

## Air Cooled Modular Chiller

Heat Pump	UAL-DR5 UAL-DRM5/DRS5
Cooling only	UAL-D5 UAL-DM5/DS5



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**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.

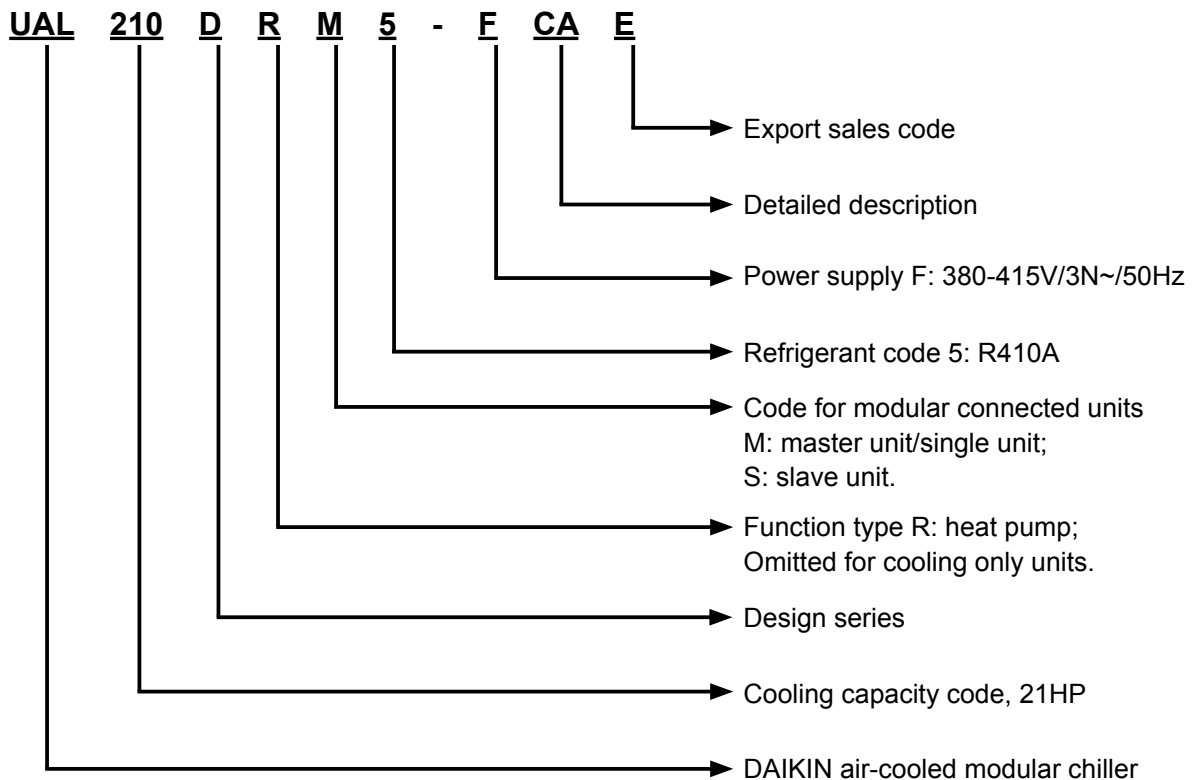
**Caution:** Sharp edges and coil surfaces are a potential injury hazard. Avoid contact with them.

**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 Name	Max Combination Qty	Capacity Range
Cooling only	UAL 210 D5	16	Cooling Capacity: 60KW-960KW
	UAL 230 D5		
Heat Pump	UAL 210 DR5	16	Cooling Capacity: 60KW-960KW
	UAL 230 DR5	16	Cooling Capacity: 64KW-1024KW
	UAL340DR5	16	Cooling Capacity: 100KW-1600KW
	UAL 450 DR5	16	Cooling Capacity: 130KW-2080KW

# Nomenclature



# Overview

DAIKIN UAL-D R410A series is a new generation of air-cooled chillers/heat pumps. They ideally combine the advanced and mature chiller technology. In addition, this series features outstanding performance, high capacity, low sound level, easy installation, and flexible system management, taking the lead in the global market.

# Features

## Refrigerant

DAIKIN is committed to protecting the global ecosystem and has developed air-cooled chiller/heat pump with R410A, a new type of refrigerant. Without chlorine, the R410A causes no harm to the ozone layer (ODP=0).

## Low Sound Level

Thanks to the newly designed spiral blades, the outdoor units feature smooth air flow, significantly reducing the turbulence and lowering the air flow sound level. Unique compressor sound-insulation design and fully hermetic volute compressor minimizes the operation noise. Moreover, unique Night Mode brings down nightly noise greatly and ensures you a sound sleep.

## Easy Installation

UAL-D series is designed to best facilitate user installation. The refrigerant system is made hermetic in the factory. Customers do not need to connect any copper pipe or refill refrigerant or invest more money for complex water systems.

