

Sustainable Comfort

AQS

Modular Air Cooled Chiller/Heat Pump



 **CLIMAVENETA**

Modular Air Cooled Chiller/Heat Pump

Units Description

The CLIMAVENETA AQS modular air-cooled chiller/ heat pump adopts the environment friendly refrigerant HFC410A, and the cooling capacity for each module can be 65kW or 130kW separately. Up to 16 modules can be connected in parallel to get combined capacity from 65kW to 2080kW. It can save the investment of cooling system and the operating cost, also the unit can be installed on the roof without extra plant room. The unit is wildly suitable to commercial and industrial application and meets both the cooling and heating requirements.



AQS065 M-N



AQS130 M-N

Nomenclature

AQS 065 M - N - E - 3

- Refrigerant: 3 for R32; Blank for R410A;
- Unit Efficiency: E for high efficiency unit; Blank for standard unit;
- Unit Type: N for heat pump; Blank for chiller;
- M for master module; S for slave module
- Cooling capacity: 065 for 65kW; 130 for 130kW;
- Modular air cooled chiller / heatpump

AQS 065 M-N

Master module of modular air-cooled heat pump,with 65kW cooling capacity and R410A refrigerant

Operating Limits

Model	Model	Ambient Temp (°C)	Chilled Water Outlet Temp (°C)	Chilled Water Outlet Temp of Antifreeze Solution (°C)
AQS 065 M-N	Cooling	-10~46	5~20	-8~20
	Heating	-10~25	26~55	26~55
AQS 130 M-N	Cooling	-10~46	5~20	-8~20
	Heating	-10~25	26~55	26~55

Features and Benefits

Intelligent Controller

- Intelligent UPC microprocessor with human-machine interface screen, unit managing, network and communication, protection when under alarm and alarm management functions.
- Multi-language menu, shortcut key, graphic unit status. Average compressor running time to extend unit working life.



Smart Defrost

Different from the traditional heat pump, CLIMAVENETA developed the SMART DEFROST system. It has the self-adaptive function which can modify and adjust the next defrost process based on outdoor temperature and humidity as well as last defrost result.



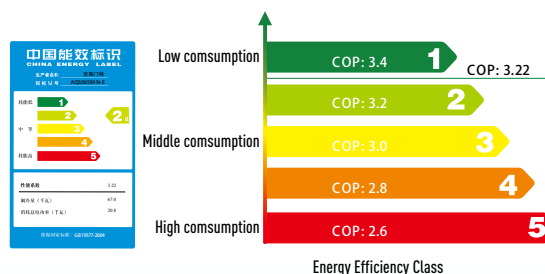
Flexible Scroll Compressor

- The unit adopts the high efficiency flexible scroll compressor with high COP, low noise, liquid hammer protection, anti-wear and perfect reliability.
- Dual compressor design which can adjust the quantity of running compressors according to load change, and its start current is small.



High Efficiency and Energy Saving

Use the high efficient components including scroll compressor, plate heat exchanger and HFC410A. The performance coefficient of the unit can arrive 3.22. We provide user with quality products and save the money for user at the same time.



Environment Friendly Refrigerant HFC410A



- Environment friendly HFC410A, no damage to the ozone layer (ODP=0)
- Higher volumetric refrigeration capacities, so better heat transfer ability and efficiency.
- Less charge amount of the refrigerant which reduce the CO₂ emission and greenhouse effect.

Efficient Heat Exchanger



Adopt high quality AISI316 stainless steel plate heat exchanger. The close-cell thermal insulation material is attached on the exchanger to prevent condensation on the external surface. The electric heater inside the exchanger also can avoid frozen in extreme environment.

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Features and Benefits

Efficient Condenser

- V type (65kW) or U type (130kW) air-side heat exchanger which increase the effective heat exchange area to enhance the performance. Copper tube with internal volute thread also increase the heat exchange area and the refrigerant disturbance for better efficiency.
- The hydrophilic-coated aluminum fin of the condenser can prevent the corrosion and the condensation water will not form the water drop which not effect the heat exchange performance.



