

AQS Air-cooled Chiller & Heat Pump with Scroll Compressors

COMFORT

CHILLERS



Air Cooled Chiller/Heat Pump

Units Description

CLIMAVENETA AQS air cooled chiller/heat pump 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 widely suitable to commercial and industrial application and meets both the cooling and heating requirements.

The unit is widely used in hospitals, hotels, office buildings, shopping malls and other air-conditioning occasions, It can meet the needs of air conditioning and heating throughout the year.

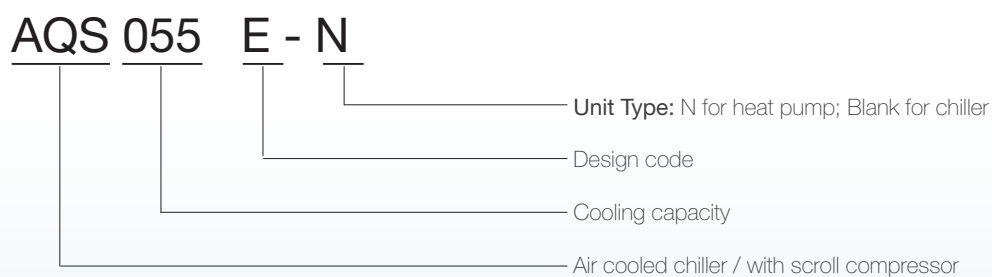


40/55/70/85



110/140/170

Nomenclature



AQS 055 E-N: Scroll type air cooled heat pump with cooling capacity of 55kW

Operating Limits

Mode	Ambient Temp (°C)	Chilled Water Outlet Temp (°C)	Chilled Water Outlet Temp of Antifreeze Solution (°C)
Cooling	-10~46	5~20	-8~20
Heating	-10~25	26~55	26~55

Remarks: 1. Exceeding the requirements of this operating range, please consult Climaveneta.

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.



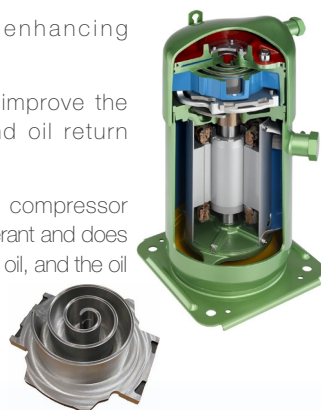
Smart Defrost

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

- Patented exhaust channel, reducing compressor noise
- Patented moving parts, enhancing compressor reliability
- Using PVE lubricating oil to improve the lubrication performance and oil return performance of the compressor
- Outer / inner shell design: the compressor motor is cooled by suction refrigerant and does not directly contact the lubricating oil, and the oil circulation rate is low.
- Unique suction refrigerant flow design: lubricating oil mainly stored in the middle layer of inner and outer shell and the suction refrigerant will not stir the lubricating oil.
- Unique scroll plate design, more reliable and with higher efficiency.



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 GB grade 2 efficiency (China National Standard). 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



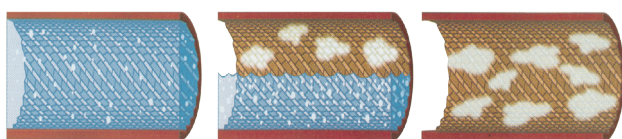
Adopt high quality AISI316 stainless steel plate heat exchanger. The close-cell thermal insulation material is attached on the exchanger to prevent condensation on the external surface. The electric heater inside the exchanger also can avoid frozen in extreme environment.

Air Cooled Chiller/Heat Pump

Features and Benefits

Efficient Condenser

The air-side heat exchanger adopts a U-shaped design to increase the effective area of heat exchange and has a remarkable heat transfer effect. High heat transfer efficiency vortex-shaped internal thread copper tube increases heat exchange area and refrigerant disturbance to improve heat transfer.



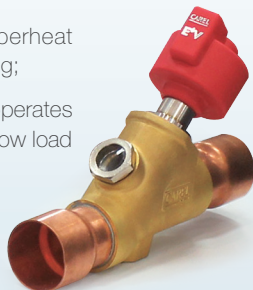
Working Under Extreme Environment

Thanks to the large area heat exchanger and SMART DEFROST, the unit can operate reliably under low 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.