## Multi-grade Modulation

UAL-D series features multi-grade modulation which can be transformed to multi-grade modulations in modular combinations. With operation grades controlled electronically, the unit exerts less shock to the power grid and saves more energy.

## Flexible module combination

1~16 sets with different capacity can be combined at will to satisfy the load selection requirements of various applications. When combined with UAL210/230 modular, UAL340 and UAL450 must be used as the master unit; the modular design of the unit allows the owner not to have to invest in the equipment at one time. The owner can increase the investment at any time with the development. The number of modular and the corresponding equipment greatly save the initial investment.

## Compact Size

Moreover, UAL-D series features compact size. Its dimensions and weight are significantly reduced. UAL R410 can be lifted without large lifting tools and located on the roof, balcony or any possible outdoor space.

## Reliable Operation

UAL-D series adapts modular design and one by one start, reducing the impact upon the grid when starting. All units have undergone strict and long-term test, ensuring reliable operation even under extreme hot/cold conditions. Units themselves, moreover, have multiple protections. The security of units is maximally guaranteed.

## High static pressure fan (50Pa optional, for UAL340 and UAL450)

It can meet the exhaust demand of the outdoor unit which shall be connected to the exhaust duct. The high static pressure fan can avoid the short circuit of airflow, and ensure the stable operation of the unit.

## Outstanding Performance

UAL-D series features leading-edge scroll technology and name-brand accessories which are strictly tested for high compatibility and reliability. Equipped with efficient scroll compressors and precise electronic expansion valves, these units feature high EER and COP, especially at partial load.

## Intelligent Control System

UAL-D features user-friendly intelligent control system. Micro chip and large-scaled LCD display are employed to make the control easy.

- Group control: One single controller can control a group made up by one master unit and maximum 15 slave units.
- BMS (Option): UAL-D provides port for BMS. One serial port can support maximum 31 gateway and one gateway can support one master unit and maximum 15 slave units.

### Basic Operating Mode

- Cooling
- Heating

### Parameter Setting

- Real time setting
- Weekly timing on/off (one on/off per day)
- Chilled water inlet temperature
- Hot water inlet temperature
- Anti-freezing/defrost temperature setting
- Defrost point A/B temperature setting

### Parameter Display

- Running status display
- Setted inlet temperature
- Actual inlet temperature
- Timing point
- Anti-freezing/defrost temperature

### Fault Alarm And Protection

- 13 protections and fault alarm functions
- Indoor controller lock

### Defrost Mode

- Auto defrost
- Manual defrost

### Memory Function

- Backup battery for realtime clock
- Customized parameters preservation after power failure

### Other Functions

- Error log inquiry
- Average compressor worn time
- Remote on/off
- Water system two-way valve control
- Auxiliary electric heating

#### NOTE:

- THE LENGTH OF COMMUNICATION WIRE BETWEEN THE MASTER UNIT AND THE WIRED CONTROLLER IS 40M. THE LENGTH OF COMMUNICATION WIRE ATTACHED TO THE SLAVE UNIT IS 5M.

# Specifications

## General Data - R410A

MODEL		C/O	H/P	C/O	H/P	H/P	H/P	
		UAL210D5	UAL210DR5	UAL230D5	UAL230DR5	UAL340DR5	UAL450DR5	
NOMINAL COOLING CAPACITY	Ton	17	17	18.5	19.1	28.3	36.8	
	kW	60	60	65	68	100	130	
NOMINAL HEATING CAPACITY	kW	--	64	--	66	100	130	
RATED POWER INPUT (COOLING)	kW	18.8	19.8	19.2	20.1	29.6	39	
RATED POWER INPUT (HEATING)	kW	--	20.5	--	20	29.9	40	
EER	Btu/h/W	10.9	--	11.5	--	--	--	
COP		3.19	3.01	3.39	3.38	3.38	3.33	
RATED RUNNING CURRENT (COOLING)	A	35.5	37.2	36.9	36.8	54.4	73.6	
RATED RUNNING CURRENT (HEATING)	A	--	38.2	--	36.7	55.8	39.8	
POWER SUPPLY	V/Ph/Hz	380-415V/3N~/50Hz						
REFRIGERANT	TYPE	R410A						
	CHARGE	kg/lb	17/37	17/37	17.2/37.9	17.2/37.9	28.2/62	32.4/71.3
WATER FLOW	COOLING	m <sup>3</sup> /h	10.3	10.3	11.2	11.7	17.2	22.4
	HEATING	m <sup>3</sup> /h	--	11	--	11.4	17.2	22.4
WPD (WATER PRESSURE DROP)	kPa	38	38	44	46	42	56	
UNIT DIMENSION	L × W × H	mm/in	1990 × 840 × 1840/78 × 33 × 72				2100×1100×2300/83×43×90	
PACKING DIMENSION	L × W × H	mm/in	2010 × 890 × 2010/79 × 35 × 79				2175×1150×2430/86×45×96	
NET WEIGHT	kg/lb	520/1145	540/1189	520/1145	515/1134	870/1914	990/2178	
GROSS WEIGHT	kg/lb	570/1256	590/1300	570/1256	565/1244	890/1958	1010/2225	
OPERATING WEIGHT	kg/lb	530/1167	555/1222	530/1167	525/1156	880/1936	1000/2202	