Working Under Extreme Environment

Thanks to the large area heat exchanger and SMART DEFROST, the unit can operate reliably under -10°C outdoor temperature that perfectly solved the problem between operation reliability under low outdoor temp. and high efficiency.



Electric Expansion Valve

- Precisely control the gas flow to optimize the evaporator's performance;
- Adjust the system based on the superheat degree of suction gas for reliable running;
- Improve the efficiency when the unit operates deviate the nominal condition or under low load condition;
- Changes rapidly according to the load, and the water temperature is stable.



Up to 16 units combined in 1 circuit

- Modular design is convenient for transport and install. The system can change the module quantity based on actual load condition which is suitable for multi-staged investment.



Multi-protection

The intelligent microprocessor have perfect protection function, such as protection when fault, alarm, record and analysis. Besides, the high and low pressure switch, fault phase, anti-phase, over load, over current, over heat, discharge gas temperature, water flow, anti-frozen functions are also equipped. And the fault can be recorded and alarm can be displayed.



Low Noise

The compressor and refrigerating system are inside the sound proof cabinet. And the rubber pad is also fixed between the compressor and frame to stop the vibration and noise spread. The aircraft grade blade and aluminum casted exterior motor are also used to reduce the noise.



Parameters

General Technical Data					Chiller	
Model			Standard		High efficient unit	
			AQS065M(S)	AQS130M(S)	AQS065M(S)E	AQS130M(S)E
Cooling capacity		kW	65	130	67	135
Total power input		kW	21.3	42.9	20.8	41.9
Power supply		V/Ph/Hz	380/3/50			
Evaporator water flow		m³/h	11.1	23.2	11.5	24.1
Water pressure drop		kPa	54	47	58	48.3
Conn.size		mm	1-1/2"thread connection	2-1/2"thread connection	1-1/2"thread connection	2-1/2"thread connection
Compressors	Compressor Qty.		2	2	2	2
	Refrigerant circuit Qty.		1	2	1	2
	Capacity regulating steps		2	2	2	2
Fans	Fan Qty.		3	2	3	2
	Air Flow	m³/h	27000	43000	27000	43000
	Total fan power		kW	1.9	2.9	1.9
Refrigerant			R410A			
Refrigerant charge		kg	9.5	20	12	22
Dimensions	Length	mm	2250	2250	2250	2250
	Width	mm	1060	1100	1060	1100
	Height	mm	2050	2285	2050	2285
Operating weight		kg	750	1000	790	1040

1. Chilled water (in/out) 12/7°C Ambient temp. 35°C

2. Comply with GB/T18430.1

Electrical Data

Power supply	380V-3N-50Hz
Voltage tolerance	< ±10%
Voltage unbalance	< 3%

Maximum values

Model	Compressor				Fans		Total unit		
	n	FLI (kW)	FLA (A)	LRA (A)	FLI (kW)	FLA (A)	FLI (kW)	FLA (A)	SA (A)
AQS 065	2	13.8	23.2	124	1.9	9	29.7	55.4	156.2
AQS 130	2	28.2	46.5	260	2.9	7.9	59.3	100.9	314.4

F.L.I. Full load power input

S.A. Starting Current

F.L.A. Full load current

L.R.A. Locked rotor current for single compressor

Modular Air Cooled Chiller/Heat Pump

Parameters

General Technical Data				Heat Pump		
Model			Standard		High efficient unit	
			AQS065M(S)N	AQS130M(S)N	AQS065M(S)NE	AQS130M(S)NE
Cooling capacity	kW		65	130	67	135
Total power input	kW		21.3	42.9	20.8	41.9
Heating capacity	kW		67	135	69	140
Total power input	kW		21.0	42.7	21.0	43.2
Power supply	V/Ph/Hz	380/3/50				
Evaporator water flow	m³/h		11.1	23.2	11.5	24.1
Water pressure drop	kPa		54	47	58	48.3
Conn.size	mm		1-1/2"thread connection	2-1/2"thread connection	1-1/2"thread connection	2-1/2"thread connection
Compressors	Compressor Qty.		2	2	2	2
	Refrigerant circuit Qty.		1	2	1	2
	Capacity regulating steps		2	2	2	2
Fans	Fan Qty.		3	2	3	2
	Air Flow	m³/h	27000	43000	27000	43000
	Total fan power	kW	1.9	2.9	1.9	2.9
Refrigerant			R410A			
Refrigerant charge		kg	10.5	22	13	25
Dimensions	Length	mm	2250	2250	2250	2250
	Width	mm	1060	1100	1060	1100
	Height	mm	2050	2285	2050	2285
Operating weight		kg	775	1010	820	1050

