DAIKIN

Engineering Data

ED-UAL-MINI-202301

Inverter Air Cooled Mini Chiller (Heat Pump)

Model: UAL040ER5 ~ UAL150ER5
Cooling Capacity: 11.2kW ~ 40.0kW
Heating Capacity: 12.0kW ~ 41.0kW

DAIKIN INDUSTRIES, LTD.

Literature No.: ED-UAL-MINI-202301
Supersedes: ED-UAL-MINI-201903

Contents

NOTE: Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations, and experienced with this type of equipment.

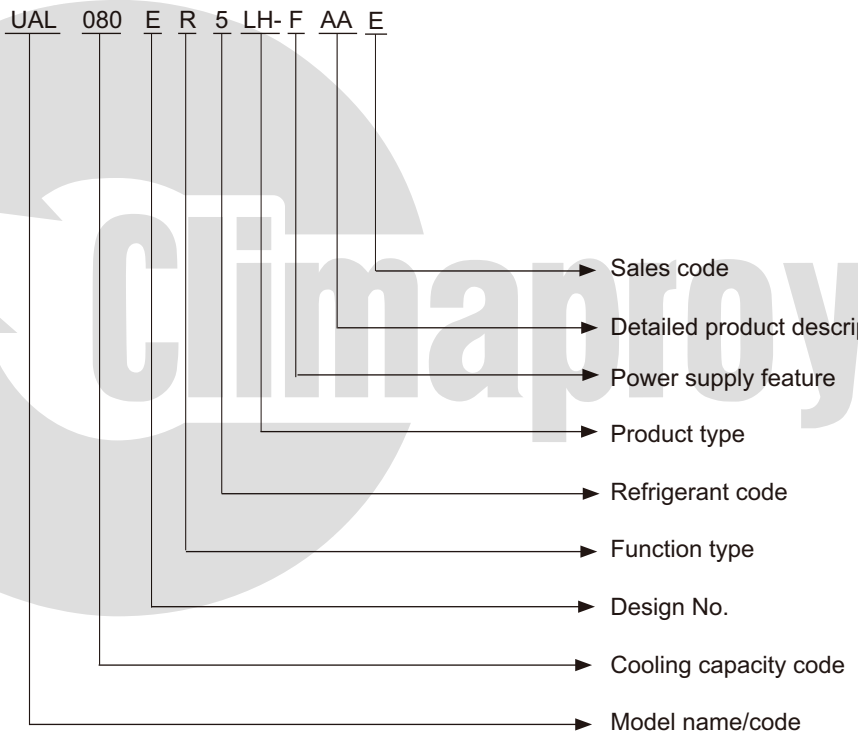
Caution: Sharp edges and coil surfaces are a potential injury hazard. Avoid contact with them.

Warning: Moving machinery and electrical power hazard may cause severe personal injury or death. Disconnect and lock off power before servicing equipment.

Model series

Model		Cooling capacity/ kW	Heating capacity/ kW
50Hz	60Hz		
UAL040ER5-AP	UAL040ER5-UP	11.20	12.00
UAL050ER5-AP	UAL050ER5-UP	14.00	15.00
UAL060ER5-AP	UAL060ER5-UP	16.00	17.00
UAL070ER5-FP	UAL070ER5-RP	20.00	21.00
UAL090ER5-FP	UAL090ER5-RP	24.00	26.00
UAL100ER5-FP	UAL100ER5-RP	28.00	30.00
UAL120ER5-FP	UAL120ER5-RP	33.00	34.00
UAL150ER5-FP	UAL150ER5-RP	40.00	41.00

Nomenclature



Model name/code – UAL, UALS…
Cooling capacity code – 030, 040, 050…
Design No. - A, B, C...
Functional type - R: cooling & heating; omitted for cooling-only units
Refrigerant code - 3: R134a; 4: R407C; 5: R410A; R22: omitted
Product type – standard: omitted
LC: low temperature cooling; LH: low temperature heating; SR: total heat recovery
Power supply features: F: 380-415V/3N~/50Hz; A: 220-240V~/50Hz; R: 380V/3N~/60Hz; U: 220V~/60Hz
Detailed description on product specification changes – AA, AB, AC …ZZ
Sales code - E: for export; omitted for domestic sales

Features

Overview

DAIKIN UAL-E air cooled inverter mini chiller (heat pump) is designed to meet the highest user requirements for product reliability, security and flexibility.

The unit is characterized by elaborate design and beautiful appearance. It can be flexibly connected with different types of fan coils, air handling units or floor heating pipes with different specifications.

With advantages like high efficiency, low noise, ease-of-use, safety, and easy installation & maintenance, the unit widely applies to multiple scenarios such as factories, stations, hotels, villas, office buildings, high-grade residential buildings, and industrial cooling.

Highly Efficiency for Better Building Energy Saving

UAL-E air cooled inverter mini chiller (heat pump) adopts full inverter technology to achieve superior performance. With DC inverter compressor and DC inverter condenser fan, unit efficiency is improved significantly especially during part load operating. And inverter chilled water pump is built in the unit, water flow is variable controlled when unit capacity output changing, pump power consumption is much saved. Excellent performance helps users reduce the operation costs, which obtains higher values within building period for proprietors. What's more, with the advantage of full inverter design, the unit is compatible with 50Hz and 60Hz power supplies.

Efficient Components after Optimal Match

UAL-E series products adopt the world-leading technology and internationally famous accessories to ensure that they match with each other under strict tests. The inverter compressor and inverter fan produce little noise during operation. The efficient inverter compressor and precise throttle system of electronic expansion valve guarantee high EER and COP values especially in part load.

High-precision Capacity Regulation

UAL-E air cooled inverter mini chiller (heat pump) can realize 15% to 100% stepless capacity regulation with low load, low output and low energy consumption.

Modular Design and Diversified Composite Application Solutions (Option)

Modular design allows up to 16 units in each group to meet various load requirements in different buildings.

Easy to Control

Electronic unit control realizes both centralized control and independent control. With high anti-interference capability, the controller can control units within the maximum range of 1,000 meters (consult factory for application). When an error occurs, the controller displays the corresponding error code.

Precise Water Temperature Control for Better Comfort and Processing

Outlet water temperature control is default set when ex-factory to accurately control the outlet water temperature of the unit. The insignificant fluctuation in water temperature avoids fluctuations in the air supply temperature of the indoor unit and ensures better comfort. The process cooling application features constant water temperature and high cooling stability.

Multi-variable Intelligent Defrosting Control

The unit judges frosting status by detecting multiple variables and intelligently selects the optimal time for entering or exiting defrosting conditions, avoiding problems such as incomplete or frequent defrosting. The dual-system unit can implement alternate defrosting, resulting that there is not large fluctuation for the water temperature and users can still enjoy comfortable heating effect. Manual defrosting can be set as required in a harsh environment.

Safe Operation Control

The cooling system provides high/low pressure protection to avoid over-high discharge pressure and over-low suction pressure. Discharge temperature protection avoids over-high discharge temperature. Cooling anti-freezing protection ensures that the plate heat exchanger is not frozen and burst at an over-low water temperature. The anti-freezing function prevents unit shutdown in winter and frost cracking of plate heat exchanger caused by over-low outdoor temperature (only effective when the main power supply is on).

Low Startup Current for Lower Shock on Power Grid

When combining inverter units, they start at low frequency to produce low startup current. When combining an inverter unit and a constant speed unit, they start in a stepped manner to decrease the startup current. Startup with low current can not only ease shock on the power grid, but also improve electricity security.

High Environment Adaptability

The unit casing is made of zinc-plated steel plate. Phosphate treatment and polyester powder coating make it bearable for the sun, rain, flooding and wind. With compact structure design, the unit can be installed in the front of or at the back of the house, on the balcony or roof without needing a professional equipment room.

Exellent performance makes the unit operate properly even in harsh conditions of high temperature or low temperature.

Simple Installation

The unit is designed to consider convenient installation to the maximum extent. The cooling system has been made hermetic in the factory, without needing any pipe connection or refrigerant filling. The water system is reserved with the inlet and outlet interfaces for connecting with end equipment. After installing the inlet and outlet pipes, users can inject water and power on the unit when ensuring water quality and cleaning pump pipeline.

Convenient Maintenance

After removing the side panel or front panel of the unit, users can touch any part for convenient repair and maintenance. When unit shutdown occurs in exceptional conditions, the controller may display fault causes for rapid troubleshooting.

Specifications

General data

Model			UAL040ER5	UAL050ER5	UAL060ER5	UAL070ER5	UAL090ER5	UAL100ER5	UAL120ER5	UAL150ER5
Accessory kit		-	UAL-A5E			UAL-A6E		UAL-A7E		UAL-A8E
Nominal cooling capacity		kW	11.20	14.00	16.00	20.00	24.00	28.00	33.00	40.00
Nominal heating capacity		kW	12.00	15.00	17.00	21.00	26.00	30.00	34.00	41.00
Capacity control		-	15%~100%							
Rated cooling power input		kW	3.810	4.242	5.150	6.720	8.650	8.970	10.98	14.40
Rated cooling current		A	17.4	19.30	23.8	11.1	14.4	15.5	18.3	23.9
Rated heating power input		kW	3.900	4.500	5.200	6.300	8.400	9.300	10.30	13.00
Rated heating current		A	17.8	21.0	24.1	10.4	13.9	15.9	17.1	21.6
Cooling COP		-	2.940	3.300	3.107	2.976	2.775	3.122	3.005	2.778
Heating COP		-	3.077	3.333	3.269	3.333	3.095	3.226	3.301	3.150
Power supply		-	220-240V~/50Hz, 220V~/60Hz			380-415V/3N~/50Hz, 380V/3N~/60Hz				
Refrigerant	Type	-	R410A							
	Charge	kg	2.7	3.1	3.1	3.3	3.6	7.2	8.0	9.0
Throttle device		-	EXV							
Cooling water flow		m^3/h	1.92	2.40	2.74	3.43	4.11	4.80	5.66	6.86
Unit WPD		kPa	14	15	20	24	35	49	42	67
External pump head		m	8	15	14	25	22	15	16	15
Water pipe size	Inlet	in.	Rp1			Rp1-1/4		G1-1/4		G1-1/2
	Outlet	in.	Rc1					G1-1/4		G1-1/2
Max chilled water difference		°C	7°C							
Unit dimensions	Length	mm	995	995	995	995	995	950	1340	1070
	Width	mm	395	395	395	395	395	780	780	1130
	Height	mm	880	1362	1362	1362	1362	1650	1650	2130
Packing dimensions	Length	mm	1086	1086	1086	1086	1086	1000	1000	1170
	Width	mm	512	512	512	512	512	850	850	1180
	Height	mm	1043	1525	1525	1525	1525	1830	1830	2260
Noise		dB(A)	50.0	51.0	52.0	55.0	56.0	57.0	59.0	60.0
Operating weight		kg	101	145	145	162	164	225	295	365
Net weight		kg	99	144	144	159	160	220	290	360
Gross weight		kg	116	157	157	172	173	230	310	370

Notes:

1. Nominal cooling codition: leaving water temperature is 7°C, water flow is 0.172[$m^3/(h \cdot kW)$], ambient temperature is 35°C.
2. Nominal heating condition: leaving water temperature is 45°C, water flow is 0.172[$m^3/(h \cdot kW)$], ambient dry bulb temperature is 7°C, wet bulb temperature is 6°C.
3. WPD includes water pressure drop of the unit and pressure drop of the supplied Y shape water filter.
4. External pump head includes unit water pressure drop, but don't include water pressure drop of Y shape water filter.
5. Built-in hydraulic kit with water pump, expansion tank. Water filter, safety valve, water filling valve and wired controller need to install on site.
6. All specifications are subjected to change by the manufacturer without prior notice.

Components Data

Model			UAL040ER5	UAL050ER5	UAL060ER5	UAL070ER5	UAL090ER5	UAL100ER5	UAL120ER5	UAL150ER5
Compressor	Type	-	Inverter rotor compressor							
	Qty	pcs	1							
Evaporator	Type	-	Brazed Plate Heat Exchanger							
	Plate material	-	Stainless steel							
	Water volume	L	1.15	1.30	1.30	1.54	1.56	2.22	3.03	3.09
Condenser fan motor	Type	-	Inverter							
	Qty	pcs	1	2				1	2	1
Condenser fan	Blade material	-	Resin							Al Alloy
	Diameter	mm	551					705	600	805
Condenser coil tube	Material	-	Copper							
	Type	-	Inner groove							
	Outer dimeter	mm	7.94	7.00	7.00	7.00	7.00	7.94	7.94	7.94
Condenser fin	Material	-	Aluminum							
	Type	-	Blue fin							
	Rows	-	2.5	2	2	3	2.5	2	2	2
	Fin per inch	-	12.7	14.1	14.1	14.1	14.1	14.1	14.1	14.1
Condenser heat transfer area		m^2	33.8	47.1		60.3	67.1	104.8	122.7	129.5
Pump	Type	-	Inverter							
	Rated power output	kW	0.25	0.37		0.55		0.55		0.75
	Rated current	A	1.74	2.17		2.50		1.45		2.1
	Protection grade		IP55	IP55		IP54		IP54		IP54
Casing	Colour	-	RAL 7032 Pebble Grey							
	Material	-	Electro-galvanized Mild Steel							
Protection devices		-	High pressure switch, thermal and current overload protector							

Note: All specifications are subjected to change by the manufacturer without prior notice.

Electrical Data

Model			UAL040ER5	UAL050ER5	UAL060ER5	UAL070ER5	UAL090ER5	UAL100ER5	UAL120ER5	UAL150ER5
Condenser fan motor	Rated power input	kW	0.15	0.15*2				0.75	0.56*2	0.75
	Poles	-	10					8	8	8
	Speed	rpm	650					850	880	800
	Protection grade		IP44					IP44	IP54	IP55
Unit max power input		kW	5.3	7.9		15.2	15.2	15.5		21.0
Unit max running current		A	24.5	39.8		25.0	25.0	29.0		40.0
Unit protection grade		-	IPX4							

Notes:

1. Unit max running current is tested under cooling outdoor dry-bulb temperature 52°C and highest speed that the compressor can reach at this temperature.
2. All specifictions are subjected to change by the manufacturer without prior notice.

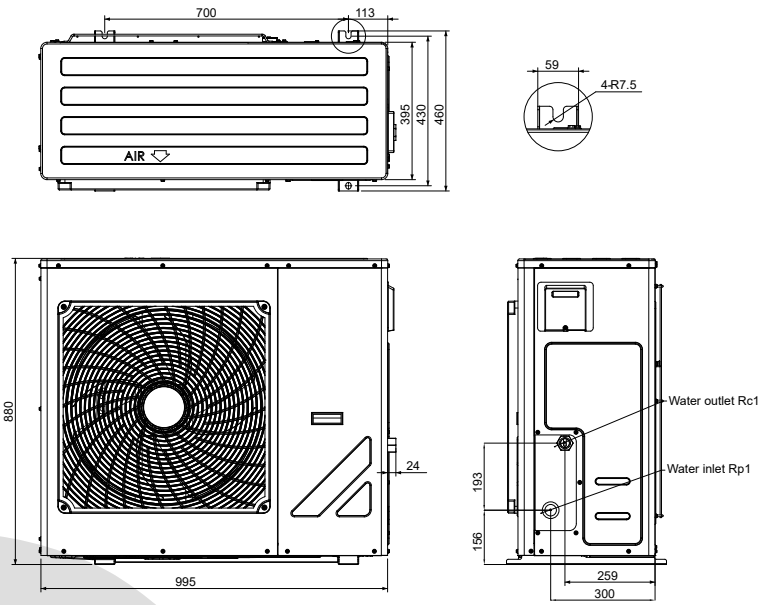
Safety Devices

Model				UAL040ER5	UAL050ER5	UAL060ER5	UAL070ER5	UAL090ER5	UAL100ER5	UAL120ER5	UAL150ER5
Safety device	High pressure switch	Type	-	PSW,H20PS B,4.15/3.11MPa,1500MM,90°							
		Open	MPa	4.15 ± 0.15							
		Close	MPa	3.11 ± 0.15							
	Low pressure switch	Type	-	N/A							
		Open	MPa	N/A							
		Close	MPa	N/A							
	Phase sequencer		-	YES							
	Discharge temperature		°C	130							

Note: All specifictions are subjected to change by the manufacturer without prior notice.

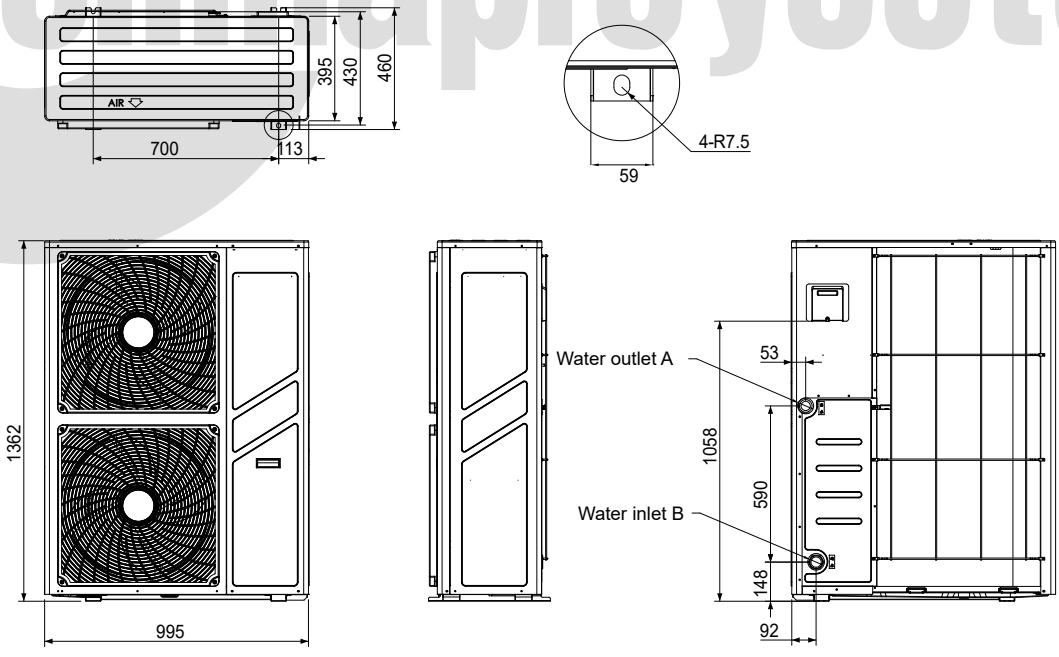
Dimensions

UAL040ER5



Unit: mm

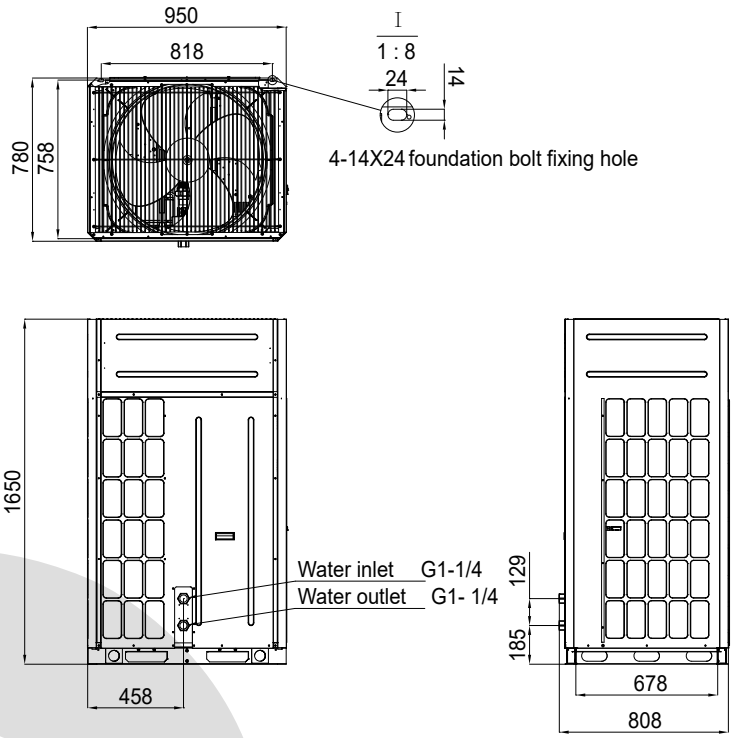
UAL050-090ER5



Model	A	B
UAL050/060ER5	Rc1	Rp1
UAL070ER5	Rc1	Rp1-1/4
UAL090ER5	Rc1	Rp1-1/4

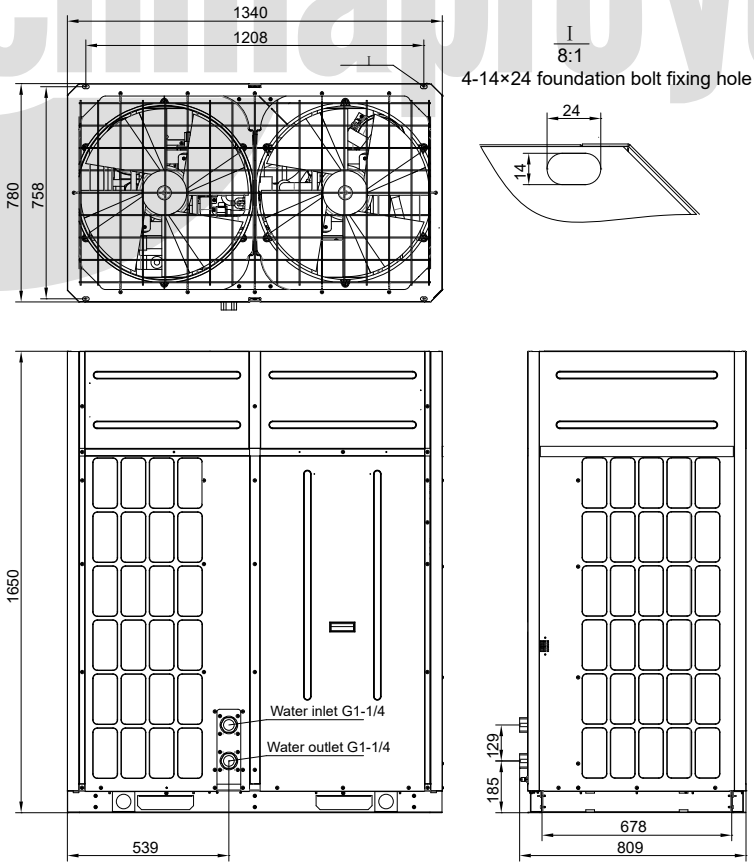
Unit: mm

UAL100ER5



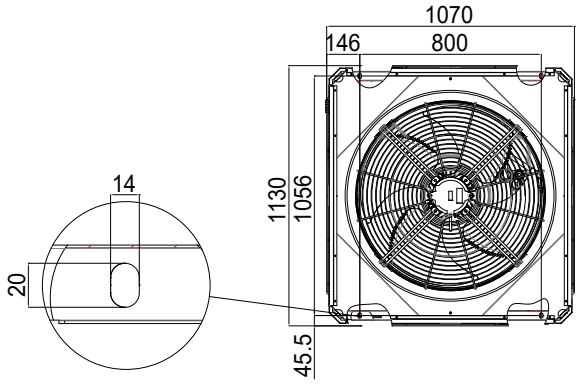
Unit: mm

UAL120ER5

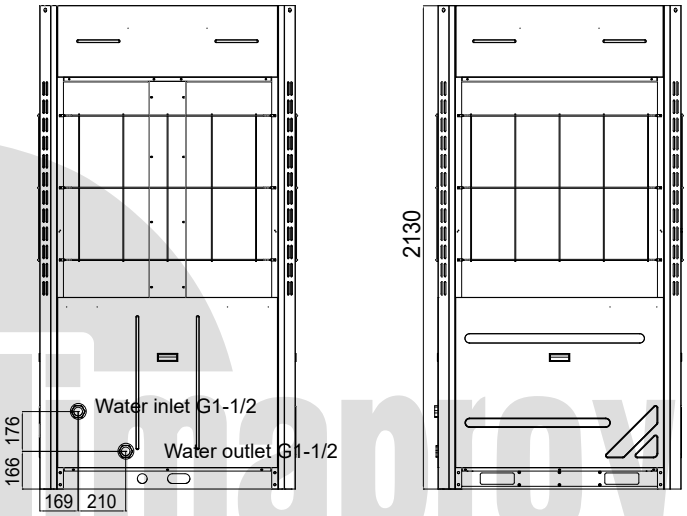


Unit: mm

UAL150ER5



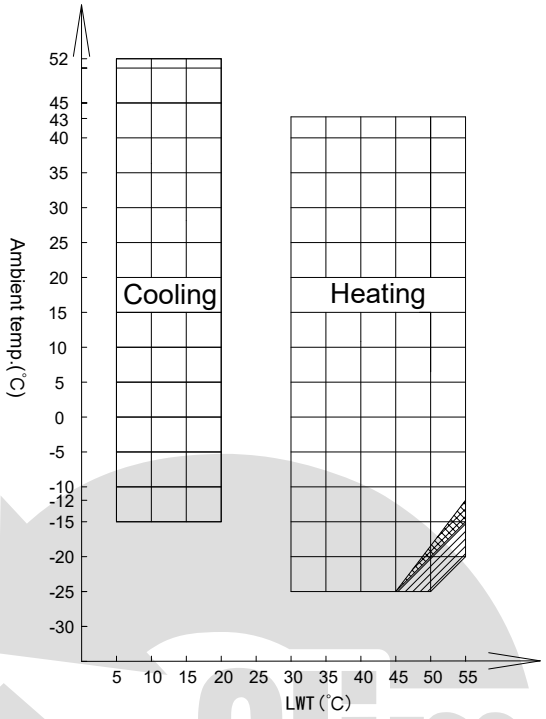
14×20 foundation bolt fix hole



Unit: mm

Performance data

Operating range



Note:

1.Ensure that the water flow is in the application range. If the flow is too low, scale adsorption will occur so as to reduce unit performance, cause frost protection sensor action, or refrigerant leakage rust caused by corrosion. If the water flow is too high, impact corrosion will occur.

