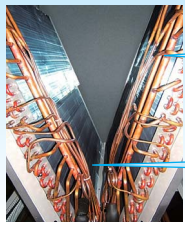
Standard hermetically sealed scroll compressors are used in all Midea air-cooled scroll chillers. Each compressor features internal motor protection, factory installed crankcase heaters, and rubber vibration isolators to ensure silent and efficient operations.

Each scroll compressor is cast in an iron frame and comes equipped with cast iron scrolls, three teflon bearings, and three oil filtration devices. The orbiting scrolls contact with just enough force to create a seal to ensure no friction exists between plates. Both the fixed and orbiting scrolls are made from high-strength cast iron to minimize thermal distortion and leaks and maximize efficiency.

Built-in vibration isolation, oil sump heating and a heat overload cut-out function, each compressor provides smooth and highly efficient functionality.



D. Condenser coils



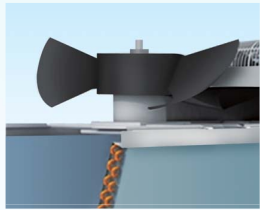
Hydrophilic aluminum inner groove tube



Optimized pipeline design, Larger heat exchange area

The enhanced louvered fin and tube type V-shape condenser coils are seamlessly constructed to a diameter of 7.94mm. Inner-grooved copper tubes are mechanically bonded to aluminum fins for maximum heat transfer efficiency. Each fin's self-spacing collar completely covers each tube, and the staggered tube design maximizes thermal efficiency. The supporting end plates are heavy-gauge galvanized steel with extruding collars that optimize tube support and structural strength. Each coil is pressure tested in the factory at not less than 450psi air pressure.

E. Condenser fans



All fans are statically and dynamically balanced to operate at minimum noise and vibration. Fan blades are designed at an appropriate pitch angle to maximize airflow through the condenser and provide maintenance-free bearings for outdoor installation. The fans are directly driven by a waterproof motor to ensure continuous operations. Each complies with the IP 54 safety class for long-term outdoor use. The fan guards are constructed of heavy gauge, rust-resistant, coated steel.

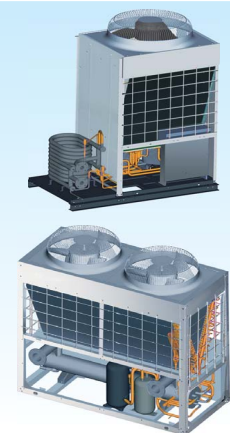
F. Condenser fan motor

The condenser fans, impeller and motors form an integral unit. The fan motors are three-phase and provided with class F winding insulation and ball bearings for high ambient application.

G. Crankcase heaters

Compressors with crankcase heaters remain powered-on during the de-energize process to protect the system against refrigerant migration, oil dilution and potential compressor failure.

H. Evaporator



- Smaller modules under 35kW use a double pipe heat exchanger to minimize size; 55kW to 250kW models adopt shell and tube heat exchangers for easy maintenance.
- High efficiency, direct-expansion type coolers with refrigerant in tubes provide chilled liquid through the baffled shell without the oil return issue found in flood-type evaporators.
- Water baffles are fabricated from corrosion-resistant galvanized steel to resist corrosion. Water vents and drain connections are included.
- 20mm-thick insulation covers all low-temperature surfaces including the evaporator, water boxes, oil return lines and chilled water flow switch pipes.

Standard features/options

Description	Standard features	Options
Hermetic scroll compressor	●	
Compressor crankcase heaters	●	
Compressor circuit breakers	●	
Compressor overload protection	●	
Condenser fan-direct drive, propeller type	●	
Condenser fan(Metal)	●	
Condenser fan guard	●	
Condenser motor circuit breakers		●
Aluminum fins condenser coils	●	
Low pressure switch	●	
High pressure switch	●	
Wired controller KJR-08B/BE or KJR-120A/MBE or KJRM-120D/BMK-E	●	
Wired controller KJR-120A/MBTE		●
BMS gateway(Lonworks)		●
BMS gateway(BACnet)		●
Remote control input	●	
Alarm signal output	●	
Anti-freezing protection	●	
Over-load protection	●	
Power phases sequence protection	●	
Anti-corrosion fins		●
Water flow switch		●
Three phase power protector		●

Accessories

Item	Name of accessory	Type	Qty	Shape	Usage
1	Installation and owner's manual	---	1		Installation and using instruction.
2	The total outlet water temperature test kit	LSQWRF65M/A-C.ZL.10	1		Inspection the temperature of total outlet water.
3	Wired controller	KJRM-120D/BMK-E	1		Control the system.

Specifications

Model		MGB-F25W/RN1	MGB-D25W/RN1	MGB-F30W/RN1	MGB-D30W/RN1	
Cooling Capacity		kW	28	28	30	30
Heating Capacity		kW	29.5	29.5	32	32
Power input	Cooling	kW	9.3	9.3	10.0	10.0
	Cooling rated current	A	14.6	14.6	16.3	16.3
	Heating	kW	9.2	9.2	9.8	9.8
	Heating rated current	A	14.3	14.3	16.0	16.0
Power supply		V/Ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50
Power supply	Manual switch	A	50	50	50	50
	Fuse	A	36	36	36	36
Max. Input consumption		kW	12.6	12.5	12.6	12.5
Max. Current		A	24.0	24.0	24.0	24.0
Compressor	Type	Scroll (fixed speed)		Scroll (digital+fixed speed)	Scroll (fixed speed)	Scroll (digital+fixed speed)
	Brand	Copeland		Copeland	Copeland	Copeland
	Model	ZP67KCE-TFD-522		ZPD67KCE-TFD-532/ ZP67KCE-TFD-522	ZP67KCE-TFD-522	ZPD67KCE-TFD-532/ ZP67KCE-TFD-522
	Quantity	Pieces	2	1/1	2	1/1
	Capacity	kW	16.2	16.2/16.2	16.2	16.2/16.2
	Input	kW	5.2	5.26/5.2	5.2	5.26/5.2
	Rated load Amps(RLA)	A	11.8	10.6/11.8	11.8	10.6/11.8
	Locked rotor Amp(LRA)	A	74	74/74	74	74/74
	Refrigerant oil	ml	1656	1892/1656	1892	1892/1656
	Type		R410A	R410A	R410A	R410A
Refrigerant	Refrigerant control	EXV		EXV	EXV	
	Weight	kg	3.5×2	3.5×2	3.5×2	3.5×2
	Type	Fin-coil		Fin-coil	Fin-coil	
Condenser (Air side)	Number of rows	3		3	3	
	Fan motor model	YDK400-8-YA		YDK400-8-YA	YDK400-8-YA	
	Quantity of fan motor	Pieces	1	1	1	
	Air flow	×10 ³ m ³ /h	12	12	12	
	Fan motor rated current	A	3.1	3.1	3.1	
	Fan motor input	kW	0.67	0.67	0.67	
	Type	Double-pipe		Double-pipe	Double-pipe	
	Water pressure drop	kPa	60	60	60	
Evaporator (Water side)	Volume	L	10	10	10	
	Water inlet/outlet pipeline inside normal diameter	mm	DN40	DN40	DN40	
	Water flow volume	m ³ /h	4.4	4.4	5.2	
	Max. Pressure	Mpa	1	1	1	
	Water pipe connection type	Flexible joint		Flexible joint	Flexible joint	
	Net(D×H×W)	mm	1514×1865×841	1514×1865×841	1514×1865×841	
Weight	Net weight	kg	380	380	380	
	Operation weight	kg	420	420	420	
Connection wiring	Power wire	mm ²	10×4+10×1	10×4+10×1	10×4+10×1	
	Signal wire	mm ²	0.75×3-core with shielding	0.75×3-core with shielding	0.75×3-core with shielding	
Control type		Wired controller		Wired controller	Wired controller	
Noise level		dB(A)	65	65	65	

- 1) Protection for over-high discharge pressure. 7) Protection for compressor overload.
 2) Protection for over-low suction pressure. 8) Outlet and inlet water temperature difference protection.
 3) Power supply phase sequence protection. 9) Compressor discharge temperature protection.
 4) Anti-freezing protection in cooling mode. 10) Water flow cut-off protection.
 5) Anti-freezing protection in Winter. 11) Sensor malfunction protection.
 6) Protection for compressor over current. 12) Low-temperature protection of shell and tube heat exchanger.

Operation water temp	°C	Cooling : 5 ~ 17 Heating : 45 ~ 50
Ambient temp	°C	Cooling : 10 ~ 46 Heating : -10 ~ 21

Note: Specifications are based on the following conditions:

- Cooling : chilled water inlet/outlet: 12°C / 7°C, and outdoor ambient temp. of 35°C DB.
- Heating : warm water inlet/outlet: 40°C / 45°C, and outdoor ambient temp. 7°CDB/6°CWB.
- Water side fouling factor: 0.086m²·°C/kW.
- 1m away in open field(sound pressure).

Model		MGCSL-F30W/RN1	MGCSL-D30W/RN1	MGCL-F30W/RN1	MGCL-D30W/RN1
Cooling Capacity		kW	30	30	30
Heating Capacity		kW	32	32	32
Power input	Cooling	kW	10+1.2(Pump)	10+1.2(Pump)	10.0
	Cooling rated current	A	18.3	18.3	16.3
	Heating	kW	9.8+1.2(Pump)	9.8+1.2(Pump)	9.8
	Heating rated current	A	17.8	17.8	16.0
Power supply		V/Ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50
Power supply	Manual switch	A	50	50	50
	Fuse	A	36	36	36
Max. Input consumption		kW	13.4	13.4	12.6
Max. Current		A	25.3	25.3	21.1
Compressor	Type	Scroll (fixed speed)		Scroll (digital+fixed speed)	Scroll (fixed speed)
	Brand	Copeland		Copeland	Copeland
	Model	ZP67KCE-TFD-522		ZPD67KCE-TFD-532/ ZP67KCE-TFD-522	ZP67KCE-TFD-522
	Quantity	Pieces	2	1/1	2
	Capacity	kW	16.2	16.2/16.2	16.2
	Input	kW	5.2	5.26/5.2	5.2
	Rated load Amps(RLA)	A	11.8	10.6/11.8	11.8
	Locked rotor Amp(LRA)	A	74	74/74	74
	Refrigerant oil	ml	1892	1892/1656	1892
	Type		R410A	R410A	R410A
Refrigerant	Refrigerant control	EXV		EXV	EXV
	Weight	kg	3.5×2	3.5×2	3.5×2
	Type	Fin-coil		Fin-coil	Fin-coil
Condenser (Air side)	Number of rows	3		3	3
	Fan motor model	YDK550-6E		YDK550-6E	YDK550-6E
	Quantity of fan motor	Pieces	1	1	1
	Air flow	×10 ³ m ³ /h	12	12	12
	Fan motor rated current	A	4.0	4.0	3.1
	Fan motor input	kW	0.865	0.865	0.40
	Type	Double-pipe		Double-pipe	Double-pipe
	Water pressure drop	kPa	/	/	60
Evaporator (Water side)	Volume	L	10	10	10
	Water inlet/outlet pipeline inside normal diameter	mm	DN40	DN40	DN40
	Water flow volume	m ³ /h	5.2	5.2	5.2
	Max. Pressure	Mpa	1	1	1
	Water pipe connection type	Flexible joint		Flexible joint	Flexible joint
	Net(D×H×W)	mm	1514×1865×841	1514×1865×841	1514×1865×841
Weight	Net weight	kg	430	430	375
	Operation weight	kg	450	450	400
Connection wiring	Power wire	mm ²	10×4+6×1	10×4+6×1	10×4+6×1
	Signal wire	mm ²	0.75×3-core with shielding	0.75×3-core with shielding	0.75×3-core with shielding
Control type		Wired controller		Wired controller	Wired controller
Noise level		dB(A)	67	67	65

- 1) Protection for over-high discharge pressure. 8) Outlet and inlet water temperature difference protection.
 2) Protection for over-low suction pressure. 9) Compressor discharge temperature protection.
 3) Power supply phase sequence protection. 10) Water flow cut-off protection.
 4) Anti-freezing protection in cooling mode. 11) Sensor malfunction protection.
 5) Anti-freezing protection in Winter. 12) Low ambient temperature drive-up protection
 6) Protection for compressor over current. 13) Low temperature protection of shell and tube heat exchanger.
 7) Protection for compressor overload.

Operation water temp	°C	Cooling : 0 ~ 17(Less than 5°C must add antifreeze) Heating : 22 ~ 50
Ambient temp	°C	Cooling : -10 ~ 46 Heating : -10 ~ 21

Note: Specifications are based on the following conditions:

- Cooling : chilled water inlet/outlet: 12°C / 7°C, and outdoor ambient temp. of 35°C DB.
- Heating : warm water inlet/outlet: 40°C / 45°C, and outdoor ambient temp. 7°CDB/6°CWB.
- Water side fouling factor: 0.086m²·°C/kW.
- 1m away in open field(sound pressure).

Model		MGB-F55W/RN1	MGB-F60W/RN1	MGB-F65W/RN1	MGB-D65W/RN1
Cooling Capacity		kW	55	60	65
Heating Capacity		kW	59	64	69
Power input	Cooling	kW	17.5	19.3	20.4
	Cooling rated current	A	30.5	33.6	36.5
	Heating	kW	18.3	19.8	21.5
	Heating rated current	A	31.5	34.3	37.2
Power supply		V/Ph/Hz	380-400/3/50	380-400/3/50	380-400/3/50
Power supply	Manual switch	A	125	125	100
	Fuse	A	100	100	70
Max. Input consumption		kW	28.2	28.2	27.5
Max. Current		A	49.8	49.8	54.5
Compressor	Type	Scroll (fixed speed)		Scroll (fixed speed)	Scroll (fixed speed+digital)
	Brand	Danfoss		Danfoss	Copeland
	Model	SH140A4ALC	SH140A4ALC	SH140A4ALC	ZP144KCE-TFD-522 / ZPD72KCE-TFD-433 / ZP67KCE-TFD-420
	Quantity	Pieces	2	2	3
	Capacity	kW	34.7	34.7	35.4/15.848/16.2
	Input	kW	10.86	10.86	10.8/5.75/5.2
	Rated load Amps(RLA)	A	21.4	21.4	21.1/12.7/11.8
	Locked rotor Amp(LRA)	A	147	147	144/82.4/74
	Refrigerant oil	ml	3300	3300	3200/1893/1685
Refrigerant	Type	R410A		R410A	R410A
	Refrigerant control	EXV+ capillary		EXV+ capillary	EXV+ capillary
	Weight	kg	7.0×2	7.0×2	7.0×2
Condenser (Air side)	Type	Fin-coil		Fin-coil	Fin-coil
	Number of rows	3		3	3
	Fan motor model	YDK550-6D		YDK550-6D	YDK550-6E
	Quantity of fan motor	Pieces	2	2	2
	Air flow	×10³m³/h	24	24	24
	Fan motor rated current	A	4.0×2	4.0×2	4.0×2
	Fan motor input	kW	0.865×2	0.865×2	0.865×2
Evaporator (Water side)	Type	Shell-tube		Shell-tube	Shell-tube
	Water pressure drop	kPa	15	15	15
	Volume	L	42	42	42
	Water inlet/outlet pipeline inside normal diameter	mm	DN100	DN100	DN100
	Water flow volume	m³/h	9.4	10.3	11.2
	Max. Pressure	Mpa	1	1	1
	Water pipe connection type	Flexible joint		Flexible joint	Flexible joint
Dimension	Net(D×H×W)	mm	2000×1880×900	2000×1880×900	2000×1880×900
	Packing(D×H×W)	mm	2090×2055×985	2090×2055×985	2090×2055×985
Weight	Net weight	kg	580	580	600
	Operation weight	kg	650	650	670
Connection wiring	Power wire	mm²	16×4+10×1	16×4+10×1	25×4+16×1
	Signal wire	mm²	0.75×3-core with shielding	0.75×3-core with shielding	0.75×3-core with shielding
Control type		Wired controller		Wired controller	Wired controller
Noise level		dB(A)		67	67
Safety protection device		1) Protection for over-high discharge pressure. 7) Protection for compressor overload. 2) Protection for over-low suction pressure. 8) Outlet and inlet water temperature difference protection. 3) Power supply phase sequence protection. 9) Compressor discharge temperature protection. 4) Anti-freezing protection in cooling mode. 10) Water flow cut-off protection. 5) Anti-freezing protection in Winter. 11) Sensor malfunction protection. 6) Protection for compressor over current. 12) Low-temperature protection of shell and tube heat exchanger.			
Operation water temp		°C		Cooling: 5 ~ 17 Heating: 45 ~ 50	Cooling: 0 ~ 17(Less than 5°C must add antifreeze) Heating: 22 ~ 50
Ambient temp		°C		Cooling: 10 ~ 46 Heating: -10 ~ 21	

Note: Specifications are based on the following conditions:
 ■ Cooling: chilled water inlet/outlet: 12°C / 7°C, and outdoor ambient temp. of 35°C DB.
 ■ Heating: warm water inlet/outlet: 40°C / 45°C, and outdoor ambient temp. 7°C DB/6°C CWB.
 ■ Water side fouling factor: 0.086m²·°C/kW.
 ■ 1m away in open field(sound pressure).

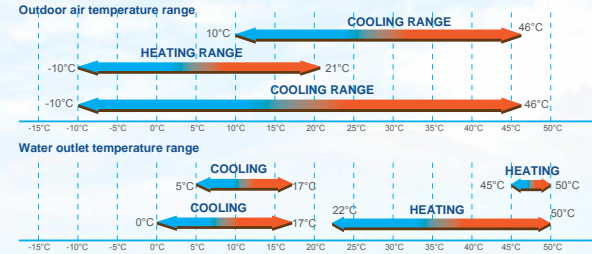
Model		MGBL-F65W/RN1	MGBL-D65W/RN1	MGB-F130W/RN1	MGBL-F130W/RN1
Cooling Capacity		kW	65	65	130
Heating Capacity		kW	69	69	138
Power input	Cooling	kW	20.4	20.4	40.8
	Cooling rated current	A	36.5	36.5	73
	Heating	kW	21.5	21.5	43
	Heating rated current	A	37.2	37.2	74.4
Power supply		V/Ph/Hz	380-400/3/50	380-415/3/50	380-400/3/50
Power supply	Manual switch	A	150	150	250
	Fuse	A	100	100	200
Max. Input consumption		kW	27.9	27.1	55.5
Max. Current		A	54.5	54.5	109
Compressor	Type	Scroll (fixed speed)		Scroll (fixed speed+digital)	Scroll (fixed speed)
	Brand	Danfoss		Copeland	Danfoss
	Model	SH140A4ALC		ZP144KCE-TFD-522 / ZPD72KCE-TFD-433 / ZP67KCE-TFD-420	SH140A4ALC
	Quantity	Pieces	2	3	4
	Capacity	kW	34.7	35.4/16.848/16.2	34.7
	Input	kW	11.2	10.8/5.75/5.2	10.86
	Rated load Amps(RLA)	A	21.4	21.1/12.7/11.8	21.4
	Locked rotor Amp(LRA)	A	147	144/82.4/74	147
	Refrigerant oil	ml	3300	3200/1893/1685	3300
Refrigerant	Type	R410A		R410A	R410A
	Refrigerant control	EXV+ capillary		EXV+ capillary	EXV+ capillary
	Weight	kg	7.0×2	7.0×2	7.0×4
Condenser (Air side)	Type	Fin-coil		Fin-coil	Fin-coil
	Number of rows	3		3	3
	Fan motor model	YDK550-6E		YDK550-6E	YDK550-6E
	Quantity of fan motor	Pieces	2	2	4
	Air flow	×10³m³/h	24	24	48
	Fan motor rated current	A	4.0×2	4.0×2	4.0×4
	Fan motor input	kW	0.865×2	0.865×2	0.865×4
Evaporator (Water side)	Type	Shell-tube		Shell-tube	Shell-tube
	Water pressure drop	kPa	15	15	25
	Volume	L	42	42	64
	Water inlet/outlet pipeline inside normal diameter	mm	DN100	DN100	DN65
	Water flow volume	m³/h	11.2	11.2	22.4
	Max. Pressure	Mpa	1	1	1
	Water pipe connection type	Flexible joint		Flexible joint	Flexible joint
Dimension	Net(D×H×W)	mm	2000×1880×900	2000×1880×900	2000×2090×1685
	Packing(D×H×W)	mm	2106×2090×998	2106×2090×998	2090×2240×1755
Weight	Net weight	kg	580	610	1150
	Operation weight	kg	650	680	1270
Connection wiring	Power wire	mm²	25×4+16×1	25×4+16×1	35×3+16×2
	Signal wire	mm²	0.75×3-core with shielding	0.75×3-core with shielding	0.75×3-core with shielding
Control type		Wired controller		Wired controller	Wired controller
Noise level		dB(A)		67	70
Safety protection device		1) Protection for over-high discharge pressure. 7) Protection for compressor overload. 2) Protection for over-low suction pressure. 8) Outlet and inlet water temperature difference protection. 3) Power supply phase sequence protection. 9) Compressor discharge temperature protection. 4) Anti-freezing protection in cooling mode. 10) Water flow cut-off protection. 5) Anti-freezing protection in Winter. 11) Sensor malfunction protection. 6) Protection for compressor over current. 12) Low-temperature protection of shell and tube heat exchanger.			
Operation water temp		°C		Cooling: 0 ~ 17(Less than 5°C must add antifreeze) Heating: 22 ~ 50	Cooling: 5 ~ 17 Heating: 45 ~ 50
Ambient temp		°C		Cooling: -10 ~ 46 Heating: -10 ~ 21	Cooling: -10 ~ 46 Heating: -10 ~ 21

Note: Specifications are based on the following conditions:
 ■ Cooling: chilled water inlet/outlet: 12°C / 7°C, and outdoor ambient temp. of 35°C DB.
 ■ Heating: warm water inlet/outlet: 40°C / 45°C, and outdoor ambient temp. 7°C DB/6°C CWB.
 ■ Water side fouling factor: 0.086m²·°C/kW.
 ■ 1m away in open field(sound pressure).