1. Chilled water (in/out) 12/7°C Ambient temp. 35°C
2. Hot water (in/out) 40/45°C Ambient temp. 7°C DB/6°C WB
3. Comply with GB/T18430.1

Electrical Data

Power supply	380V-3N-50Hz
Voltage tolerance	< ±10%
Voltage unbalance	< 3%

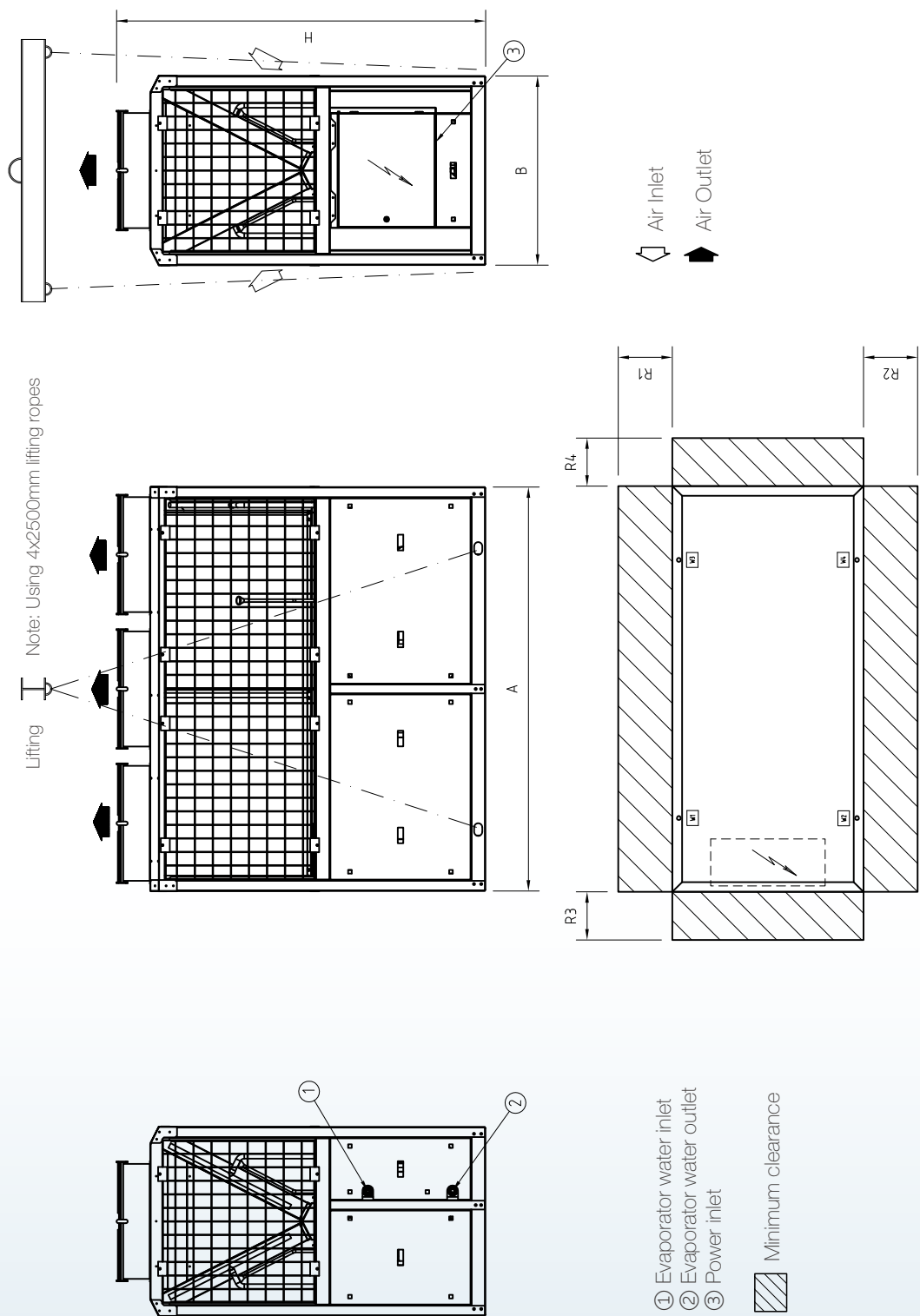
Maximum values

Model	Compressor				Fans		Total unit		