2.Shadow area of heating mode:

2.1 UAL070&090ER5 can't operate when OAT<-12°C , LWT>45°C

2.2 UAL150ER5 can't operate when OAT<-15°C, LWT<45°C

Cooling capacity performance table

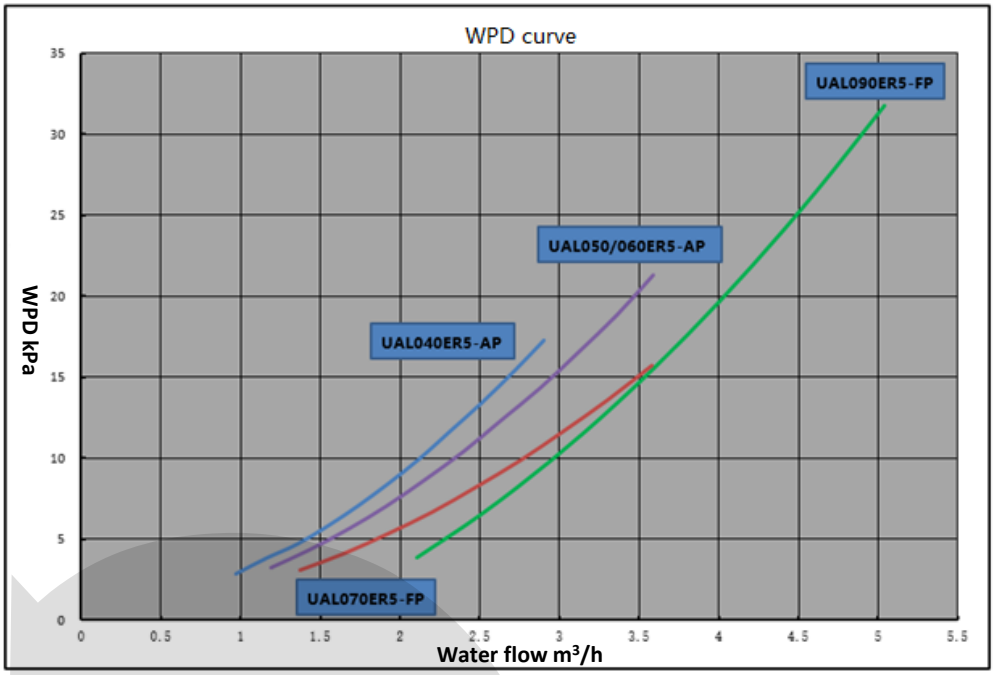
Model	Leaving water temperature (°C)	Ambient temperature (°C)																													
		-10		-5		0		5		10		15		20		25		30		35		40		48		45		50		52	
		Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)
UAL040ER5	5	19.89	2.12	18.67	2.24	17.54	2.37	16.46	2.51	15.46	2.65	14.52	2.81	13.63	2.97	12.80	3.14	12.02	3.33	11.28	3.52	10.60	3.73	9.91	3.97	8.07	3.79	5.02	2.97	4.13	2.64
	7	21.02	2.16	19.74	2.29	18.54	2.42	17.40	2.56	16.34	2.71	15.34	2.87	14.41	3.04	13.53	3.22	12.70	3.40	11.93	3.60	11.20	3.810	10.47	4.06	8.53	3.88	5.30	3.04	4.37	2.70
	9	22.16	2.21	20.81	2.34	19.54	2.48	18.34	2.62	17.22	2.77	16.17	2.93	15.19	3.11	14.26	3.29	13.39	3.48	12.57	3.68	11.80	3.89	11.04	4.15	8.99	3.96	5.59	3.10	4.60	2.76
	12	23.95	2.28	22.49	2.42	21.12	2.56	19.83	2.71	18.62	2.86	17.48	3.03	16.42	3.21	15.41	3.39	14.47	3.59	13.59	3.80	12.76	4.02	11.93	4.28	9.72	4.09	6.04	3.20	4.98	2.85
	15	25.89	2.36	24.31	2.50	22.83	2.64	21.44	2.80	20.13	2.96	18.90	3.13	17.75	3.31	16.66	3.51	15.65	3.71	14.69	3.93	13.79	4.16	12.90	4.43	10.51	4.23	6.53	3.31	5.38	2.94
	20	29.39	2.49	27.60	2.63	25.91	2.79	24.33	2.95	22.85	3.12	21.45	3.30	20.14	3.50	18.91	3.70	17.76	3.91	16.67	4.14	15.66	4.38	14.64	4.67	11.93	4.46	7.41	3.49	6.11	3.10
UAL050ER5	5	24.86	2.36	23.34	2.49	21.92	2.64	20.58	2.79	19.32	2.95	18.15	3.13	17.04	3.31	16.00	3.50	15.02	3.70	14.10	3.92	13.24	4.15	12.38	4.42	10.09	4.22	6.27	3.30	5.16	2.94
	7	26.28	2.41	24.68	2.55	23.17	2.70	21.76	2.85	20.43	3.02	19.18	3.20	18.01	3.38	16.91	3.58	15.88	3.79	14.91	4.01	14.00	4.242	13.09	4.52	10.67	4.32	6.63	3.38	5.46	3.00
	9	27.70	2.46	26.01	2.60	24.42	2.76	22.93	2.92	21.53	3.09	20.22	3.27	18.98	3.46	17.82	3.66	16.74	3.87	15.72	4.09	14.76	4.33	13.80	4.61	11.24	4.41	6.99	3.45	5.75	3.07
	12	29.94	2.54	28.12	2.69	26.40	2.85	24.79	3.01	23.28	3.19	21.85	3.37	20.52	3.57	19.27	3.78	18.09	4.00	16.99	4.23	15.95	4.48	14.91	4.77	12.15	4.56	7.55	3.57	6.22	3.17
	15	32.37	2.63	30.39	2.78	28.54	2.94	26.80	3.11	25.16	3.29	23.62	3.48	22.18	3.69	20.83	3.90	19.56	4.13	18.36	4.37	17.24	4.62	16.12	4.92	13.14	4.71	8.17	3.68	6.72	3.27
	20	36.74	2.77	34.50	2.93	32.39	3.10	30.41	3.28	28.56	3.47	26.81	3.68	25.18	3.89	23.64	4.12	22.20	4.36	20.84	4.61	19.57	4.88	18.30	5.20	14.91	4.97	9.27	3.89	7.63	3.45
UAL060ER5	5	28.41	2.86	26.68	3.03	25.05	3.20	23.52	3.39	22.09	3.59	20.74	3.80	19.47	4.02	18.28	4.25	17.17	4.50	16.12	4.76	15.14	5.04	14.15	5.36	11.53	5.13	7.17	4.01	5.90	3.57
	7	30.03	2.92	28.20	3.10	26.48	3.28	24.86	3.47	23.35	3.67	21.92	3.88	20.58	4.11	19.33	4.35	18.15	4.60	17.04	4.87	16.00	5.150	14.96	5.48	12.19	5.24	7.58	4.10	6.24	3.65
	9	31.66	2.99	29.72	3.16	27.91	3.35	26.21	3.54	24.61	3.75	23.11	3.97	21.69	4.20	20.37	4.44	19.13	4.70	17.96	4.97	16.86	5.26	15.77	5.61	12.85	5.36	7.99	4.19	6.58	3.73
	12	34.22	3.09	32.13	3.27	30.17	3.46	28.33	3.66	26.60	3.87	24.98	4.10	23.45	4.34	22.02	4.59	20.68	4.86	19.41	5.14	18.23	5.44	17.05	5.79	13.89	5.53	8.63	4.33	7.11	3.85
	15	36.99	3.19	34.73	3.38	32.61	3.57	30.62	3.78	28.75	4.00	27.00	4.23	25.35	4.48	23.80	4.74	22.35	5.02	20.99	5.31	19.71	5.62	18.43	5.98	15.02	5.72	9.33	4.47	7.68	3.98
	20	41.99	3.37	39.42	3.56	37.02	3.77	34.76	3.99	32.64	4.22	30.64	4.47	28.77	4.73	27.02	5.00	25.37	5.29	23.82	5.60	22.37	5.93	20.91	6.31	17.04	6.03	10.59	4.72	8.72	4.20
UAL070ER5	5	35.52	3.73	33.35	3.95	31.31	4.18	29.40	4.42	27.61	4.68	25.92	4.95	24.34	5.24	22.85	5.55	21.46	5.87	20.15	6.21	18.92	6.57	17.69	7.00	14.42	6.69	8.96	5.24	7.38	4.65
	7	37.54	3.82	35.25	4.04	33.10	4.27	31.08	4.52	29.18	4.79	27.40	5.06	25.73	5.36	24.16	5.67	22.68	6.00	21.30	6.35	20.00	6.720	18.70	7.16	15.24	6.84	9.47	5.35	7.80	4.76
	9	39.57	3.90	37.15	4.13	34.89	4.37	32.76	4.62	30.76	4.89	28.88	5.18	27.12	5.48	25.46	5.80	23.91	6.13	22.45	6.49	21.08	6.87	19.71	7.31	16.06	6.99	9.98	5.47	8.22	4.86
	12	42.78	4.03	40.16	4.26	37.71	4.51	35.41	4.77	33.25	5.05	31.22	5.35	29.32	5.66	27.53	5.99	25.85	6.34	24.27	6.70	22.79	7.09	21.31	7.56	17.36	7.22	10.79	5.65	8.89	5.02
	15	46.24	4.16	43.42	4.40	40.77	4.66	38.28	4.93	35.94	5.22	33.75	5.52	31.69	5.84	29.76	6.18	27.94	6.54	26.23	6.93	24.63	7.33	23.03	7.80	18.77	7.46	11.66	5.84	9.61	5.19
	20	52.48	4.39	49.28	4.65	46.27	4.92	43.45	5.20	40.80	5.51	38.31	5.83	35.97	6.17	33.77	6.52	31.71	6.90	29.78	7.31	27.96	7.73	26.14	8.23	21.30	7.87	13.24	6.16	10.90	5.48
UAL090ER5	5	42.62	4.80	40.02	5.08	37.58	5.38	35.28	5.69	33.13	6.02	31.11	6.38	29.21	6.75	27.43	7.14	25.75	7.55	24.18	7.99	22.70	8.46	21.23	9.01	17.30	8.61	10.75	6.74	8.85	5.99
	7	45.05	4.91	42.30	5.20	39.72	5.50	37.30	5.82	35.02	6.16	32.88	6.52	30.88	6.90	28.99	7.30	27.22	7.72	25.56	8.17	24.00	8.650	22.44	9.21	18.29	8.81	11.36	6.89	9.36	6.13
	9	47.48	5.02	44.59	5.31	41.86	5.62	39.31	5.95	36.91	6.30	34.66	6.66	32.54	7.05	30.56	7.46	28.69	7.89	26.94	8.35	25.30	8.84	23.65	9.41	19.27	9.00	11.98	7.04	9.86	6.26
	12	51.33	5.19	48.20	5.49	45.26	5.81	42.49	6.15	39.90	6.50	37.46	6.88	35.18	7.28	33.03	7.71	31.02	8.16	29.12	8.63	27.34	9.13	25.57	9.73	20.84	9.30	12.95	7.28	10.66	6.47
	15	55.49	5.36	52.10	5.67	48.92	6.00	45.94	6.35	43.13	6.72	40.50	7.11	38.03	7.52	35.71	7.96	33.53	8.42	31.48	8.91	29.56	9.43	27.64	10.05	22.52	9.60	14.00	7.52	11.53	6.68
	20	62.98	5.65	59.14	5.98	55.53	6.33	52.14	6.70	48.95	7.09	45.97	7.50	43.16	7.94	40.53	8.40	38.05	8.89	35.73	9.40	33.55	9.95	31.37	10.60	25.56	10.13	15.89	7.93	13.08	7.05
UAL100ER5	5	49.72	4.98	46.69	5.27	43.84	5.58	41.16	5.90	38.65	6.25	36.29	6.61	34.08	7.00	32.00	7.40	30.04	7.83	28.21	8.29	26.49	8.77	24.77	9.34	20.18	8.93	12.54	6.99	10.33	6.21
	7	52.56	5.09	49.35	5.39	46.34	5.70	43.51	6.04	40.86	6.39	38.36	6.76	36.02	7.15	33.82	7.57	31.76	8.01	29.82	8.48	28.00	8.970	26.18	9.55	21.33	9.13	13.26	7.15	10.92	6.35
	9	55.40	5.21	52.02	5.51	48.84	5.83	45.86	6.17	43.06	6.53	40.43	6.91	37.97	7.31	35.65	7.74	33.47	8.19	31.43	8.66	29.51	9.17	27.59	9.76	22.49	9.33	13.97	7.30	11.51	6.49
	12	59.89	5.38	56.23	5.69	52.80	6.02	49.58	6.37	46.55	6.74	43.71	7.14	41.04	7.55	38.54	7.99	36.18	8.46	33.98	8.95	31.90	9.47	29.83	10.09	24.31	9.64	15.11	7.54	12.44	6.71
	15	64.74	5.56	60.79	5.88	57.08	6.22	53.59	6.58	50.32	6.97	47.25	7.37	44.37	7.80	41.66	8.26	39.12	8.74	36.73	9.24	34.49	9.78	32.24	10.42	26.28	9.96	16.33	7.79	13.45	6.93
	20	73.48	5.86	68.99	6.20	64.78	6.56	60.83	6.95	57.11	7.35	53.63	7.78	50.36	8.23	47.28	8.71	44.40	9.22	41.69	9.75	39.14	10.32	36.60	10.99	29.82	10.51	18.53	8.22	15.26	7.31
UAL120ER5	5	58.60	6.10	55.02	6.45	51.67	6.83	48.51	7.23	45.55	7.65	42.77	8.09	40.16	8.56	37.71	9.06	35.41	9.59	33.25	10.15	31.22	10.74	29.19	11.44	23.79	10.93	14.78	8.56	12.17	7.60
	7	61.95	6.24	58.16	6.60	54.61	6.98	51.28	7.39	48.15	7.82	45.21	8.27	42.45	8.76	39.86	9.27	37.43	9.81	35.15	10.38	33.00	10.98	30.86	11.69	25.14	11.18	15.63	8.75	12.87	7.78
	9	65.29	6.37	61.31	6.74	57.56	7.14	54.05	7.55	50.75	7.99	47.65	8.46	44.75	8.95	42.01	9.47	39.45	10.02	37.04	10.60	34.78	11.22	32.52	11.95	26.50	11.42	16.47	8.94	13.56	7.95
	12	70.58	6.58	66.27	6.97	62.23	7.37	58.43	7.80	54.86	8.26	51.51	8.74	48.37	9.24	45.42	9.78	42.65	10.35	40.04	10.95	37.60	11.59	35.16	12.35	28.65	11.80	17.80	9.24	14.66	8.21
	15	76.30	6.80	71.64	7.20	67.27	7.62	63.16	8.06	59.31	8.53	55.69	9.02	52.29	9.55	49.10	10.11	46.10	10.69	43.29	11.32	40.64	11.97	38.00	12.75	30.97	12.19	19.25	9.54	15.85	8.48
	20	86.60	7.18	81.31	7.59	76.35	8.03	71.69	8.50	67.31	9.00	63.20	9.52	59.35	10.07	55.73	10.66	52.32	11.28	49.13	11.94	46.13	12.63	43.13	13.45	35.15	12.86	21.84	10.06	17.99	8.95
UAL150ER5	5	71.03	8.00	66.70	8.46	62.63	8.96	58.80	9.48	55.21	10.03	51.84	10.61	48.68	11.23	45.71	11.88	42.92	12.58	40.30	13.31	37.84	14.08	35.38	15.00	28.83	14.34	17.92	11.22	14.76	9.97
	7	75.09	8.18	70.50	8.65	66.20	9.16	62.16	9.69	58.37	10.26	54.80	10.85	51.46	11.48	48.32	12.15	45.37	12.86	42.60	13.61	40.00	14.40	37.40	15.34	30.48	14.66	18.94	11.47	15.60	10.20
	9	79.14	8.36	74.31	8.85	69.77	9.36	65.52	9.90	61.52	10.48	57.76	11.09	54.24	11.74	50.93	12.42	47.82	13.14	44.90	13.91	42.16	14.72	39.42	15.67	32.12	14.98	19.96	11.72	16.44	10.42
	12	85.55	8.63	80.33	9.14	75.43	9.67	70.82	10.23	66.50	10.83	62.44	11.46	58.63	12.12	55.05	12.83	51.69	13.58	48.54	14.37	45.57	15.20	42.61	16.19	34.73	15.48	21.58	12.11	17.77	10.77
	15	92.48	8.92	86.84	9.44	81.54	9.99	76.56	10.57	71.89	11.18	67.50	11.84	63.38	12.52	59.51	13.25	55.88	14.02	52.47	14.84	49.27	15.70	46.06	16.72	37.54	15.99	23.33	12.51	19.21	11.12
	20	104.96	9.41	98.56	9.96	92.54	10.54	86.90	11.15	81.59	11.80	76.61	12.49	71.94	13.21	67.55	13.98	63.42	14.80	59.55	15.66	55.92	16.57	52.28	17.64	42.61	16.87	26.48	13.20	21.81	11.73