Model		MGB-F200W/RN1	MGBL-F200W/RN1	MGBT-F250W/RN1	MGBL-F250W/RN1		
Cooling Capacity		kW		185	185	250	250
Heating Capacity		kW		200	200	270	270
Power input	Cooling	kW		63	63	78.3	78.3
	Cooling rated current	A		110	110	141.9	141.9
	Heating	kW		61	61	80	80
	Heating rated current	A		107	107	146	146
Power supply		V/Ph/Hz	380-400/3/50	380-400/3/50	380-400/3/50	380-400/3/50	380-400/3/50
Power supply	Manual switch	A		400	400	450	450
	Fuse	A		350	350	350	350
Max. Input consumption		kW		78.3	78.3	104.9	104.9
Max. Current		A		150	150	200	200
Compressor	Type	Scroll (fixed speed)		Scroll (fixed speed)	Scroll (fixed speed)	Scroll (fixed speed)	Scroll (fixed speed)
	Brand	Danfoss		Danfoss	Danfoss	Danfoss	Danfoss
	Model	SH140A4ALC		SH140A4ALC	SH120A4ALC	SH120A4ALC	SH120A4ALC
	Quantity	Pieces	6	6	8	8	8
	Capacity	kW		34.7	34.7	32.6	32.6
	Input	kW		10.86	10.86	10.3	10.3
	Rated load Amps(RLA)	A		21.4	21.4	20.7	20.7
	Locked rotor Amp(LRA)	A		147	147	142	142
	Refrigerant oil	ml		3300	3300	3300	3300
	Refrigerant	Type	R410A		R410A	R410A	R410A
Refrigerant control	EXV+ capillary		EXV+ capillary	EXV+ capillary	EXV+ capillary	EXV+ capillary	
Weight	kg		7.0×6	7.0×6	15×4	15×4	
Condenser (Air side)	Type	Fin-coil		Fin-coil	Fin-coil	Fin-coil	Fin-coil
	Number of rows	3		3	3	3	
	Fan motor model	YDK550-6D		YDK550-6E	YS700-6F-1/YS700-6F-2	YDK550-6E	
	Quantity of fan motor	Pieces	6	6	6/2	6	
	Air flow	×10 ³ m ³ /h	72	72	96	96	
	Fan motor rated current	A	4.0×6	4.0×6	1.8×8	4.0×8	
Fan motor input	kW		0.865×6	0.865×6	0.9×8	0.865×8	
Evaporator (Water side)	Type	Shell-tube		Shell-tube	Shell-tube	Shell-tube	
	Water pressure drop	kPa		30	30	40	40
	Volume	L		90	90	131	131
	Water inlet/outlet pipeline inside normal diameter	mm		DN80	DN80	DN100	DN100
	Water flow volume	m ³ /h		31.8	31.8	43	43
	Max. Pressure	Mpa		1	1	1	1
Water pipe connection type	Flexible joint		Flexible joint	Flexible joint	Flexible joint	Flexible joint	
Dimension	Net(D×H×W)	mm		2850×2110×2000	2850×2110×2000	3800×2130×2000	3800×2130×2000
	Packing(D×H×W)	mm		2980×2260×2135	2980×2260×2135	3900×2200×2100	3900×2200×2100
Weight	Net weight	kg		1730	1730	2450	2450
	Operation weight	kg		2000	2000	2600	2600
Connection wiring	Power wire	mm ²		75×3+35×2	75×3+35×2	185×4+70×1	150×4+70×1
	Signal wire	mm ²		0.75×3-core with shielding	0.75×3-core with shielding	0.75×3-core with shielding	0.75×3-core with shielding
Control type	Wired controller		Wired controller	Wired controller	Wired controller	Wired controller	
Noise level	dB(A)		74	74	74	74	
Safety protection device	1) Protection for over-high discharge pressure. 7) Protection for compressor overload.						
	2) Protection for over-low suction pressure. 8) Outlet and inlet water temperature difference protection.						
	3) Power supply phase sequence protection. 9) Compressor discharge temperature protection.						
	4) Anti-freezing protection in cooling mode. 10) Water flow cut-off protection.						
	5) Anti-freezing protection in Winter. 11) Sensor malfunction protection.						
	6) Protection for compressor over current. 12) Low-temperature protection of shell and tube heat exchanger.						
Operation water temp	°C		Cooling: 5 ~ 17 Heating: 45 ~ 50	Cooling: 0 ~ 17(Less than 5°C must add antifreeze) Heating: 22 ~ 50			
Ambient temp	°C		Cooling: 10 ~ 46 Heating: -10 ~ 21	Cooling: -10 ~ 46 Heating: -10 ~ 21	Cooling: 10 ~ 52 Heating: -10 ~ 21	Cooling: -10 ~ 46 Heating: -10 ~ 21	

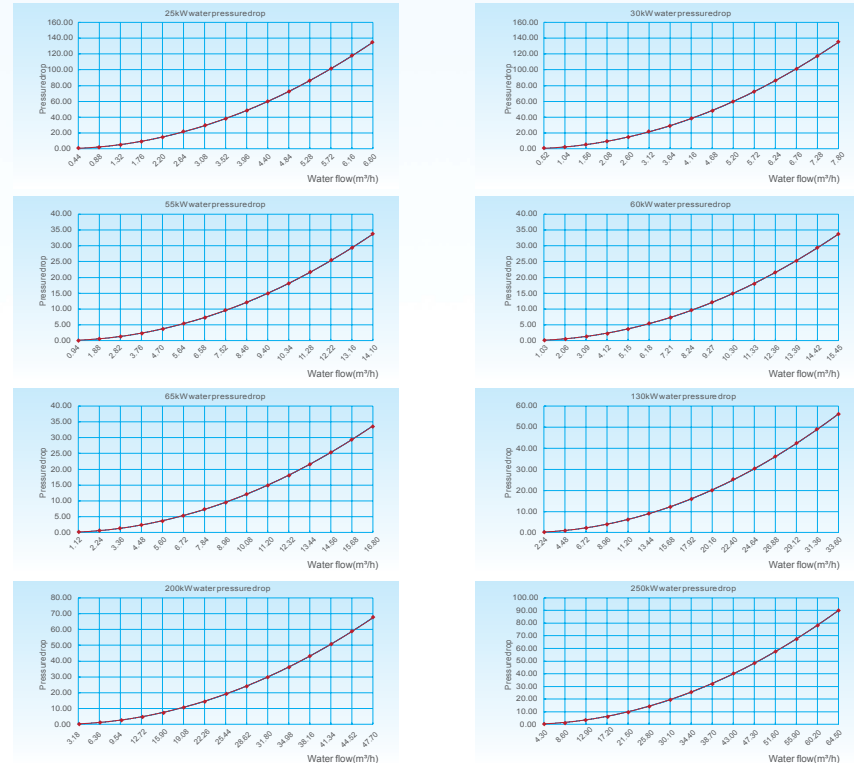
Application range

Operation temperature range



Mode	Outdoor ambient temperature range	Water outlet temperature range
Cooling	10°C~46°C	0°C~17°C (7°C is default, less than 5°C must add antifreeze)
	-10°C~46°C	5°C~17°C (7°C is default)
Heating	-10°C~21°C	22°C ~ 50°C (45°C is default)

Water pressure drop



Glycol factors

A glycol solution is required when the unit with condition as mentioned. The use of glycol will reduce the performance of the unit depending on concentration.

Ethylene glycol:

Quality of glycol%	Modification coefficient				Freezing point °C
	Cooling capacity modification	Power modification	Water resistance	Water flow modification	
0	1.000	1.000	1.000	1.000	0
10	0.984	0.998	1.118	1.019	-4.000
20	0.973	0.995	1.268	1.051	-9.000
30	0.965	0.992	1.482	1.092	-16.000
40	0.960	0.989	1.791	1.145	-23.000
50	0.950	0.983	2.100	1.200	-37.000

Propylene glycol:

Quality of glycol%	Modification coefficient				Freezing point °C
	Cooling capacity modification	Power modification	Water resistance	Water flow modification	
0	1.000	1.000	1.000	1.000	0
10	0.976	0.996	1.071	1.000	-3.000
20	0.961	0.992	1.189	1.016	-7.000
30	0.948	0.988	1.380	1.034	-13.000
40	0.938	0.984	1.728	1.078	-22.000
50	0.925	0.975	2.150	1.125	-35.000

Units operating with glycol solutions are not included in the ARI Certification Program.

Fouling factor

ALTITUDE (m)	Difference of water inlet and outlet temp (°C)	Fouling Factor							
		0.018 °C /kW		0.044m 2 °C /kW		0.086m 2 °C /kW		0.172m 2 °C /kW	
		C	P	C	P	C	P	C	P
Sea level	3	1.036	1.077	1.019	1.076	0.991	0.975	0.963	0.983
	4	1.039	1.101	1.022	1.080	0.994	0.996	0.971	0.984
	5	1.045	1.105	1.028	1.086	1.000	1.000	0.977	0.989
	6	1.051	1.109	1.034	1.093	1.006	1.004	0.983	0.994
600	3	1.024	1.087	1.008	1.064	0.980	0.984	0.951	0.991
	4	1.027	1.111	1.011	1.068	0.983	1.005	0.959	0.992
	5	1.034	1.115	1.017	1.074	0.989	1.009	0.965	0.997
	6	1.043	1.115	1.026	1.084	0.998	1.009	0.973	0.999
1200	3	1.013	1.117	0.996	1.052	0.969	1.011	0.942	1.002
	4	1.015	1.118	0.998	1.055	0.971	1.012	0.948	1.003
	5	1.023	1.122	1.006	1.063	0.979	1.015	0.955	1.005
	6	1.031	1.125	1.015	1.072	0.987	1.018	0.962	1.007
1800	3	1.002	1.128	0.986	1.042	0.959	1.021	0.935	1.007
	4	1.005	1.129	0.989	1.045	0.962	1.022	0.941	1.010
	5	1.012	1.132	0.995	1.051	0.968	1.024	0.945	1.012
	6	1.018	1.134	1.001	1.058	0.974	1.026	0.949	1.014

C--Cooling capacity P--Power

Performance data

Cooling:

Chilled water outlet temp (°C)	Model	Ambient temp (°C)												
		21		25		30		35		40		46		
		Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	
5	25kW	31.35	8.19	29.52	8.44	27.85	8.71	26.32	8.97	24.66	9.42	22.69	9.89	
	30kW	33.59	8.81	31.63	9.08	29.84	9.36	28.2	9.65	26.42	10.13	24.31	10.64	
	55kW	61.58	15.41	57.98	15.89	54.7	16.38	51.7	16.89	48.44	17.73	44.57	18.62	
	60kW	67.17	17	63.25	17.52	59.67	18.07	56.4	18.62	52.85	19.56	48.62	20.53	
	65kW	72.77	17.97	68.52	18.52	64.64	19.1	61.1	19.69	57.25	20.67	52.67	21.7	
	130kW	145.54	35.93	137.04	37.05	129.29	38.19	122.2	39.37	114.5	41.34	105.34	43.41	
	200kW	207.12	55.49	195.03	57.2	183.99	58.97	173.9	60.8	162.94	63.83	149.91	67.03	
	250kW	279.89	68.96	263.55	71.09	248.63	73.29	235	75.56	220.2	79.34	202.58	83.3	
	6	25kW	32.41	8.32	30.49	8.58	28.73	8.84	27.13	9.11	25.45	9.57	23.44	10.05
		30kW	34.72	8.94	32.66	9.22	30.79	9.51	29.07	9.8	27.27	10.29	25.11	10.8
55kW		63.65	15.65	59.88	16.14	56.44	16.64	53.3	17.15	49.99	18.01	46.04	18.91	
60kW		69.44	17.26	65.33	17.8	61.57	18.35	58.14	18.91	54.54	19.86	50.23	20.85	
65kW		75.23	18.25	70.77	18.81	66.7	19.39	62.99	19.99	59.08	20.99	54.41	22.04	
130kW		150.46	36.49	141.54	37.62	133.4	38.78	125.97	39.98	118.16	41.98	108.83	44.08	
200kW		214.11	56.35	201.42	58.09	189.84	59.89	179.27	61.74	168.15	64.83	154.87	68.07	
250kW		289.34	70.03	272.19	72.2	256.54	74.43	242.25	76.73	227.23	80.57	209.28	84.6	
7		25kW	33.54	8.49	31.52	8.75	29.68	9.02	28	9.3	26.29	9.77	24.24	10.25
		30kW	35.93	9.13	33.77	9.41	31.8	9.7	30	10	28.17	10.5	25.97	11.03
	55kW	65.88	15.97	61.91	16.47	58.3	16.98	55	17.5	51.65	18.38	47.62	19.29	
	60kW	71.87	17.61	67.54	18.16	63.6	18.72	60	19.3	56.34	20.27	51.95	21.28	
	65kW	77.85	18.62	73.17	19.19	68.9	19.79	65	20.4	61.04	21.42	56.27	22.49	
	130kW	155.71	37.24	146.34	38.39	137.8	39.58	130	40.8	122.07	42.84	112.55	44.98	
	200kW	221.59	57.5	208.26	59.28	196.1	61.11	185	63	173.72	66.15	160.17	69.46	
	250kW	299.44	71.46	281.43	73.67	265	75.95	250	78.3	234.75	82.22	216.44	86.33	

Note: The inlet/outlet water temperature difference is 5°C.

Chilled water outlet temp. (°C)	Model	Ambient temp (°C)											
		21		25		30		35		40		46	
		Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power
8	25kW	34.57	8.74	32.46	9.01	30.54	9.29	28.78	9.58	27.06	10.06	24.97	10.56
	30kW	37.04	9.4	34.78	9.69	32.72	9.99	30.84	10.3	28.99	10.82	26.76	11.36
	55kW	67.91	16.45	63.77	16.96	59.99	17.48	56.54	18.03	53.15	18.93	49.06	19.87
	60kW	74.09	18.14	69.57	18.7	65.44	19.28	61.68	19.88	57.98	20.87	53.51	21.92
	65kW	80.26	19.18	75.36	19.77	70.9	20.38	66.82	21.01	62.81	22.06	57.97	23.17
	130kW	160.52	38.35	150.72	39.54	141.79	40.76	133.64	42.02	125.62	44.13	115.95	46.33
	200kW	228.44	59.22	214.49	61.06	201.78	62.94	190.18	64.89	178.77	68.13	165	71.54
	250kW	308.7	73.61	289.86	75.88	272.68	78.23	257	80.65	241.58	84.68	222.98	88.92
9	25kW	35.55	8.83	33.35	9.1	31.34	9.38	29.51	9.67	27.77	10.16	25.66	10.66
	30kW	38.09	9.49	35.73	9.79	33.58	10.09	31.62	10.4	29.75	10.92	27.49	11.47
	55kW	69.83	16.61	65.5	17.12	61.56	17.65	57.97	18.2	54.55	19.11	50.4	20.07
	60kW	76.18	18.32	71.46	18.89	67.16	19.47	63.24	20.07	59.51	21.08	54.99	22.13
	65kW	82.52	19.36	77.41	19.96	72.76	20.58	68.51	21.22	64.47	22.28	59.57	23.39
	130kW	165.05	38.73	154.83	39.92	145.52	41.16	137.02	42.43	128.94	44.55	119.14	46.78
	200kW	234.87	59.8	220.33	61.65	207.08	63.55	194.99	65.52	183.49	68.8	169.54	72.24
	250kW	317.4	74.32	297.75	76.62	279.84	78.99	263.5	81.43	247.95	85.5	229.11	89.78
10	25kW	36.9	8.96	34.58	9.24	32.47	9.52	30.54	9.82	28.77	10.31	26.62	10.82
	30kW	39.53	9.63	37.05	9.93	34.79	10.24	32.73	10.56	30.83	11.08	28.52	11.64
	55kW	72.48	16.86	67.92	17.38	63.78	17.92	60	18.47	56.52	19.4	52.28	20.37
	60kW	79.06	18.59	74.1	19.17	69.58	19.76	65.45	20.37	61.66	21.39	57.03	22.46
	65kW	85.65	19.65	80.27	20.26	75.38	20.89	70.91	21.53	66.8	22.61	61.79	23.74
	130kW	171.31	39.31	160.55	40.52	150.75	41.78	141.82	43.07	133.59	45.22	123.57	47.48
	200kW	237.19	60.7	222.3	62.57	208.73	64.51	196.36	66.5	184.97	69.83	171.1	73.32
	250kW	329.43	75.44	308.75	77.77	289.9	80.17	272.72	82.65	256.9	86.79	237.64	91.13
11	25kW	37.93	9.05	35.51	9.33	33.31	9.62	31.31	9.91	29.52	10.41	27.34	10.93
	30kW	40.63	9.73	38.05	10.03	35.69	10.34	33.54	10.66	31.63	11.19	29.29	11.75
	55kW	74.5	17.03	69.75	17.55	65.43	18.1	61.5	18.66	57.99	19.59	53.7	20.57
	60kW	81.27	18.78	76.09	19.36	71.38	19.96	67.09	20.57	63.27	21.6	58.58	22.68
	65kW	88.04	19.85	82.44	20.46	77.33	21.09	72.68	21.75	68.54	22.83	63.47	23.98
	130kW	176.08	39.69	164.87	40.92	154.66	42.19	145.36	43.49	137.08	45.67	126.93	47.95
	200kW	243.81	61.29	228.28	63.19	214.15	65.14	201.27	67.16	189.8	70.52	175.75	74.04
	250kW	338.62	76.18	317.06	78.53	297.43	80.96	279.54	83.47	263.61	87.64	244.1	92.02
12	25kW	38.79	9.18	36.29	9.46	34.01	9.76	31.93	10.06	30.15	10.56	27.95	11.09
	30kW	41.56	9.87	38.88	10.18	36.44	10.49	34.22	10.82	32.3	11.36	29.94	11.92
	55kW	76.2	17.28	71.28	17.81	66.81	18.36	62.73	18.93	59.22	19.87	54.89	20.87
	60kW	83.13	19.05	77.76	19.64	72.88	20.25	68.43	20.87	64.6	21.92	59.88	23.01
	65kW	90.06	20.14	84.24	20.76	78.95	21.4	74.13	22.06	69.98	23.17	64.87	24.33
	130kW	180.11	40.28	168.49	41.52	157.91	42.81	148.27	44.13	139.97	46.34	129.75	48.65
	200kW	249.38	62.19	233.29	64.11	218.64	66.1	205.29	68.14	193.8	71.55	179.65	75.13
	250kW	346.37	77.29	324.01	79.68	303.66	82.15	285.13	84.69	269.16	88.92	249.52	93.37
13	25kW	39.49	9.25	36.9	9.54	34.55	9.84	32.41	10.14	30.63	10.65	28.43	11.18
	30kW	42.31	9.95	39.54	10.26	37.02	10.58	34.73	10.9	32.82	11.45	30.46	12.02
	55kW	77.56	17.41	72.49	17.95	67.87	18.51	63.67	19.08	60.17	20.03	55.84	21.04
	60kW	84.61	19.2	79.08	19.8	74.04	20.41	69.46	21.04	65.64	22.09	60.91	23.2
	65kW	91.66	20.3	85.67	20.93	80.21	21.57	75.25	22.24	71.11	23.35	65.99	24.52
	130kW	183.33	40.6	171.33	41.85	160.42	43.15	150.49	44.48	142.22	46.71	131.98	49.04
	200kW	253.84	62.69	237.23	64.63	222.13	66.63	208.37	68.69	196.91	72.12	182.74	75.73
	250kW	352.55	77.91	329.49	80.32	308.51	82.81	289.41	85.37	273.49	89.64	253.8	94.12

Note: The inlet/outlet water temperature difference is 5°C.