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 refrigeration system of the Climaveneta air-cooled unit are placed in the sound insulation board, and the rubber anti-vibration pad is used at the frame connection of the compressor to prevent vibration and noise transmission. The fan uses aerospace fan blades and aluminum cast outer rotor motors to reduce airflow noise.



Parameters

General Technical Data

Model		AQS040E	AQS055E	AQS070E	AQS085E	AQS110E	AQS140E	AQS170E	AQS220E	AQS280E	AQS340E
Cooling Capacity		kW	44.7	53.7	66.3	84.4	111	140.8	166.3	222	332.5
Cooling Power Input		kW	12	14.8	18.5	24.4	30.8	39.9	47.7	61.5	95.4
Rated Voltage		V/Hz/ph	380V-3N-50Hz								
Evaporator Water Flow		m ³ /h	7.7	9.2	11.4	14.5	19.1	24.2	28.6	38.2	57.2
Water Pressure Drop		kpa	50.8	55.3	56.7	54.4	44.6	43.5	39.4	44.6	39.2
Conn.size		mm	1-1/2"thread connection			2-1/2"thread connection			4"victaulic coupling		
Compressors	Qty.		2	2	2	2	2	2	4	4	4
	Cooling Circuit Qty.		1	1	1	1	2	2	4	4	4
	Capacity Regulating Steps		2	2	2	2	2	2	4	4	4
Fans	Qty.		1	1	1	1	2	2	4	4	4
	Air Flow	m ³ /h	21500	21400	21000	21600	42800	42000	43200	85600	86400
	Total Fan Power	kW	1.9	1.9	1.9	1.9	3.8	3.8	3.8	7.6	7.6
Refrigerant			R410A								
Refrigerant Charge		kg	10	11	12	13	22	23	26	44	52
Dimension	L	mm	1100	1100	1100	1100	2250	2250	2250	2998	2998
	W	mm	1130	1130	1130	1130	1100	1100	1100	2248	2248
	H	mm	2210	2210	2210	2440	2210	2210	2440	2250	2480
Weight		kg	680	695	700	715	1030	1050	1070	2160	2240

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

Electrical Data

Power supply		380V-3N-50Hz							
Voltage tolerance		< ±10%							
Voltage unbalance		<2%							
Model	n	Compressor			Fans		Total unit		
		FLI	FLA	LRA	FLI	FLA	FLI	FLA	SA
		(kW)	(A)	(A)	(kW)	(A)	(kW)	(A)	(A)
AQS040E	2	9.1	15.3	98	1.9	4	20.1	34.6	117.3
AQS055E	2	10.7	18.6	142	1.9	4	23.3	41.2	164.6
AQS070E	2	12.9	21.4	138	1.9	4	27.7	46.8	163.4
AQS085E	2	16.7	28.2	172	1.9	4	35.3	60.4	204.2
AQS110E	2	22.4	37.4	211	3.8	8	48.6	82.8	256.4
AQS140E	2	29.4	48.7	285	3.8	8	62.6	105.4	341.7
AQS170E	2	32	53.3	346	3.8	8	67.8	114.6	407.3
AQS220E	4	22.4	37.4	211	7.6	16	97.2	165.6	339.2
AQS280E	4	29.4	48.7	285	7.6	16	125.2	210.8	447.1
AQS340E	4	32	53.3	346	7.6	16	135.6	229.2	521.9

*Note: All parameters are maximum and are for reference only by electrical professional engineers. Please refer to the electrical specifications for specific design.