Heating capacity performance table

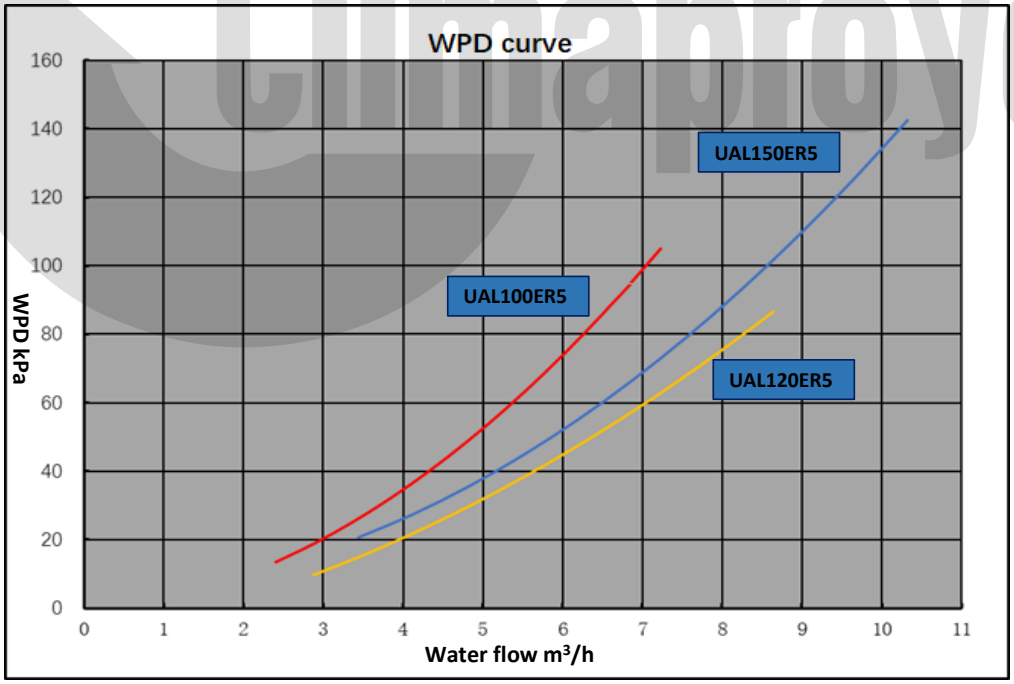
Model	Leaving water temperature (°C)	Ambient temperature (°C)																											
		-25		-20		-15		-10		-5		0		7		15		20		25		30		35		40		43	
		Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)
UAL040ER5	30	4.6	1.8	6.0	2.0	7.4	2.1	8.8	2.3	10.2	2.5	11.5	2.6	13.5	2.9	15.7	3.1	17.1	3.3	18.5	3.4	19.9	3.6	21.3	3.8	22.7	3.9	23.5	4.0
	35	4.1	2.2	5.5	2.3	6.9	2.5	8.3	2.6	9.7	2.8	11.0	3.0	13.0	3.2	15.2	3.5	16.6	3.6	18.0	3.8	19.4	4.0	20.8	4.1	22.2	4.3	23.0	4.4
	40	3.6	2.5	5.0	2.7	6.4	2.8	7.8	3.0	9.2	3.2	10.5	3.3	12.5	3.6	14.7	3.8	16.1	4.0	17.5	4.1	18.9	4.3	20.3	4.5	21.7	4.6	22.5	4.7
	45	3.5	2.6	4.9	2.7	5.9	3.2	7.3	3.3	8.7	3.5	10.0	3.7	12.00	3.900	14.2	4.2	16.0	4.0	17.4	4.2	18.8	4.4	20.2	4.5	21.6	4.7	22.4	4.8
	50	3.1	2.9	4.5	3.0	5.4	3.5	6.8	3.7	8.2	3.9	9.5	4.0	11.5	4.3	13.7	4.5	15.6	4.3	17.0	4.5	18.4	4.7	19.8	4.8	21.2	5.0	22.0	5.1
	55	2.6	3.2	4.0	3.4	4.9	3.9	6.3	4.0	7.7	4.2	9.0	4.4	11.0	4.6	13.2	4.9	15.1	4.7	16.5	4.8	17.9	5.0	19.3	5.2	20.7	5.3	21.5	5.4
UAL050ER5	30	7.8	3.2	9.1	3.3	10.3	3.4	11.5	3.5	12.8	3.6	14.0	3.6	15.8	3.8	17.7	3.9	19.0	4.0	20.2	4.0	21.4	4.1	22.7	4.2	23.9	4.3	24.7	4.3
	35	7.6	3.5	8.8	3.6	10.1	3.7	11.3	3.7	12.5	3.8	13.8	3.9	15.5	4.0	17.5	4.1	18.7	4.2	20.0	4.3	21.2	4.4	22.4	4.4	23.7	4.5	24.4	4.6
	40	7.3	3.7	8.6	3.8	9.8	3.9	11.0	4.0	12.3	4.1	13.5	4.1	15.3	4.3	17.2	4.4	18.5	4.5	19.7	4.5	20.9	4.6	22.2	4.7	23.4	4.8	24.2	4.8
	45	7.3	3.8	8.5	3.9	9.6	4.2	10.8	4.2	12.0	4.3	13.3	4.4	15.00	4.500	17.0	4.6	18.4	4.5	19.7	4.6	20.9	4.7	22.1	4.7	23.4	4.8	24.1	4.9
	50	7.1	4.0	8.3	4.1	9.3	4.4	10.5	4.5	11.8	4.6	13.0	4.6	14.8	4.8	16.7	4.9	18.2	4.7	19.5	4.8	20.7	4.9	21.9	4.9	23.2	5.0	23.9	5.1
	55	6.8	4.2	8.1	4.3	9.1	4.7	10.3	4.7	11.5	4.8	12.8	4.9	14.5	5.0	16.5	5.1	18.0	5.0	19.2	5.0	20.4	5.1	21.7	5.2	22.9	5.3	23.7	5.3
UAL060ER5	30	8.2	3.5	9.7	3.6	11.2	3.8	12.7	3.9	14.2	4.0	15.7	4.1	17.8	4.3	20.2	4.5	21.7	4.6	23.2	4.7	24.7	4.9	26.2	5.0	27.7	5.1	28.6	5.2
	35	7.9	3.8	9.4	3.9	10.9	4.1	12.4	4.2	13.9	4.3	15.4	4.4	17.5	4.6	19.9	4.8	21.4	4.9	22.9	5.0	24.4	5.2	25.9	5.3	27.4	5.4	28.3	5.5
	40	7.7	4.1	9.2	4.2	10.7	4.4	12.2	4.5	13.7	4.6	15.2	4.7	17.3	4.9	19.7	5.1	21.2	5.2	22.7	5.3	24.2	5.5	25.7	5.6	27.2	5.7	28.1	5.8
	45	7.6	4.2	9.1	4.3	10.4	4.7	11.9	4.8	13.4	4.9	14.9	5.0	17.00	5.200	19.4	5.4	21.1	5.3	22.6	5.4	24.1	5.5	25.6	5.6	27.1	5.8	28.0	5.8
	50	7.4	4.4	8.9	4.5	10.2	5.0	11.7	5.1	13.2	5.2	14.7	5.3	16.8	5.5	19.2	5.7	20.9	5.5	22.4	5.6	23.9	5.8	25.4	5.9	26.9	6.0	27.8	6.1
	55	7.2	4.7	8.7	4.8	9.9	5.3	11.4	5.4	12.9	5.5	14.4	5.6	16.5	5.8	18.9	6.0	20.7	5.8	22.2	5.9	23.7	6.1	25.2	6.2	26.7	6.3	27.6	6.4
UAL070ER5	30	12.1	5.0	13.9	5.0	15.6	5.0	17.3	5.0	19.1	5.0	20.8	5.1	23.3	5.1	26.0	5.1	27.8	5.2	29.5	5.2	31.2	5.2	33.0	5.2	34.7	5.2	35.8	5.3
	35	11.4	5.4	13.1	5.4	14.9	5.4	16.6	5.4	18.3	5.4	20.1	5.5	22.5	5.5	25.3	5.5	27.0	5.6	28.8	5.6	30.5	5.6	32.2	5.6	34.0	5.6	35.0	5.7
	40	10.6	5.8	12.4	5.8	14.1	5.8	15.8	5.8	17.6	5.8	19.3	5.9	21.8	5.9	24.5	5.9	26.3	6.0	28.0	6.0	29.7	6.0	31.5	6.0	33.2	6.0	34.3	6.1
	45	10.5	5.8	12.2	5.9	13.4	6.2	15.1	6.2	16.8	6.2	18.6	6.3	21.00	6.300	23.8	6.3	26.1	6.0	27.9	6.1	29.6	6.1	31.3	6.1	33.1	6.1	34.1	6.1
	50	9.9	6.2	11.6	6.2	12.6	6.6	14.3	6.6	16.1	6.6	17.8	6.7	20.3	6.7	23.0	6.7	25.5	6.4	27.3	6.4	29.0	6.4	30.7	6.4	32.5	6.4	33.5	6.5
	55	9.1	6.6	10.9	6.6	11.9	7.0	13.6	7.0	15.3	7.0	17.1	7.1	19.5	7.1	22.3	7.1	24.8	6.8	26.5	6.8	28.2	6.8	30.0	6.8	31.7	6.8	32.8	6.9
UAL090ER5	30	11.7	4.0	14.1	4.4	16.6	4.7	19.1	5.0	21.6	5.3	24.0	5.6	27.5	6.0	31.5	6.5	33.9	6.8	36.4	7.1	38.9	7.4	41.4	7.7	43.8	8.0	45.3	8.2
	35	11.2	4.8	13.6	5.2	16.1	5.5	18.6	5.8	21.1	6.1	23.5	6.4	27.0	6.8	31.0	7.3	33.4	7.6	35.9	7.9	38.4	8.2	40.9	8.5	43.3	8.8	44.8	9.0
	40	10.7	5.6	13.1	6.0	15.6	6.3	18.1	6.6	20.6	6.9	23.0	7.2	26.5	7.6	30.5	8.1	32.9	8.4	35.4	8.7	37.9	9.0	40.4	9.3	42.8	9.6	44.3	9.8
	45	10.6	5.8	13.0	6.1	15.1	7.1	17.6	7.4	20.1	7.7	22.5	8.0	26.00	8.400	30.0	8.9	32.8	8.6	35.3	8.9	37.8	9.2	40.3	9.5	42.7	9.8	44.2	10.0
	50	10.2	6.4	12.6	6.8	14.6	7.9	17.1	8.2	19.6	8.5	22.0	8.8	25.5	9.2	29.5	9.7	32.4	9.2	34.9	9.5	37.4	9.8	39.9	10.1	42.3	10.4	43.8	10.6
	55	9.7	7.2	12.1	7.6	14.1	8.7	16.6	9.0	19.1	9.3	21.5	9.6	25.0	10.0	29.0	10.5	31.9	10.0	34.4	10.3	36.9	10.6	39.4	10.9	41.8	11.2	43.3	11.4
UAL100ER5	30	13.1	5.7	16.0	6.1	18.9	6.5	21.7	6.9	24.6	7.3	27.5	7.7	31.5	8.3	36.1	8.9	39.0	9.3	41.8	9.7	44.7	10.1	47.6	10.5	50.4	10.9	52.2	11.1
	35	12.6	6.0	15.5	6.4	18.4	6.8	21.2	7.2	24.1	7.6	27.0	8.0	31.0	8.6	35.6	9.2	38.5	9.6	41.3	10.0	44.2	10.4	47.1	10.8	49.9	11.2	51.7	11.5
	40	12.1	6.4	15.0	6.8	17.9	7.2	20.7	7.6	23.6	8.0	26.5	8.4	30.5	9.0	35.1	9.6	38.0	10.0	40.8	10.4	43.7	10.8	46.6	11.2	49.4	11.6	51.2	11.8
	45	12.1	6.4	15.0	6.8	17.4	7.5	20.2	7.9	23.1	8.3	26.0	8.7	30.00	9.300	34.6	9.9	38.0	10.0	40.8	10.4	43.7	10.8	46.6	11.2	49.4	11.6	51.2	11.8
	50	11.6	6.7	14.5	7.1	16.9	7.9	19.7	8.3	22.6	8.7	25.5	9.1	29.5	9.7	34.1	10.3	37.5	10.3	40.3	10.7	43.2	11.1	46.1	11.5	48.9	11.9	50.7	12.2
	55	11.1	7.1	14.0	7.5	16.4	8.2	19.2	8.6	22.1	9.0	25.0	9.4	29.0	10.0	33.6	10.6	37.0	10.7	39.8	11.1	42.7	11.5	45.6	11.9	48.4	12.3	50.2	12.5
UAL120ER5	30	12.9	6.0	16.5	6.5	20.0	7.0	23.5	7.5	27.0	8.0	30.6	8.5	35.5	9.3	41.1	10.1	44.7	10.6	48.2	11.1	51.7	11.6	55.2	12.1	58.8	12.6	60.9	12.9
	35	12.4	6.4	16.0	6.9	19.5	7.4	23.0	7.9	26.5	8.4	30.1	8.9	35.0	9.6	40.6	10.4	44.2	10.9	47.7	11.4	51.2	11.9	54.7	12.4	58.3	12.9	60.4	13.2
	40	11.9	6.7	15.5	7.2	19.0	7.7	22.5	8.2	26.0	8.7	29.6	9.2	34.5	10.0	40.1	10.8	43.7	11.3	47.2	11.8	50.7	12.3	54.2	12.8	57.8	13.3	59.9	13.6
	45	11.9	6.7	15.5	7.2	18.5	8.1	22.0	8.6	25.5	9.1	29.1	9.6	34.00	10.30	39.6	11.1	43.7	11.3	47.2	11.8	50.7	12.3	54.2	12.8	57.8	13.3	59.9	13.6
	50	11.4	7.1	15.0	7.6	18.0	8.4	21.5	8.9	25.0	9.4	28.6	9.9	33.5	10.7	39.1	11.5	43.2	11.6	46.7	12.1	50.2	12.6	53.7	13.1	57.3	13.6	59.4	13.9
	55	10.9	7.4	14.5	7.9	17.5	8.8	21.0	9.3	24.5	9.8	28.1	10.3	33.0	11.0	38.6	11.8	42.7	12.0	46.2	12.5	49.7	13.0	53.2	13.5	56.8	14.0	58.9	14.3
UAL150ER5	30	12.4	4.2	17.1	5.2	21.8	6.2	26.5	7.3	31.2	8.3	35.9	9.3	42.5	10.8	50.0	12.4	54.7	13.4	59.5	14.4	64.2	15.5	68.9	16.5	73.6	17.5	76.4	18.1
	35	11.9	4.9	16.6	6.0	21.3	7.0	26.0	8.0	30.7	9.0	35.4	10.1	42.0	11.5	49.5	13.1	54.2	14.2	59.0	15.2	63.7	16.2	68.4	17.2	73.1	18.3	75.9	18.9
	40	11.4	5.7	16.1	6.7	20.8	7.7	25.5	8.8	30.2	9.8	34.9	10.8	41.5	12.3	49.0	13.9	53.7	14.9	58.5	15.9	63.2	17.0	67.9	18.0	72.6	19.0	75.4	19.6
	45	11.4	5.7	16.1	6.7	20.3	8.5	25.0	9.5	29.7	10.5	34.4	11.6	41.00	13.00	48.5	14.6	53.7	14.9	58.5	15.9	63.2	17.0	67.9	18.0	72.6	19.0	75.4	19.6
	50	10.9	6.4	15.6	7.5	19.8	9.2	24.5	10.3	29.2	11.3	33.9	12.3	40.5	13.8	48.0	15.4	53.2	15.7	58.0	16.7	62.7	17.7	67.4	18.7	72.1	19.8	74.9	20.4
	55	10.4	7.2	15.1	8.2	19.3	10.0	24.0	11.0	28.7	12.0	33.4	13.1	40.0	14.5	47.5	16.1	52.7	16.4	57.5	17.4	62.2	18.5	66.9	19.5	71.6	20.5	74.4	21.1

Water pressure drop curve

UAL030-090ER5



UAL100-150ER5

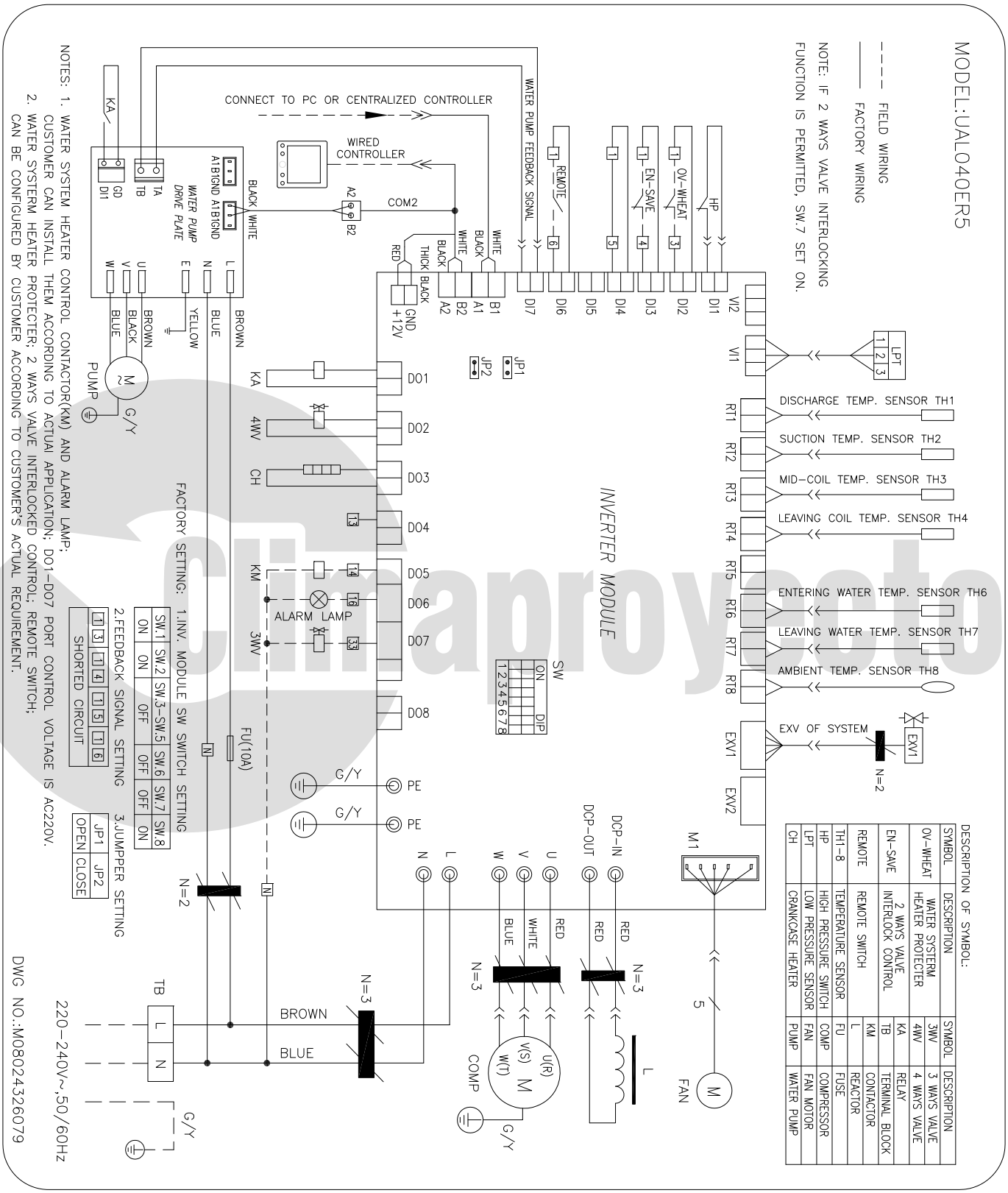


Notes:

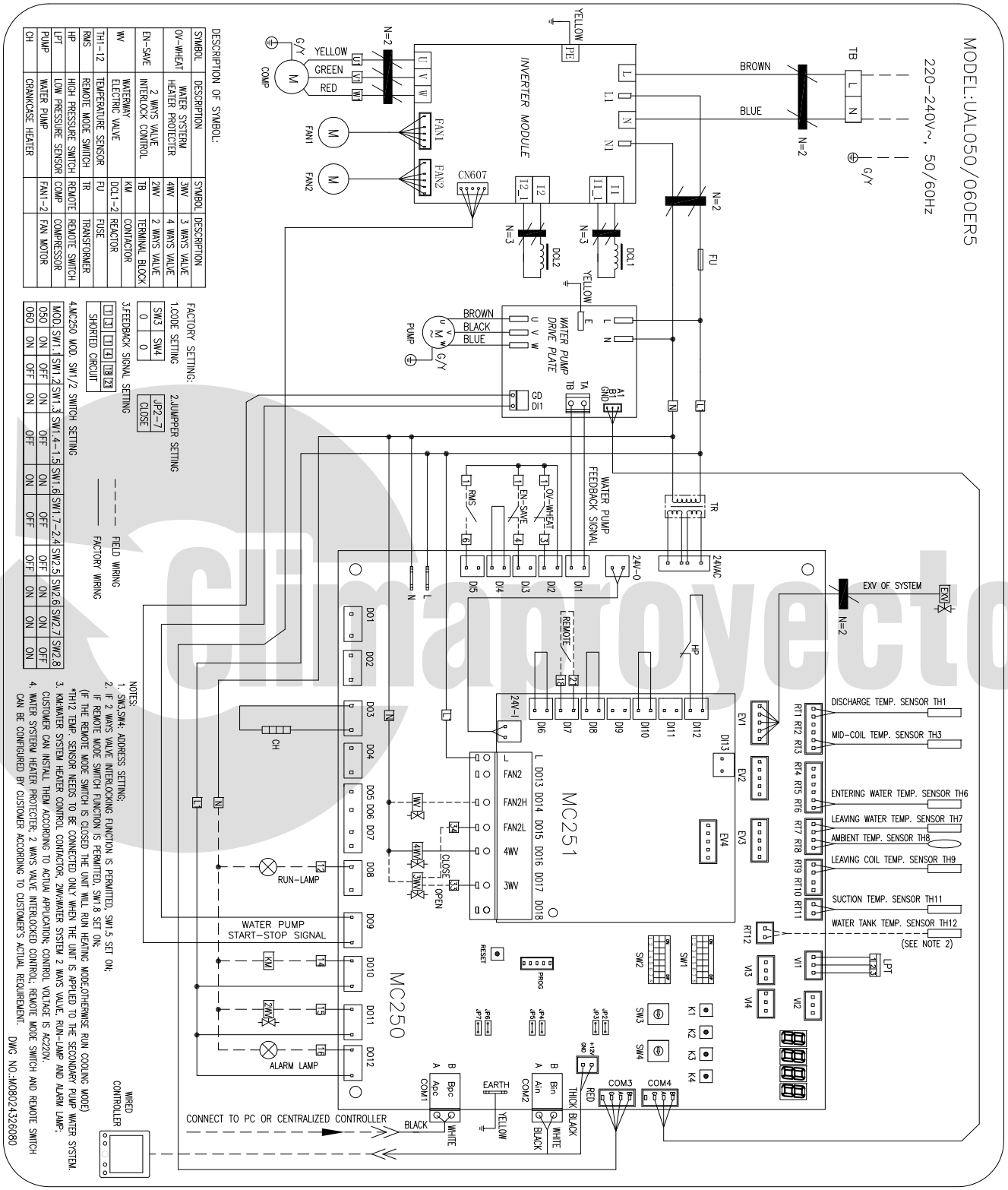
1. Water pressure drop of the unit is tested by the plate heat exchanger and the supplied Y-type filter.
2. Water resistance of plate heat exchanger and Y-type filter is tested under condition of clean water; it may be inconsistent with that shown in the diagram due to the water quality on site.