	n	FLI (kW)	FLA (A)	LRA (A)	FLI (kW)	FLA (A)	FLI (kW)	FLA (A)	SA (A)
AQS 065	2	13.8	23.2	124	1.9	9	29.7	55.4	156.2
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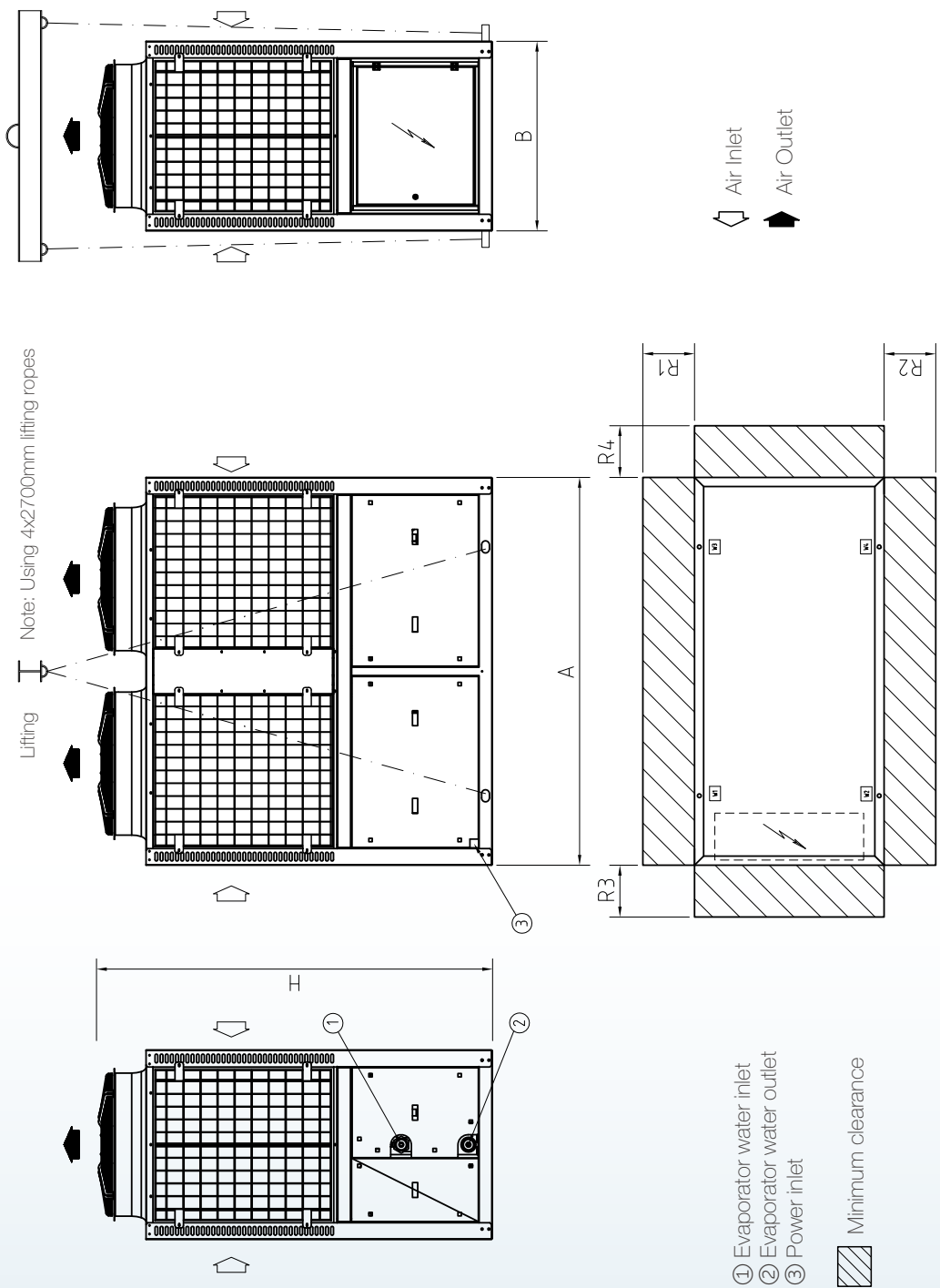
F.L.I. Full load power input S.A. Starting Current
 F.L.A. Full load current L.R.A. Locked rotor current for single compressor