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

Air Cooled Chiller/Heat Pump

Parameters

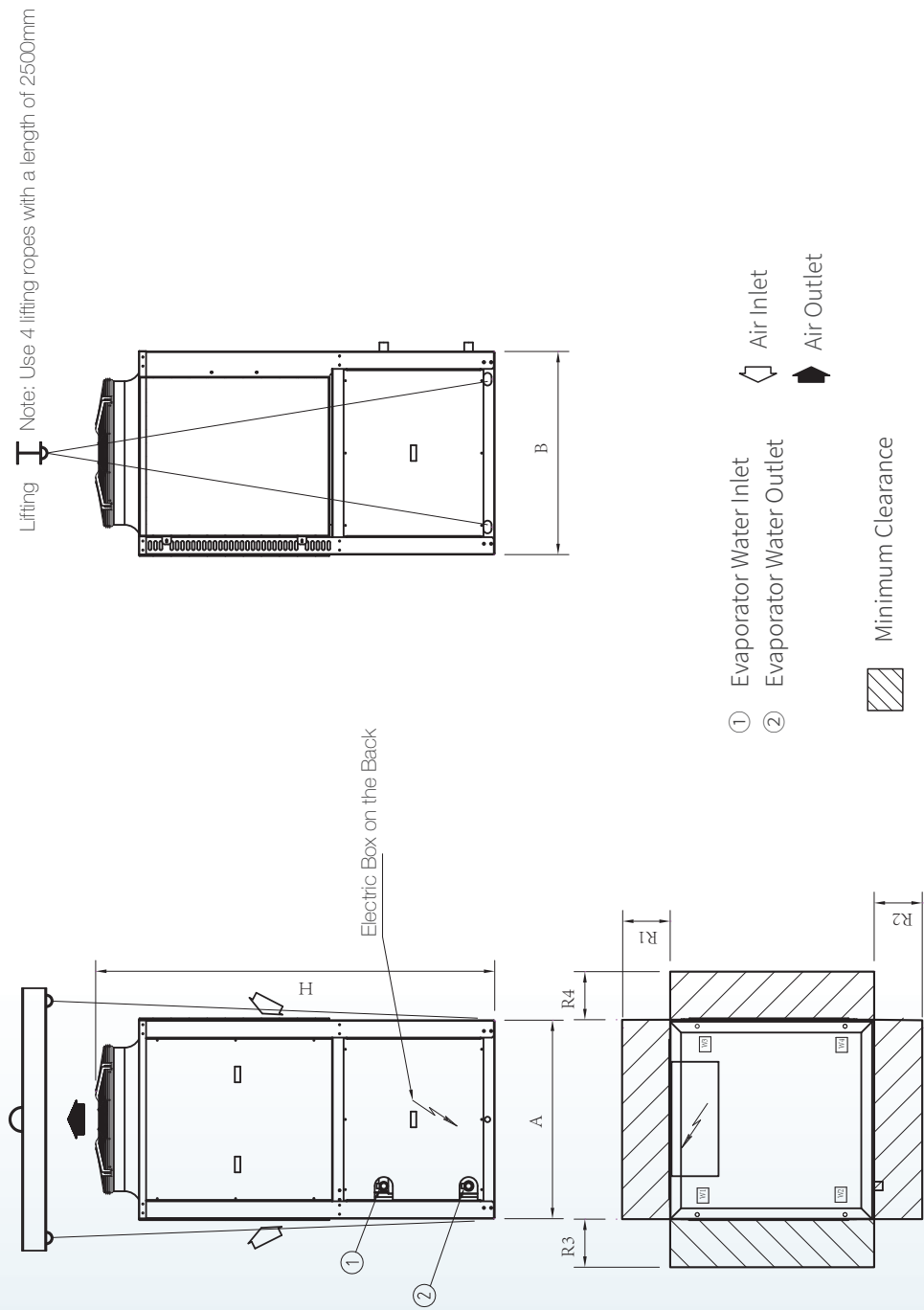
General Technical Data											
Model		AQS040E -N	AQS055E -N	AQS070E -N	AQS085E -N	AQS110E -N	AQS140E -N	AQS170E -N	AQS220E -N	AQS280E -N	AQS340E -N
Cooling Capacity	kW	44.7	53.7	66.3	84.4	111	140.8	166.3	222	281.6	332.5
Cooling Power Input	kW	12	14.8	18.5	24.4	30.8	39.9	47.7	61.5	79.9	95.4
Heating Capacity	kW	47.7	58	71.3	90.4	120.1	151.4	180.9	240.3	302.8	361.8
Heating Power Input	kW	12.2	15	18.7	24.3	31.1	40.1	48	62.2	80.3	96
Rated Voltage	V/Hz/ph	380V-3N-50Hz									
Evaporator Water Flow	m ³ /h	7.7	9.2	11.4	14.5	19.1	24.2	28.6	38.2	48.4	57.2
Water Pressure Drop	kpa	50.8	55.3	56.7	54.4	44.6	43.5	39.4	44.6	43.4	39.2
Conn.size	mm	1-1/2"thread connection				2-1/2"thread connection			4"victaulic coupling		
Compressors	Qty.	2	2	2	2	2	2	2	4	4	4
	Cooling Circuit Qty.	1	1	1	1	2	2	2	4	4	4
	Capacity Regulating Steps	2	2	2	2	2	2	2	4	4	4
Fans	Qty.	1	1	1	1	2	2	2	4	4	4
	Air Flow m ³ /h	21500	21400	21000	21600	42800	42000	43200	85600	84000	86400
	Total Fan Power kW	1.9	1.9	1.9	1.9	3.8	3.8	3.8	7.6	7.6	7.6
Refrigerant		R410A									
Refrigerant Charge		kg	11	12	13	15	24	26	28	44	52
Model	L	mm	1100	1100	1100	1100	2250	2250	2250	2998	2998
	W	mm	1130	1130	1130	1130	1100	1100	1100	2248	2248
	H	mm	2210	2210	2210	2440	2210	2210	2440	2250	2480
Weight	kg	690	705	715	725	1040	1060	1080	2180	2220	2260