Wiring diagram

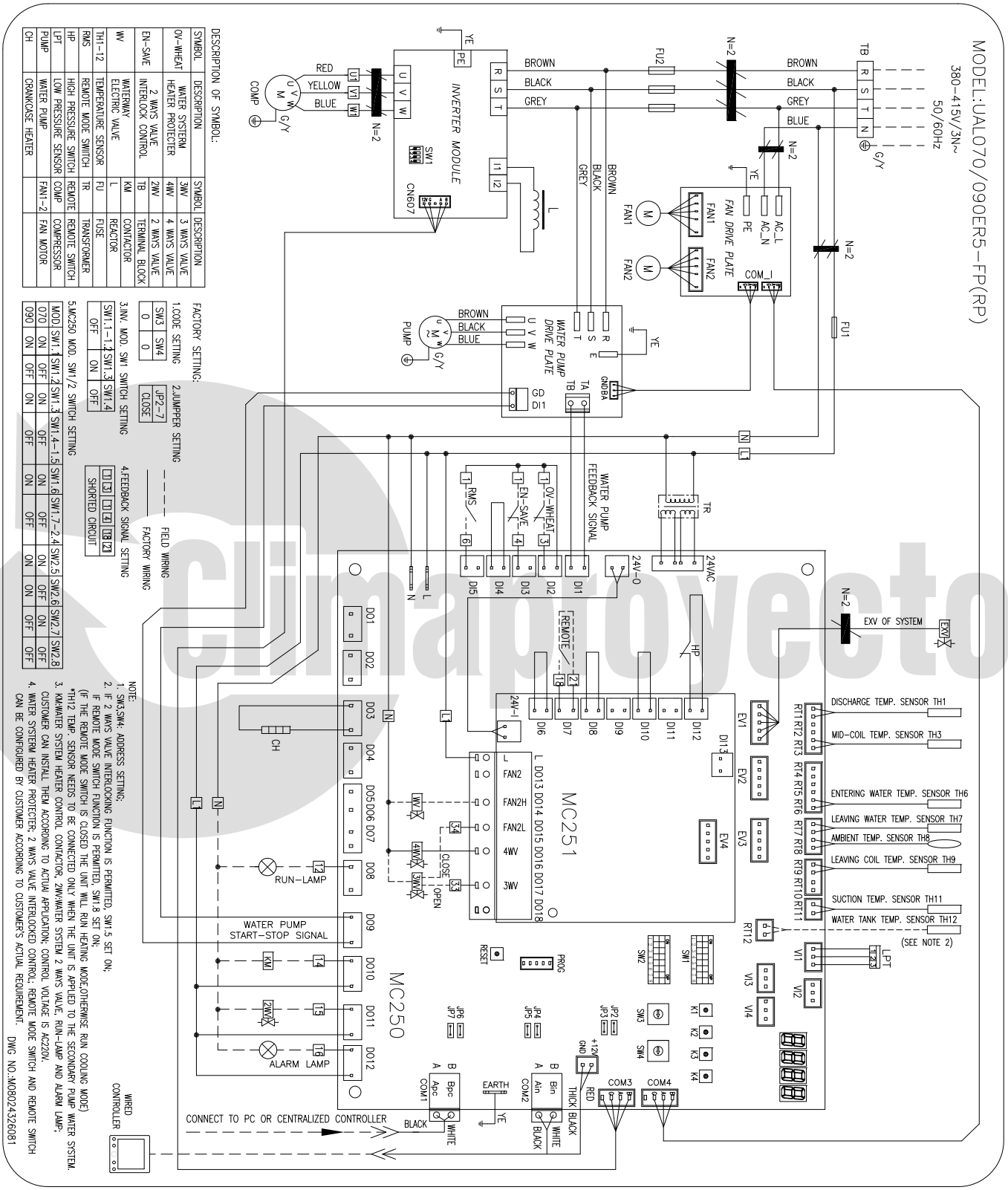
UAL040ER5



UAL050-060ER5



UAL070-090ER5



DESCRIPTION OF SYMBOL:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
OV-WHEAT	WATER SYSTERM HEATER PROTECTER	3W	3 WAYS VALVE
		4W	4 WAYS VALVE
EN-SAVE	2 WAYS VALVE INTERLOCK CONTROL	2W	2 WAYS VALVE
		TB	TERMINAL BLOCK
WV	WATERWAY ELECTRIC VALVE	KM	CONTACTOR
		L	REACTOR
TH1-12	TEMPERATURE SENSOR	FU	FUSE
RMS	REMOTE MODE SWITCH	TR	TRANSFORMER
HP	HIGH PRESSURE SWITCH	REMOTE	REMOTE SWITCH
LPT	LOW PRESSURE SENSOR	COMP	COMPRESSOR
PUMP	WATER PUMP	FAN1-2	FAN MOTOR
CH	CRANKCASE HEATER		

FACTORY SETTING:

1.CODE SETTING

SW3	SW4
0	0

2.JUMPER SETTING

JP2-7	CLOSE

3.INV. MOD. SW1 SWITCH SETTING

SW1.1~1.2	SW1.3	SW1.4
OFF	ON	OFF

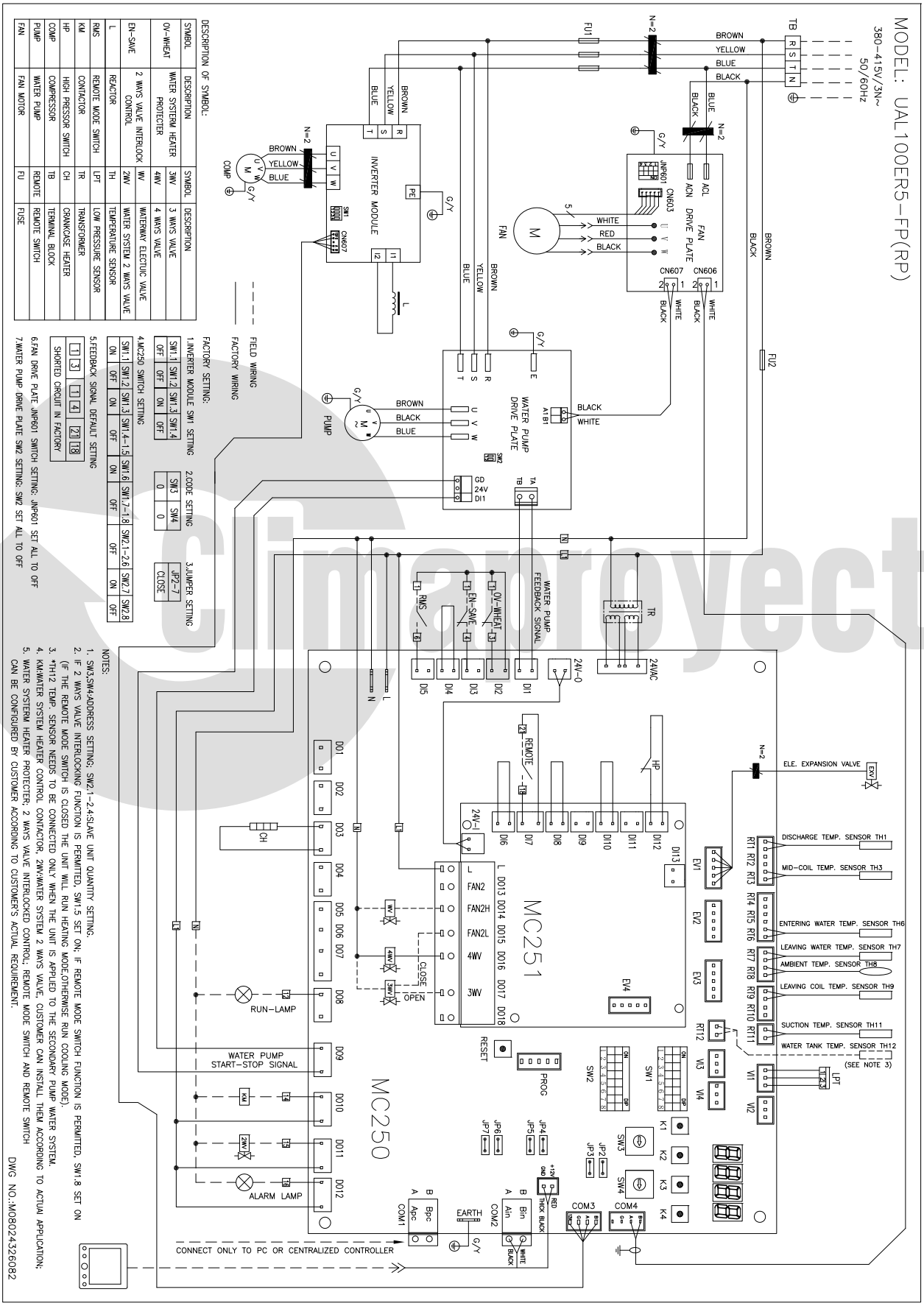
4.FEEDBACK SIGNAL SETTING

TB3	TB4	TB5	TB6	TB7
SHORTED CIRCUIT				

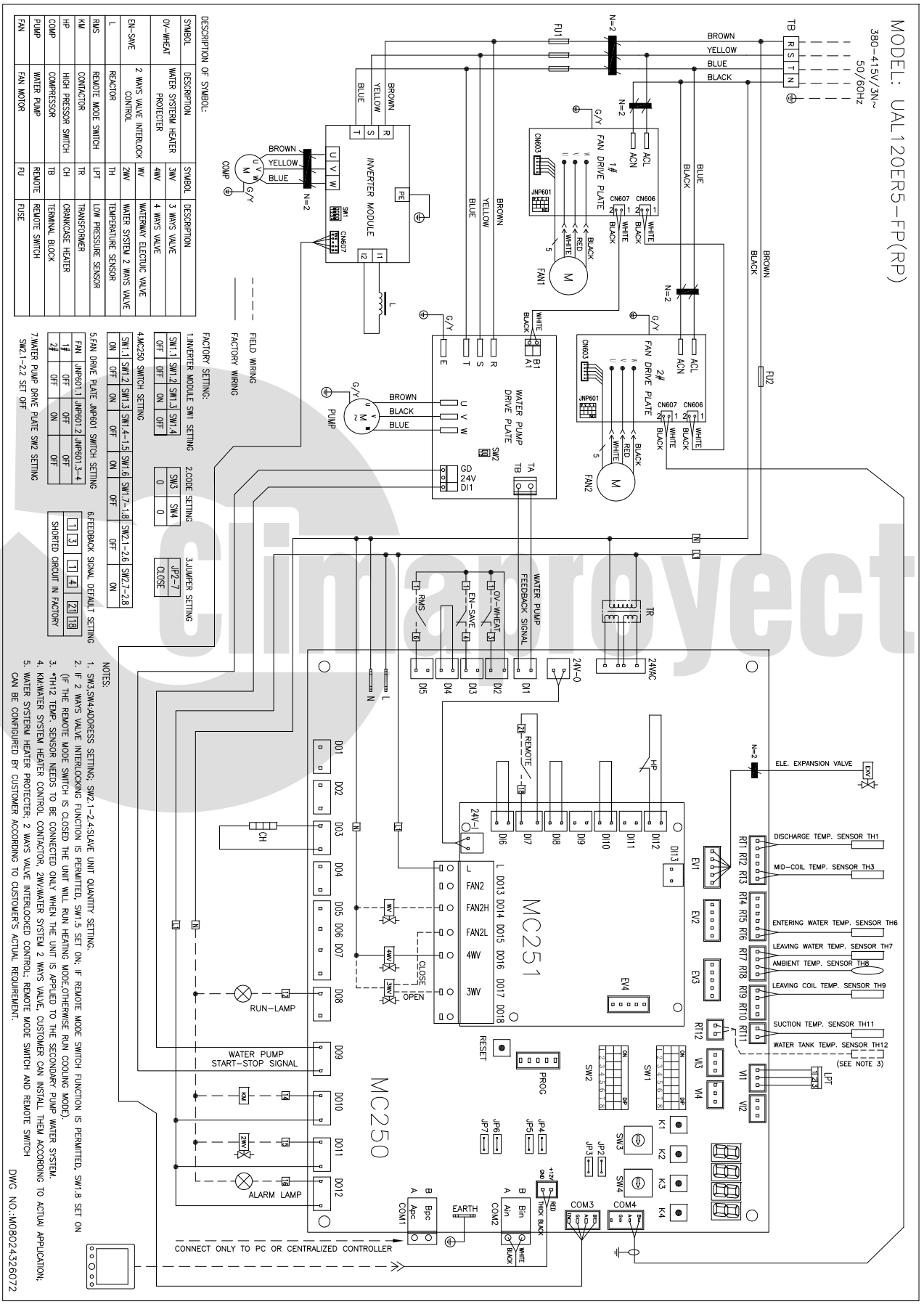
5.MC250 MOD. SW1/2 SWITCH SETTING

MOD	SW1.1	SW1.2	SW1.3	SW1.4~1.5	SW1.6	SW1.7~2.4	SW2.5	SW2.6	SW2.7	SW2.8
070	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
090	ON	OFF	ON	OFF	ON	OFF	ON	ON	OFF	OFF

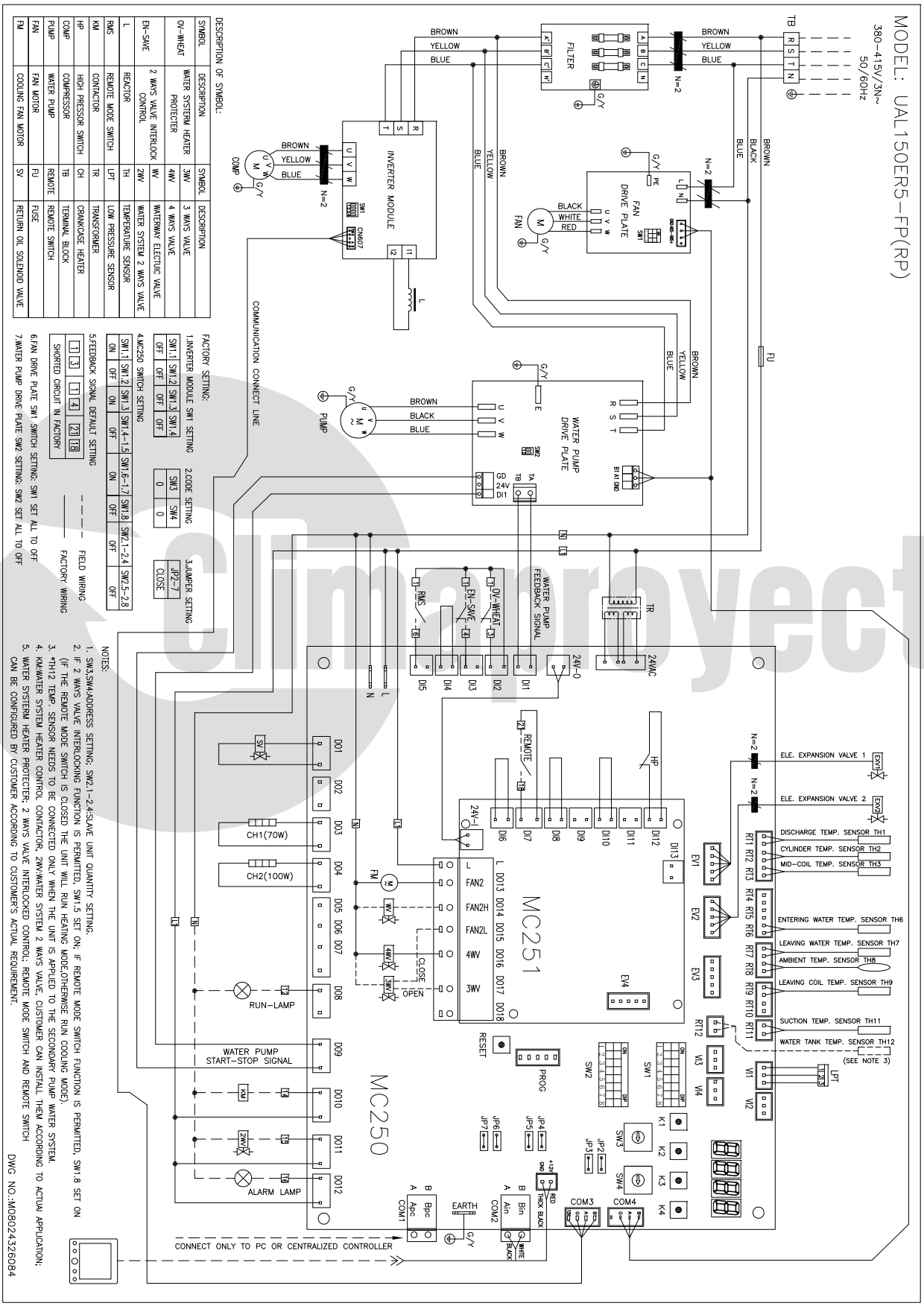
UAL100ER5



UAL120ER5



UAL150ER5



Unit installation

Working condition requirement

Item	Description
Power supply voltage	220V±10%;380±10%
Power supply frequency	Rated frequency ±1%
Variations between phases	Rated voltage ±2% (for 3 phases unit only)
Air quality	Must not contain solute that can corrode copper, aluminum or iron.
Water flow	Nominal water flow ±50%
Water flow velocity	0.5 ~ 2.0m/s
Pressure of chilled water	< 1.0 Mpa
Quality of chilled water	Must not contain solute that can corrode copper, iron, or welding material. For details on the water quality requirements, see ""Water Quality Requirements"".
Installation site	Take anti-snow and ventilation measures as required.
Ambient temp.	Refer to the operating range.
Relative humidity	<90%

Note:

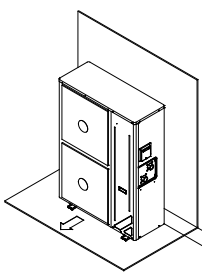
1. The unit is strictly tested before delivery and can work safely in the rated working conditions.
2. For the performance of the unit in different working conditions, please refer to performance table and water pressure drop curve. This is the normal operating temperature range for the unit. Beyond this temperature range, the unit can only operate for a short moment before a failure alarm is triggered.

Installation of UAL030-080ER5

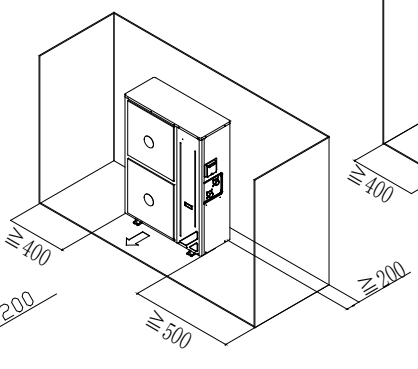
Each unit can be independently installed in a position, or multiple units can be installed in a wide position. Pay attention to their arrangement when multiple units are installed in a position. Different arrangement modes are detailed as follows:

With an Obstacle at the Air Inlet Side

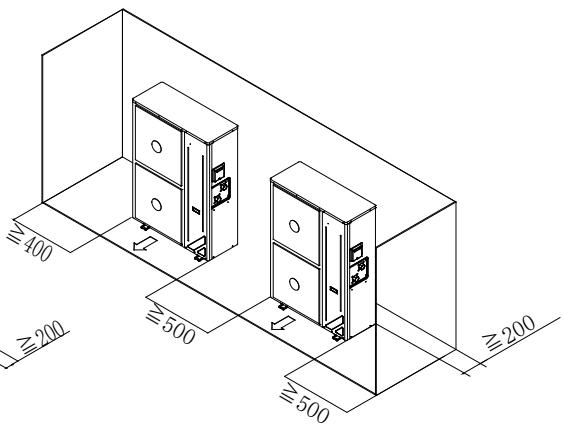
- Without an obstacle at the upper side
  a. Single unit installation
     - An obstacle exists at the air inlet side only (see Figure 1).
     - Obstacles exist at both sides and the air inlet side (see Figure 2).
  b. Group installation (two or more units)
     - Obstacles exist at both sides and the air inlet side (see Figure 3).Obstacles exist at both sides and the air inlet side (see Figure 3).



Frigure 1



Frigure 2



Frigure 3

Unit: mm

- **With an obstacle at the upper side**
  a. Single unit installation
     - An obstacle exists at the air inlet side (see Figure 4).
     - Obstacles exist at both sides and the air inlet side (see Figure 5).
  b. Group installation (two or more units)
     - Obstacles exist at both sides and the air inlet side (see Figure 6).

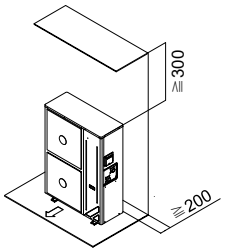


Figure 4

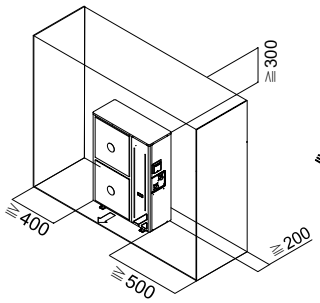


Figure 5

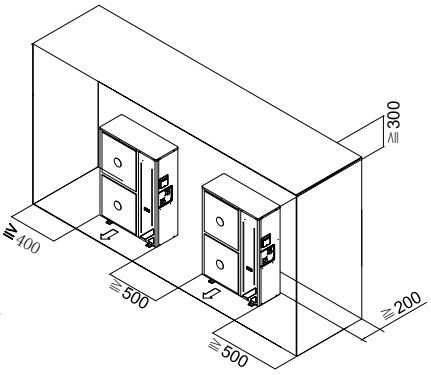


Figure 6

Unit: mm

With an obstacle at the air discharge side

- **Without an obstacle at the upper side**
  a. Single unit installation (see Figure 7)
  b. Group installation (two or more units) (see Figure 8)
- **With an obstacle at the upper side**
  a. Single unit installation (see Figure 9)

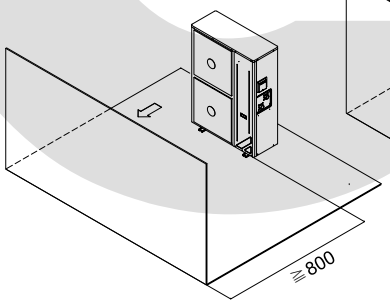


Figure 7

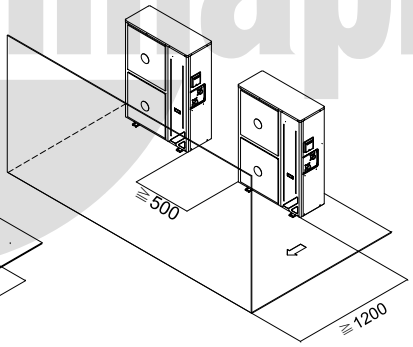


Figure 8

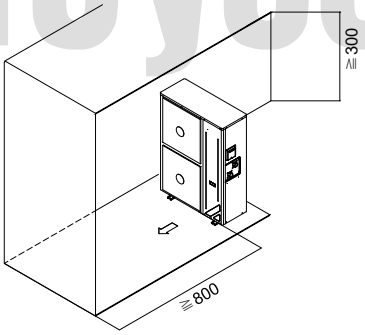


Figure 9

Unit: mm

  b. Group installation (two or more units) (see Figure 10)

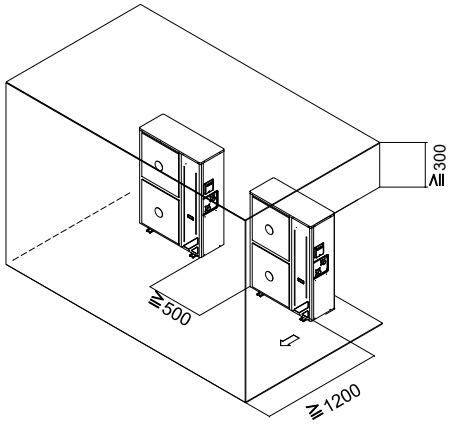


Figure 10

Unit: mm

With obstacles at both the air Inlet and discharge sides

Mode 1: When the obstacle at the air discharge side is higher than the unit, the height of the obstacle at the air inlet side will not be limited.

- **Without an obstacle at the upper side**
  a. Single unit installation (see Figure 11)
  b. Group installation (two or more units) (see Figure 12)

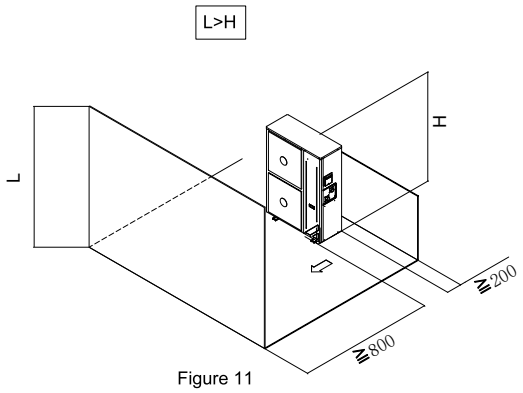


Figure 11

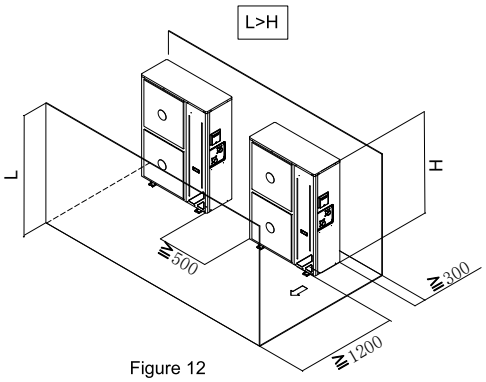


Figure 12

Unit: mm

- **With an obstacle at the upper side**
  a. Single unit installation (see Figure 13)
  The relationship between H, A, and L is as follows:

	L	A
L ≦ H	0<L ≦ 1/2H	900
	1/2H<L ≦ H	1200
H<L	L ≦ H for setting the base	

  b. Group installation (see Figure 14)
  The relationship between H, A, and L is as follows:

	L	A
L ≦ H	0<L≦1/2H	1200
	1/2H<L≦H	1450
H<L	L ≦ H for setting the base	

  Only two units can be installed in this mode.