Modular Air Cooled Chiller/Heat Pump

AQS065 M-N Dimension Drawing



AQS130 M-N Dimension Drawing



Remark: The above clearance is only applicable to single unit, multiple unit please see the catalogue: Combination Installation Diagram

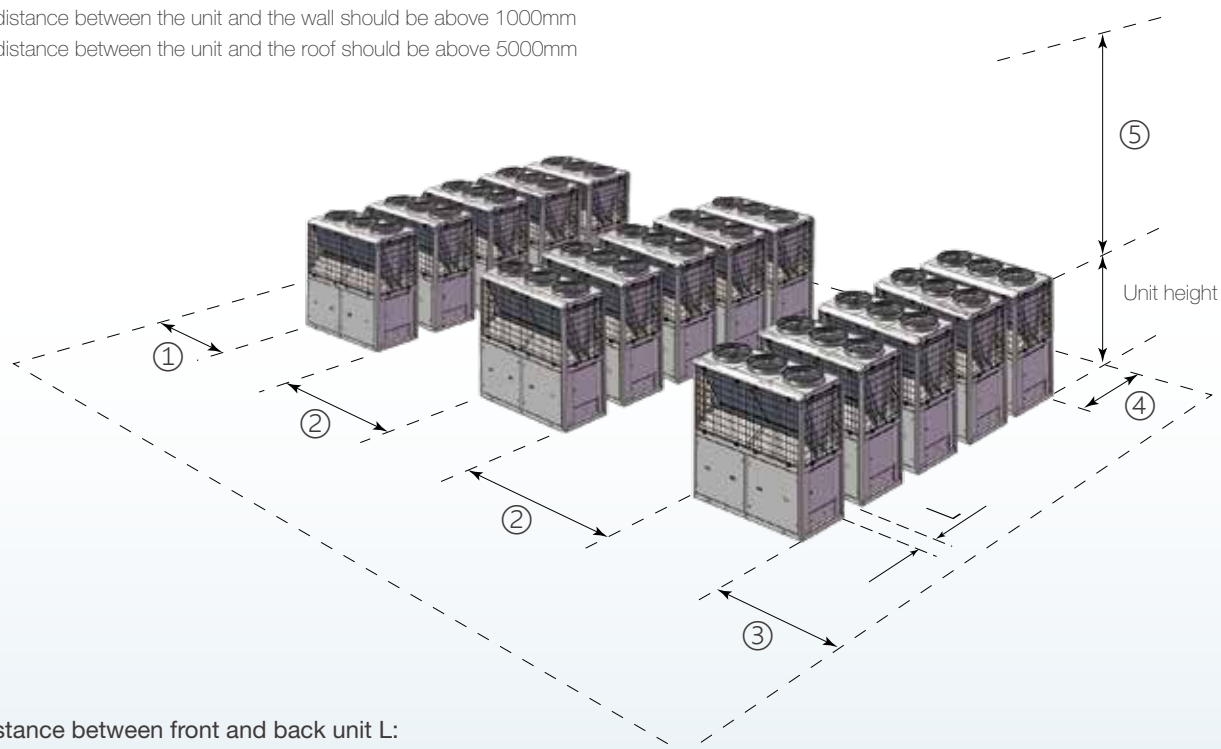
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Dimension and Maintenance Space