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

2. Heat water (in/out) 40/45°C Ambient temp. 7°C Wet bulb temperature 6°C Comply with GB/T18430.1

3. Electric data is the same with AQS.E

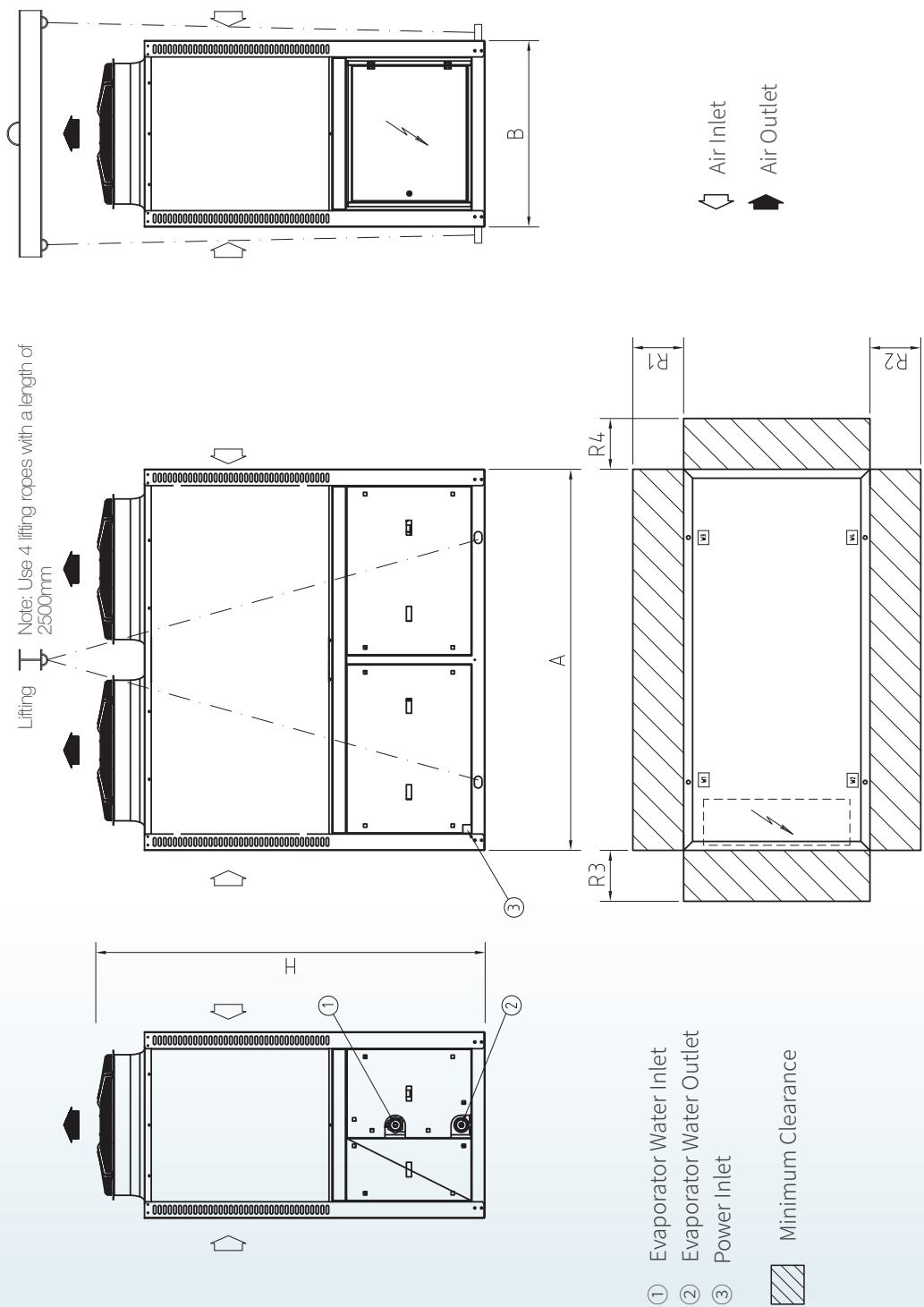
AQS040~085E(-N) Dimensional Drawing