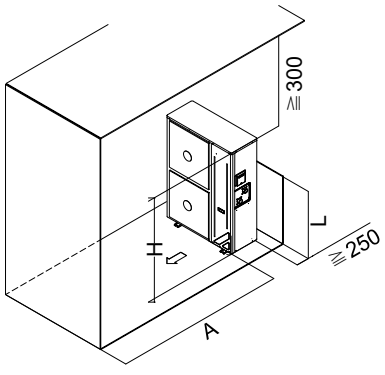


Figure 13

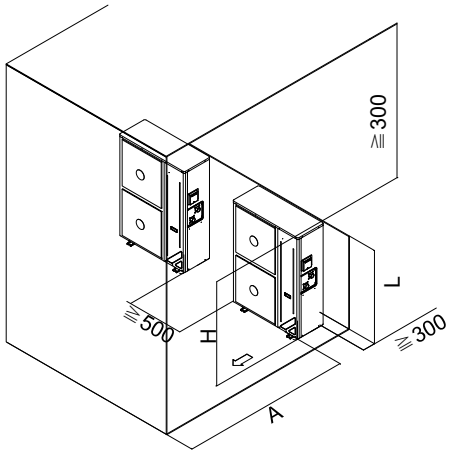


Figure 14

Unit: mm

Mode 2: When the obstacle at the air discharge side is lower than the unit, the height of the obstacle at the air inlet side will not be limited.

- **Without an obstacle at the upper side**

  a. Single unit installation (see Figure 15)

  L ≦ H

  b. Group installation (two or more units) (see Figure 16)

  The relationship between H, A, and L is as follows:

L	A
0<L≦1/2H	250
1/2H<L≦H	300

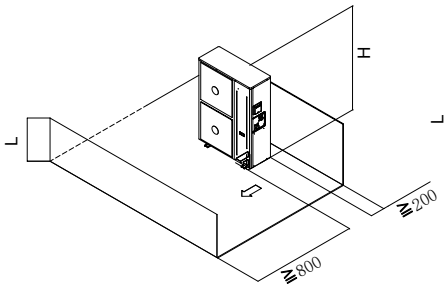


Figure 15

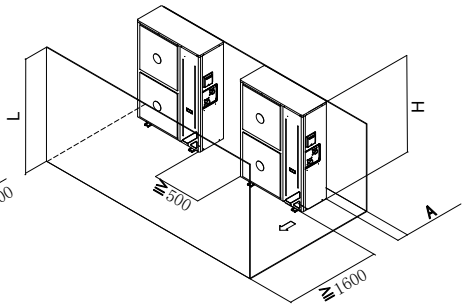


Figure 16

Unit: mm

- **With an obstacle at the upper side**

  a. Single unit installation (see Figure 17)

  The relationship between H, A, and L is as follows:

	L	A
L≦H	0<L≦1/2H	200
	1/2H<L≦H	250
H<L	L H for setting the base	

  b. Group installation (see Figure 18)

  The relationship between H, A, and L is as follows:

	L	A
L≦H	0<L≦1/2H	250
	1/2H<L≦H	300
H<L	L≦H for setting the base	

  Only two units can be installed in this mode.

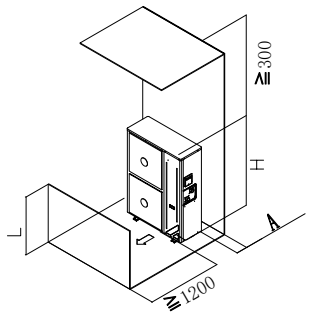


Figure 17

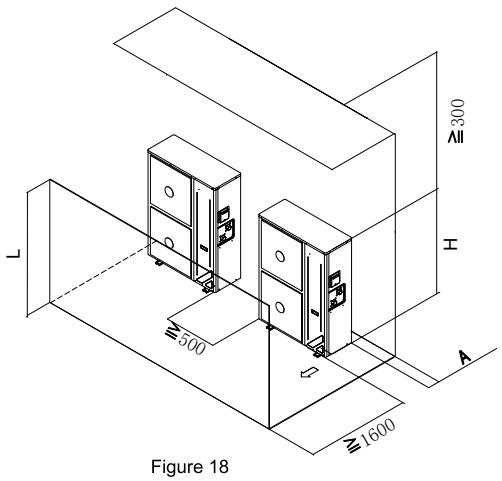


Figure 18

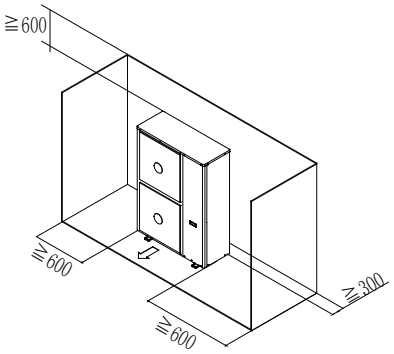
Unit: mm

Note:

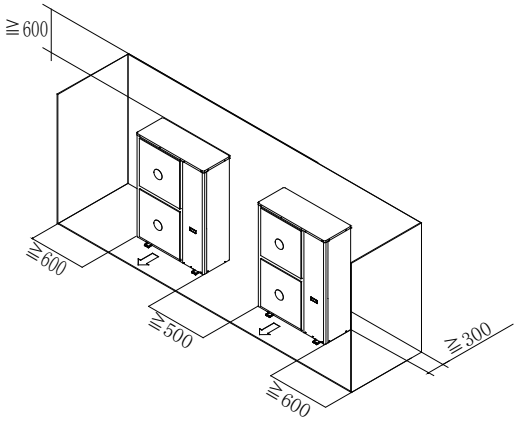
1. H is height from fundation base bottom to unit top.
2. L is height of obstacle.
3. A is distance from unit rear to obstacle at unit inlet side.

Wind shield installation for cooling at low ambient temperature

If running cooling mode when ambient temperature <5°C, wind shield shall be installed at the side of chiller airflow inlet, distance between wind shield and both side of chiller shall be ≥600mm and wind shield shall be 600mm higher than chiller.



Single unit installation



Group installation

Unit: mm

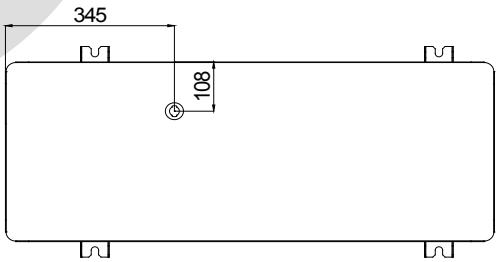
Condensate water treatment

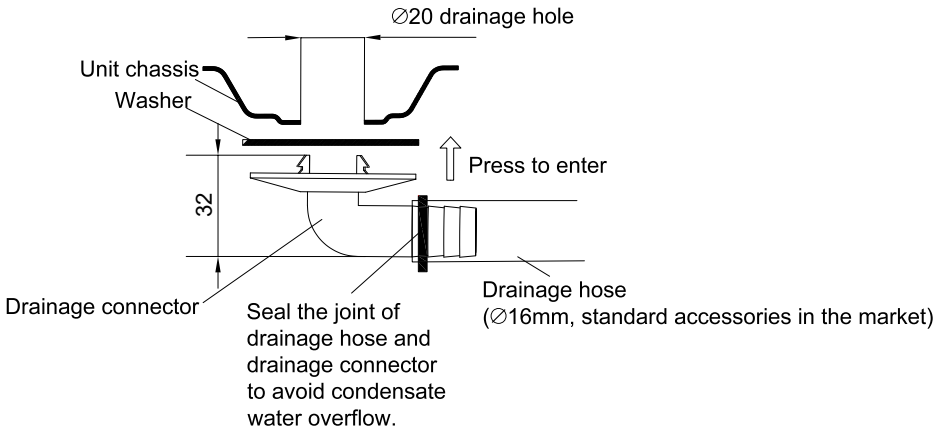
The unit may drain off condensate water when operating in heating or defrosting mode. A drainage connector and a suitable drainage hose can be installed at the bottom of the unit to conduct centralized drainage. Installation precautions are as follows:

- Reserve a space for convenience of installing/removing the drainage connector. Raise the unit for at least 80 mm and maintain a certain slope for the drainage hose to guarantee smooth drainage.
- Take the drainage connector and washer (standard accessories of the unit) out of the accessory case and install them at the drainage hole of the bottom chassis.
- Connect a drainage hose of Φ16mm (standard accessories in the market, purchased by users according to onsite situations).
- Do not use drainage connectors in cold places, but let condensate water drain off freely. Otherwise, condensate water may be frozen at the bottom chassis, affecting heating effects of the unit and causing drainage pipeline cracking.

The following figures show the size of drainage hole and the installation method of drainage connector:

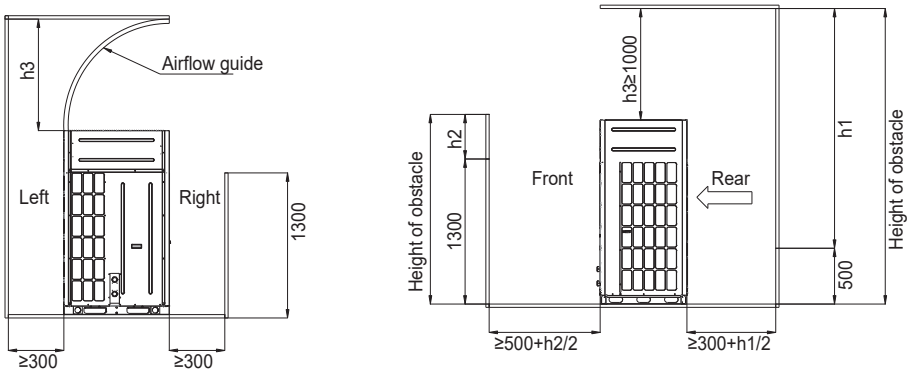
Unit：mm





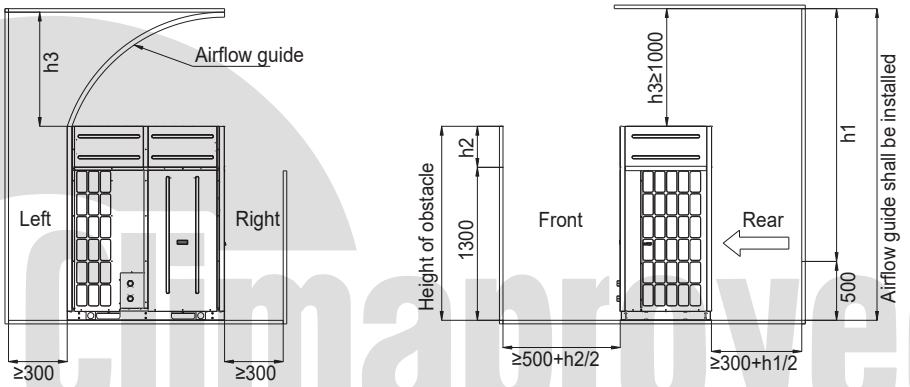
Installation of UAL100-150ER5

UAL100ER5



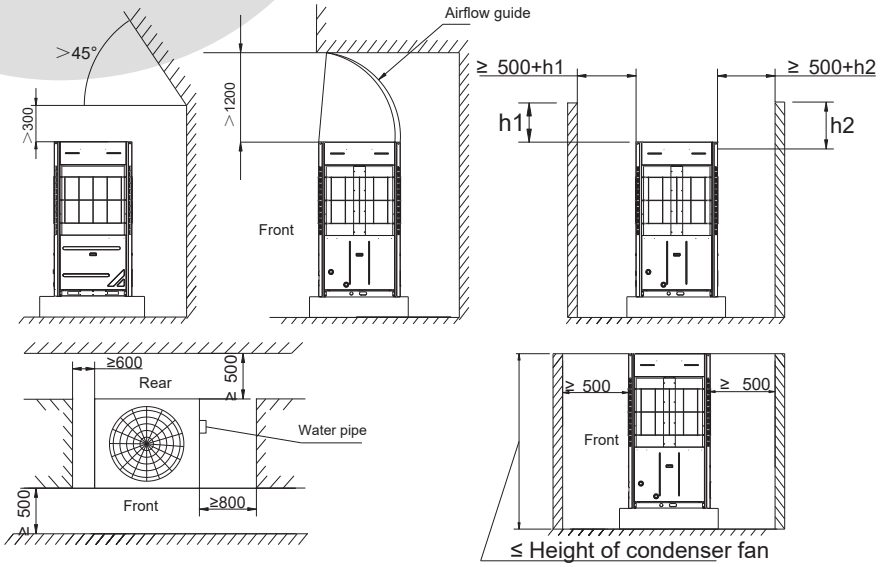
Note：if 1000≦h3≦1600，Airflow guide shall be installed. Unit:mm

UAL120ER5



Note：if 1000≦h3≦1600，Airflow guide shall be installed. Unit:mm

UAL150ER5



Unit:mm

Note: Unit can’t be installed in a space enclosed on all sides.

The unit can be mounted in one place or multiple units are mounted in a large area. For the latter, attention should be paid to the arrangement, which is detailed as follows:

Obstacles at two sides

a. Mounting of single unit

- Obstacles in the back only (see Figure 1)
- Obstacles in the back and sides (see Figure 2)

b. Package mounting (2 sets or more)

- Obstacles in the front and back (see Figure 3)
- Obstacles in the back and sides (see Figure 4)

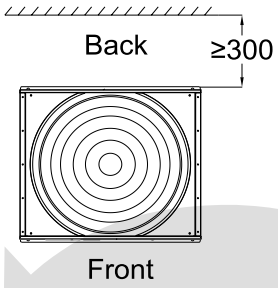


Figure 1

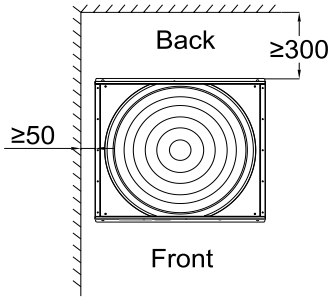


Figure 2

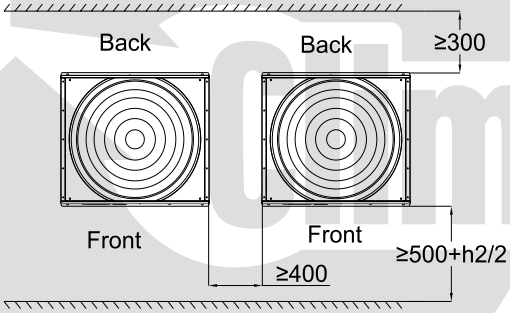


Figure 3

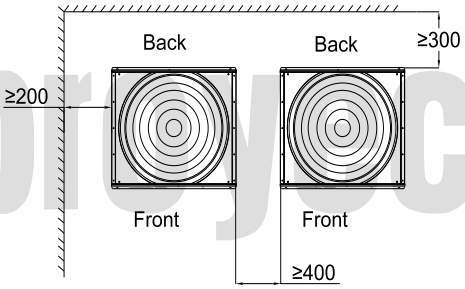


Figure 4

Unit: mm

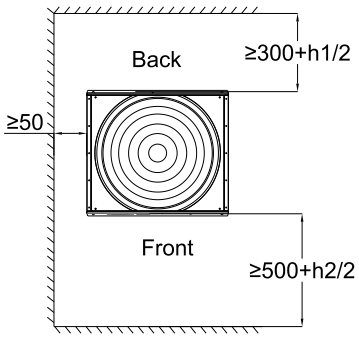
Obstacles in the three sides

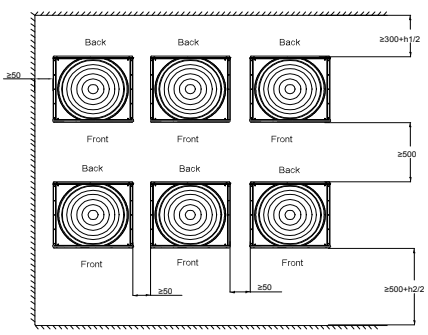
a. Mounting of single unit

- Obstacles in the front, back and one side (see Figure 5)

b. Package mounting (more than two sets)

- Obstacles in the front, back and one side, mounting in the same direction (see Figure 6)
- Obstacles in the front, back and one side, back-to-back mounting 1 (see Figure 7)
- Obstacles in the front, back and one side, back-to-back mounting 2 (see Figure 8)





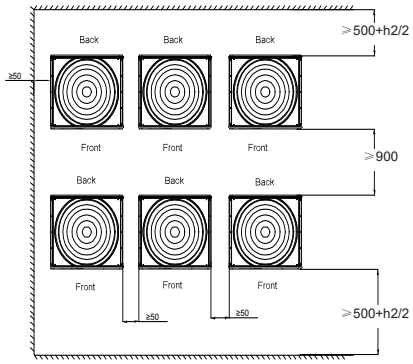


Figure 7
Back-to-back mounting 1

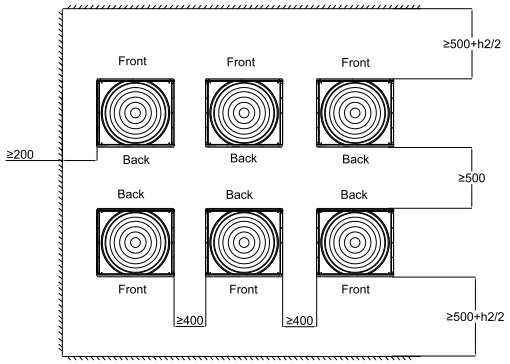


Figure 8
Back-to-back mounting 2

Unit: mm

Obstacles in the four sides

a. Mounting of single unit

- Obstacles in the front, back and sides (see Figure 9)

b. Package mounting (more than two sets)

- Obstacles in the front, back and sides, mounting in the same direction (see Figure 10)
- Obstacles in the front, back and sides, back-to-back mounting 1 (see Figure 11)
- Obstacles in the front, back and sides, back-to-back mounting 2 (see Figure 12)
- Obstacles in the front, back and sides, face-to-face mounting (see Figure 13

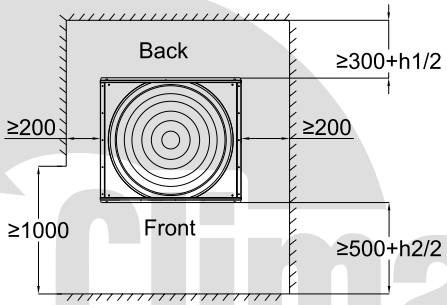


Figure 9

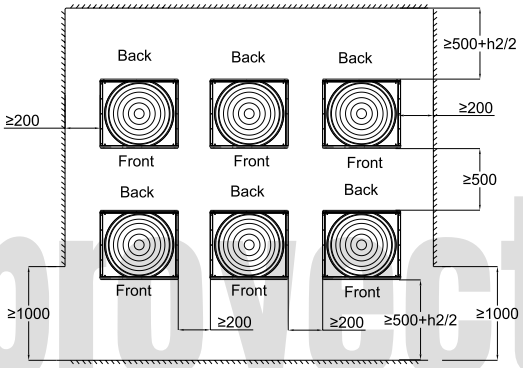


Figure 10
Mounting in the same direction

Unit: mm

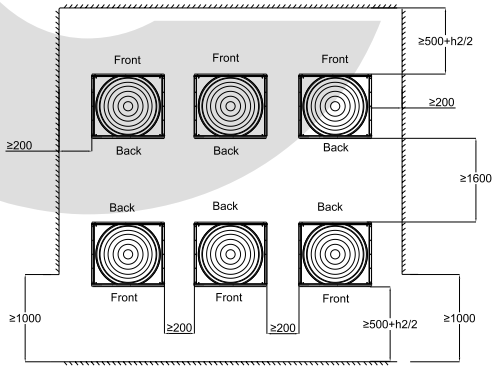


Figure 11
Back-to-back mounting 1

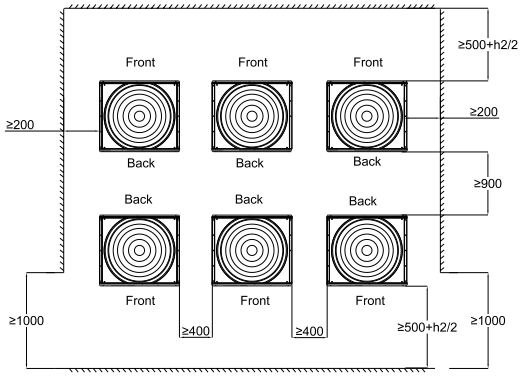


Figure 12
Back-to-back mounting 2

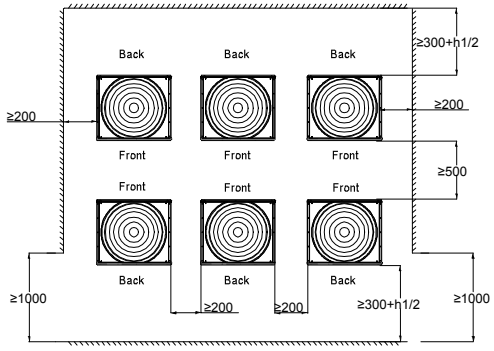


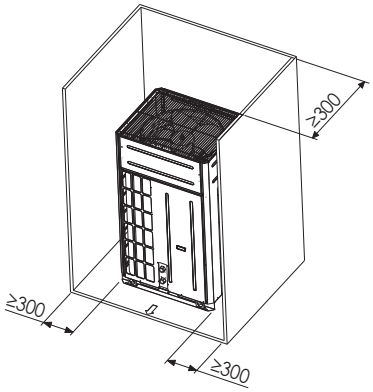
Figure 13
Face-to-face mounting

Unit: mm

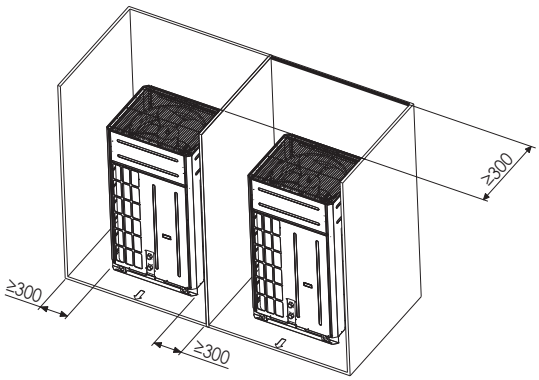
Wind shield installation for cooling at low ambient temperature

If running cooling mode when ambient temperature <5°C, wind shield shall be installed at the side of chiller airflow inlet, distance between wind shield and both side of chiller shall be ≥600mm and wind shield shall be 600mm higher than chiller.