Chilled water outlet temp. (°C)	Model	Ambient temp (°C)											
		21		25		30		35		40		46	
		Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power
14	25kW	40.47	9.32	37.79	9.61	35.35	9.9	33.13	10.21	31.34	10.72	29.11	11.26
	30kW	43.36	10.02	40.48	10.33	37.87	10.65	35.49	10.98	33.58	11.53	31.19	12.1
	55kW	79.49	17.53	74.22	18.08	69.43	18.64	65.07	19.21	61.56	20.17	57.19	21.18
	60kW	86.72	19.34	80.97	19.94	75.74	20.55	70.99	21.19	67.15	22.25	62.38	23.36
	65kW	93.94	20.44	87.72	21.07	82.05	21.72	76.9	22.4	72.75	23.52	67.58	24.69
	130kW	187.89	40.88	175.43	42.14	164.11	43.45	153.8	44.79	145.5	47.03	135.17	49.38
	200kW	260.15	63.12	242.91	65.08	227.23	67.09	212.96	69.16	201.46	72.62	187.15	76.25
	250kW	361.32	78.45	337.37	80.88	315.59	83.38	295.78	85.96	279.8	90.26	259.94	94.77
15	25kW	40.99	9.36	38.23	9.65	35.73	9.95	33.46	10.26	31.68	10.77	29.47	11.31
	30kW	43.92	10.07	40.97	10.38	38.29	10.7	35.85	11.03	33.95	11.58	31.57	12.16
	55kW	80.5	17.62	75.1	18.17	70.19	18.73	65.72	19.31	62.24	20.27	57.88	21.29
	60kW	87.83	19.43	81.93	20.03	76.57	20.65	71.7	21.29	67.9	22.36	63.14	23.47
	65kW	95.15	20.54	88.76	21.18	82.95	21.83	77.67	22.51	73.55	23.63	68.41	24.81
	130kW	190.3	41.08	177.52	42.35	165.9	43.66	155.34	45.01	147.11	47.26	136.81	49.63
	200kW	263.49	63.43	245.79	65.4	229.71	67.42	215.09	69.5	203.69	72.98	189.43	76.63
	250kW	365.96	78.84	341.38	81.28	319.05	83.79	298.73	86.38	282.9	90.7	263.1	95.24

Note: The inlet/outlet water temperature difference is 5°C.

Heating:

Hot water outlet temp	Model	Ambient temp (°C)													
		-10		-6		-2		2		7		10		13	
		Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power
40	25kW	18.34	5.76	22.92	6.54	26.97	7.27	29.96	7.9	32.57	8.32	36.47	8.82	41.95	9.52
	30kW	19.89	6.13	24.86	6.97	29.25	7.74	32.5	8.42	35.33	8.86	39.57	9.39	45.5	10.14
	55kW	40.4	11.45	45.84	13.01	53.93	14.46	59.92	15.71	65.13	16.54	72.95	17.53	83.89	18.94
	60kW	39.78	12.39	49.73	14.08	58.5	15.64	65	17	70.65	17.9	79.13	18.97	91	20.49
	65kW	42.89	13.45	53.61	15.29	63.07	16.99	70.08	18.46	76.17	19.43	85.31	20.6	98.11	22.25
	130kW	85.78	26.91	107.22	30.57	126.14	33.97	140.16	36.93	152.34	38.87	170.63	38.33	196.22	41.39
	200kW	124.31	38.17	155.39	43.37	182.81	48.19	203.13	52.38	220.79	55.14	247.28	58.45	284.38	63.12
	250kW	167.82	50.06	209.78	56.88	246.8	63.2	274.22	68.7	298.07	72.31	333.83	76.65	383.91	82.78
41	25kW	17.72	5.87	22.18	6.67	26.12	7.42	29.06	8.06	31.62	8.49	35.35	8.99	40.58	9.71
	30kW	19.22	6.26	24.06	7.11	28.34	7.9	31.52	8.59	34.3	9.04	38.34	9.58	44.02	10.35
	55kW	35.44	11.68	44.36	13.28	52.24	14.75								

Hot water outlet temp (°C)	Model	Ambient temp (°C)															
		-10		-6		-2		2		7		10		13			
		Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power		
43	25kW	16.79	6.12	21.07	6.95	24.88	7.72	27.73	8.39	30.24	8.84	33.69	9.37	38.54	10.12		
	30kW	18.22	6.52	22.86	7.4	26.98	8.23	30.08	8.94	32.8	9.41	36.54	9.98	41.81	10.77		
	55kW	33.58	12.17	42.14	13.82	49.75	15.36	55.46	16.7	60.48	17.58	67.38	18.63	77.08	20.12		
	60kW	36.43	13.16	45.71	14.96	53.97	16.62	60.16	18.07	65.61	19.02	73.09	20.16	83.61	21.77		
	65kW	39.28	14.29	49.28	16.24	58.18	18.05	64.86	19.62	70.74	20.65	78.8	21.89	90.15	23.64		
	130kW	78.55	28.59	98.56	32.48	116.37	36.09	129.73	39.23	141.47	41.3	157.6	40.72	180.29	43.98		
	200kW	113.85	40.55	142.84	46.08	168.65	51.2	188.01	55.66	205.03	58.58	228.4	62.1	261.29	67.07		
	250kW	153.69	53.18	192.84	60.44	227.67	67.15	253.82	72.99	276.79	76.83	308.34	81.44	352.75	87.96		
	25kW	16.47	6.24	20.69	7.09	24.45	7.88	27.29	8.57	29.8	9.02	33.13	9.56	37.84	10.32		
	30kW	17.86	6.65	22.44	7.55	26.53	8.39	29.61	9.12	32.32	9.6	35.94	10.18	41.04	10.99		
44	55kW	32.94	12.41	41.38	14.11	48.91	15.67	54.58	17.04	59.59	17.93	66.26	19.01	75.67	20.53		
	60kW	35.73	13.43	44.88	15.26	53.05	16.96	59.21	18.43	64.64	19.4	71.88	20.57	82.09	22.21		
	65kW	38.52	14.58	48.39	16.57	57.2	18.42	63.84	20.02	69.69	21.07	77.5	22.33	88.5	24.12		
	130kW	77.03	29.17	96.78	33.15	114.39	36.83	127.67	40.03	139.38	42.14	154.99	41.55	177	44.88		
	200kW	111.64	41.38	140.26	47.02	165.79	52.25	185.03	56.79	202	59.78	224.62	63.37	256.52	68.44		
	250kW	150.72	54.27	189.35	61.67	223.81	68.52	249.79	74.48	272.7	78.4	303.24	83.1	346.3	89.75		
	25kW	16.23	6.37	20.41	7.24	24.16	8.04	26.99	8.74	29.5	9.2	32.75	9.75	37.33	10.53		
	30kW	17.6	6.78	22.14	7.71	26.21	8.57	29.28	9.31	32	9.8	35.52	10.39	40.49	11.22		
	55kW	32.46	12.67	40.83	14.39	48.32	15.99	53.99	17.39	59	18.3	65.49	19.4	74.66	20.95		
	60kW	35.21	13.71	44.29	15.57	52.41	17.31	58.56	18.81	64	19.8	71.04	20.99	80.99	22.67		
45	65kW	37.96	14.88	47.75	16.91	56.51	18.79	63.14	20.43	69	21.5	76.59	22.79	87.31	24.61		
	130kW	75.92	29.76	95.49	33.82	113.01	37.58	126.27	40.85	138	43	153.18	45.58	174.63	49.23		
	200kW	110.03	42.22	138.4	47.98	163.79	53.31	183	57.95	200	61	222	64.66	253.08	69.83		
	250kW	148.54	55.38	186.84	62.93	221.11	69.92	247.05	76	270	80	299.7	84.8	341.66	91.58		
	25kW	15.91	6.43	20.04	7.31	23.74	8.12	26.56	8.83	29.06	9.29	32.2	9.85	36.64	10.64		
	30kW	17.26	6.85	21.74	7.79	25.76	8.65	28.81	9.4	31.52	9.9	34.92	10.49	39.74	11.33		
	55kW	31.82	12.79	40.08	14.54	47.49	16.15	53.12	17.56	58.12	18.48	64.39	19.59	73.28	21.16		
	60kW	34.52	13.84	43.48	15.73	51.51	17.48	57.62	19	63.04	20	69.85	21.2	79.49	22.89		
	65kW	37.22	15.03	46.87	17.08	55.54	18.98	62.12	20.63	67.97	21.72	75.31	23.02	85.7	24.86		
	130kW	74.43	30.06	93.74	34.16	111.07	37.96	124.24	41.26	135.93	43.43	150.61	46.04	171.39	49.72		
46	200kW	107.87	42.65	135.86	48.46	160.97	53.85	180.06	58.53	197	61.61	218.28	65.31	248.4	70.53		
	250kW	145.63	55.93	183.41	63.56	217.31	70.62	243.08	76.76	265.95	80.8	294.67	85.65	335.34	92.5		
	25kW	15.44	6.56	19.47	7.46	23.1	8.28	25.87	9	28.33	9.48	31.33	10.05	35.6	10.85		
	30kW	16.75	6.99	21.12	7.94	25.06	8.82	28.06	9.59	30.73	10.1	33.99	10.7	38.61	11.56		
	55kW	30.88	13.05	38.94	14.83	46.2	16.48	51.73	17.91	56.66	18.85	62.67	19.98	71.19	21.58		
	60kW	33.5	14.12	42.24	16.05	50.11	17.83	56.12	19.38	61.46	20.4	67.98	21.62	77.22	23.35		
	65kW	36.12	15.33	45.54	17.42	54.03	19.36	60.5	21.04	66.27	22.15	73.29	23.48	83.26	25.36		
	130kW	72.23	30.66	91.09	34.85	108.05	38.72	121	42.08	132.53	44.3	146.58	46.96	166.52	50.71		
	200kW	104.69	43.5	132.01	49.43	156.6	54.92	175.36	59.7	192.08	61.81	212.43	66.61	241.33	71.94		
	250kW	141.33	57.05	178.22	64.83	211.41	72.03	236.74	78.3	259.3	82.42	286.79	87.36	325.79	94.35		
47	25kW	14.83	6.76	18.73	7.68	22.24	8.53	24.93	9.2	27.34	9.76	30.18	10.35	34.23	11.18		
	30kW	16.09	7.2	20.31	8.18	24.13	9.09	27.05	9.88	29.66	10.4	32.74	11.02	37.13	11.9		
	55kW	29.66	13.44	37.45	15.27	44.48	16.97	49.87	18.45	54.68	19.42	60.37	20.58	68.45	22.23		
	60kW	32.18	14.54	40.63	16.53	48.25	18.36	54.09	19.96	59.31	21.01	65.48	22.27	74.26	24.05		
	65kW	34.69	15.79	43.8	17.95	52.02	19.94	58.32	21.67	63.95	22.81	70.6	24.18	80.06	26.12		
	130kW	69.38	31.58	87.6	35.89	104.04	39.88	116.64	43.35	127.89	45.63	141.19	48.37	160.11	52.23		
	200kW	100.55	44.8	126.96	50.91	150.78	56.57	169.04	61.49	185.35	63.67	204.63	68.61	232.05	74.1		
	250kW	135.75	58.76	171.4	66.77	203.56	74.19	228.21	80.64	250.23	84.89	276.25	89.98	313.27	97.18		

Note: The inlet/outlet water temperature difference is 5°C.

Hot water outlet temp (°C)	Model	Ambient temp (°C)															
		-10		-6		-2		2		7		10		13			
		Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power	Capacity	Power		
49	25kW	14.02	7.03	17.73	7.99	21.08	8.87	23.66	9.65	25.97	10.15	28.62	10.76	32.4	11.62		
	30kW	15.21	7.49	19.23	8.51	22.87	9.45	25.67	10.27	28.17	10.81	31.05	11.46	35.15	12.38		
	55kW	28.05	13.98	35.46	15.89	42.16	17.65	47.32	19.19	51.95	20.19	57.24	21.41	64.8	23.12		
	60kW	30.43	15.12	38.46	17.19	45.74	19.1	51.33	20.76	56.35	21.85	62.09	23.16	70.29	25.01		
	65kW	32.8	16.42	41.47	18.66	49.31	20.74	55.34	22.54	60.75	23.73	66.95	25.15	75.78	27.16		
	130kW	65.61	32.85	82.94	37.33	98.62	41.47	110.69	45.08	121.5	47.45	133.89	50.3	151.56	54.32		
	200kW	95.08	46.6	120.2	52.95	142.93	58.83	160.41	63.95	176.08	66.21	194.05	71.36	219.66	77.06		
	250kW	128.36	61.11	162.27	69.44	192.95	77.16	216.56	83.87	237.71	88.28	261.96	93.58	296.54	101.07		
	25kW	13.12	7.38	16.61	8.39	19.97	9.32	22.22	10.13	24.41	10.66	26.86	11.3	30.35	12.2		
	30kW	14.23	7.86	18.02	8.93	21.45	9.92	24.1	10.79	26.48	11.36	29.13	12.04	32.92	13		
50	55kW	26.24	14.68	33.22	16.68	39.55	18.53	44.43	20.14	48.83	21.2	53.71	22.48	60.69	24.28		
	60kW	28.47	15.88	36.03	18.05	42.9	20.05	48.2	21.8	52.97	22.94	58.26	24.32	65.84	26.26		
	65kW	30.69	17.24	38.85	19.6	46.25	21.77	51.96	23.67	57.1	24.91	62.81	26.41	70.98	28.52		
	130kW	61.38	34.49	77.7	39.19	92.5	43.55	103.93	47.33	114.21	49.83	125.63	52.81	141.96	57.04		
	200kW	88.96	48.93	112.61	55.6	134.05	61.78	150.62	67.15	165.52	69.52	182.07	74.92	205.74	80.92		
	250kW	120.09	64.17	152.02	72.92	180.97	81.02	203.34	88.06	223.45	92.7	245.8	98.26	277.75	106.12		

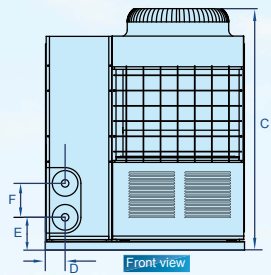
Note: The inlet/outlet water temperature difference is 5°C.

Electrical data

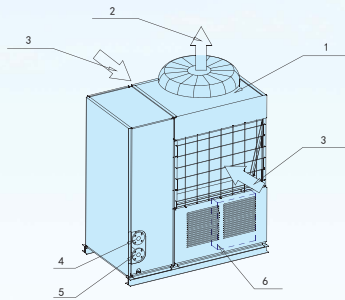
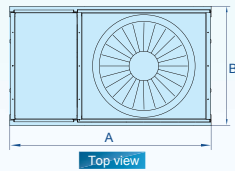
Model	Outdoor Unit				Power Supply		Compressor		OFM	
	Hz	Voltage	Min.	Max.	TOCA	MFA	LRA(each)	RLA(each)	KW	FLA
MGB-F25W/RN1	50	380-415	342	456	24	36	74	11.8	0.67	3.1
MGB-D25W/RN1	50	380-415	342	456	24	36	74	10.6/11.8	0.67	3.1
MGB-F30W/RN1	50	380-415	342	456	24	36	74	11.8	0.67	3.1
MGB-D30W/RN1	50	380-415	342	456	24	36	74	10.6/11.8	0.67	3.1
MGCSL-F30W/RN1	50	380-415	342	456						

Dimensions

25/30kW module

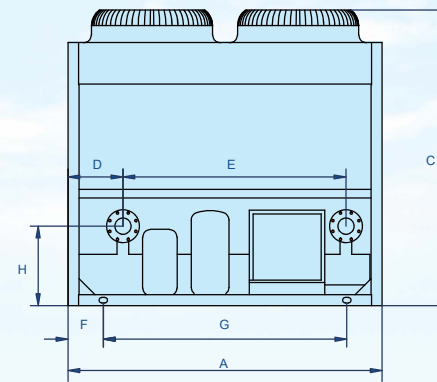


Model	Unit	A	B	C	D	E	F
MGB-F(D)25W/RN1	mm	1514	841	1865	115	315	172
MGB-F(D)30W/RN1	inch	59.6	33.11	73.43	4.53	12.4	6.77
MGBL-F(D)30W/RN1							

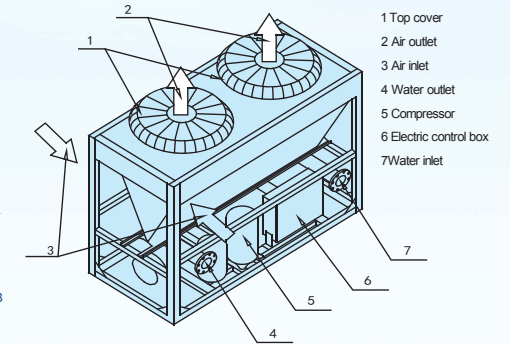
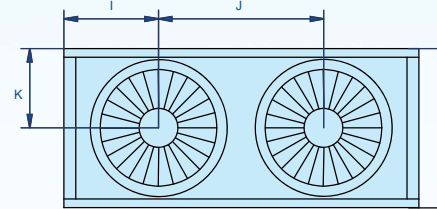


- 1 Top cover
- 2 Air outlet
- 3 Air inlet
- 4 Water outlet
- 5 Water inlet
- 6 Electric control box

55/60/65kW module



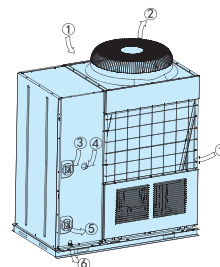
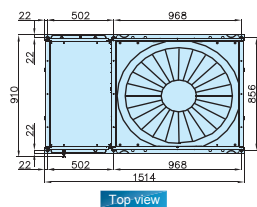
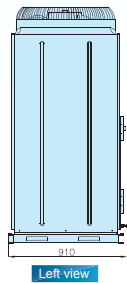
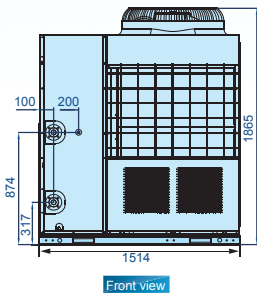
Model	Unit	A	B	C	D	E	F	G	H	I	J	K
MGB-F65W/RN1	mm	2000	900	1880	350	1420	225	1500	506	530	930	450
MGB-F60W/RN1												
MGB-F65W/RN1												
MGBL-F65W/RN1	inch	78.74	35.4	74	13.78	55.91	8.86	59.06	19.92	20.87	36.61	17.72
MGBL-D65W/RN1												



- 1 Top cover
- 2 Air outlet
- 3 Air inlet
- 4 Water outlet
- 5 Compressor
- 6 Electric control box
- 7 Water inlet

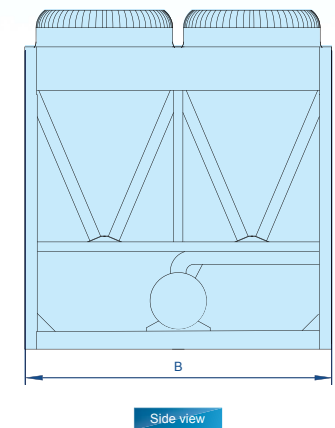
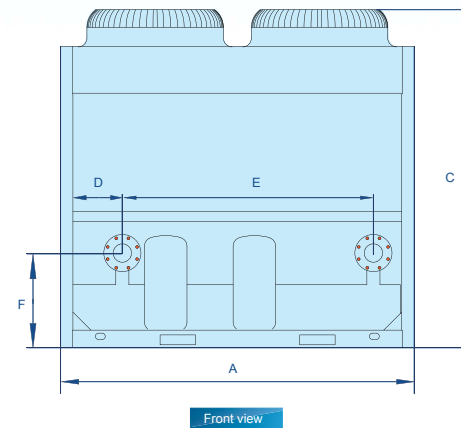
30kW module(Integrated)

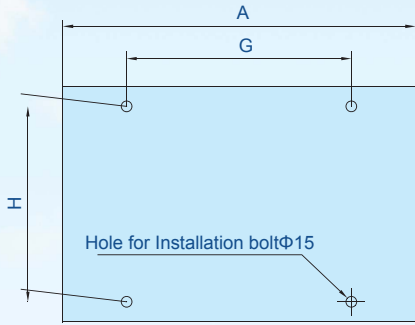
(Available for MGCSL-F30W/RN1 and MGCSL-D30W/RN1)



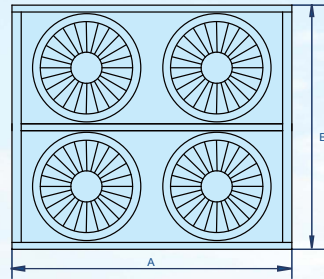
- 1 Air inlet
- 2 Air outlet
- 3 Water inlet
- 4 Make up water inlet
- 5 Water outlet
- 6 Drain