Model	Dimension			Maintenance space				Evaporator connect	
	A [mm]	B [mm]	H [mm]	R1 [mm]	R2 [mm]	R3 [mm]	R4 [mm]	IN/OUT	
								Form	Ø
AQS 065 M-N	2250	1060	2050	1000	1000	600	600	Thread	1- 1/2"
AQS 130 M-N	2250	1100	2285	1000	1000	1000	1000	Thread	2- 1/2"

Combination Installation Diagram

- ① The distance between the unit and the wall should be above 1000mm
- ② The distance between the units should be above 1200mm
- ③ The distance between the unit and the wall should be above 1000mm
- ④ The distance between the unit and the wall should be above 1000mm
- ⑤ The distance between the unit and the roof should be above 5000mm



The distance between front and back unit L:

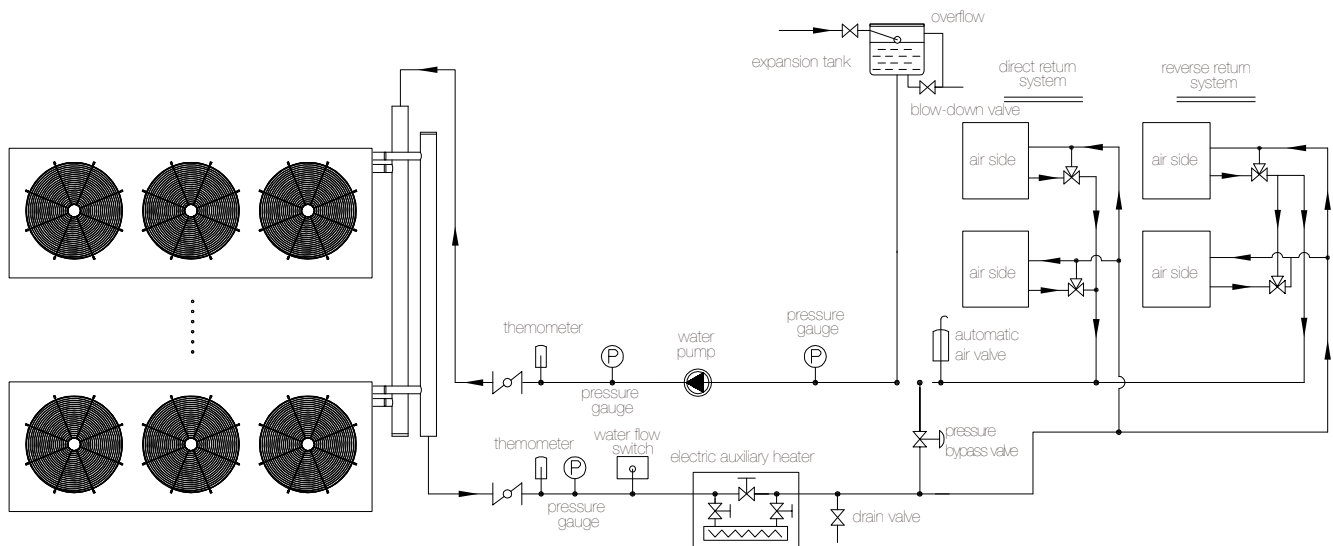
For AQS 065:

1、 When units with protection grille and board , $L \geq 400\text{mm}$;

2、 When units without protection grille and board , $L \geq 50\text{mm}$;

For AQS130: $L \geq 600\text{mm}$.

System Diagram



AQS065 M-N as example

Remark:

1. Unit is equipped with Y type water filter.
2. Every modular unit is equipped with water temperature sensor. Besides, there are another two temperature sensors supplied to be installed on the total water pipe (Connected with master module control circuit).
3. Every modular unit is supplied with pressure difference switch, so there is no need to install water flow switch on every module. Just install one water flow switch on total water pipe. (this water flow switch is optional which connecting on the microprocessor of master unit).
4. Because can not make sure the installation space between units at site, our factory will not supply the signal wire for the units. We suggest to select 1mm² three-core shield wire.



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