UAL100ER5



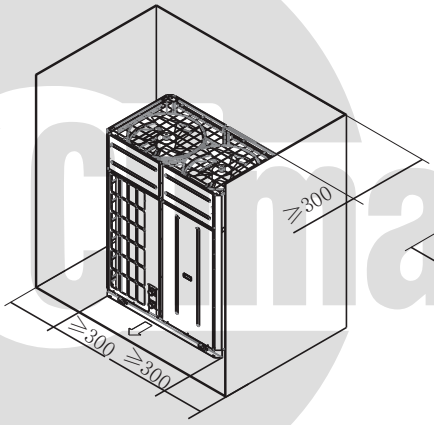
Single unit installation



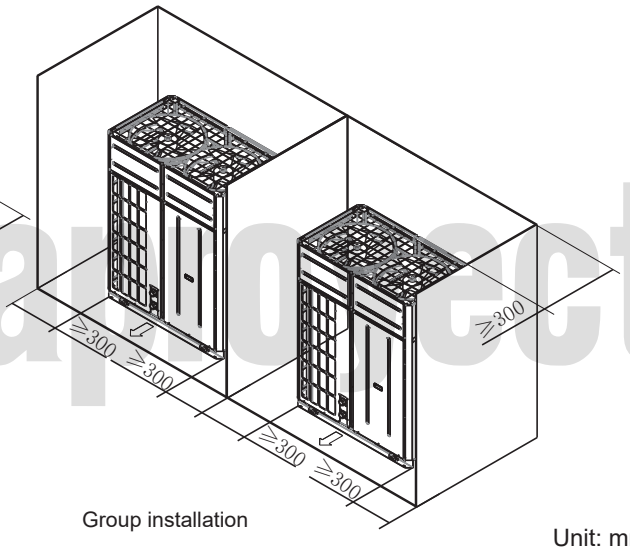
Group installation

Unit: mm

UAL120ER5



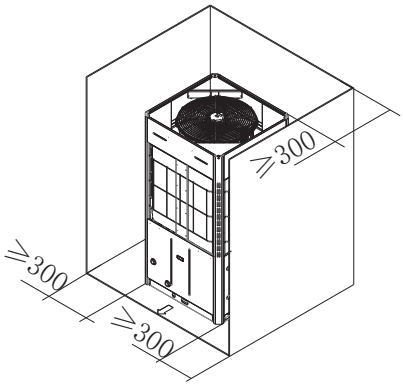
Single unit installation



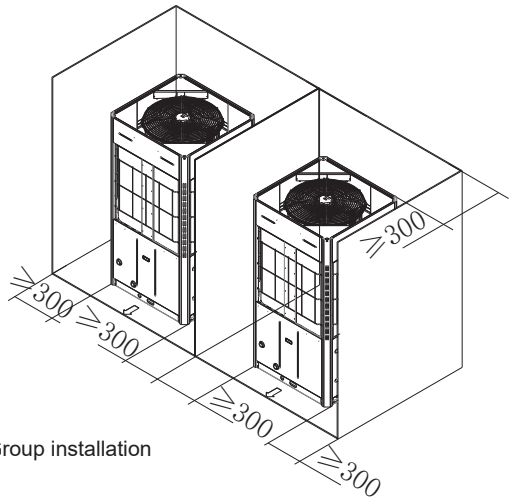
Group installation

Unit: mm

UAL150ER5



Single unit installation

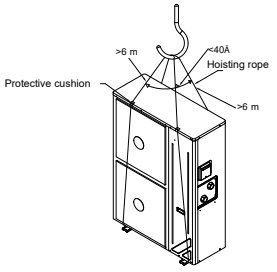


Group installation

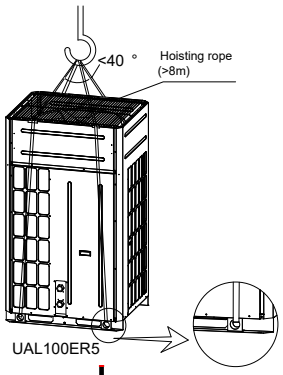
Unit: mm

Hoisting the unit

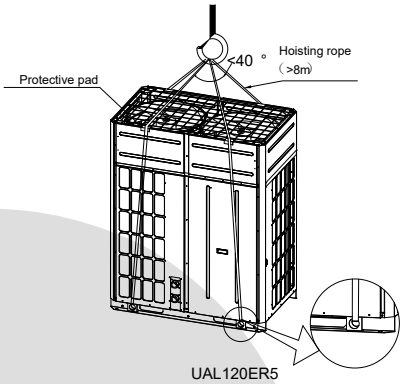
Perform Hoisting operation according to the following diagram. Support the units at four points when moving them. Do not move with three supporting points, which may cause instability and dropping of the units.



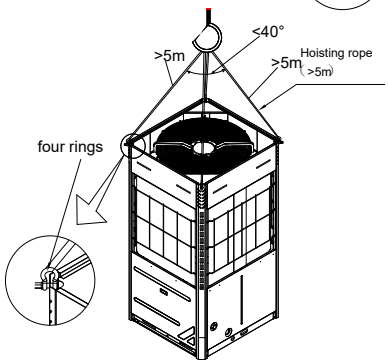
UAL040-090ER5



UAL100ER5



UAL120ER5



UAL150ER5

CAUTION: Be sure to carefully move the units.

Do not use the supplied packaging straps to rig or move the units; doing so may cause danger.

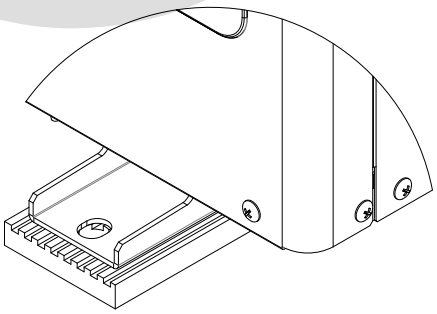
Do not touch heat exchanger fins with bare hands; doing so may hurt your fingers.

The center of gravity of units lies in the front right side. Try to find the center of gravity and then slowly rig the units.

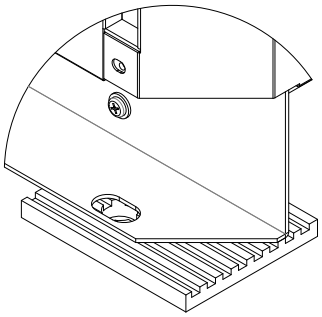
Select appropriate rigging ropes according to the weight of units.

Installation for chillers

UAL040-090ER5



UAL100/120/150ER5



- Build the base with concrete or mounting bracket. When building the base, take into considerations about the floor's intensity, drainage (when the units operate, water drains away from the units), pipes and cable layout. Insufficient intensity may cause dropping of the unit, thus causing personal injuries.
- Fasten the chillers with anchor bolts to avoid falling down due to earthquake or strong wind. The unit must be properly installed to prevent damages arising from strong wind and earthquake.
- Vibration may transmit to installation parts and the floor and wall may cause vibration and noises, both of which depend on the installation conditions. Therefore, anti-vibration measures must be taken (such as the anti-vibration pad and bumper bracket).

Unit model	UAL040~090ER5	UAL100~150ER5
Specification of anti-vibration pads (L×W×H)	100×80×15mm	150×125×15mm
Qty	4	4

WARNING:

- The unit must be installed in a place with sufficient strength for bearing the running weight of the unit.

Part list of accessory kit:

Item	Name	UAL-A5E	UAL-A6E	UAL-A7E	UAL-A8E
		QUANTITY	QUANTITY	QUANTITY	QUANTITY
1	Product Manual	1	1	1	1
2	Water Filter DN25	1	/	/	/
	Water Filter DN32	/	1	1	/
	Water Filter DN40	/	/	/	1
3	Automatic Refill Valve	1	1	1	1
4	Safety Valve	1	1	1	1
5	Remote Control Wire	1	1	1	1
6	Wired Controller	1	1	1	1
7	Drain Cock Joint	2	2	/	/
8	PE Gasket	2	2	/	/

Note: Accessory kit should be purchased separately.

Electrical installation

Before connecting the circuit, strictly abide by the following safety rules and measures:

The units must be installed by DAIKIN service personnel or personnel who are specially trained. The installation must abide by the national and local laws and regulations in aspects of electricity, construction and environment protection as well as meet the requirement of product installation instructions. Users are not allowed to remove or add control components. For unit damages and personal injuries caused by operations which fail to follow the rules, DAIKIN assumes no responsibility.

The earth wires of the air conditioning unit must be grounded well. Earth wires cannot be connected to gas pipes, water pipes, and telephone lines, because poor earth may result in electric shock.

Circuit connecting must refer to wiring diagram and the instructions as below.

Check whether the power supply is of standards before starting.

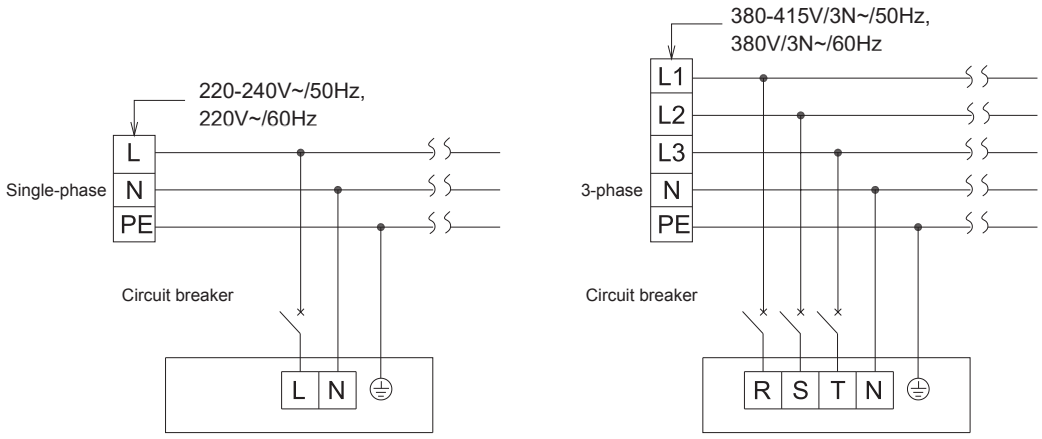
Model	Minimum diameter of power cable (mm^2)			Max running current (A)	Max power input (kW)
	Phase line	Neutral line	Earth line		
UAL040ER5	4	4	4	24.5	5.3
UAL050ER5	10	10	10	39.8	7.9
UAL060ER5	10	10	10	39.8	7.9
UAL070ER5	4	4	4	25.0	15.2
UAL090ER5	4	4	4	25.0	15.2
UAL100ER5	6	6	6	29.0	15.5
UAL120ER5	6	6	6	29.0	15.5
UAL150ER5	10	10	10	40.0	21.0

Note:

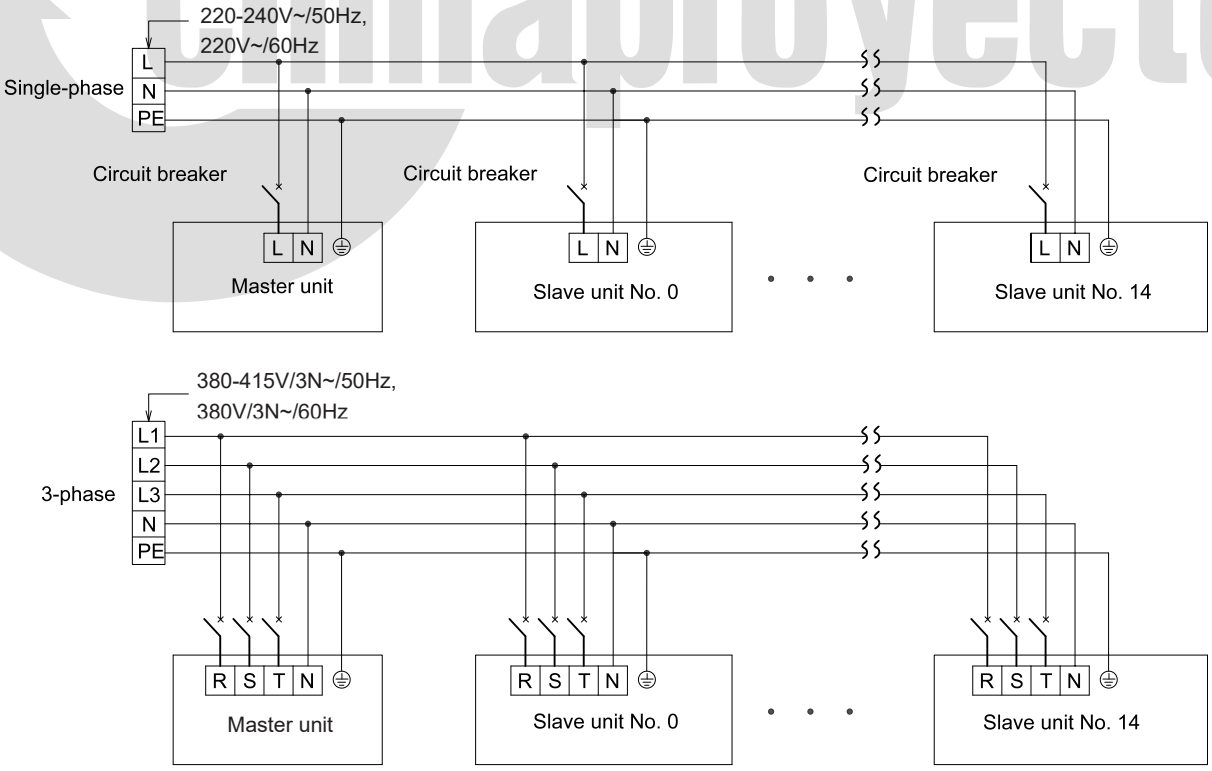
1. The above data are electric parameters for basic module units.
2. Connection for all the conductors must be secure.
3. Keep all the conductors away from refrigerant pipes and movable components like compressor and fan.

Power cable connection diagram

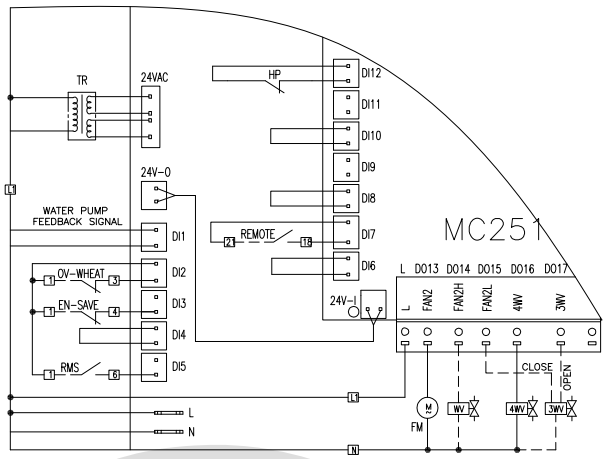
Single unit

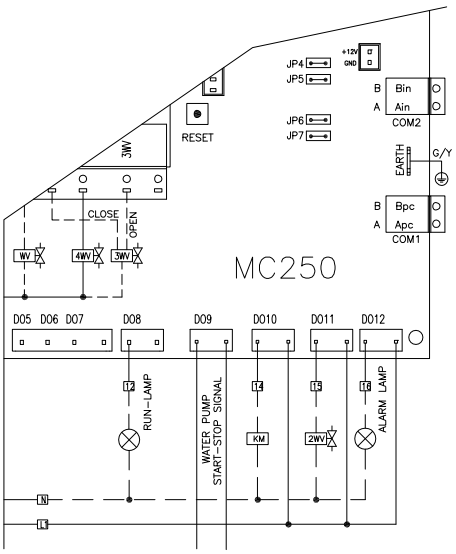


With slave unit



Connection illustration for control devices





Note:

"------"Parts within the dashed box are to be connected onsite.

"——"Parts within the real-line box are connected before ex-factory.

Above wiring is take UAL070-090ER5 as example.

Description of symbol:

OV-WHEAT: Water system heater protector (heater is mainly for auxiliary heating in winter).

EN-SAVE: 2-way valve interlock control (for interlock control between outdoor unit and fan coil unit).

RMS: Remote mode switch (for cooling mode and heating mode switching).

REMOTE: Remote switch (for remote control outdoor unit ON an OFF).

NOTE: Feedback signal, module interface input voltage is 24V.

RUN-LAMP: Lamp for indicating unit running status.

KM: Contactor for water system heater.

2WV: 2-way valve for water system (for variable flow control in modular combination).

ALARM-LAMP: Lamp for indicating unit alarm.

NOTE: The output voltage of the module interface is 220-240 V.

NOTE:

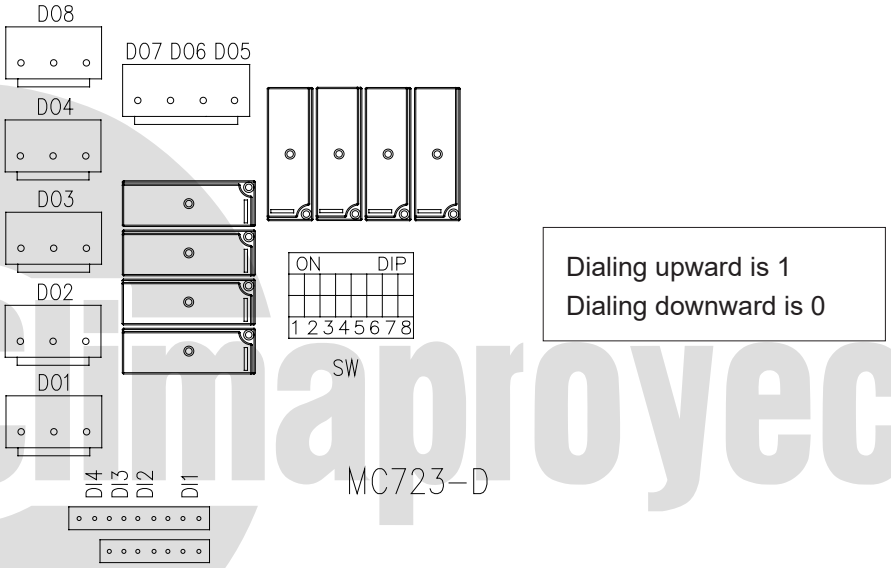
1. ***ABOVE PARTS CAN BE CONFIGURED BY CUSTOMER ACCORDING TO ACTUAL REQUIREMENT OF CUSTOMER.***
2. ***FUNCTIONS FOR SITE WIRING ARE VARIOUS FOR DIFFERENT MODELS OF CHILLER, PLEASE REFER TO WIRING DIAGRAM OF EACH MODEL FOR DETAILS.***

DIP switch setting

The control board can be used to set the unit's capacity, address, master and slave unit number. The capacity DIP has been set at delivery time and cannot be changed. The address DIP and slave number DIP need to be set as needed after the unit is installed. Customers need to take down the address number and location of the unit and keep the record in good condition for maintenance reference.

Setting of UAL040ER5

There are DIP switches on unit control board for settings of 2-way valve interlock, master/slave unit, slave unit quantity, setting of master unit address is through wired controller. Slave unit address and quantity shall be set according to actual situation after installation. Meanwhile user shall record the address code and installation place of corresponding unit and save as important document for reference during maintenance. Registration of master unit address, 2-way valve interlock control and slave unit address are set by wired controller.



SW1 indicates DIP master/slave units. Set to ON if they are master units, and set to OFF if they are slave units.

SW2 indicates temperature control. Set to ON for outlet water temperature control, and set to OFF for inlet water temperature control.

SW3~5 indicate slave unit quantity (must to be set) or slave unit address setting (in the range 0~7).

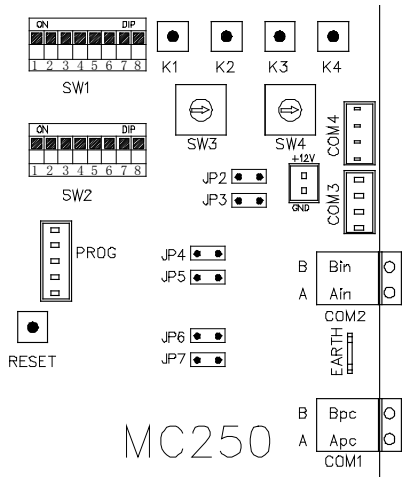
SW.3	SW.4	SW.5	Slave quantity	Slave address
0	0	0	0	0#
0	0	1	1	1#
0	1	0	2	2#
0	1	1	3	3#
1	0	0	4	4#
1	0	1	5	5#
1	1	0	6	6#
1	1	1	7	7#

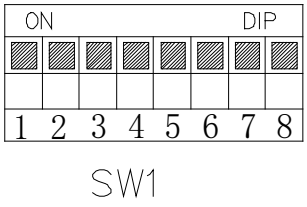
SW6 indicates fan speed select. Set to ON for high static pressure fan speed control, set to OFF for standard static pressure fan speed control.

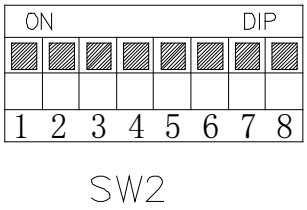
SW7 is reserved.

SW8 indicates water flow system select. Set to ON for variable flow system, set to OFF for constant flow system.

Setting of UAL050-150ER5







Dialing upward is 1.
Dialing downward is 0.

SW1.1 indicates setting master and slave unit. Set SW1.1 to ON for master unit, and set SW1.1 to OFF for slave unit.

SW1.2 indicates setting cooling only unit or heat pump unit. Set SW1.2 to ON for cooling only, and set SW1.2 to OFF for heat pump unit.

SW1.3 indicates setting temperature control. Set SW1.3 to ON for leaving water temperature control, and set SW1.3 to OFF for return water temperature control.

NOTE: when units are modular combined, main pipe outlet water sensor TH5 and connecting wire should be configured by factory which are options.

SW1.4 & SW1.7 are for setting unit type.

SW1.5 indicates setting 2-way valve interlock function. When using this function, set SW1.5 to ON.

SW1.6 indicates setting water flow control method. Set SW1.6 to ON for variable flow system, set SW1.6 to OFF for constant flow system.

SW1.8 indicates setting remote mode switch (Cooling/Heating). Set SW1.8 to ON to enable the function, set SW1.8 to OFF to disable the function.

The master unit must be set the quantity of slave units to be connected, while slave units do not need to set SW2.1~SW2.4.

Quantity of slave units	SW2.1	SW2.2	SW2.3	SW2.4	Quantity of slave units	SW2.1	SW2.2	SW2.3	SW2.4
0	0	0	0	0	8	1	0	0	0
1	0	0	0	1	9	1	0	0	1
2	0	0	1	0	10	1	0	1	0
3	0	0	1	1	11	1	0	1	1
4	0	1	0	0	12	1	1	0	0
5	0	1	0	1	13	1	1	0	1
6	0	1	1	0	14	1	1	1	0
7	0	1	1	1	15	1	1	1	1

Set SW2.5~SW2.8 for unit model.(Factory setting).