130kW module

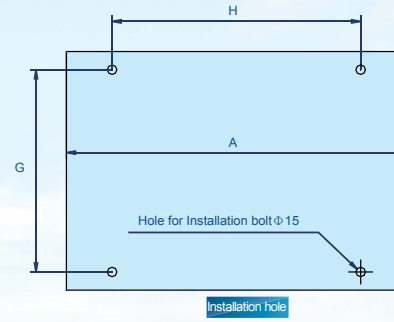




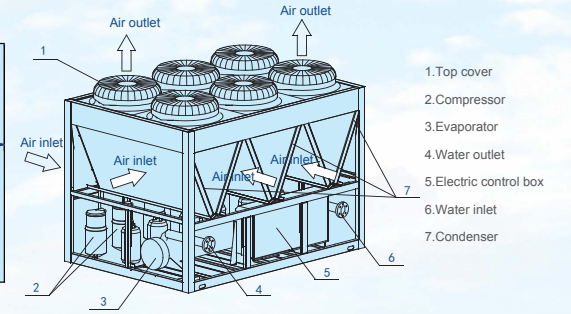
Installation hole



Top view

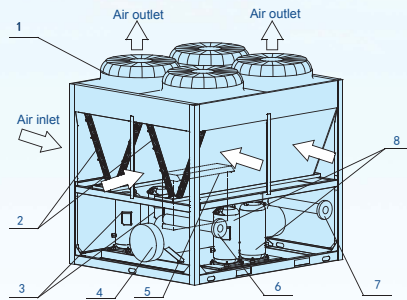


Installation hole

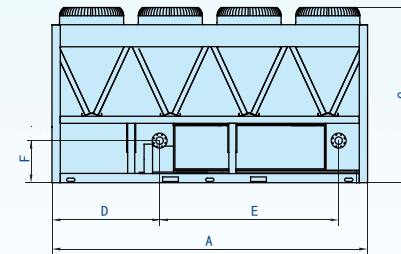


- 1.Top cover
- 2.Compressor
- 3.Evaporator
- 4.Water outlet
- 5.Electric control box
- 6.Water inlet
- 7.Condenser

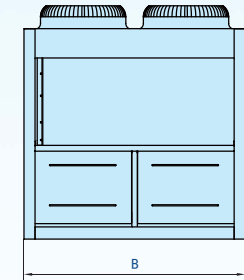
- 1 Top cover
- 2 Condenser
- 3 Compressor
- 4 Evaporator
- 5 Electric control box Air inlet
- 6 Water outlet
- 7 Water inlet
- 8 Compressor



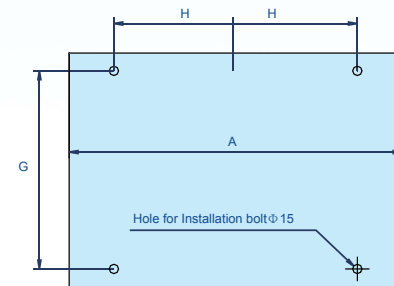
250kW module



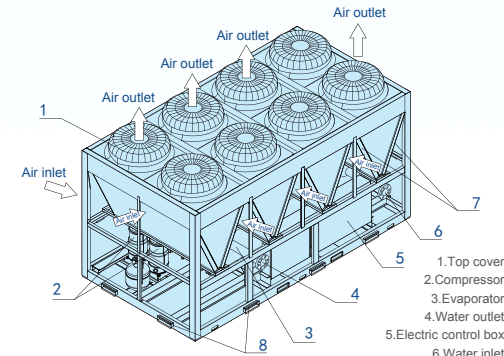
Front view



Left view

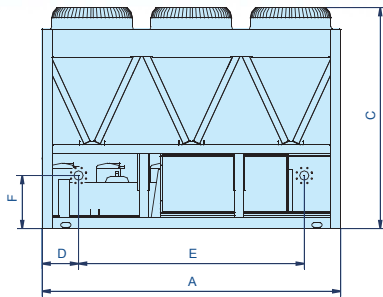


Installation hole

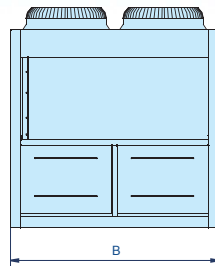


- 1.Top cover
- 2.Compressor
- 3.Evaporator
- 4.Water outlet
- 5.Electric control box
- 6.Water inlet
- 7.Condenser
- 8. Transportation guard plate
(Be removed off after installation)

200kW module



Front view



Left view

Model	Unit	A	B	C	D	E	F	G	H
MGB-F130W/RN1	mm	2000	1685	2080	350	1420	506	1550	1586
MGBL-F130W/RN1	inch	78.74	66.34	81.89	13.78	55.91	19.92	61.02	62.44






Model	Unit	A	B	C	D	E	F	G	H
MGB-F200W/RN1	Mm	2850	2000	2110	3470	2156	506	1888	2388
MGBL-F200W/RN1	inch	112.2	78.74	83.07	136.61	84.88	19.92	74.33	94.02

Model	Unit	A	B	C	D	E	F	G	H
MGBT-F250W/RN1	Mm	3800	2000	2130	1235	2156	573	1888	1551
MGBL-F250W/RN1	inch	149.6	78.74	83.86	48.62	84.88	22.56	74.33	61.06

Control system →

Control system

Control Devices

Type	Function Descriptions	
Wired Controller	 <p>KJRM-120D/BMK-E</p>	<p>(Standard)</p> <ul style="list-style-type: none"> Parameter setting and display. Real time clock control. Malfunction manual reset. Hysteresis temp. setting. Touch key operation <p>It can connect max. 16PCBs. MODBUS gateway is available by communication port X Y E in wired controller, it can be customized.</p>
	 <p>KJR-120A/MBTE</p>	<p>(Optional)</p> <ul style="list-style-type: none"> Parameter setting and display. Real time clock control. Malfunction manual reset. Hysteresis temp. setting. Weekly timing function. <p>It can connect max. 16PCBs.</p>
LONWORKS Gateway		<p>(Optional)</p> <ul style="list-style-type: none"> Operation mode setting. Outlet water temperature setting. Hysteresis setting. Alarm clear setting. <p>It can connect max. 16PCBs.</p>
BACnet Gateway		<p>(Optional)</p> <ul style="list-style-type: none"> Operation mode setting. Temperature setting. Wired controller lock setting. Alarm clear setting. <p>It can connect max. 15 wired controllers, each wired controller can connect max. 16 PCBs.</p>
Network control software		<p>(Optional)</p> <ul style="list-style-type: none"> Control operation mode in the refrigeration system. Query real-time operating parameter in the main system and subsystem. Set up the weekly timing that could realizes the schedule management for the refrigeration system. Record refrigeration system error. It can connect max. 16 wired controllers by ar5485/232 converter, each wired controller can connect max. 16 PCBs.

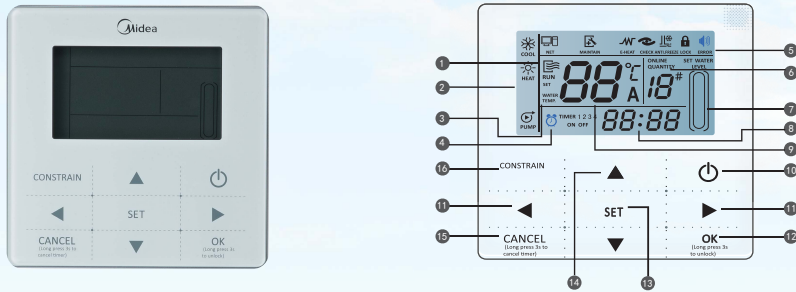
Note: The wired controller and gateway can be used together as following:

Wired Controller	LONWORKS Gateway	BACnet Gateway	Network Control Software	MODBUS Gateway
KJRM-120D/BMK-E	■			■
KJR-120A/MBTE	■	■	■	

Wired controller KJRM-120D/BMK-E(Standard)

The setting and operation order can be send to the main board and the running condition can be displayed by the wired controller. It can connect max. 16PCBs. It is available for all Midea air cooled scroll chillers.

The MODBUS gateway can be customized, it is available by communication port X, Y and E in wired controller.

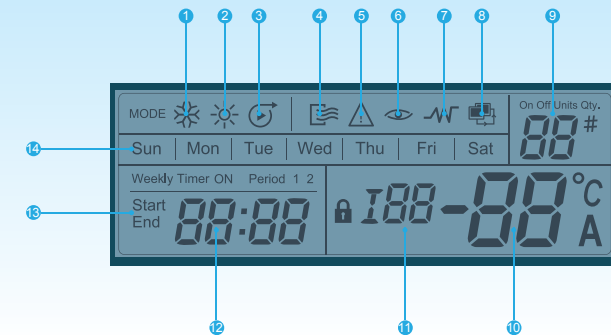
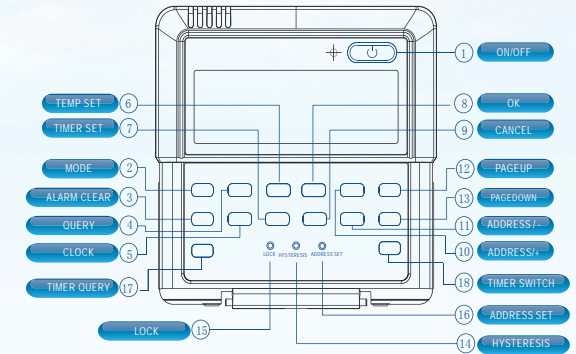


Item	Description	Item	Description
1	Operation icon	9	Water temp.
2	Mode area	10	ON/OFF Key
3	Setting temperature	11	Right, Left Right Key
4	Timing On/Off	12	OK key
5	Function Icon	13	Setting key
6	On-line Unit Qty. Indication	14	Add, Reduce key
7	Reserved	15	Cancel key
8	Clock	16	Reserved. key

Wired controller KJR-120A/MBTE(Optional, with weekly timer)

The wired controller KJR-120A/MBTE is functional design, it is available for all Midea air cooled scroll chiller, it can automatically adjust the module which is new or old to execute the related indicator. The main functions as following:

- Provide the timing startup function.
- The temp. difference between start up temperature and setting temperature (It can be adjusted, the range is 2,3,4,5 C (2 C is default)).
- Real-time timer function instead of relative time.
- Operation parameter checking button.
- Remote control icon display function.
- Malfunction manual reset.



Item	Description	Item	Description
1	Cooling mode.	8	Remote control is on or off.
2	Heating mode.	9	Display the units quantity on line/ON,OFF state.
3	Pump mode.	10	Display temp., current, error codes, protection codes.
4	Normal running, the light is on.	11	Display the checking parameters (IA/IB/T3A/T3B).
5	The unit has error, the light is on.	12	Real time display./Week timing check and query display.
6	When querying, the light is on.	13	Display the week timing state. / The week timing set period display.
7	The electric heater works, the light is on.	14	Set week timing.



Network control system

The intelligent network control system of the Midea air-cooled scroll chiller mainly comprises the RS485/232 converter, which can connect max. 16 wired controllers, each wired controller can control max. 16 PCBs.



Main functions:

- Controls the refrigeration system's operating mode.
- Queries operation parameters in the main and subsystems in real time.
- Provides a weekly timer for managing the refrigeration system.
- Records refrigeration system errors.

LONWORKS gateway

The unit's LONWORKS gateway controls the central A/C to facilitate the building management system (BMS). LONWORKS provides four settings to control the air-cooled chillers: Operation Mode, Outlet Water Temperature, Hysteresis, and Clear Alarm.



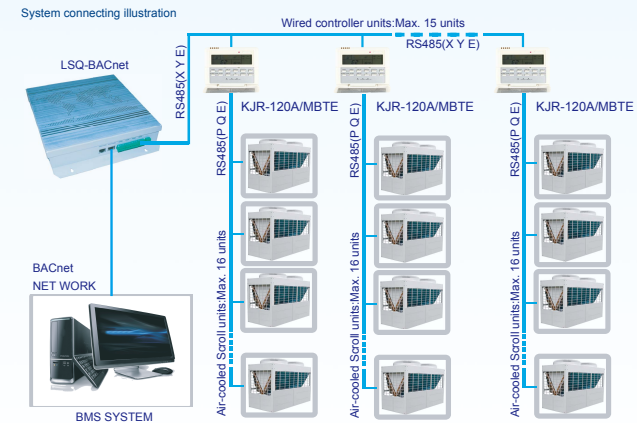
BACnet gateway

The BACnet gateway enables access to any online central air conditioning system, and provides operational data and control functionality.

Settings include 'Operation Mode', 'Temperature', 'Wired Controller Lock' and 'Clear Alarm'. Users can change the corresponding BACnet object variables to set the unit's operational status.

The network system comprises the BACnet control gateway, KJR-120A/MBTE wired controller, and a sub-module. The BACnet control gateway can provide four 485 bus bars. Each bus connects to a maximum of 15 KJR-120A/MBTE wired controllers, and each wired controller can connect max.16 PCBs.

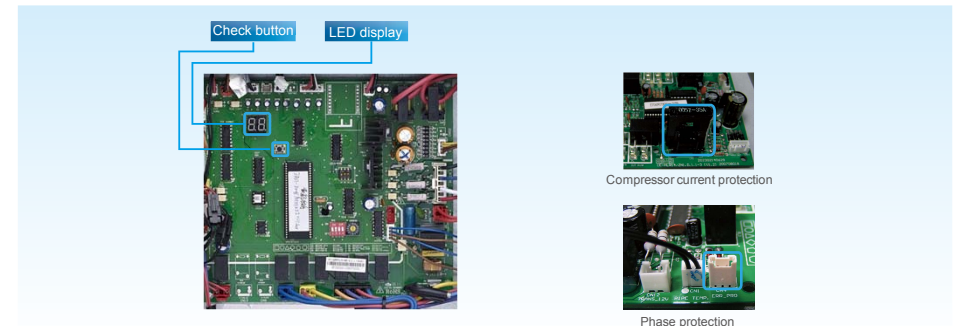
The system can connect max. 240 PCBs.



Protection

The main board's LED shows all alarm and protection information. The chiller controller continually performs self-diagnostic checks; monitors the system's temperature, pressure and protection devices; it will automatically shut down faulty compressors, refrigerant circuits or the entire unit if a fault occurs.

- Users can press Check on the LED to display the system's operational status.
- The LED displays protection or error codes if either condition occurs.



Error codes for fixed mould

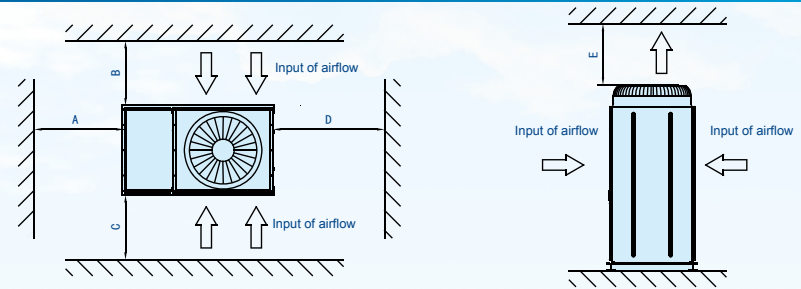
No	Code	Trouble	No	Code	Trouble
1	E0	Water flow detection error (The third time)	18	P0	High pressure or air discharge temperature protection in system A
2	E1	Power phase sequence error	19	P1	Low pressure protection in system A
3	E2	Communication error	20	P2	High pressure or air discharge temperature protection in system B
4	E3	Total water outlet temperature sensor error	21	P3	Low pressure protection in system B
5	E4	Outlet water temperature sensor error in shell and tube exchanger	22	P4	Current protection in system A
6	E5	Pipe temperature sensor error in condenser A	23	P5	Current protection in system B
7	E6	Pipe temperature sensor error in condenser B	24	P6	Condenser high pressure protection in system A
8	E7	Outdoor ambient temperature sensor error	25	P7	Condenser high pressure protection in system B
9	E8	Air discharge temperature sensor error in digital compressor in system A	26	P8	Air discharge temperature sensor protection in digital compressor in system A
10	E9	Water flow detection error (The first and second times)	27	P9	Outlet and inlet water temperature difference protection
11	EA	Main unit detected that auxiliary unit's quantity have decreased	28	PA	Starting protection of low-temperature cooling
12	EB	Anti-freezing temperature sensor 1 error in shell and tube exchanger	29	Pb	System anti-freezing protection
13	EC	Wired controller did not find out any on-line module unit	30	PC	(Reserved failure code)
14	ED	Wired controller and module unit communication error	31	PE	Low-temperature protection of shell and tube heat exchanger
15	Ed	1-hour consecutive 4-times PE protection	32	F1	EEPROM failure
16	EE	Wired controller and computer communication error	33	F2	Failure of reduction of wired controller number at parallel connection of multiple wired controller (reserved)
17	EF	Inlet water temperature sensor error			

Error modes for digital module

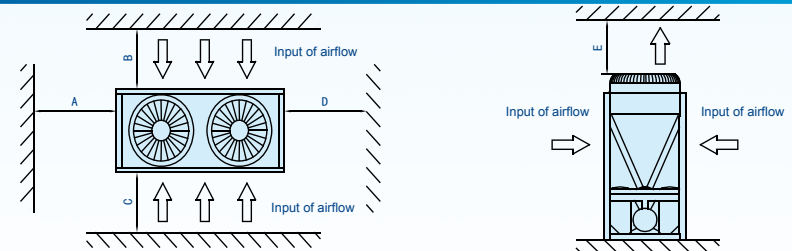
No	Code	Trouble	No	Code	Trouble
1	E0	EEPROM error	16	P0	High pressure or air discharge temperature protection in system A
2	E1	Power phase sequence error	17	P1	Low pressure protection in system A
3	E2	Communication error	18	P2	High pressure or air discharge temperature protection in system B
4	E3	Total water outlet temperature sensor error	19	P3	Low pressure protection in system B
5	E4	Outlet water temperature sensor error in heat exchanger	20	P4	Current protection in system A
6	E5	Pipe temperature sensor error in condenser A	21	P5	Current protection in system B
7	E6	Pipe temperature sensor error in condenser B	22	P6	Condenser high pressure protection in system A
8	E7	Outdoor ambient temperature sensor error or power supply protection	23	P7	Condenser high pressure protection in system B
9	E8	Output error of the power protector	24	P8	(Reserved failure code)
10	E9	Water flow detection error	25	P9	Outlet and inlet water temperature difference protection
11	EA	(Reserved failure code)	26	PA	Low ambient temperature drive-up protection
12	Eb	Anti-freezing temperature sensor 1 error in shell and tube exchanger	27	Pb	System anti-freezing protection
13	EC	Wired controller detected that the units on-line have decreased	28	Pc	Anti-freezing pressure protection in system A
14	Ed	(Reserved failure code)	29	Pd	Anti-freezing pressure protection in system B
15	EF	Inlet water temperature sensor error	30	PE	Low-temperature protection of shell and tube heat exchanger

Installation clearance

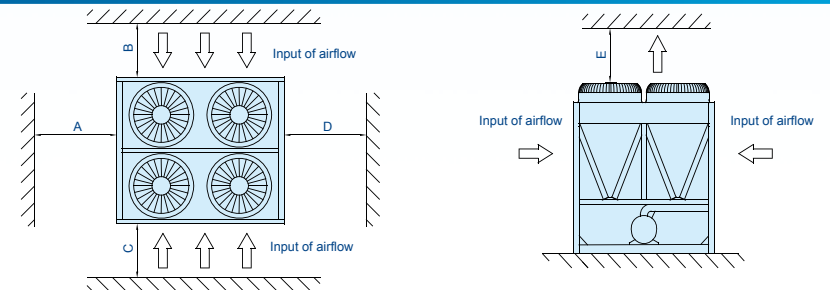
25/30kW module



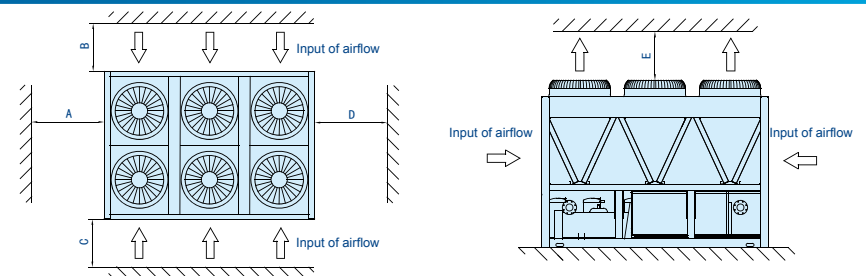
55/60/65kW module



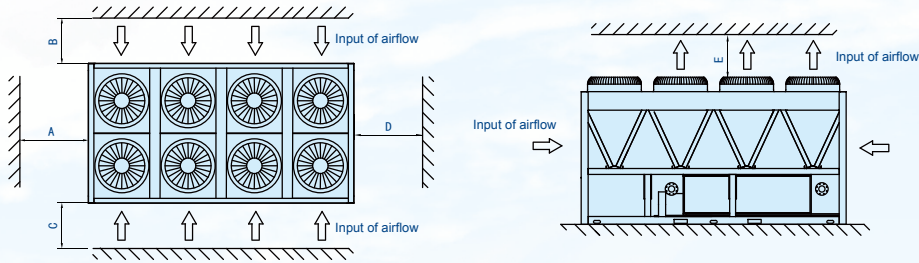
130kW module



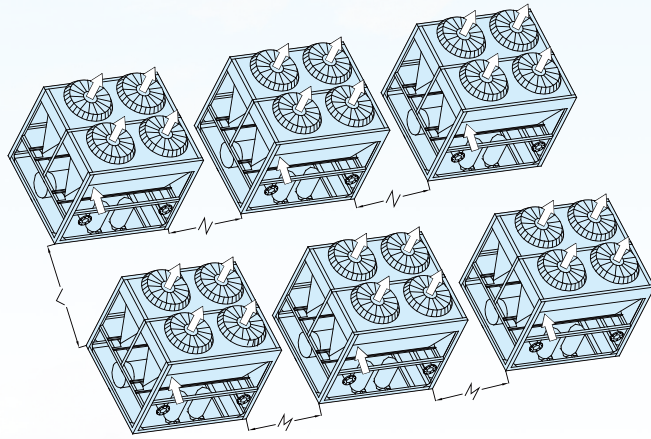
200kW module



250kW module



For modules combination



The recommend space parameter:

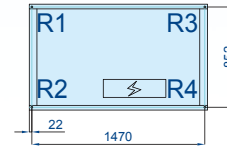
No	Model	Max unit combined quantity	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	L(mm)	M(mm)	N(mm)			
1	MGB-F(D)25W/RN1	16	≥1500	≥2000	≥2000	≥1500	≥8000	≥ 600	≥ 300	≥ 300			
2	MGB-F(D)30W/RN1	16						≥ 600	≥ 300	≥ 300			
3	MGCSL-F30W/RN1	1						≥ 600	≥ 300	≥ 300			
4	MGCSL-D30W/RN1	1						≥ 600	≥ 300	≥ 300			
5	MGCL-F30W/RN1	1						≥ 600	≥ 300	≥ 300			
6	MGCL-D30W/RN1	1						≥ 600	≥ 300	≥ 300			
7	MGB-F55W/RN1	16						≥ 600	≥ 300	≥ 300			
8	MGB-F60W/RN1	16						≥ 600	≥ 300	≥ 300			
9	MGB-F65W/RN1	16						≥ 600	≥ 300	≥ 300			
10	MGB-D65W/RN1	16						≥ 600	≥ 300	≥ 300			
11	MGBL-F65W/RN1	16						≥ 600	≥ 300	≥ 300			
12	MGBL-D65W/RN1	16						≥ 600	≥ 300	≥ 300			
13	MGB-F130W/RN1	8						≥ 600	≥ 300	≥ 300			
14	MGBL-F130W/RN1	8						≥ 600	≥ 300	≥ 300			
15	MGB-F200W/RN1	5						≥ 600	≥ 300	≥ 300			
16	MGBL-F200W/RN1	5						≥ 600	≥ 300	≥ 300			
17	MGBT-F250W/RN1	8						≥2000	≥2000	≥2000	≥ 600	≥ 300	≥ 300
18	MGBL-F250W/RN1	8						≥ 600			≥ 300	≥ 300	

Load distribution

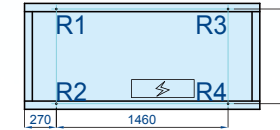
Unit:KG

No	Model	R 1	R 2	R 3	R 4	R 5	R 6
1	MGB-F25W/RN1	81	68	139	112	/	/
2	MGB-D25W/RN1	81	68	139	112	/	/
3	MGB-F30W/RN1	81	68	139	112	/	/
4	MGB-D30W/RN1	81	68	139	112	/	/
5	MGCSL-F30W/RN1	90	77	157	131	/	/
6	MGCSL-D30W/RN1	90	77	157	131	/	/
7	MGCL-F30W/RN1	81	68	139	112	/	/
8	MGCL-D30W/RN1	81	68	139	112	/	/
9	MGB-F55W/RN1	170	180	145	155	/	/
10	MGB-F60W/RN1	170	180	145	155	/	/
11	MGB-F65W/RN1	170	180	145	155	/	/
12	MGB-D65W/RN1	180	190	145	155	/	/
13	MGBL-F65W/RN1	170	180	145	155	/	/
14	MGBL-D65W/RN1	170	180	145	155	/	/
15	MGB-F130W/RN1	350	340	295	285	/	/
16	MGBL-F130W/RN1	350	340	295	285	/	/
17	MGB-F200W/RN1	567	433	567	433	/	/
18	MGBL-F200W/RN1	567	433	567	433	/	/
19	MGBT-F250W/RN1	373	344	487	462	539	395
20	MGBL-F250W/RN1	373	344	487	462	539	395

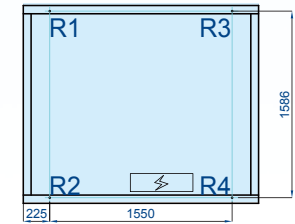
Dimension unit: mm



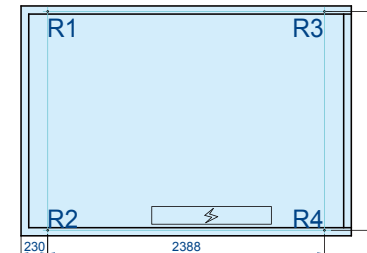
25/30kW module



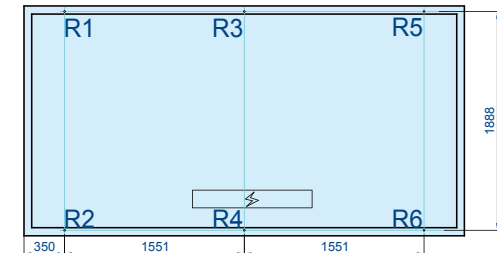
55/60/65kW module



130kW module



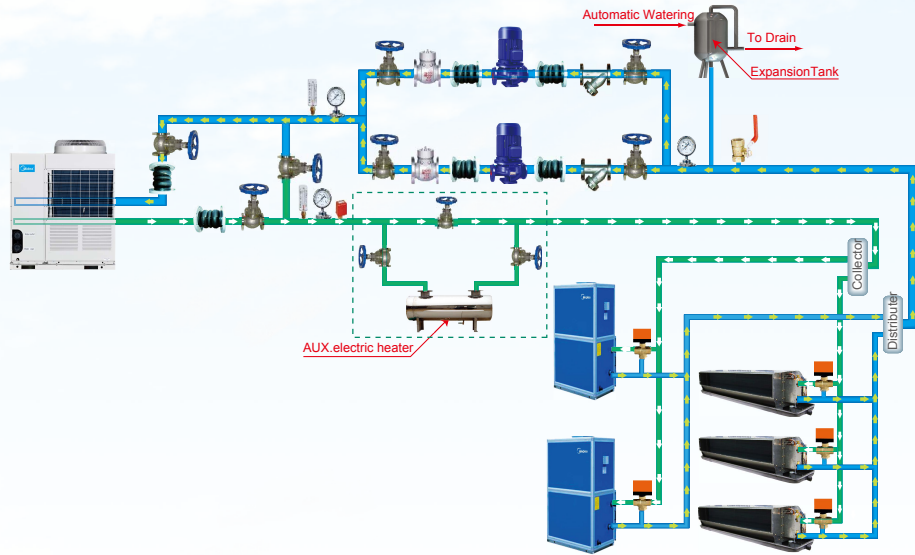
200kW module



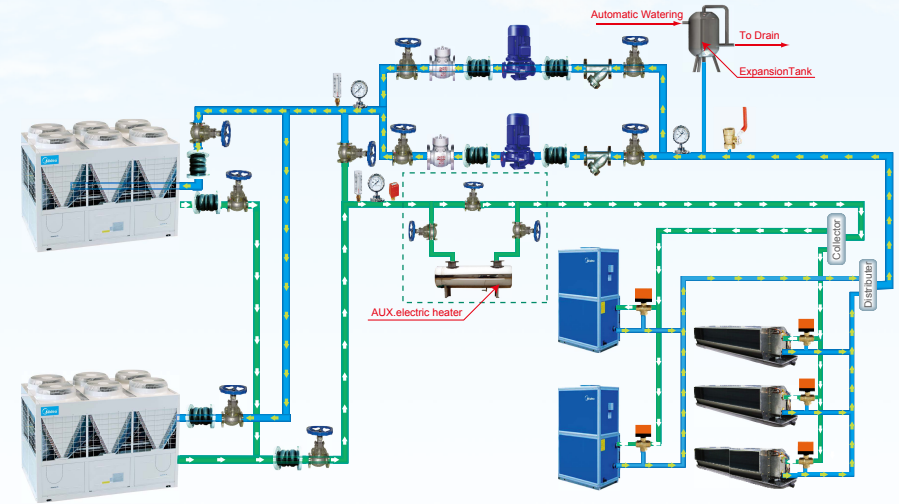
250kW module

Typical piping

25/30kW module water pipeline sketch drawing



200kW module water pipeline sketch drawing



■ The table below describes the symbols.

Symbol	Symbol Explanation	Symbol	Symbol explanation
	Stop Valve		Y-Shaped Filter
	Pressure Gauge		Thermometer
	Water Flow Switch		Water Pump
	3-Way Valve		Check Valve
	Soft Joint		Air Vent

■ The table below describes the symbols.

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Aqua Force Series

Air cooled screw chiller

Contents

47 Product introduction	59 Electrical data
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48 Product lineup	61 Dimensions
49 Features and benefits	67 Typical schematic wiring diagram
51 Mechanical components	69 Application guidelines
54 Standard control & safety devices	71 Microprocessor controller
54 Options	72 Rigging instructions
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57 Performance data	75 Troubleshooting guide

With half century experience in chiller industry, Midea Chongqing chiller manufacturing base is becoming one of the largest chiller companies in China. It covers an area of 800 Mu (137 acre), with a registered capital of 12.5 million US \$ and a total investment of over 0.85 billion US\$. There are 6 product series and over 100 model products including centrifugal chillers, screw water chillers, scroll water chillers, water-cooled packaged units, and central air-conditioning indoor terminal devices(AHU/FCU). Five chiller manufacture shops with 14 flexible production lines lead a manufacturing capacity of 500 units centrifugal chillers, 1000 units of air cooled screw, 2000 units of water cooled screw and 200000 units of AHU products.

Strong R&D and manufacturing capacity makes Midea Chongqing general become the fastest developing company in chiller industry. The chiller test lab which is certified by China National Refrigeration Equipment Inspection Center gets the largest refrigeration test capacity in Asia. The engineer team with 100 top engineers and international chiller experts who are working many years in structure, electricity, and performance testing and software aspect make Midea the headship in chiller industry. In the year of 2011 Midea CAC invested another 150 million RMB for test lab as ARI test stand, big capacity air cooled screw life span testing room, 1500kW compressor motor test lab etc.

Concentrating on energy-saving and environment protection, Midea Chongqing chiller factory commits itself to the reliable and high efficiency products for the world. The chiller products are widely used in different countries and obtain good public praise from the clients. The solutions for the Beijing capital international airport Jakarta international airport, China rapid transit station win good feedback and commendation. Continuing with the past and opening up the future, Midea chiller brand will go further and create an illustrious future.



Centrifugal chiller factory
Manufacturing capacity:
500 units/Year



Water cooled screw chiller factory
Manufacturing capacity:
2000 units/Year



Air cooled screw chiller factory
Manufacturing capacity:
1000 units/Year



8800kW water cooled chiller performance testing stand

The 8800kW water chilled chiller testing stand is one of the most advanced testing facilities in the world. It is able to simulate all the chiller running condition like Chinese National standard condition (7/12 C, 30/35 C) .Chinese industry condition (7/12 C, 32/37 C) . AHRI testing condition (6.7/12.2 C , 29.4/35 C) .It provides all precise testing date for the IPLV and NPLV calculation. Every chiller will be tested in the stand before shipping.

1500kW motor performance testing center

The 1500kW compressor motor testing lab used to simulate all the working condition for the actual situation. Provide the electrical correct factor for all the compressors. The cooling capacity range rang from 1200kW to 8800kW. Evaporating temperature range from -20 C to 40 C and condensing temperature range from 25 C to 80 C. It is one of the most advanced testing facility in China.



1200kW air cooled chiller performance testing lab

The 1200kW air cooled testing lab is a one of the largest air cooled product testing lab. It can simulate all the actual ambient temperature range from -20 C to 56 C. It ensure all the air cooled chiller product work reliably in all temperature condition. The 1200kW air cooled testing lab was certified by AHRI.



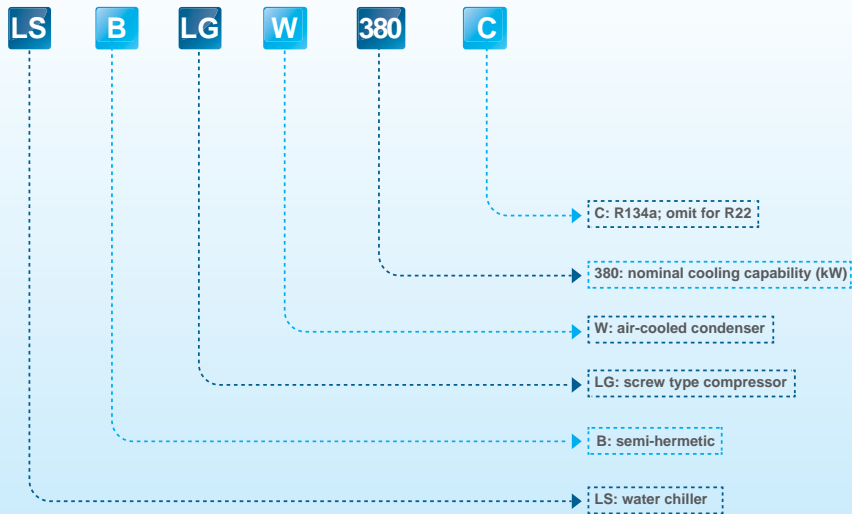
Product introduction

Air cooled screw chiller is a kind of central air-conditioning unit which adopts air as the cooling or (Heating) source and water as the cooling or (heating) medium to cool down or (heat) the indoor ambient temperature through the indoor terminal(AHU/FCU). Midea air cooled screw chillers are the premium solution for industrial and commercial applications where installation contractors, consultants and building owners require optimal performances and optimized quality. Air cooled chiller typically have a lower initial investment and maintenance cost than water cooled system since it does not require a cooling tower, condenser water pump, and associated condenser water chemical treatment system.

Midea air cooled screw chillers are designed to meet current and future requirements in terms of reliability, energy efficiency and intelligent control. We use the best technologies available today :Twin-rotor screw compressors with a variable capacity valve are ideally matched to coolers and condensers optimally configured for superior heat transfer and unit efficiency. They are widely applied in school, hospital, shopping mall, office as well as the factory and manufacturing processing area.



Nomenclature



Product lineup

LSBLGW380C



LSBLGW500C



LSBLGW600C



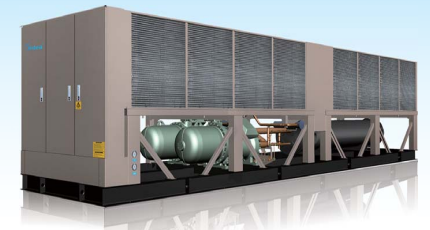
LSBLGW720C



LSBLGW900C



LSBLGW1000C



LSBLGW1200C



LSBLGW1420C



Features and benefits

Environmental care

- R134a environmental- friendly refrigerant
Refrigerant of the HFC R134a group with zero ozone depletion potential.
Very low GWP (Global Warming Potential)



Lower refrigerant charge through the use of high-efficiency heat exchangers

- Leak-tight refrigerant circuit
Reduction of leaks as no capillary tubes and flare connections are used.
Verification of pressure sensors and temperature sensors without transferring refrigerant charge
Discharge shut-off valve for simplified maintenance.

Low operating sound levels

- The twin-screw compressor adopts the strong points of gapless-loss, high- efficiency cubage, low-noise, few easy workout parts. Double-wall structure not only compensates the pressure, but also significantly reduces the noise. Cast iron casing and oil separator can reduce the noise significantly.
- Low-noise fans, made of a composite material are even quieter and do not generate intrusive low-frequency noise. Rigid fan mounting is preventing start-up noise.
- Multiple direct drive dynamically balanced propeller fans operate at low tip speeds for maximum efficiency and minimum noise and vibration. A heavy-gauge vinyl-coated fan guard protects each fan.

Design flexibility

- Six basic capacity modules, wide array of module combination.
- Standard module for flexible stock and fast delivery.
- Field-coupled to meet large project tonnage requirements.
- Low initial investment and maintenance cost.

User-friendly

- Touchable screen display , Color coded, easy for operation.
- Three status indicators on the screen which include power, status and communication .
- Liquid crystal 40 character display with text provided on two lines and light emitting diode backlighting for outdoor viewing



High accuracy micro-control

- The newest advanced microprocessor controller. This controller monitors analog and digital inputs to achieve precise control & protective functions of the air cooled water chiller units. This microprocessor controller is complete with all the hardware and software necessary to control the chiller unit and ensure its efficiency and reliability.
- Intelligent control: The unit is controlled by micro-controller with has the automatic control functions of fault diagnosis, energy management and anti-freezing monitoring ensure the high-efficiency operation and more convenient in use.
- The unit with RS485 open protocol communication interface is BMS compatible. The startup and shutdown of each unit is controlled by the host computer, reducing the running cost to the lowest.
- Complete and safe control system: All electrically control elements are designed and selected with stable quality and reliable function; The unit designed with multiple security measures ensure the safe and reliable running
- The sensors related to control and other assemblies are equipped by factory and strictly tested.

Absolute reliability, very economical operation

- Bizer brand twin-rotor screw compressor equipped with a high-efficiency motor
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the cooler heat exchange surface (superheat control)
- Fully factory testing of all the units ensures a trouble free start-up. The unit has passed full factory test before being delivered to ensure the reliable working on the site.

Easy and fast installation

- Compact size and module design save the transportation, lifting and installation cost
- The unit can be placed in service after being connected with power supply and water supply during field installation .

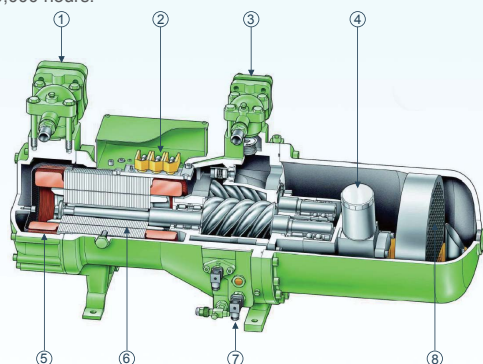


Mechanical components

Advanced twin-rotor screw compressor

■ Midea® air screw chiller is equipped with the 3rd generation industrial semi-hermetic screw compressor which with the latest advanced 5-6 asymmetry dentiform rotors. The rotors are processed by high-precision CNC and each part is well-proportioned and none-gap matching, which minimizes the friction resistance and clearance lost, guarantees quiet running and good duration.

■ The compressor motor is direct drive type with two poles to operate at 2960 rpm (50HZ) input speed. It is non-reversing, squirrel cage induction type suitable for the voltage shown on the equipment schedule. Compressors combined an balance piston with separated radial and axial force bearings, oil cooler connector, liquid injection & economizer connector, PTC motor coil protection and discharge temperature & it's controller, oil level switch and oil pressure differential switch, oil sight glass, oil strainer, crank case heater and other accessories. The bearing of compressor is from SKF, Sweden gurantee the continuously runing more than 60,000 hours.



- ① Suction cut-off valve
- ② Solenoid valve
- ③ Discharge cut-off valve
- ④ Oil filter
- ⑤ Suction filter net
- ⑥ Motor
- ⑦ Oil heater
- ⑧ Oil separator filter net

Condenser

- Air cooled condenser coil consist of staggered rows of seamless inner groove copper tube, mechanically expanded onto the die formed aluminum fin to ensure optimum heat exchange capability.
- Grooved condenser fin and tube condenser coils of seamless, internally enhanced, high condensing coefficient, corrosion resistant copper tubes arranged in staggered rows and mechanically bonded to corrosion resistant aluminum alloy fins with full height fin collars.
- The fins have full self spacing collars which completely cover each tube. Blue fin and black epoxy-coated aluminum fin are options.

Throttling device

- Famous brand electronic expansion valve which control by drive module control.
- The drive module controller controls the valve according to cooler suction superheat.
- PID arithmetic control the open degree of the valve.



Fan

■ The adoption of advanced new-type low-speed blade profile and quantic load distribution in the blade design, which improves the cross section and radial shape of the blade. Compared to the performance of the blade products of commonly used profile, the blade of fans is of relatively larger lift coefficient and lift-drag ratio, and the fan offers higher wind pressure, larger air delivery and obviously higher efficiency.