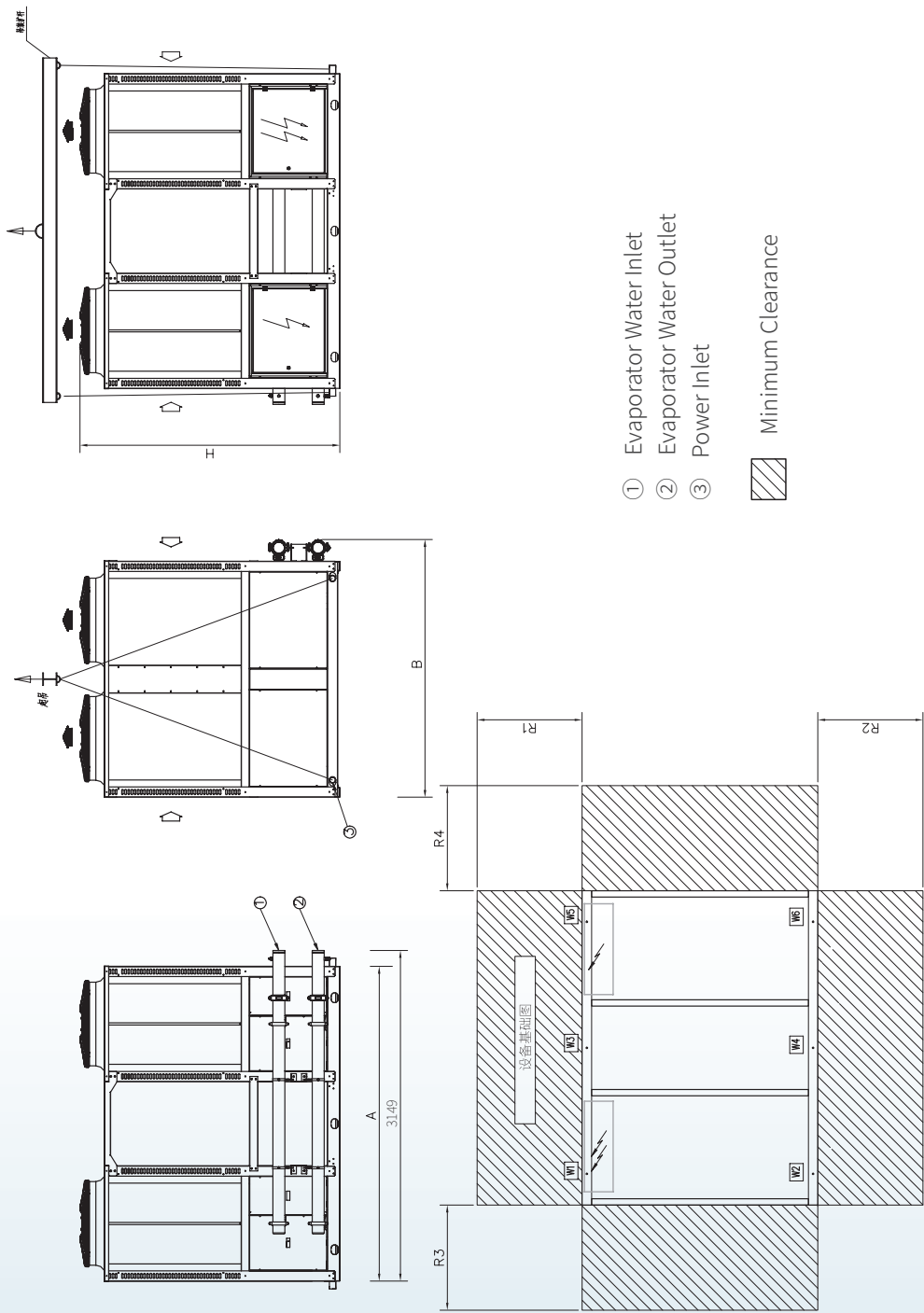
Note: The above maintenance space size is only applicable to single machine. The maintenance space size of multi-unit assembly is shown in the sample: unit assembly installation dimension drawing