Model	SW2.5	SW2.6	SW2.7	SW2.8
UAL040ER5	-	-	-	-
UAL050ER5	0	1	1	0
UAL060ER5	0	1	1	1
UAL070ER5	1	0	1	0
UAL090ER5	1	1	0	0
UAL100ER5(DI8 close)	0	0	1	0
UAL120ER5(DI8 close)	0	0	1	1
UAL150ER5(DI8 close)	0	1	0	0

Address DIP setting of master units (in the range of 0 to 99):

SW3	SW4	Master unit address	SW3	SW4	Master unit address	SW3	SW4	Master unit address	SW3	SW4	Master unit address
0	0	1#	0	8	9#	1	6	17#	2	4	25#
0	1	2#	0	9	10#	1	7	18#	2	5	26#
0	2	3#	1	0	11#	1	8	19#	2	6	27#
0	3	4#	1	1	12#	1	9	20#	2	7	28#
0	4	5#	1	2	13#	2	0	21#	2	8	29#
0	5	6#	1	3	14#	2	1	22#	2	9	30#
0	6	7#	1	4	15#	2	2	23#	3	0	31#
0	7	8#	1	5	16#	2	3	24#	3	1	32#

Address DIP setting of slave units (in the range of 0 to 14)

SW3	SW4	Slave unit address	SW3	SW4	Slave unit address
0	0	0#	0	8	8#
0	1	1#	0	9	9#
0	2	2#	1	0	10#
0	3	3#	1	1	11#
0	4	4#	1	2	12#
0	5	5#	1	3	13#
0	6	6#	1	4	14#
0	7	7#			

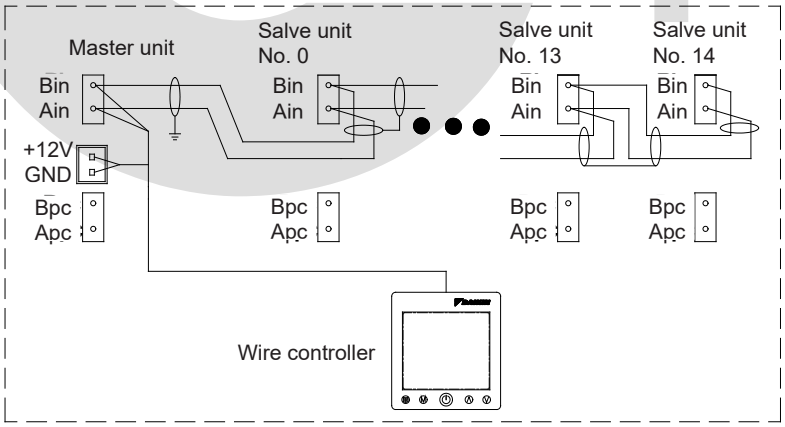
Note:

Address codes in the same system cannot be repeated.

Prepare for commissioning with power-on only after setting the address code.

The inner side of the control box of the unit is attached with electrical wiring diagram of the unit, which provides detailed descriptions for DIP setting. Please keep it properly.

Wiring between master and slave unit and wiring of controller



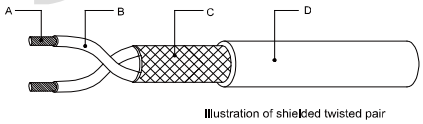


Illustration of shielded twisted pair

A) Conductor (WTC pair with cross section area of at least 0.5mm² or 20AWG)

B) Insulator

C) Screen layer (twisted WTC with a screening factor no less than 95%)

D) Outer jacket (PVC)

Note:

Better choose network cables with a tenser shielding layer and smaller twisting distance.

Please refer to the UL2547 or UL2791 wire specification.

The control cable must not be longer than 1000 meters.

The control cable must be at least 20cm away from major current wire.

Water system installation

Notes for connecting water pipes

The water pump is supplied with the unit. Ensure that the lift used is within the lift range of the water pump.

Fix the thermometers and pressure gauges on the water inlets and outlets. This helps you know operating condition of the chiller.

The water side heat exchanger is a stainless steel plate heat exchanger. There is a possibility that scales adhere to the plate heat exchanger, depending on water quality. To remove these scales, therefore, a periodical cleaning using cleaning agent is required.

Ensure that the water flow is in the application range. If the flow is too low, scale adsorption will occur so as to reduce unit performance, cause anti-freezing protection sensor action, or gas leakage caused by rust corrosion. If the water flow is too high, impact corrosion will occur.

An expansion tank has been equipped with the water system upon factory delivery to adapt to the water pressure fluctuation resulting from water temperature change in the water supply system.

An insulated water tank of proper volume is recommended to avoid unit frequently start and stop during too low of the load.

Be sure to set an automatic exhaust valve at the highest point of the water system, and set a proper drain valve at the lowest point of the water system.

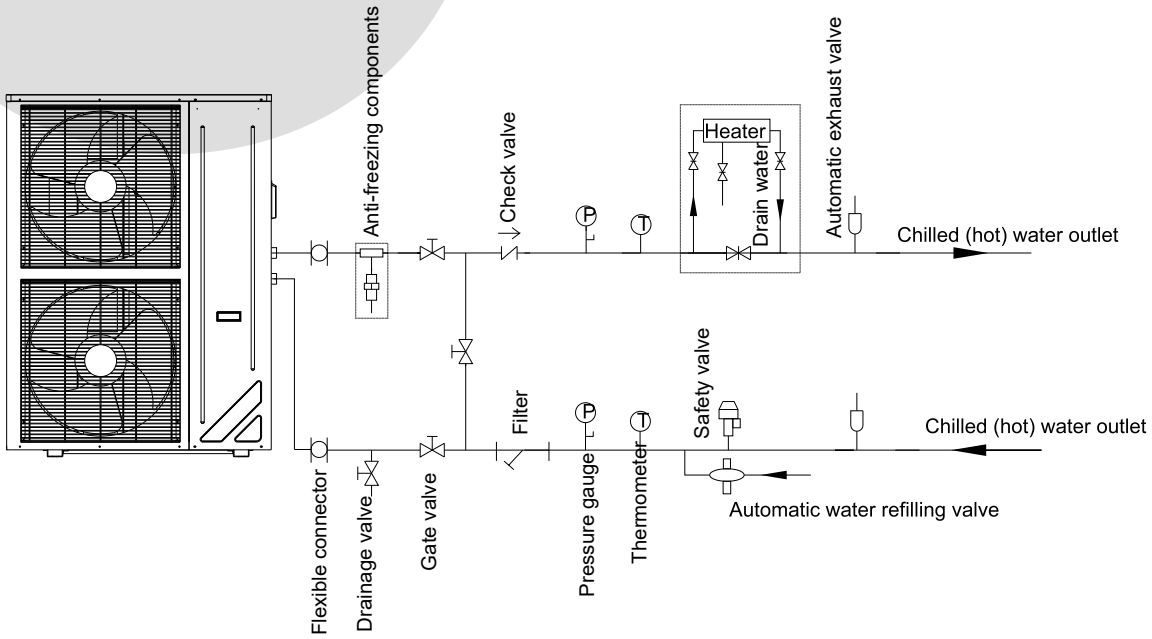
Take insulation measures for the water pipe to prevent heat loss and water condensation.

For water system installation, please see the water system installation diagram. Refer to the design drawings from the design institute for specific installation construction.

Install the Y-shaped water filter equipped with the unit (water filter is supplied by factory.) on the water return pipe. Clean the filter mesh after commissioning.

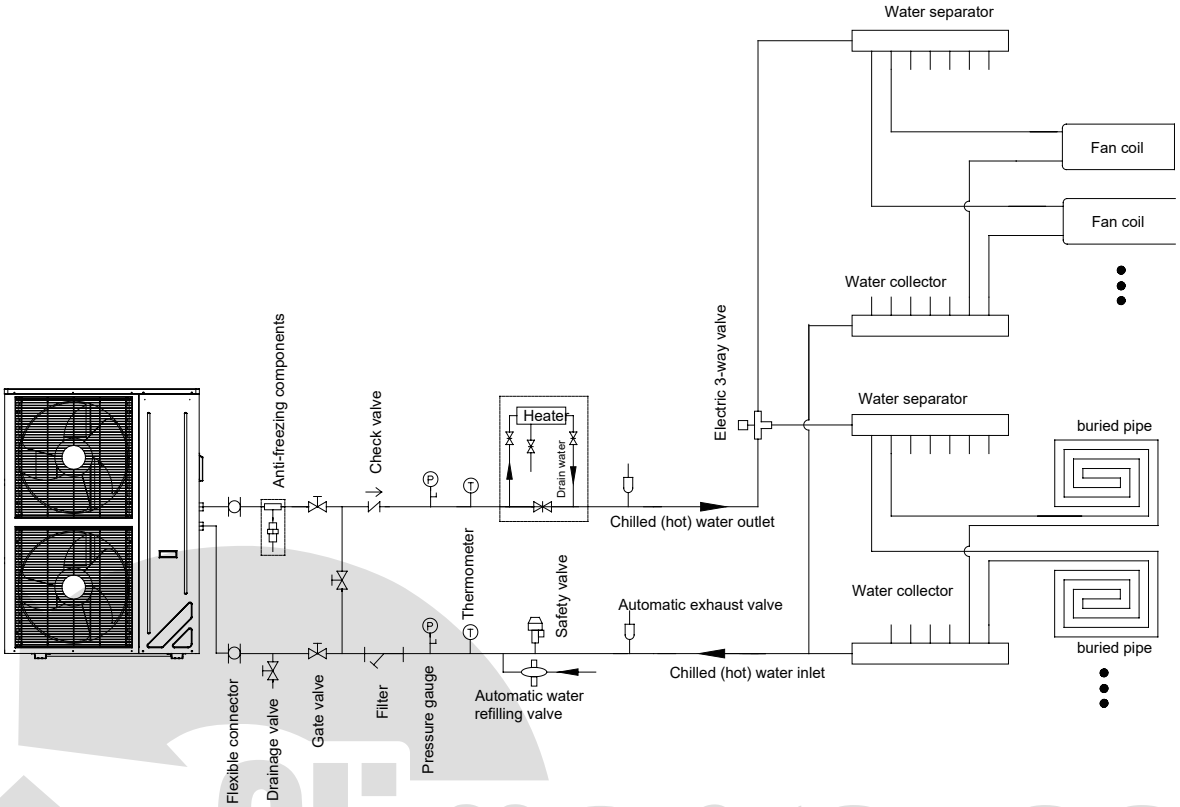
Before injecting water, ensure that there are not sand, pebbles, rusty iron, welding slag or other foreign materials in the pipes to prevent damaging the heat exchanger. When flushing the water supply system, bypass the master unit and the end-side heat exchanger with bypass valves.

Water system installation diagram for a single unit

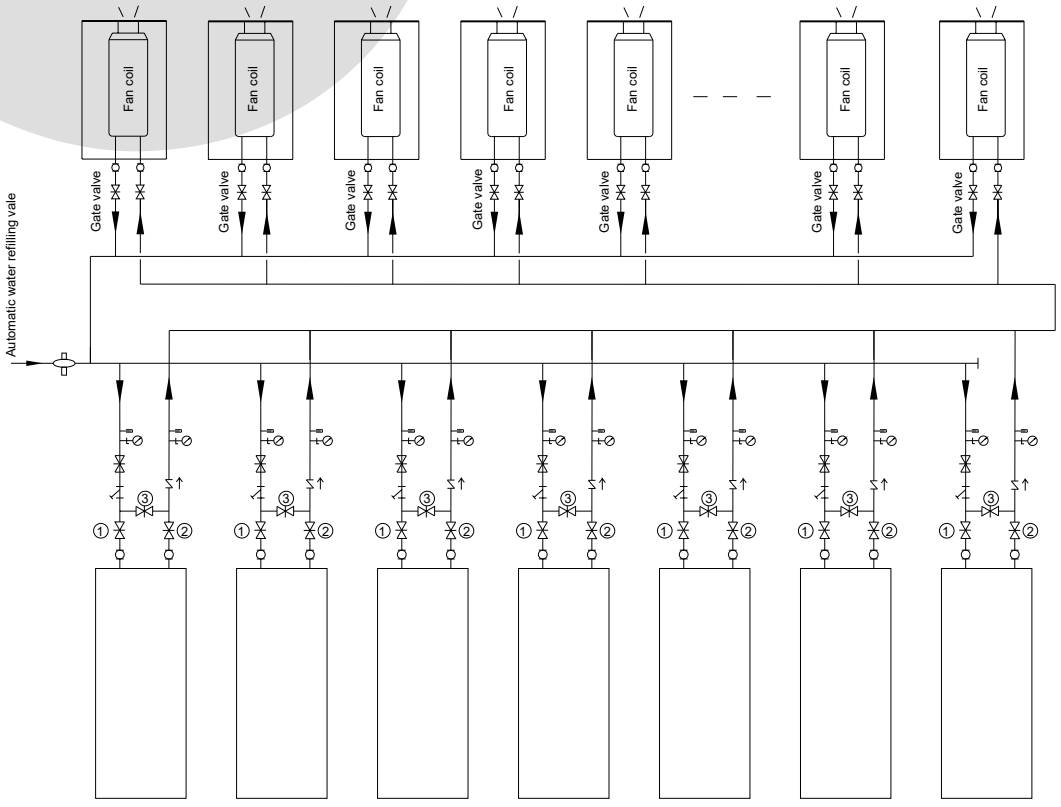


Note: When the ambient temperature is lower than 0°C, keep the unit in power-on status. If the unit is powered off for more than 3 hours, use drainage valves to directly drain off water from the system to avoid frost cracking of water-side heat exchanger and pipes.

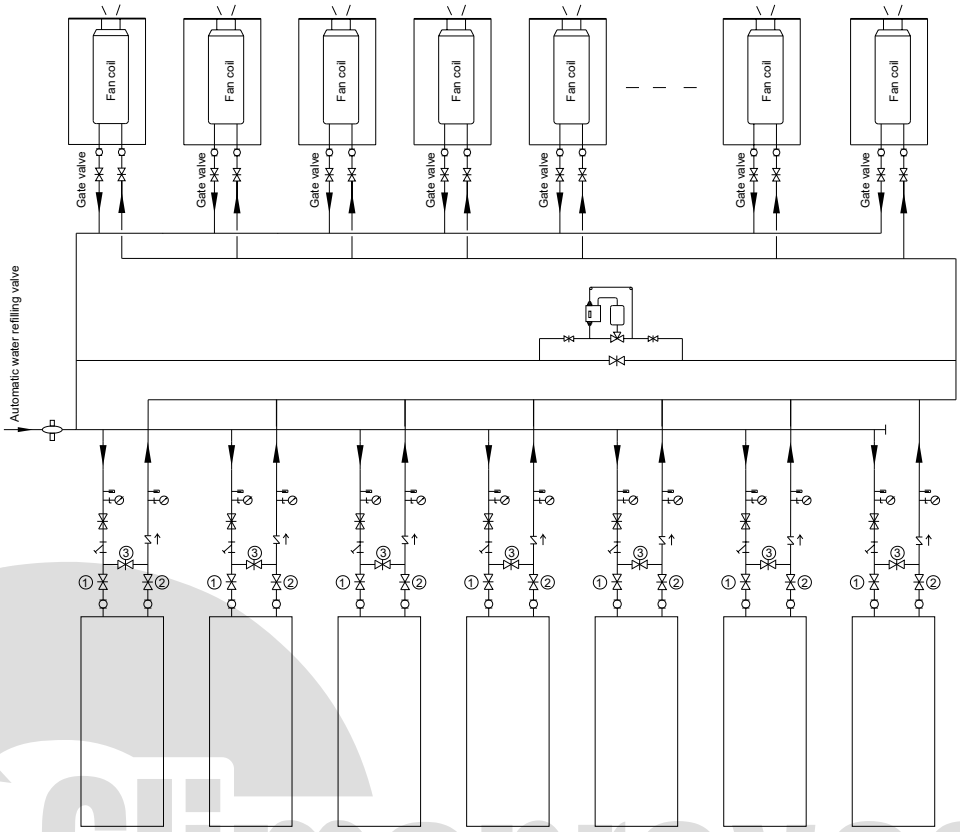
Water system installation diagram for a single unit with water distributors/collectors



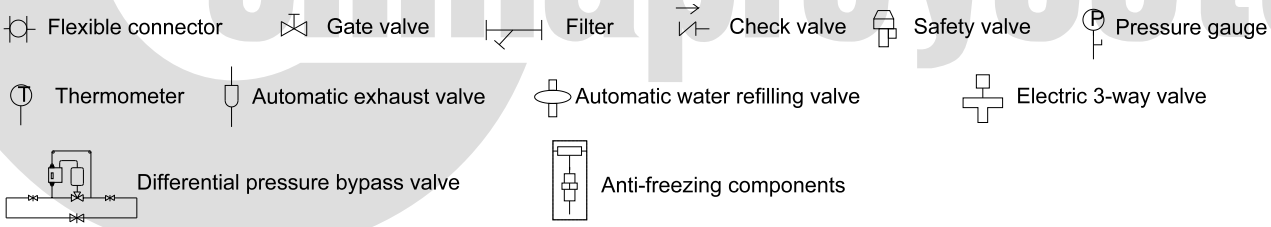
Multiple module unit combinations: reference diagram of constant flow rate of water system adjusting indoor temperature by adjusting end air flow of air-conditioner.



Multiple module unit combinations: reference diagram of variable flow rate water system adjusting indoor temperature by adjusting flow rate of chilled water.



Legends in systematic diagram:



Total dimension for the pipes of module combinations:

Refer recommended water speed in table 1 in chapter Hydraulic calculation and pipe system to decide main pipe size.

CAUTION:

(1) When cleaning the water system, close all the gate valves as shown in position 1 and 2. Open the 3 valve to bypass the units to avoid foreign matters in water system entering the plate of units, which may influence the efficiency of heat exchange and life expectancy of the plate.

(2) If two or more units are combined, it is recommended to install a reserved return system for the water system. If a direct return system is adopted, it may cause uneven water flow distribution of units, thus affecting operation of units. In addition, differential pressure bypass valves should be added to balance the pressure of the water system.

(3) The areas with the ambient temperature lower than 0°C can be configured with anti-freezing components, which should be installed at the water outlet side. To facilitate drainage, customers need to install drainage hoses.

Hydraulic calculation and pipe system

Pipe design for the air-conditioning system

- The pipes of an air conditioning system must have sufficient transportation capacities. For example, the water system must ensure that the water flowing through the air conditioning unit or fan coil reaches the rated flow rate to ensure that the unit works properly.
- Deploy pipes properly. Use pipes with reverse return if possible. Although the initial investment is increased a little, the water flow in the system is more stable. If pipes have no reverse return design, pressure between branch pipes must be balanced in the design process.
- When determining the diameters of pipes, ensure that the transportation capacity is sufficient, the resistance and noise is minimal, and that the unit works economically. A larger pipe diameter requires more investment, but the flow resistance is smaller, the circulation pump consumes less energy, and the operation cost is smaller. Therefore, a balance needs to be achieved between the operation cost and investment by designing the pipe diameter properly. Avoid a large water flow with small temperature variation to ensure that the pipe system is economical.
- In the design process, calculate water resistance accurately to ensure that water pressures between circuits are well balanced and that the air conditioning system works with the best water and thermal conditions.
- The pipe system of an air conditioning system must meet the adjustment requirements for partial workload.
- The pipe system of an air conditioning system should use energy saving technologies whenever possible.
- Pipes and accessories of the pipe system must meet the related requirements.
- The design of the pipe system must facilitate maintenance, operation, and adjustment.

* Determining the diameter of pipes in the air conditioning system

The pipe diameter is determined based on the following: $d = \sqrt{\frac{4m_w}{3.14v}}$

mw: water flow m^3/s
v: water speed m/s

The water speed should be determined by the recommendations in the first table and design the water pipe diameters accordingly, or you can determine the water pipe diameter based on water flow in the second table.

Table 1: Recommended water speed (m/s)

Diameter (mm)	12	20	25	32	40	50	65	80
Closed water system	0.4 - 0.5	0.5 - 0.6	0.6 - 0.7	0.7 - 0.9	0.8 - 1.0	0.9 - 1.2	1.1 - 1.4	1.2 - 1.6
Open water system	0.3 - 0.4	0.4 - 0.5	0.5 - 0.6	0.6 - 0.8	0.7 - 0.9	0.9 - 1.0	0.9 - 1.2	1.1 - 1.4
Diameter (mm)	100	125	150	200	250	300	350	400
Closed water system	1.3 - 1.8	1.5 - 2.0	1.6 - 2.2	1.8 - 2.5	1.8 - 2.6	1.9 - 2.9	1.6 - 2.5	1.8 - 2.6
Open water system	1.2 - 1.6	1.4 - 1.8	1.5 - 2.0	1.6 - 2.3	1.7 - 2.4	1.7 - 2.4	1.6 - 2.1	1.8 - 2.3

Table 2: Pipe diameter and resistance loss in unit length

Diameter of the steel tube (mm)	Closed water system		Open water system	
	Water flow (m^3/h)	kPa/100m	Water flow (m^3/h)	kPa/100m
15	0 - 0.5	0 - 60	--	--
20	0.5 - 1.0	10 - 60	--	--
25	1.0 - 2.0	10 - 60	0 - 1.3	0 - 43
32	2.0 - 4.0	10 - 60	1.3 - 2.0	11 - 40
40	4.0 - 6.0	10 - 60	2.0 - 4.0	10 - 40
50	6.0 -11.0	10 - 60	4.0 - 8.0	--
65	11.0 -18.0	10 - 60	8.0 - 14.0	--
80	18 - 32	10 - 60	14 - 22	--
100	32 - 65	10 - 60	22 - 45	--
125	65 - 115	10 - 60	45 - 82	10 - 40
150	115~185	10 - 47	82 - 130	10 - 43

Note: Parameters in the preceding table may vary based on the design manual. For details, see the «HVAC Design Manual».

Water storage tank volume calculating

Unit water system minimum water volume must meet below value:

Model	Min water volume /L	Model	Min water volume /L	Model	Min water volume /L
UAL040ER5	81	UAL070ER5	142	UAL120ER5	187
UAL050ER5	101	UAL090ER5	176	UAL150ER5	226
UAL060ER5	115	UAL100ER5	165		

Wired controller instruction

Display interface

The following table lists icons and their meanings:

Icon	Meaning	Icon	Meaning
	Cooling mode		Alarm
	Heating mode		Water pump
	Hot water mode	PWD	Password
	Floor heating mode	AM	Morning
SET	Setting	PM	Afternoon
A/C WATER	Air conditioning water temperature	ON	Timer power-on
HOT WATER	Hot water temperature	OFF	Timer power-off
	Clock		Locking
	Defrosting	MEMO	Automatic startup after power restoration
	Silence		Low battery

Function overview

- Power-on/off control
- Mode setting
- Temperature setting
- Switching common temperature types
- Error code display
- Clock setting
- Timer setting
- Automatic startup after power restoration
- Low-noise mode setting
- Password input
- Manual defrosting
- Low battery reminder
- Locking
- Energy-saving mode setting
- Floor heating mode enabling
- Water pump mode setting

Number of controller keys

Five keys: “Menu” key, “Mode” key, “ON/OFF” key, “Plus” key, and “Minus” key.

Menu	Mode	ON/OFF	Plus	Minus

Description of controller functions

■ **Power-on/off control**

In power-on status, press “ ” to enter the power-off status. In power-off status, press “ ” to enter the power-on status.