- Condenser Fans with low noise, full airfoil cross section for maximum efficiency, statically and dynamically balanced for low vibration operation, and positioned in extended, formed steel orifices for low sound and maximum efficiency.
- All fan motors shall be three phase with class "F" winding insulation and ball bearings for high ambient application.

Compact design shell and tube water cooler

- Cooler is shell-tube heat exchanger design, with internally-finned copper tubes roller expanded into the tube sheet. Units are fabricated with high-performance tubing, steel shell & tube sheets. Water boxes are nozzle-in-head type with victaulic for easy connections.
- High efficiency, direct-expansion type cooler with refrigerant in tubes and chilled liquid through the baffled shell.
- Water baffles fabricated from galvanized steel to resist corrosion. Removable heads allow access to internally-enhanced, seamless, copper tubes. Water vent and drain connections including.
- The 20MM thickness insulation covers all low temperature surfaces include the cooler, water box, oil return line, chilled water flow switch piping etc.

SHELL & TUBE HEAT EXCHANGER (COOLER)	WATER SIDE		REFRIGERANT SIDE	
	DESIGN PRESSURE, (BAR/PSIG)	TEST PRESSURE, (BAR/PSIG)	DESIGN PRESSURE, (BAR/PSIG)	TEST PRESSURE, (BAR/PSIG)
Standard	10/147	12.5/188	18/265	19.8/291
Option	16/235	20/294	18/265	19.8/291

Refrigerant circuit

- Independent refrigerant circuit per compressor, each using copper refrigerant pipe formed on computer controlled bending machines. Less piping brazed joints result in a highly reliable and leak resistant system.
- Liquid line components include: Manual shut-off valve with charging port, high adsorption removable core filter-drier, solenoid valve, sight glass with moisture-indicator, and reliable electronic expansion valves for R134a.

Microprocessor controls

The microprocessor controller on the state of art microprocessor technology. This controller monitors analog and digital inputs to achieve control & safety functions of the unit. The control system is module-designed, easy for installation and maintenance. The chiller which reserved with RS485 port can be interfaced with BAS (Building Automation system). The remote monitoring and control of the chiller is possible.

Touch screen information

The display of control regulation and operating parameters, diagnostics, and error messages is a 7 inch, 65636 colors TFT displayer with 800 X 480 distinguish ability. The screen can display error codes, settings of various set points, specified temperature and pressure values, and the status of operating parameters and options.

>>> Power-down memory function

When power-down, the chiller will maintain preceding running mode and parameter set point.

>>> Weekly operation scheduling

The user can set the chiller operation schedule in the weekly timetable to run and stop the chiller automatically. If a sudden power outage, the chiller will not restart until manual reset.

>>> Data acquisition & storing

Max. 256 records of latest alarms and 500 seconds chilled/cooling water temperature trend display.

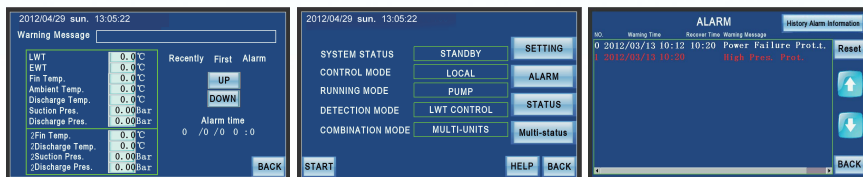
>>> Self-diagnosis

Self-diagnosis is always performed before start-up to enable safe operation. Only all the requirements get satisfied, the chiller will start.

Multiple self-protecting functions guarantee the safety of unit and running perfectly.

>>> Easily accessible measurements :

- Suction and discharge temperatures
- Suction & discharge pressures
- Compressor capacity adjustment status
- Ambient temperature
- Water inlet/Outlet temperatures
- Fan status



Multiple self-protections functions:

High/low pressure protection	Guarantee the Comp. running in the right range and its lifespan
Anti-freezing protection under cooling mode	Protect the copper pipes of evaporator from damage due to water freeze
Frequent startup protection	Protect Comp. from getting burned by the overheated winding due to frequent startup
Overheat protection of compressor	Protect Comp. from damage due to lack of refrigerant or lubricant oil
Water flow protection	Protect Comp. from getting burned due to failure of heat-exchange

Standard control & safety devices

MICROPROCESSOR CONTROLLER: This controller monitors analog and digital inputs to achieve precise control & safety functions of the unit.

COMPRESSOR IN-BUILT PROTECTION DEVICE: Protects the compressor by monitoring:

- A) Motor winding temperature in case of overload.
- B) Discharge gas temperature in case of overheating.
- C) Phase reversal for direction of rotation.

CRANKCASE HEATERS: Each compressor has immersion type crankcase heater. The compressor crankcase heater is always on when the compressors are de-energized. This protects the system against refrigerant migration, oil dilution and potential compressor failure.

DUAL-HIGH PRESSURE SWITCHES: These switches provide an additional safety protection in the case of excessive discharge pressure.

UNDER VOLTAGE AND PHASE PROTECTION: Protects against low & high incoming voltage as well as single phasing, phase reversal and phase imbalance by de-energizing the control circuit. It is an automatic reset device, but it can be set up for manual reset.

MOULDED CASE CIRCUIT BREAKER: Protects against circuit fault. When tripped (automatically or manually), the breaker opens the power supply to total circuit quickly.

INDICATOR LIGHTS: Three lights indicate power ON, Status and Communication.

ELECTRONIC EXPANSION VALVE: Electronic expansion valve is used to regulate the refrigerant flow to the water cooler and maintain a constant superheat and load optimization.

FILTER DRIER (REPLACEABLE CORE TYPE): Refrigerant circuits are kept free of harmful moisture, sludge, acids and oil contamination particles by the filter drier.

SIGHT GLASS: A moisture indicating sight glass is installed in the liquid line. An easy-to-read color indicator shows moisture contents and provides a mean for checking the system refrigerant charge.

PRESSURE GAUGES: Suction & discharge pressures gauges.

Options

WATER FLOW SWITCH: Water flow switch to protect the evaporator need to connect for upright mounting in horizontal pipe. (Field mounted)

VIBRATION ISOLATION: Neoprene Isolation – Recommended for normal installations and provides good performance in most applications for the least cost. (Field mounted)

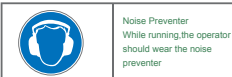
Spring Isolators – Level adjustable, spring and cage type isolators for mounting under the unit base rails. 1" nominal deflection may vary slightly by application. (Field mounted)

ANTI-CORROSION FINS CONDENSER : provide corrosion resistance comparable to copper-fin coils in typical seashore locations.

Specifications

UNIT SIZE		LSBLGW360C	LSBLGW500C	LSBLGW600C	LSBLGW720C	LSBLGW900C	LSBLGW1000C	LSBLGW1200C	LSBLGW1420C
COOLING CAPACITY	kW	376	496	594	720	902	996	1203	1419
POWER SUPPLY		380V,3P+N+PE,50HZ							
RATED POWER CONSUMPTION	kW	124	159	187	234	285	318	381	466
REFRIGERANT									
TYPE		R134a							
CHARGE	kg	76	90	105	140	76+90	90+90	105+105	140+140
REFRIGERANT CONTROL		ELECTRONIC EXPANSION VALVE							
COMPRESSOR									
COMPRESSOR TYPE		Semi-hermetic, twin screw compressor							
QUANTITY		1	1	1	1	2	2	2	2
OIL CHARGE PER COMPRESSOR	Liters	30	30	30	32	30+30	30+30	30+30	32+32
CAPACITY ADJUSTABLE RANGE	%	25%,50%,75%,100% 4-step			12.5%,25%,37.5%,50%,62.5%,75%,87.5%,100%				
MOTOR OVERLOAD PROTECTION		ELECTRONIC							
OIL LUBRICARION		INJECTION							
FAN									
QUANTITY		6	8	10	10	14	16	16	20
AIR VOLUME	m³/h	23000*6	23000*8	23000*10	23000*10	23000*14	23000*16	23000*16	23000*20
MOTOR INPUT	kW	2.4*6	2.4*8	2.4*10	2.4*10	2.4*14	2.4*16	2.4*16	2.4*20
MOTOR SPEED	rpm	940	940	940	940	940	940	940	940
EVAPORATOR									
EVAPORATOR TYPE		SHELL-TUBE HEAT EXCHANGEER							
WATER VOLUME	m³	0.222	0.308	0.340	0.520	0.620	0.600	0.770	0.910
WATER FLOW	m³/h	65.4	86	103.2	123.8	154.8	172	206.4	244.2
WATER PRESSURE DROP	kPa	39	54	56	58	74	75	71	69
WATER PIPE CONNECTION	mm	DN125	DN125	DN125	DN150	DN150	DN150	DN200	DN200
FOULING FACTOR	m².k/kW	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086
GENERAL									
LENGTH	mm	3810	4680	5800	5800	8800	9640	9640	11700
WIDTH	mm	2280	2280	2280	2280	2280	2280	2280	2280
HEIGHT	mm	2370	2370	2370	2370	2430	2430	2430	2430
SHIPPING WEIGHT	kg	3320	4330	5000	5500	7750	8900	9100	11100
RUNNING WEIGHT	kg	3540	4640	5340	6020	8370	9500	9870	12010

Notes:
 1) Nominal cooling capacities are based on the following conditions:
 Chilled water inlet/outlet temp: 12°C/7°C; Outdoor temp (DB/WB):35°C/24°C.
 2) The applicable ambient temperature range of R134a air-cooled screw units is 15°C ~ 43°C, Please refer to the technical manual for detailed performance table.
 3) The factory keeps the right to improve the product and parameter without notice.Please refer to the actual parameter on the nameplate.
 4) Caution: noise preventer required .



Selection procedure

Design requirements

The following design requirement must be known to select a proper package chiller.

1. Required cooling capacity in kilowatt (kW)
2. Leaving chilled water temperature in °C (LWT)
3. Chiller water flow rate
4. Design ambient temperature
5. Maximum and minimum ambient temperatures
6. Altitude
7. Electrical power supply

ELEVATION ABOVE SEA LEVEL(Meter)	CAPACITY CORRECTION FACTOR
0	1.000
300	0.997
600	0.994
900	0.990
1200	0.987
1500	0.983
1800	0.979

Sample selection

Select an air cooled chiller for the following conditions:

Required system capacity is 590kW at 7°C leaving chilled water. Design ambient temperature is 35°C. Altitude is 600 meter above sea level.

Water cooler fouling factor is 0.086. Power supply : 380V-3Ph-50Hz

>>> Step-1:unit selection

Enter the capacity performance data at given LWT and ambient temperature. LSBLGCW600 chiller unit at sea level will produce 596.2kW and 184.1 kW power input at 7°C leaving water temperature and 35°C ambient temperature. For the conditions required, the unit actual cooling capacity when corrected for altitude (0.994) Capacity = 596.2 × 0.994 = 592.6 kW, which then exceeds the requirements. So the selection is correct.

>>> Step-2:electrical

Refer to electrical data at 380V-3Ph-50Hz, the main power wire size for LSBLGCW600 is to be sized for a maximum running current of 340.8 Amps.

>>> Step-3:chilled water pump selection

For chilled water pump selection, add all pressure drop in the closed chiller water loop piping to the pressure drop.

Applicable range

Content	Running range
Ambient TEMP.	T1 Condition:15°C~43°C
Out water TEMP.	5°C~15°C
Max inlet/outlet water TEMP. difference	8°C
Voltage tolerance	Rating Voltage±10%
Power supply frequency	Rating frequency±2%
Compressor max. start count	4 times per hour
Environment quality	High corrosive environment and high humidity should be avoid.

Performance Data

Model	Outlet Temp. / °C	Ambient Temperature / °C																											
		15	20	25	30	35	40	43	15	20	25	30	35	40	43														
LSRLGW360/C	5	418.0	93.0	397.3	101.4	386.6	108.1	362.3	116.7	349.8	122.8	324.3	130.6	312.0	137.1	418.0	93.0	397.3	101.4	386.6	108.1	362.3	116.7	349.8	122.8	324.3	130.6	312.0	137.1
	6	436.0	94.5	414.3	103.0	396.6	109.7	376.9	117.3	362.5	123.4	337.5	132.6	320.1	138.8	436.0	94.5	414.3	103.0	396.6	109.7	376.9	117.3	362.5	123.4	337.5	132.6	320.1	138.8
	7	453.9	96.0	431.3	104.5	412.6	111.3	392.0	120.6	376.0	125.8	350.6	134.3	334.5	140.6	453.9	96.0	431.3	104.5	412.6	111.3	392.0	120.6	376.0	125.8	350.6	134.3	334.5	140.6
	8	471.9	97.5	448.3	106.1	426.6	112.9	407.0	123.6	390.7	128.8	363.8	136.1	347.1	142.4	471.9	97.5	448.3	106.1	426.6	112.9	407.0	123.6	390.7	128.8	363.8	136.1	347.1	142.4
	9	489.8	99.0	465.3	107.6	444.7	114.5	422.1	126.3	404.8	131.5	376.9	137.8	359.7	144.2	489.8	99.0	465.3	107.6	444.7	114.5	422.1	126.3	404.8	131.5	376.9	137.8	359.7	144.2
	10	507.8	100.4	482.3	109.2	460.7	116.1	437.2	129.9	417.2	135.0	390.1	139.6	370.7	145.7	507.8	100.4	482.3	109.2	460.7	116.1	437.2	129.9	417.2	135.0	390.1	139.6	370.7	145.7
	11	525.8	101.9	499.3	110.7	476.7	117.7	452.6	131.0	430.2	141.4	384.9	141.4	384.9	147.7	525.8	101.9	499.3	110.7	476.7	117.7	452.6	131.0	430.2	141.4	384.9	141.4	384.9	147.7
	12	543.7	103.4	516.3	112.2	492.8	119.3	467.3	132.7	446.2	143.4	397.5	143.4	397.5	149.5	543.7	103.4	516.3	112.2	492.8	119.3	467.3	132.7	446.2	143.4	397.5	143.4	397.5	149.5
	13	561.7	104.9	533.3	113.8	508.8	120.9	482.3	134.9	461.5	145.4	410.0	145.4	410.0	151.3	561.7	104.9	533.3	113.8	508.8	120.9	482.3	134.9	461.5	145.4	410.0	145.4	410.0	151.3
	14	579.6	106.4	550.3	115.3	520.8	122.5	497.4	136.6	475.4	148.1	422.6	148.1	422.6	153.1	579.6	106.4	550.3	115.3	520.8	122.5	497.4	136.6	475.4	148.1	422.6	148.1	422.6	153.1
	15	597.6	107.9	567.3	116.9	540.8	124.1	512.5	138.2	490.5	150.8	434.8	150.8	434.8	158.0	597.6	107.9	567.3	116.9	540.8	124.1	512.5	138.2	490.5	150.8	434.8	150.8	434.8	158.0
	LSRLGW60/C	5	527.4	120.7	504.5	131.3	489.1	139.4	470.0	143.9	461.8	154.7	431.7	167.6	175.3	527.4	120.7	504.5	131.3	489.1	139.4	470.0	143.9	461.8	154.7	431.7	167.6	175.3	
		6	545.2	122.1	521.5	132.8	505.5	141.2	486.6	150.7	478.4	158.8	447.9	169.8	177.8	545.2	122.1	521.5	132.8	505.5	141.2	486.6	150.7	478.4	158.8	447.9	169.8	177.8	
		7	563.1	123.4	538.5	134.3	522.3	143.0	509.9	152.7	486.0	159.0	465.3	172.3	180.3	563.1	123.4	538.5	134.3	522.3	143.0	509.9	152.7	486.0	159.0	465.3	172.3	180.3	
		8	581.0	124.7	555.5	135.8	540.4	144.7	530.3	154.7	515.6	161.5	482.7	174.7	182.8	581.0	124.7	555.5	135.8	540.4	144.7	530.3	154.7	515.6	161.5	482.7	174.7	182.8	
9		598.9	126.0	572.5	137.3	557.8	146.5	550.6	156.7	534.3	163.8	500.1	177.2	185.3	598.9	126.0	572.5	137.3	557.8	146.5	550.6	156.7	534.3	163.8	500.1	177.2	185.3		
10		616.8	127.3	589.5	138.8	575.8	148.3	570.9	158.7	558.4	165.8	517.5	179.6	193.5	616.8	127.3	589.5	138.8	575.8	148.3	570.9	158.7	558.4	165.8	517.5	179.6	193.5		
11		634.7	128.7	606.2	140.3	619.4	150.0	591.2	160.7	571.5	168.5	530.2	181.4	190.4	634.7	128.7	606.2	140.3	619.4	150.0	591.2	160.7	571.5	168.5	530.2	181.4	190.4		
12		652.6	130.1	623.0	141.8	641.2	151.8	611.6	162.7	590.2	170.8	552.4	194.5	202.9	652.6	130.1	623.0	141.8	641.2	151.8	611.6	162.7	590.2	170.8	552.4	194.5	202.9		
13		670.5	131.5	639.7	143.3	663.0	153.6	631.9	164.7	608.6	173.2	569.8	197.0	205.6	670.5	131.5	639.7	143.3	663.0	153.6	631.9	164.7	608.6	173.2	569.8	197.0	205.6		
14		688.4	132.9	656.4	144.8	684.7	155.3	652.2	166.7	627.4	175.5	587.2	199.4	207.9	688.4	132.9	656.4	144.8	684.7	155.3	652.2	166.7	627.4	175.5	587.2	199.4	207.9		
15		706.3	134.3	673.1	146.3	705.4	157.1	673.3	168.8	647.5	178.0	605.9	192.1	200.6	706.3	134.3	673.1	146.3	705.4	157.1	673.3	168.8	647.5	178.0	605.9	192.1	200.6		
LSRLGW20/C		5	634.0	133.6	609.2	147.7	591.0	159.7	569.4	172.7	557.4	182.6	168.7	207.2	208.6	634.0	133.6	609.2	147.7	591.0	159.7	569.4	172.7	557.4	182.6	168.7	207.2	208.6	
		6	653.3	135.9	627.9	150.1	608.5	162.0	587.5	175.1	575.2	184.8	191.2	211.1	653.3	135.9	627.9	150.1	608.5	162.0	587.5	175.1	575.2	184.8	191.2	211.1			
		7	672.6	138.2	646.4	152.4	627.4	164.6	606.9	177.6	594.0	187.0	203.7	213.8	672.6	138.2	646.4	152.4	627.4	164.6	606.9	177.6	594.0	187.0	203.7	213.8			
		8	691.9	140.5	665.3	154.7	646.9	167.2	626.3	180.2	614.5	189.5	206.3	216.5	691.9	140.5	665.3	154.7	646.9	167.2	626.3	180.2	614.5	189.5	206.3	216.5			
	9	711.2	142.8	684.8	156.9	666.9	169.8	646.7	182.8	634.1	191.9	208.8	219.2	711.2	142.8	684.8	156.9	666.9	169.8	646.7	182.8	634.1	191.9	208.8	219.2				
	10	730.5	145.1	704.3	159.2	687.4	172.4	665.1	185.4	651.3	194.0	211.4	221.6	730.5	145.1	704.3	159.2	687.4	172.4	665.1	185.4	651.3	194.0	211.4	221.6				
	11	750.0	147.4	723.8	161.5	706.5	175.0	684.4	188.0	673.4	196.6	213.9	224.5	750.0	147.4	723.8	161.5	706.5	175.0	684.4	188.0	673.4	196.6	213.9	224.5				
	12	770.5	149.7	743.3	163.8	726.0	177.6	703.8	190.6	693.1	199.0	216.5	227.2	770.5	149.7	743.3	163.8	726.0	177.6	703.8	190.6	693.1	199.0	216.5	227.2				
	13	791.0	151.9	763.8	166.1	748.1	180.2	723.2	193.1	712.8	201.3	218.5	229.9	791.0	151.9	763.8	166.1	748.1	180.2	723.2	193.1	712.8	201.3	218.5	229.9				
	14	811.5	154.2	784.3	168.4	769.6	182.8	742.6	195.7	732.4	203.7	221.6	232.6	811.5	154.2	784.3	168.4	769.6	182.8	742.6	195.7	732.4	203.7	221.6	232.6				
	15	832.0	156.5	805.3	170.7	790.6	185.4	763.2	198.5	752.5	206.2	224.3	235.4	832.0	156.5	805.3	170.7	790.6	185.4	763.2	198.5	752.5	206.2	224.3	235.4				
	LSRLGW120/C	5	767.1	177.6	744.1	189.9	717.3	204.2	699.5	212.7	676.9	227.9	611.2	269.2	767.1	177.6	744.1	189.9	717.3	204.2	699.5	212.7	676.9	227.9	611.2	269.2			
		6	786.8	180.9	767.3	193.6	736.5	207.8	711.8	222.1	697.9	230.8	657.0	282.6	786.8	180.9	767.3	193.6	736.5	207.8	711.8	222.1	697.9	230.8	657.0	282.6			
		7	815.4	184.8	791.4	197.4	752.1	215.5	735.1	225.6	720.0	234.0	678.5	286.3	815.4	184.8	791.4	197.4	752.1	215.5	735.1	225.6	720.0	234.0	678.5	286.3			
		8	844.0	188.6	815.5	201.1	767.0	218.1	758.4	229.1	744.1	237.6	699.9	297.5	289.9	844.0	188.6	815.5	201.1	767.0	218.1	758.4	229.1	744.1	237.6	699.9	297.5	289.9	
9		864.6	192.4	836.6	204.9	810.7	218.7	781.8	232.6	761.3	241.0	721.3	281.2	273.5	864.6	192.4	836.6	204.9	810.7	218.7	781.8	232.6	761.3	241.0	721.3	281.2	273.5		
10		887.3	196.2	863.7	208.6	834.4	222.3	805.1	238.1	787.8	243.7	742.8	268.4	276.7	887.3	196.2	863.7	208.6	834.4	222.3	805.1	238.1	787.8	243.7	742.8	268.4	276.7		
11		911.9	200.1	887.8	212.4	858.1	226.0	828.5	239.6	813.5	247.8	764.2	269.8	280.8	911.9	200.1	887.8	212.4	858.1	226.0	828.5	239.6	813.5	247.8	764.2	269.8	280.8		
12		938.3	203.9	911.9	216.1	881.8	229.6	851.8	243.1	836.6	251.3	785.7	272.1	284.5	938.3	203.9	911.9	216.1	881.8	229.6	851.8	243.1	836.6	251.3	785.7	272.1	284.5		
13		962.9	207.7	936.0	219.9	905.6	233.2	875.1	246.8	859.7	254.7	807.1	275.7	288.1	962.9	207.7	936.0	219.9	905.6	233.2	875.1	246.8	859.7	254.7	807.1	275.7	288.1		
14		987.5	211.6	960.1	223.6	929.3	236.8	898.5	250.1	889.8	258.1	828.5	279.4	291.8	987.5	211.6	960.1	223.6	929.3	236.8	898.5	250.1	889.8	258.1	828.5	279.4	291.8		
15		1013.0	215.9	985.2	227.3	954.5	240.5	923.8	253.7	907.4	261.9	851.2	283.4	295.4	1013.0	215.9	985.2	227.3	954.5	24									