Air Cooled Chiller/Heat Pump

AQS110~170E(-N) Dimensional Drawing



AQS220~340E(-N) Dimensional Drawing

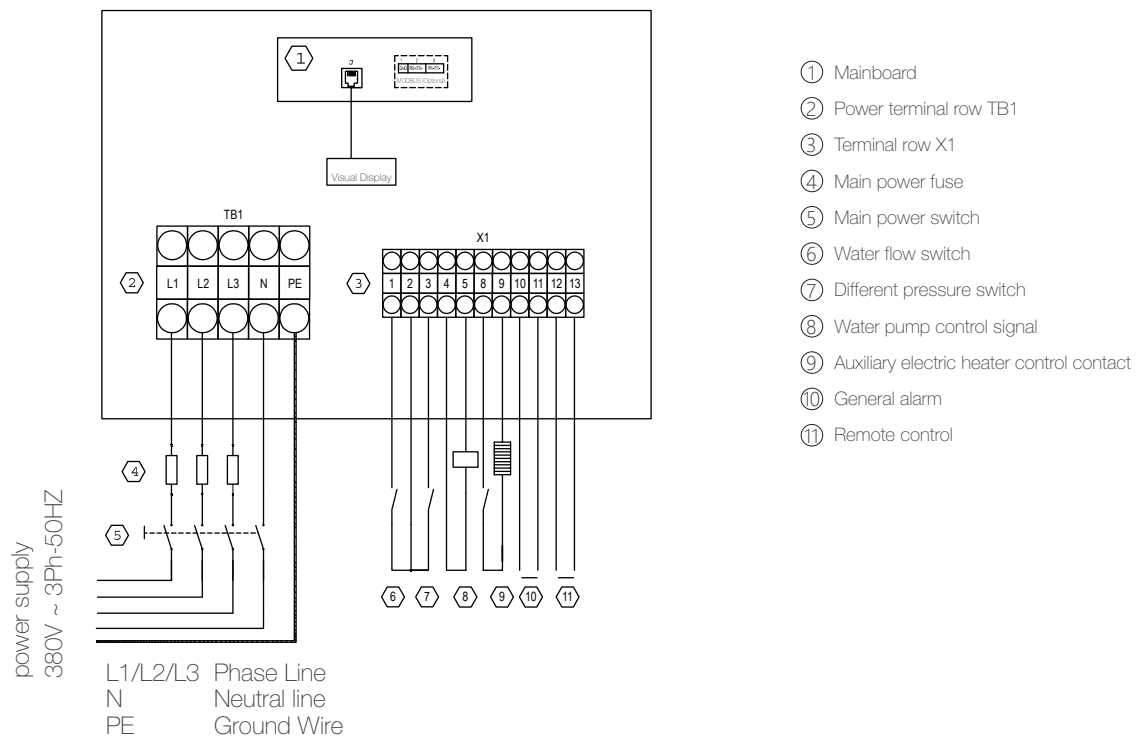


Note: The above maintenance space size is only applicable to single machine. The maintenance space size of multi-unit assembly is shown in the sample unit assembly installation dimension drawing