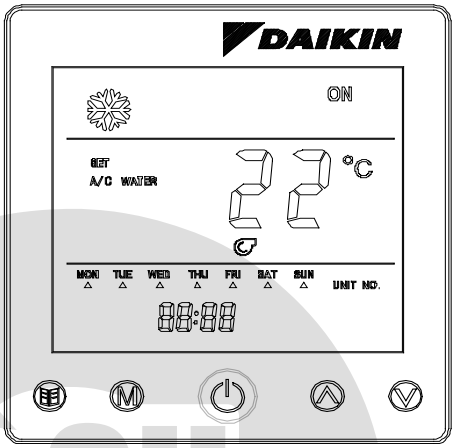


Figure: Power-on status

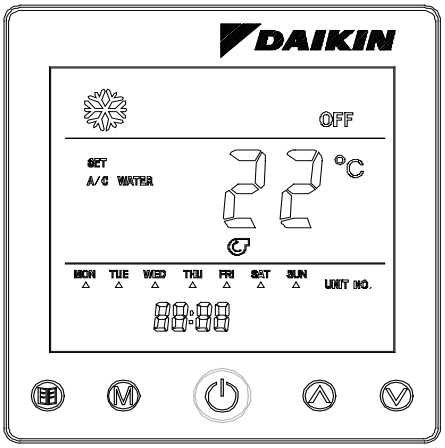
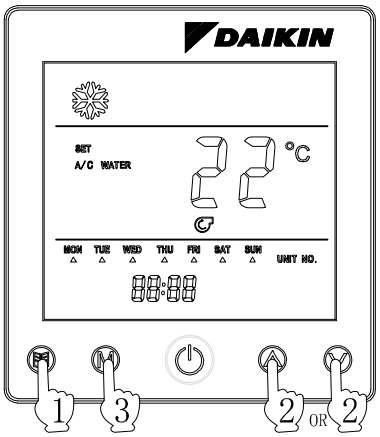


Figure: Power-off status

■ **Mode setting**

In power-off status, press “ ” to switch the mode as follows: Cooling → Heating → Hot water → Floor heating → Automatic in summer (+) → Automatic in winter (+) → (The specific modes are determined by logics of the unit.)

Note: To run the floor heating mode, set this mode for the master unit and enable this mode on the wired controller.



■ **Temperature setting**

Press “ ”, and then press “ ” or “ ” to make “**Setting**” and “**Air Conditioning Water Temperature**” or “**Hot Water Temperature**” blink. Press “ ” to enter temperature change. Press “ ” or “ ” to adjust the temperature, and then press “ ” to save the change.

■ **Switching between preset temperature and actual temperature**

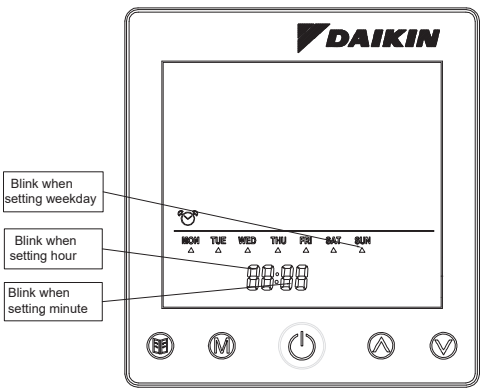
Press “ ” or “ ” to switch between preset temperature and actual temperature.

■ **Error code display**

When failure occurs, “ ” blinks and the corresponding error code is displayed.

■ **Clock setting**

Clock setting allows you to set the weekday, hour and minute.



■ **Weekday setting**

Press and hold " ", and then press " " or " " to make " " blink. Press " " to enter clock setting (now "**Weekday**" starts to blink). Press " " to enter weekday setting and press " " or " " to set the weekday. Press " " to save weekday setting and enter hour setting.

■ **Hour setting**

When the hour part starts to blink, press " " or " " to adjust the hour. Press " " to save hour setting and enter minute setting.

■ **Minute setting**

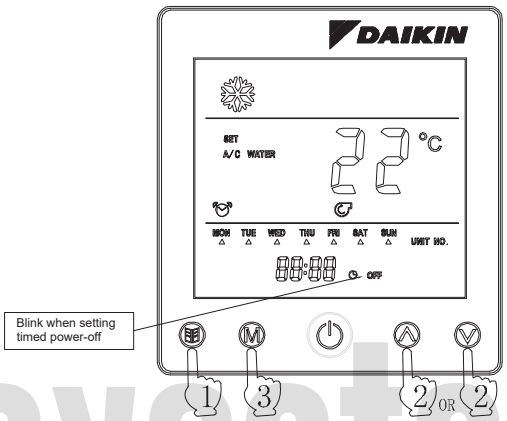
When the minute part starts to blink, press " " or " " to adjust the minute. Press " " to save minute setting and thus clock setting finishes.

■ **Timer setting**

Timer setting allows you to set timed power-on and timed power-off four times every day. To cancel timer setting, set timed power-on/off to 00:00.

■ **Timer power-on setting**

Press and hold " ", and then press " " or " " to make " ON" flash. Press " " to enter timed power-on setting (now "**Weekday**" starts to blink). Press " " or " " to select a weekday, and then press " " to save weekday setting and enter power-on times setting (now the number of times starts to blink). Press " " or " " to set the number of times, and then press " " to enter power-on time setting. Set it in the same way as clock setting.



■ **Timer power-off setting**

Press and hold " " to make "Unit No." blink. Press " " or " " to make "" blink. Press " " to enter timed power-off setting. Set it in the same way as timed power-on setting.

■ **Canceling timer setting**

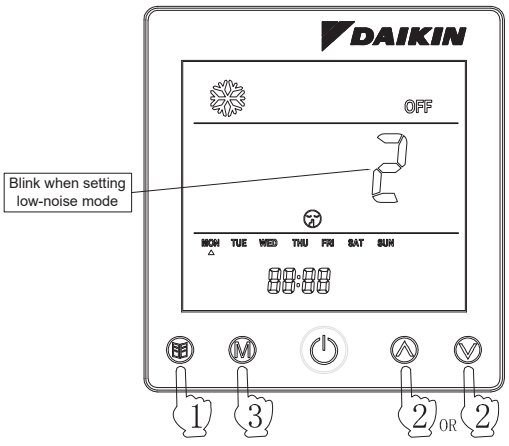
1. To cancel a timed action, set the time for this action to 00:00.
2. To cancel all timed actions, press and hold " " + " " at the same time.

■ **Automatic startup after power restoration**

When the function of automatic startup after power restoration is set on the unit, the wire controller displays "MEMO".

To set this function on the wire controller:

1. Press " ", and then press " " or " " to make " MEMO" blink.
2. Press " " to enter this setting.
3. Press " " or " " to switch parameter values. Press " " to save a value. When the parameter value is 1, it indicates this function is enabled; when the parameter value is 0, it indicates this function is not enabled.



■ **Low-noise mode setting**

When the function of low-noise mode is set on the unit, the wire controller displays "".

To set this function on the wire controller:

Press " ", and then press " " or " " to make " " blink. Press " " to enter low-noise mode setting. Press " " or " " to select a low-noise mode, and then press " " to save.

Note:

1. Only when the mode value is set to 1 or 2, " " will be displayed after exiting setting.
2. The value 0 indicates no low-noise mode, 1 indicates nighttime low-noise mode, and 2 indicates all-day low-noise mode.

■ **Password input**

Press and hold " ", and then press " " or " " to make "Password" blink. Press " " to enter password input status. Press " " or " " to change the password, and then press " " to save.

■ **Manual defrosting**

Press " " after inputting the password. Press " " or " " to make " " blink, and then press " ". Press " " or " " to select a parameter value. When the value is set to 1, the wire controller will send a manual defrosting direction to the unit.

Note:

1. When " " is displayed, it indicates that the air conditioning system is defrosting.
2. Manual defrosting can be set only when the unit is powered on in heating mode.

■ **Low battery reminder**

When the battery level of the wire controller is low, " " will be displayed.

■ **Backlight display**

1. When the wire controller incurs key actions, the backlight will go on.
2. If there are not any operations on the wire controller for 10 seconds, the backlight will go out.

■ **Wire controller locking**

Press and hold " " to enter or exit the locked status. In locking status, " " is displayed.

Note: When the wire controller is in locked status, power-on/off actions cannot be performed. When you press a key, the icon will blink and a long beeping sound will occur.

■ **Unit No. setting**

By default, "**Unit No.**" and the corresponding number are not displayed. To set the unit No.:

1. Press and hold " ".
2. Press " " or " " to make "**Unit No.**" blink.
3. Press " " to enter unit No. setting. Press " " or " " to select a unit No.

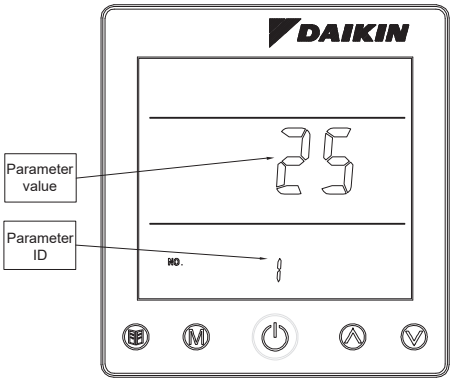
Note: If you exit the unit No. setting status when "--" is displayed, "**Unit No.**" and the corresponding number will not be displayed and the unit No. is set to FF (master unit), as shown in the following figure:

■ **Parameter query and setting**

Parameter query and setting can be used only after you input the service password.

1. Press " " to enter the parameter query and setting status. Only the parameter ID and parameter value are displayed.
2. Press " " or " " to adjust the parameter value.
3. Press " " to enter parameter value modification. Press " " or " " to modify the parameter value.
4. Press " " to save the modification.

Note: If there are not any operations on the wire controller after you input the service password, you need to input the service password again to enter the parameter query and setting status.



■ **Energy-saving mode setting**

When the unit operates in energy-saving mode, " " is displayed on the wire controller.

To set the energy-saving mode on the wire controller:

1. Press " ", and then press " " or " " to make " " blink.
2. Press " " to enter energy-saving mode setting.
3. Press " " or " " to switch parameter values. Press " " to save a value. When the parameter value is 1, it indicates the unit operates in energy-saving mode; to exit the energy-saving mode, set the parameter value to 0.

■ **Floor heating mode enabling**

When the unit requires operating in floor heating mode, enable the floor heating mode on the wire controller as follows:

1. Press " ⊞ ", and then press " ∧ " or " ∨ " to make "⌂" (to the right of " MEMO ") blink.
2. Press " M ".
3. Press " ∧ " or " ∨ " to switch parameter values. Press " M " to save a value. When the parameter value is 1, it indicates the floor heating mode is enabled and can be selected on the wire controller; to exit the floor heating mode, set the parameter value to 0.

■ **Water pump mode setting**

To set the water pump mode on the wire controller:

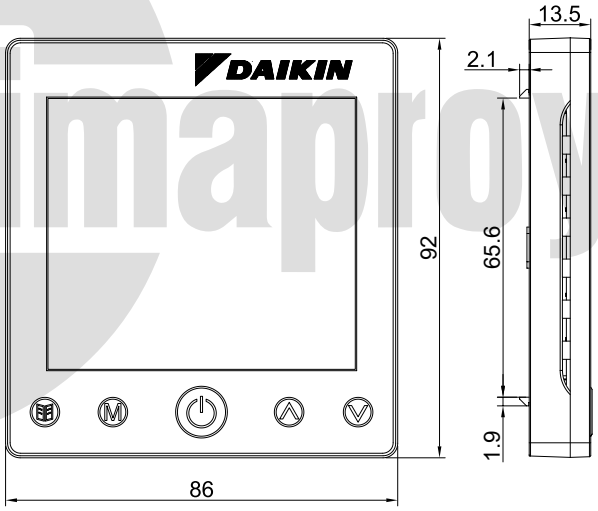
1. Press " ⊞ ", and then press " ∧ " or " ∨ " to make " " blink.
2. Press " M ".
3. Press " ∧ " or " ∨ " to switch parameter values. Press " M " to save a value. When the parameter value is 1, it indicates the water pump mode is enabled and " " always blinks; to exit the water pump mode, set the parameter value to 0.

■ **Others**

1. When setting a function, press " ⊞ " to immediately exit the current action.
2. If there are not any valid operations within 10 seconds during setting, the wire controller will exit the current action and return to the idle status.
3. When the air conditioning water pump is enabled, " " will be displayed.

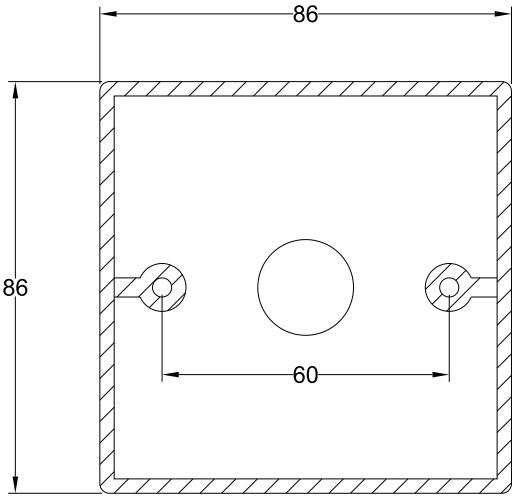
Controller installation

Dimensions:



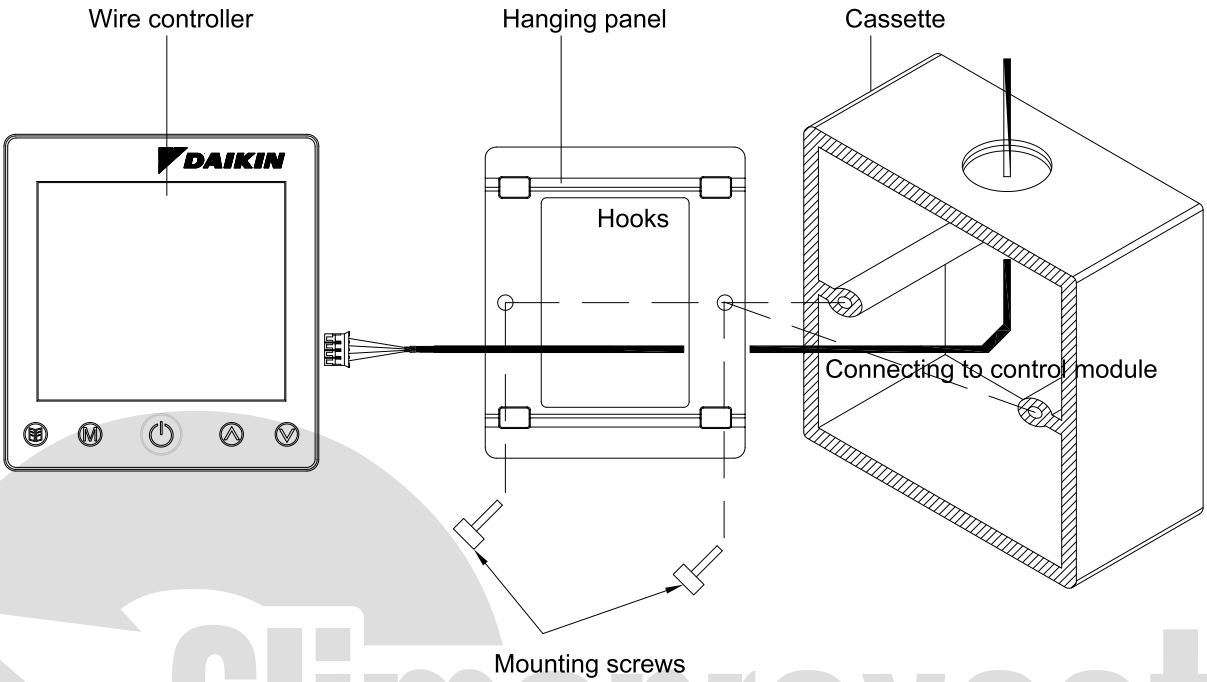
Unit: mm

The MC324 wire controller shall be installed with a standard 86 mm cassette:



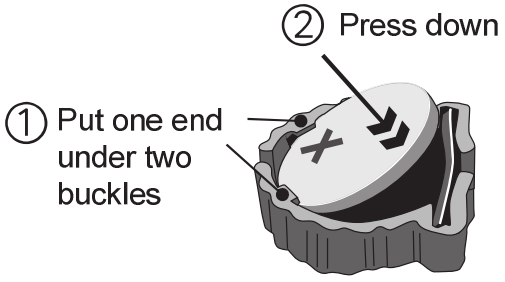
Unit: mm

(1) Remove the hanging panel from the wire controller and fix it to the cassette with mounting screws.
(2) Connect wires of the wire controller and buckle mounting holes at the back of the wire controller with hooks of the hanging panel.
See the following installation diagram:



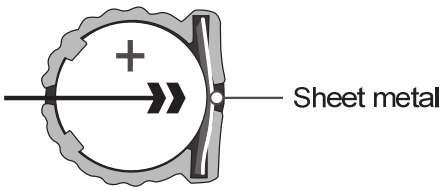
Note: The wired controller is delivered without battery, battery CR1220 3V * 1 shall be purchased locally and installed on site, please refer to following instruction.

Installing the battery



Place one end of the battery under the two buckles, with the positive electrode upward, and then press down the other end to horizontal position.

Removing the battery



Push the metal sheet along the direction indicated by the arrow. Then, the battery pops up automatically.

Commissioning and operation

Check items before test run

CAUTION: In order to protect the equipment, you should check the following before attempting test run. It would also be a good idea to read “Safety Precautions” once more before starting.

- Is the water pump interlock circuit connected?
  Control the starting/stopping of the pump through the pump output on PCB controller. Otherwise, the heat exchanger may crack due to frost!
  Ensure the interlock contacts of the pump are voltage-free contacts. If there is voltage loop, the control components of the units may be damaged.
- To start the unit for the first time or restart it after long-time shutdown, turn the power supply to “ON” at least 12 hours ahead for heating up the crankcase to ensure the compressor operates smoothly.
- Is the water pump filled with water?
  If not, open the water supply faucet and fill the water system with water, while purging air.
- Check electric connection of the unit. Check whether power lines are of correct diameter and correctly connected, and whether grounding lines are firmly connected.
- Before test run, clean the water system to ensure there are not any pollutants in the piping. For details about the cleaning method, see “Water quality control”.
- Ensure that the scope of application does not exceed the operating scope of the units.

Check items after test run

After the unit runs in stable state, check the following items:

S/N	Inspection item	Inspection method	Reference
1	Power voltage	Voltmeter	220V±10%;380±10%
2	Operating current of a single compressor	Galvanometer	13~30A
3	Operating current of a single fan	Galvanometer	1.5~5A
4	Inlet water temperature in cooling operation	Thermometer	15~20°C
5	Outlet water temperature in cooling operation	Thermometer	6~15°C
6	Inlet water temperature in heating operation	Thermometer	30~45°C
7	Temperature difference of inlet/outlet water	Thermometer	2~7°C
8	Discharge air temperature of the compressor	Thermometer	65~115°C
9	Low pressure in cooling operation	Pressure gauge	6.5~10.0bar
10	High pressure in cooling operation	Pressure gauge	22~41.5bar
11	Low pressure in heating operation	Pressure gauge	3.0~10.0bar
12	High pressure in heating operation	Pressure gauge	22~33bar

Note: The above references are only bases to judge whether the units onsite are in good condition. The maximum and minimum reference values are for maximum and minimum conditions. If the units exceed the reference values in stable operating, please consult the local dealer and DAIKIN.

Inspection and maintenance

CAUTION: Recheck the relevant safety precautions before inspection and maintenance.

CAUTION: The unit has been strictly tested and inspected before factory delivery. Customers shall perform periodical inspection and maintenance to ensure excellent performance.

- This unit shall be inspected and maintained by the personnel who have experienced professional cooling training. Check safety control components of the unit before the unit restarts.

Periodical inspection

- Clean the fin heat exchanger.
  To ensure working efficiency of the condenser and maximize heat exchange, keep the heat exchanger clean and get rid of any pollutants that may block heat exchanger fins such as leaves, cotton wool and insects. Clean by washing with water or steam-cleaning.
- Check the chilled water.
  Drop some water from the air or water purge plug.
  If the water is dirty, replace all the water in the system. (For details about the water quality requirements, see Water Quality Control.)
  Dirty water reduces cooling capability and causes corrosion of water heat exchangers and piping.
- Check if there is air in the water piping system.
  Even after air is purged at the beginning, air can still get inside the system. You should continue to purge air in the system from time to time.
- Clean the Y-shaped water filter in the water system.
- Refill the refrigerant and lubricant.
  Each unit is supplied with sufficient refrigerant and lubricant before delivery.
  In case of a normal system, no refrigerant or lubricant needs to be refilled and it is not allowed to randomly refill or replace the refrigerant or lubricant.
  If there is any need for refilling due to a leakage, refer to the refilling amount specified on the unit nameplate.

Maintenance

Routine check must be performed during operation of the unit to ensure the performance of the unit, which is the best method for avoiding unnecessary downtime and other wastes. Routine check is performed for the following items:

Items	Monthly	Quarterly	Semiannually	Annually	For consideration of needs
1. Compressor					
Evaluate performance and check whether there are abnormal noises	•				
Check whether connection lines are firm	•				
Check whether the current is abnormal (within 10%)		▲			
Check the discharge air temperature of the compressor		▲			
Detect the level of oil					▲
Check the color of lubricant					▲
2. Controller					
Check parameter settings			▲		
Check the protector			▲		
Check the time-delay protector			▲		
Check the phase sequence protector			▲		
Check the high/Low pressure switch					▲
Check the differential pressure switch and water switch					▲
Check the overload protector			▲		
Check the discharge air temperature protector			▲		
3. Plate heat exchanger					
Check water quality	•				
Clean plate heat exchanger					▲
Check seasonal protective measures (anti-freezing in winter)					▲
4. Fin heat exchanger					
Clean fin heat exchanger		▲			
5. Others					
Check whether the Y-type filter needs to be replaced or cleaned	•				
Check whether bolts of the unit are loose		•			

Remarks: The forgoing maintenance plans are supervisory only (for reference) and specific maintenance plans may be implemented according to different operation performance and areas.

Note: ● indicates items checked by users themselves, and ▲ indicates items checked by professional technicians.

Water quality control

Water quality requirements

Water in the water system must be softened to prevent scale in the heat exchanger and affecting the heat exchanger performance. Water not softened can also cause scale in the water pipes and cause the water resistance to increase. This affects the water flow and the performance of the water pump. Softened water must meet the following requirements.

Item			Base Value	Tendency	
				Corrosion	Scale Formation
Standard item	pH (25ºC)		7.5~9.0	O	O
	Conductivity (25ºC)	μS/cm	<800	O	O
	Cl^-	mg(Cl^-)/L	<200	O	
	SO_4^{2-}	mg(SO_4^{2-})/L	<200	O	
	Acid consumption (pH=4.8)	mg($CaCO_3$)/L	<100		O
	Full hardness	mg($CaCO_3$)/L	<200		O
	Free Cl_2	mg(Cl_2)/L	<1	O	
Reference item	Fe	mg(Fe)/L	<1.0	O	O
	S^{2-}	mg(S^{2-})/L	Not detectable	O	
	$NH4^+$	mg(NH_4^+)/L	<1.0	O	
	SiO_2	mg(SiO_2)/L	<50		O
Note: ○ indicates relevant factors that are inclined to corrosion or scale formation.					

In addition, since water in the water system is directly used by users, water quality must meet the requirements of local domestic water health standards.

Warning

- Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries., Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirmwith your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.

- Ask a qualifed installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.

- Use only those parts and accessories supplied or specifiedby Daikin. Ask a qualifiedinstaller or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.

- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any enquiries, please contact your local importer, distributor and/or retailer.

Cautions on product corrosion

1. The units should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the unit close to the sea shore, contact your local distributor.

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