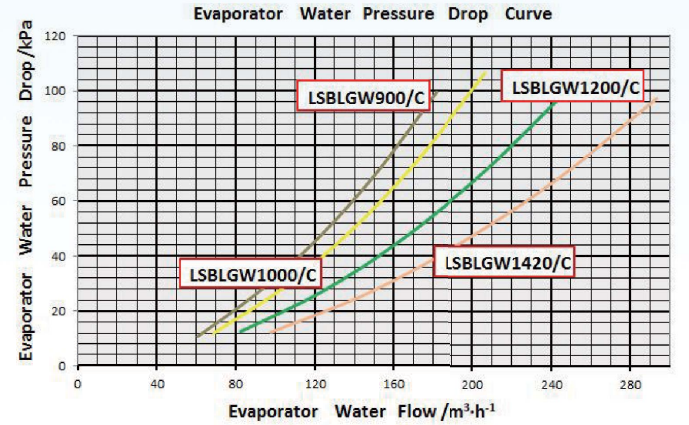
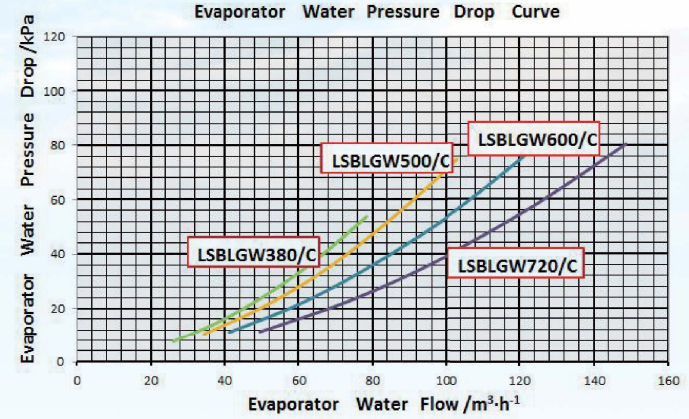
Electrical data

UNIT MODEL	Nominal		POWER SUPPLY					COMPRESSOR				FAN			CRANKCASE HEATER			
	Voltage	Hz	Min. Voltage	Max. Voltage	Max Running Current/A	Rated Current/A	Qty	LRA/A (each)	Max Allowed Current/A (each)	Rated Current/A (each)	Rated Power/kW (each)	Qty	Full Load Amps(each)	Power Input/kW	Total Input/kW	Voltage/V	Total Walls/W	Total Amps/A
LSBLGW380/C	380	50	340	420	287	212	1	586	370	187	109.6	6	5.6	2.4	14.4	220	300	1.36
LSBLGW500/C	380	50	340	420	368	271	1	805	450	239	139.8	8	5.6	2.4	19.2	220	300	1.36
LSBLGW600/C	380	50	340	420	412	319	1	805	450	278	163	10	5.6	2.4	24	220	300	1.36
LSBLGW720/C	380	50	340	420	523	398	1	917	480	358	210	10	5.6	2.4	24	220	300	1.36
LSBLGW900/C	380	50	340	420	655	483	1	805	450	239	139.8	14	5.6	2.4	33.6	220	300	1.36
LSBLGW1000/C	380	50	340	420	368*2	542	2	805	450	239	139.8	16	5.6	2.4	38.4	600	600	2.72
LSBLGW1200/C	380	50	340	420	412*2	650	2	805	450	292	171.3	16	5.6	2.4	38.4	600	600	2.72
LSBLGW1420/C	380	50	340	420	523*2	796	2	917	480	358	210	20	5.6	2.4	48	600	600	2.72

NOTE:

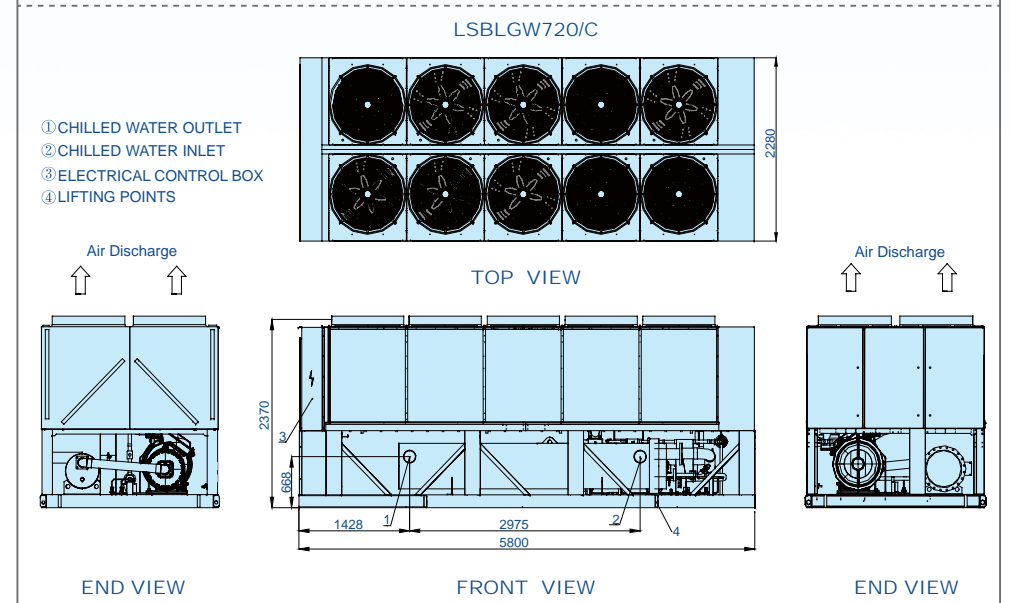
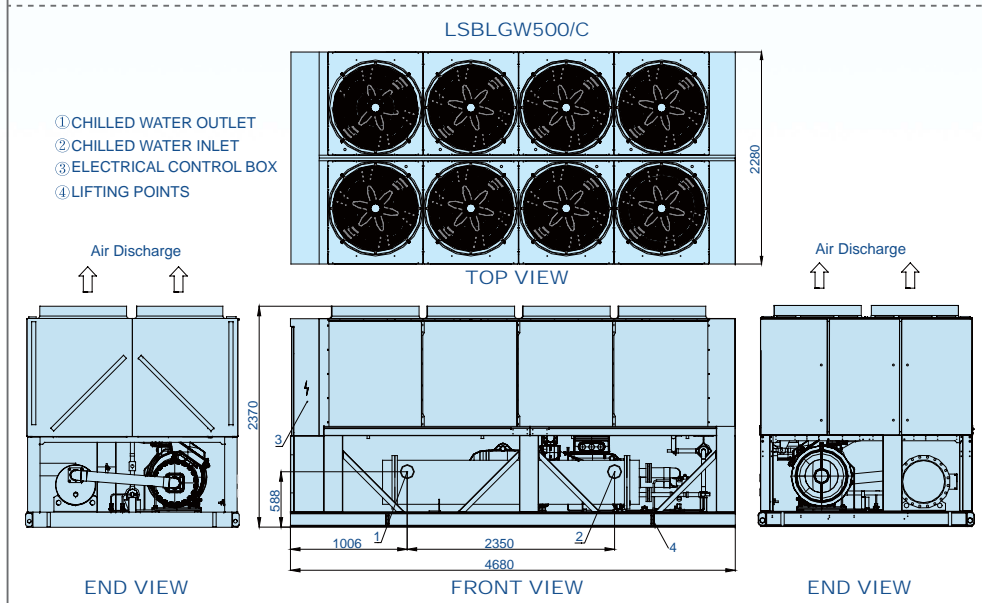
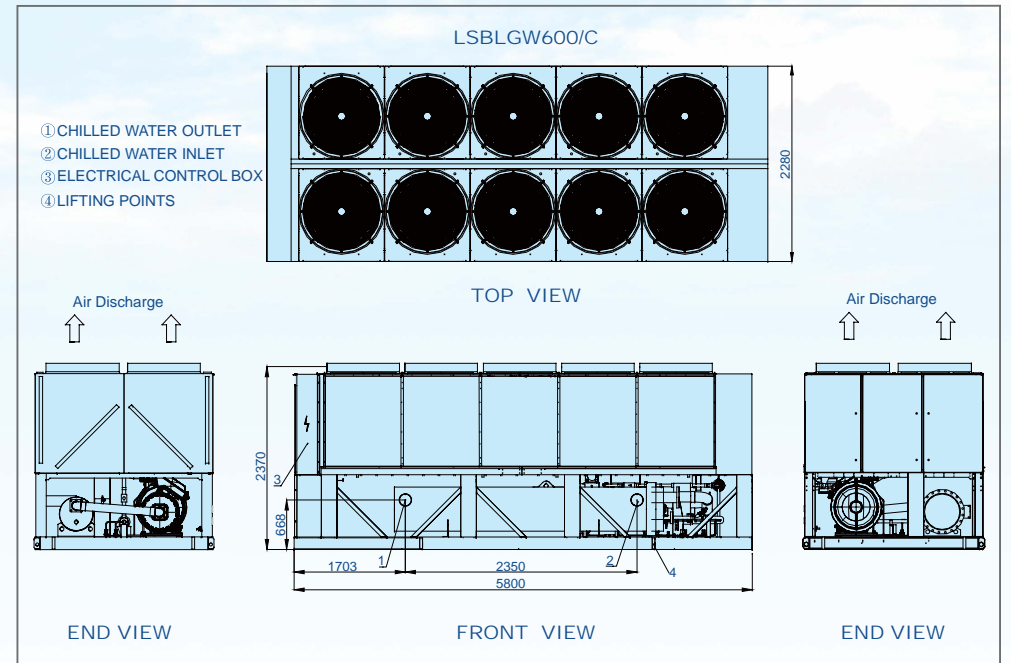
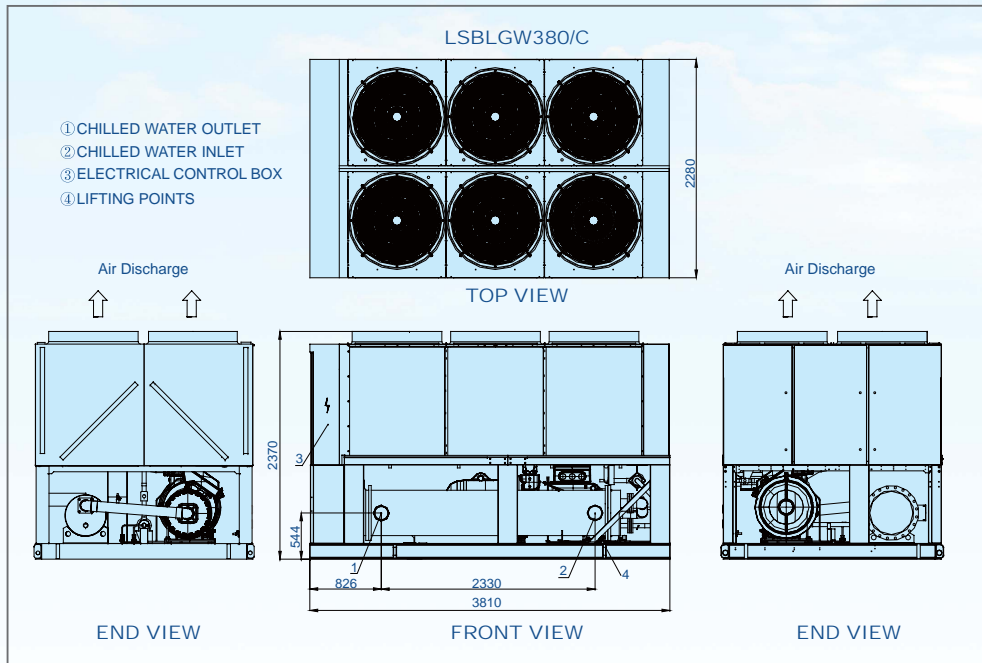
- Customer to specify the exact nominal power supply available at site so that electrical components are selected accurately, failing to do so will affect unit performance & terms of warranty.
- Main power must be supplied from a single field supplied and mounted fused circuit breaker.
- The compressor crankcase heaters must be energized for & hours before the unit is initially started or after a prolonged power disconnection.
- All field wiring must be in accordance with local standards.
- Minimum and maximum unit supply voltage are shown in the tabulated data above.
- Neutral line required on 380V-3Ph-50Hz(5 wires) power supply.
- Rated load Amps values are on nominal conditions.
- The $\pm 10\%$ voltage variation from the nominal is allowed for a short time only, not permanent.

Water pressure drop



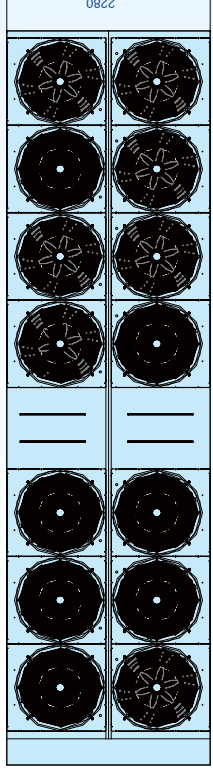
Unit Model	Min. Flow Rate		Max. Flow Rate	
	m³/h	GPM	m³/h	GPM
LSBLGW380/C	53	233	79	348
LSBLGW500/C	69	304	104	458
LSBLGW600/C	83	365	124	546
LSBLGW720/C	99	436	149	656
LSBLGW900/C	124	546	186	819
LSBLGW1000/C	138	608	207	912
LSBLGW1200/C	165	727	248	1092
LSBLGW1420/C	196	863	293	1290

Dimensions

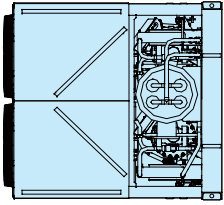


LSBLGW900/C

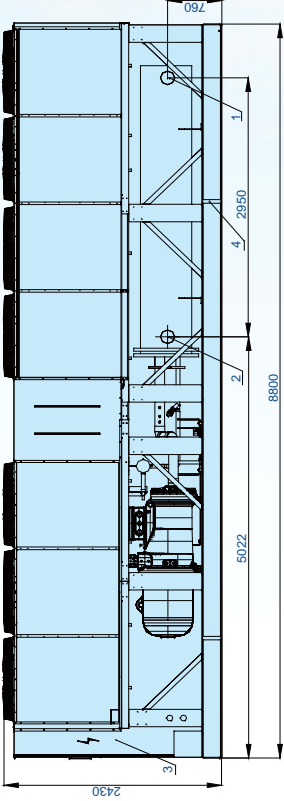
- ① CHILLED WATER INLET
- ② CHILLED WATER OUTLET
- ③ ELECTRICAL CONTROL BOX
- ④ LIFTING POINTS



TOP VIEW



END VIEW

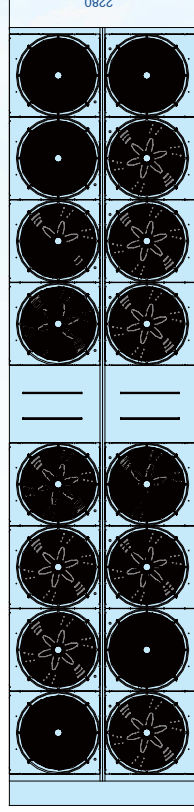


FRONT VIEW

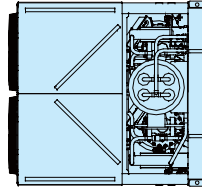
END VIEW

LSBLGW1000/C

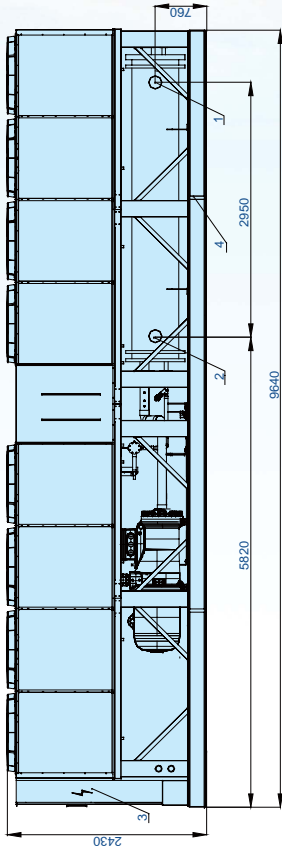
- ① CHILLED WATER INLET
- ② CHILLED WATER OUTLET
- ③ ELECTRICAL CONTROL BOX
- ④ LIFTING POINTS



TOP VIEW



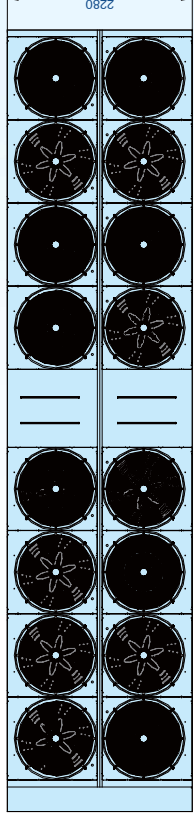
END VIEW



FRONT VIEW

END VIEW

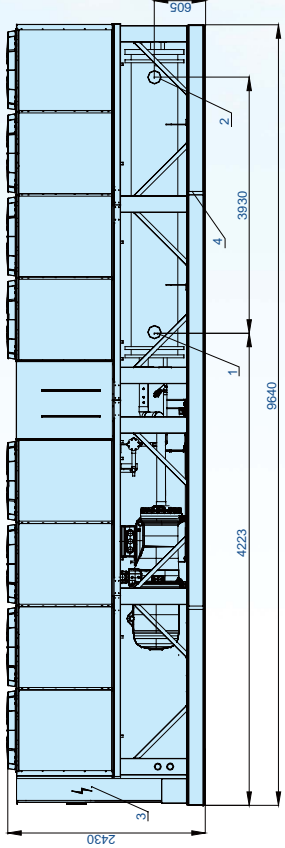
LSBLGW1200/C



- ① CHILLED WATER INLET
- ② CHILLED WATER OUTLET
- ③ ELECTRICAL CONTROL BOX
- ④ LIFTING POINTS

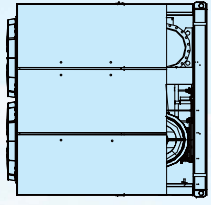
TOP VIEW

Air Discharge



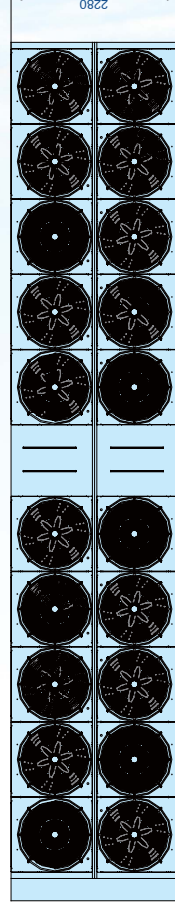
FRONT VIEW

END VIEW



END VIEW

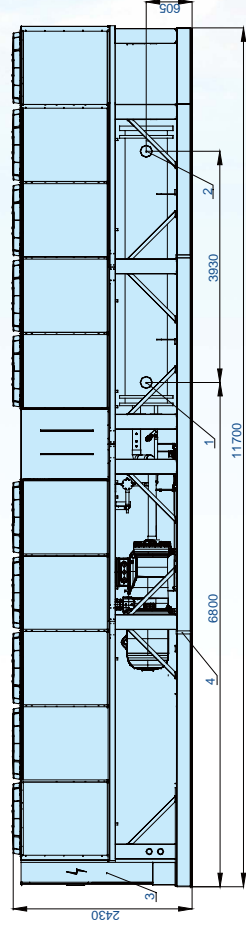
LSBLGW1420/C



- ① CHILLED WATER INLET
- ② CHILLED WATER OUTLET
- ③ ELECTRICAL CONTROL BOX
- ④ LIFTING POINTS

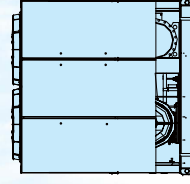
TOP VIEW

Air Discharge



FRONT VIEW

END VIEW



END VIEW

Application guidelines

Introduction

These guidelines should be considered when designing systems and their installation utilizing air-cooled chillers. Stable operation, performance and reliability of units is often dependent upon proper compliance with these recommendations.