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Electrical Wiring Diagram

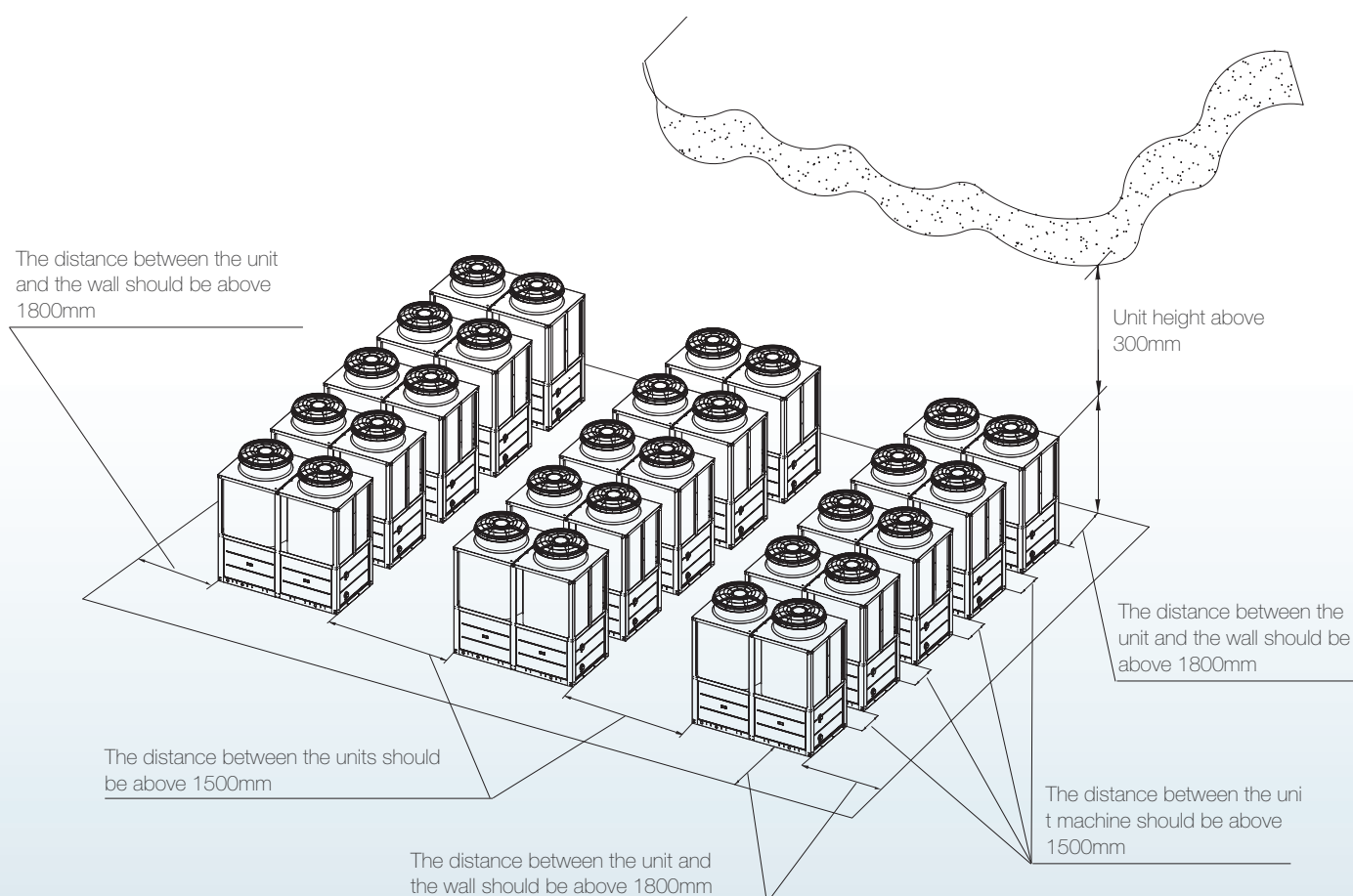
AQS040~340E(-N)Customer Wiring Diagram



Dimension and Maintenance Space

Model	Dimension			Maintenance				Evaporator connect	
	A	B	H	R1	R2	R3	R4	IN/OUT	
	mm	mm	mm	mm	mm	mm	mm	Type	φ
AQS 085E (-N)	1100	1130	2440	1000	1000	1000	1000	Thread	1-1/2"
AQS 040/055/70E (-N)	1100	1130	2110	1000	1000	1000	1000	Thread	1-1/2"
AQS 110 /140E (-N)	2250	1100	2110	1000	1000	1000	1000	Thread	2-1/2"
AQS 170E (-N)	2250	1100	2440	1000	1000	1000	1000	Thread	2-1/2"
AQS 220/280E (-N)	2998	2248	2250	1000	1000	1000	1000	Victaulic	4"
AQS 340E (-N)	2998	2248	2480	1000	1000	1000	1000	Victaulic	4"

Combination Installation Diagram





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