Unit selection/ sizing

Unit selection procedure and capacities are provided in this catalog for proper selection. The electronic selection program may also be utilized for this purpose.

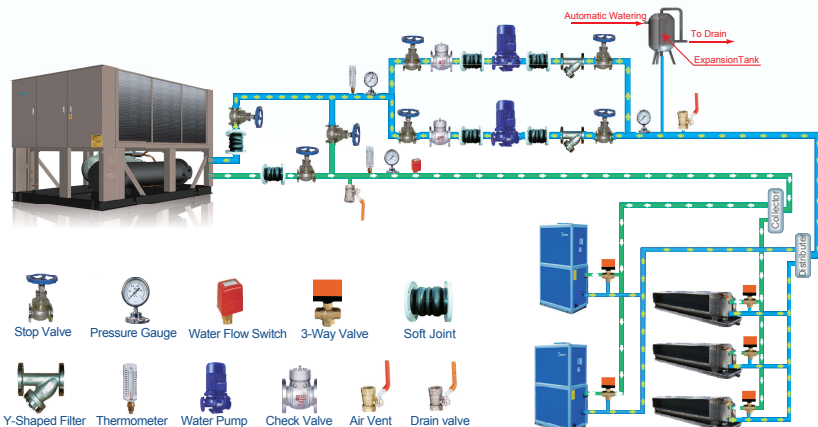
Over sizing chillers beyond a maximum limit of 5-10% in order to assure adequate capacity or considering future expansions is not recommended. Over sizing adversely affects the operating efficiency due to erratic system operation and excessive compressor cycling which also results in reduced compressor life. It should be noted that, units operate more efficiently when fully loaded rather than larger equipment operating at partial capacities. In addition, an oversized unit is usually more costly to purchase, install and operate.

Operation of two chillers at higher loading is preferred to operating a single chiller at or near its minimum possible capacity.

Effect of altitude on unit capacity

The tabulated performance data provided in this catalog are for use at or near sea level altitude application. At altitudes substantially above sea level, the decreased air density will reduce condenser capacity and therefore unit capacity. For unit selection at these higher altitudes, apply appropriate correction factor from the table provided in this catalog.

Typical water piping layout



Introduction

The following pertinent guidelines are served to ensure satisfactory operation of the units. Failure to follow these recommendations may cause improper operation and loss of performance, damage to the unit and difficulty in servicing and maintenance.

- Water piping must be connected correctly, water must enter from the inlet connection on the cooler and leave from the outlet connection.
- The flow switch must be arranged at the outlet pipe of the cooler and interlocked with the input contact in the control cabinet. The straight pipe section at each side of the flow switch shall have a length that is at least 5 times the pipe diameter; do not install it near the elbow, orifice plate or valve.
- The water system must be fitted with the water pump with appropriate displacement and pressure head, so as to ensure normal water supply to the unit. The soft connection shall be used between the water pump, unit and water system pipelines, and the bracket shall be provided to avoid stress on the unit. Welding work for installation shall avoid damage to the unit.
- The water filter must be installed before the water inlet pipeline of the unit, which shall be provided with a 40-mesh screen. This will aid in preventing foreign material from entering and decreasing the performance of the cooler.
- Each low point shall be fitted with a drain connection so as to drain the remaining water in the system.
- The auto discharge air valve shall be arranged between the high point of the pipeline and the expansion tank. Hand shut-off valves are recommended for use in all lines to facilitate servicing.
- The thermometer and pressure gauge are arranged on the straight pipe sections of the water inlet pipeline and drain pipeline, and their installation places shall be far away from the elbows.
- The flushing and insulation of the water pipelines shall be carried out before it is connected with the unit, so as to prevent dirt from damaging the unit.

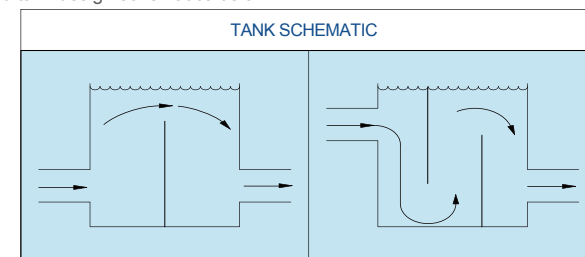
Chilled fluid volume requirement

The volume of water in a piping system loop is critical to the smooth and proper operation of a chilled water system. If sufficient volume of water is not there in the system, the temperature control can be lost resulting in erratic system operation and excessive compressor cycling.

$$V(\text{Liters}) = \text{CAP}(\text{kW}) \times N$$

Note: CAP -- Nominal cooling capacity (kW) N = 7.17

To achieve the aforementioned water volume requirements, it may be necessary to install a tank in the piping system loop to increase the volume of water in the system and therefore, reduce the rate of change of return water temperature. This tank should be provided on the return water side to the chiller and the tank should be baffled to ensure that there is no stratification and the entering stream thoroughly mixes with the tank water. See recommended tank design schematics below.



Microprocessor controller

Sequence of operation:

The following describes the sequence of operation for a two screw compressor chiller unit. Operation is similar for a one or more compressor unit. For initial start-up, the following conditions must be met:

- The power supply to the unit shall be energized for 8 hours in advanced.
- All safety conditions satisfied.
- Chilled water pump running and chilled water flow switch contact closed.
- Customer interlock contact closed, if any.

Stage - on sequence

Stage ON & OFF sequence, shall be accomplished by the Leaving water temperature control selection.

Stage # 1:

If the leaving water temperature is in loading area, the compressor # 1 electronic expansion valve shall be switched ON. Now the compressor is in the minimum or unloaded capacity. The compressor capacity is varied to achieve the full/part load capacity as per the load demand.

As discharge pressure of compressor # 1 rises, the corresponding fans are energized accordingly to the fan stage-ON set point. If the discharge pressure falls below the fan stage-OFF set point value, the corresponding fans will turn off.

Stage # 2:

If the compressor has loaded in 50% and entered capacity adjustment program, the leaving water temperature still be in loading area, the compressor #2 electronic expansion valve shall be switched ON. Now the compressor capacity is varied to achieve the full/part load capacity as per the load demand.

As discharge pressure of compressor # 2 rises, the corresponding fans are energized accordingly to the fan stage-ON set point. If the discharge pressure falls below the fan stage-OFF set point value, the corresponding fans will turn off.

Stage - off sequence

During the staging OFF, the first-in-first-out sequence is adopted.

As the applied load decreases and when the leaving water temperature falls in unloading area, the compressor #1 shall unload.

If the leaving water temperature still be in unloading area, the compressor # 2 shall unload.

If both of the two compressors have unloaded to 50% status, and the leaving water temperature still be in unloading area, the compressor # 1 shall be turned off firstly.

Rigging instructions

Attention to riggers:

Hooking rigging sling thru holes in base rail, as shown below.

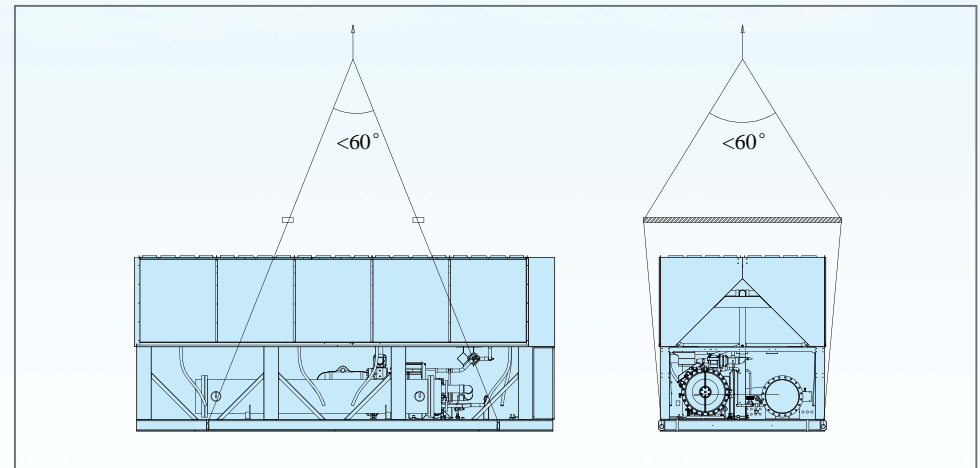
Center of gravity is not unit center line. Ensure center of gravity aligns with the main lifting point before lifting.

Use spreader bar when rigging, to prevent the slings from damaging the unit.

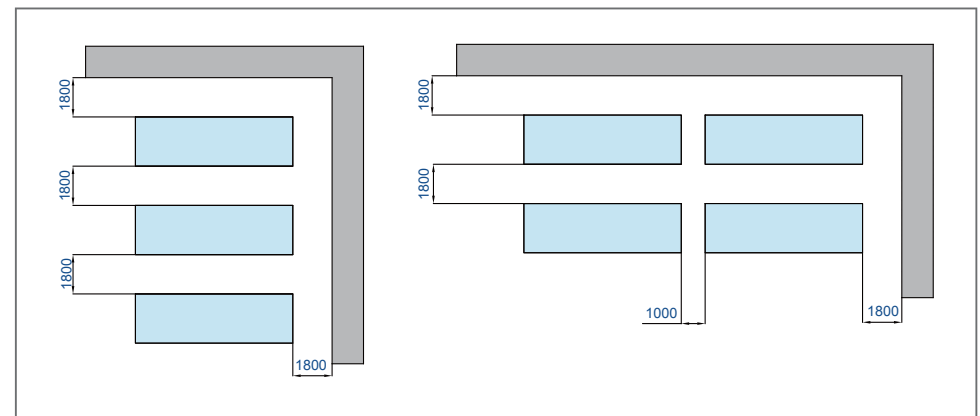
Caution:

All panels should be in place when rigging. Care must be taken to avoid damage to the coils during handling.

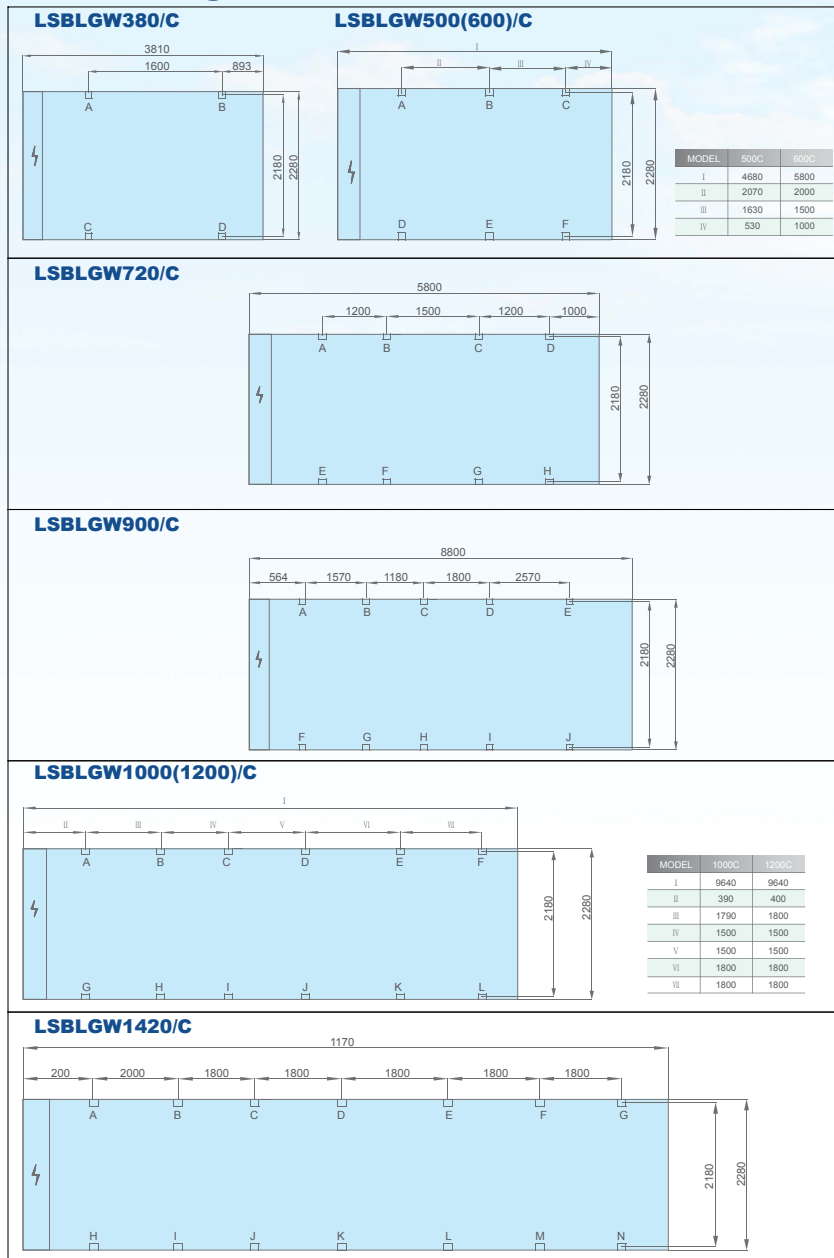
Insert packing material between coils & slings as necessary.



Installation clearance



Mounting location

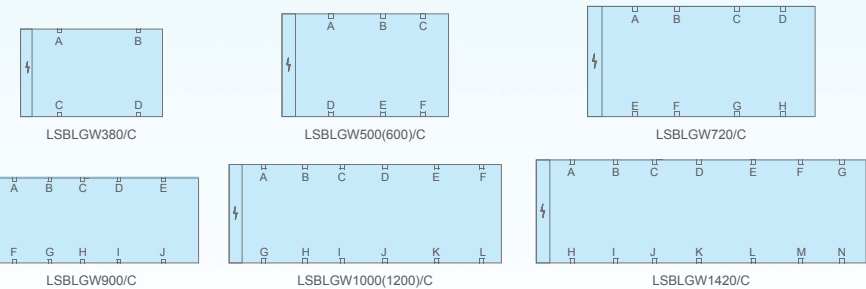


Note: All dimensions are in mm

Load distribution

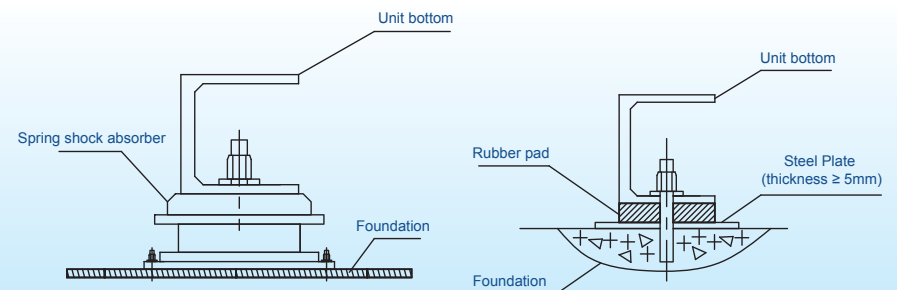
Unit:KG

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N
LSBLGW380/C	869	901	869	901	-	-	-	-	-	-	-	-	-	-
LSBLGW500/C	633	855	832	633	855	832	-	-	-	-	-	-	-	-
LSBLGW600/C	815	934	921	815	934	921	-	-	-	-	-	-	-	-
LSBLGW720/C	687	765	800	758	687	765	800	758	-	-	-	-	-	-
LSBLGW900/C	814	944	947	747	733	814	944	947	747	733	-	-	-	-
LSBLGW1000/C	726	912	917	732	731	732	726	912	917	732	731	732	-	-
LSBLGW1200/C	789	912	905	779	777	773	789	912	905	779	777	773	-	-
LSBLGW1420/C	794	925	954	936	800	798	798	794	925	954	936	800	798	798



Installation requirements:

- Be sure to take the base preparation and structure into consideration seriously during installation, especially avoid the intensity and noise of floor when the machine is installed on the top story of buildings. It is recommended to discuss with the building designer before conducting installation.
- The surrounding of the base shall be equipped with drainage ditch and make sure it can dewatering freely for convenient in drain.
- Anti-vibration pad shall be placed between the base frame and foundation in order to avoid transmitting vibration and noise during the runtime of the unit, and make sure the unit is acilnic during installation.



Troubleshooting guide

1. Unit Touch Screen Fault

- Check whether emergency switch (SB) is normal, has been reset.
- Check whether air switch (QF) be in "ON" status, the fuse is normal.
- Check whether the wiring of the power line and communication line are correct, and the bolt has been tightened.
- Check whether the wiring of isolation transformer is correct, and the component is normal.
- Check whether the switch power is normal.

2. Power Protection

- Check whether the setting parameters of the phase relay are correct.
- Check whether the wiring of phase sequence relay is correct.
- Check the wiring of power is correct.
- Check the power quality.

3. Temperature Sensor Failure

- Check whether the wiring is correct
- Check whether the resistance of temperature sensor is normal.

4. Pressure Sensor Failure

- Check whether the wiring of suction and discharge pressure sensors is correct.
- Check whether the setting range on touch screen is corresponding with the range marked on the sensor.
- Check whether the correction value is correct.

5. Compressor Overload Protection

- Check whether the setting value of compressor thermal overload relay is correct.
- Check whether the overload relay itself is normal.
- Check the quality of power supply.
- Check whether the load is normal.
- Check whether supply oil system of compressor is normal.

6. Oil level Protection

- Check whether the oil level switch or connection is failure
- Check whether there is refrigeration oil leakage.
- Check whether the unit has run with liquid and some oil is taken away from the compressor.

7. Fan Overload Protection

- Check whether the setting value of fan thermal overload relay is correct.
- Check whether the relay is normal.
- Check whether there is bad ventilation around the unit.
- Check whether the fan load is too heavy.
- Check whether the power is normal.

8. High Discharge Pressure Protection

- Check whether discharge pressure sensor itself and setting values are normal.
- Check whether the ambient temperature has exceeded allowed running range.
- Check whether all of valves have been open fully.
- Check whether the condenser is normal.
- Check whether the fans are normal
- If all mentioned above are normal, but the alarm still exist. Maybe there exists non-condensable gas or too much refrigerant in the system.

9. Low Suction Pressure Protection

- Check whether all valves have been open fully, such as suction and discharge shutoff valves, angle valves or ball valves on two sides of the filter.
- Check whether the opening of EXV is normal.
- Check whether suction temperature sensor is normal and the installation meet the requirement.
- Check whether there is plugging in the filter.
- Check whether there is a leakage of refrigerant.
- Check whether the chilled water system is normal.

10. High Discharge Temperature Protection

- Check whether discharge temperature is normal.
- Check whether ambient or water temperature is excess allowed range.
- Check whether the injection system is normal.
- Check whether the filter is normal.
- Check whether EXV is normal.
- Check whether the refrigeration oil is normal.

11. Water Flow Fault Protection

- Check whether the type of water pump can meet the requirement;
- Check whether the water pump run normally and the wiring is correct;
- Check whether the water flow reaches to allowed range.
- Check the direction of the targets is normal and the installation of water flow switch meet the requirement.
- Check whether the wiring of water flow switch is normal.
- Check whether the chilled water system is normal.

12. Anti-freeze Protection

- Check whether chilled leaving water temperature is less than 3 C .
- Check whether the wiring and water flow switch itself is normal.
- Check whether the chilled water system is normal.

13. Contactor Protection

- Check whether the setting value of time relay is correct.
- Check whether the wiring of contactors are normal.
- Check whether physical construction is normal, Check whether the coil is normal and the contactor can be suctioned normally.