### NOTES:

1. THE SPECIFICATIONS GIVEN IN THE TABLE WILL BE SUBJECT TO THE MODIFICATIONS ON PRODUCT DESIGN BY THE MANUFACTURER.
2. NOMINAL COOLING CAPACITY CONDITION: LWT 7°C, WATER FLOW 0.172 [M<sup>3</sup>/(H·KW)], OUTDOOR TEMPERATURE 35°C.
3. NOMINAL HEATING CAPACITY CONDITION: LWT 45°C, WATER FLOW 0.172 [M<sup>3</sup>/(H·KW)], OUTDOOR DRY-BULB TEMPERATURE 7°C, WET-BULB TEMPERATURE 6°C.

## Components Data - R410A

MODEL		UAL210D5	UAL210DR5	UAL230D5	UAL230DR5	UAL340DR5	UAL450DR5	
EVAPORATOR	TYPE	BRAZED PLATE HEAT EXCHANGER						
	PLATE MATERIAL	STAINLESS STEEL						
	NOMINAL COOLING WATER FLOW	m <sup>3</sup> /h	10.3		11.2	11.7	17.2	22.4
	NOMINAL HEATING WATER FLOW	m <sup>3</sup> /h	--	11	--	11.4	17.2	22.4
	WATER VOLUME	L	6.56			10.97		
	PIPING CONNECTION	mm/in	Rc 2			Rc 2 1/2		
	UNIT WATER PRESSURE DROP	kPa/psi	38/5.5	38/5.5	44/6.4	46/6.7	42/6.1	56/8.1
CONDENSER COIL TUBE	MATERIAL	COPPER						
	TYPE	INNER GROOVE						
	OUTER DIAMETER	mm	9.52	9.52	9.52	7.94	7.94	7.94
FIN	MATERIAL	ALUMINUM						
	TYPE	WHITE	BULE	WHITE	BULE	BULE	BULE	
	ROWS	3						
	FIN PER INCH	16	16	16	13	14	14	
TOTAL FACE AREA	m <sup>2</sup> /ft <sup>2</sup>	3.43/36.9			7.13/76.7			
CONDENSER FAN	TYPE/DRIVE	BROAD WHEEL AXIAL FANS WITH LOW NOISE						
	QUANTITY	2						
	BLADE MATERIAL	GALVANIZED STEEL						
	MOTOR POLES	6						
	AIR VOLUME	m <sup>3</sup> /ft <sup>3</sup>	12000/7059			19500/11470	19000/11177	
COMPRESSOR	TYPE	HERMETIC SCROLL COMPRESSOR						
	QUANTITY	2			3	4		
REFRIGERANT	TYPE	R410A						
	CHARGE	kg	17	17	17.2	17.2	28.2	32.4
FLOW CONTROL	TYPE	EXV						
NUMBERS OF CIRCUITS		2						
OIL	MODEL	POE						
	CHARGE	L	3.25					
CASING	COLOUR	RAL 7032 PEBBLE GREY						
	MATERIAL	EG						
PROTECTION DEVICES		H/L PRESSURE SWITCH/THERMAL AND CURRENT OVERLOAD PROTECTOR						

NOTE: ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

## Electrical Data - R410A

MODEL			UAL210D5	UAL210DR5	UAL230D5	UAL230DR5	UAL340DR5	UAL450DR5
FAN MOTOR	RATED RUNNING CURRENT H/L	A	2.5/1.7				4.0/2.6	
	MOTOR OUTPUT	W	900				13000	
	POLES (H/L)		6/10				6	
FAN SPEED	H/L	RPM	780/477				930 / 750	
COMPRESSOR	RATED RUNNING CURRENT	A	19.22		20.8		20.8	
	LOCKED ROTOR AMP (LRA)	A	115		124		124	
IP/INSULATION GRADE			IPX4/F					
UNIT OPERATING CURRENT		A	35.5	36.0/37.2	36.9	36.8/36.7	54.3	73.6
UNIT MAX RUNNING CURRENT		A	44.5	45	47	47.7	78.1	99.8

**NOTES:**

- 1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
- 2) MAX RUNNING CURRENT IS TESTED UNDER BELOW CONDITION: COOLING OUTDOOR DRY-BULB TEMPERATURE 43°C; HEATING DRY-BULB TEMPERATURE 21°C, WET-BULB TEMPERATURE 15.5°C.
- 3) THE RATED RUNNING CURRENT AND POLES ARE TESTED IN THE HIGH SPEED AND LOW SPEED.

## Safety Devices

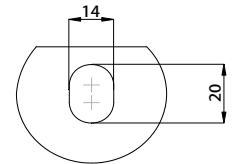
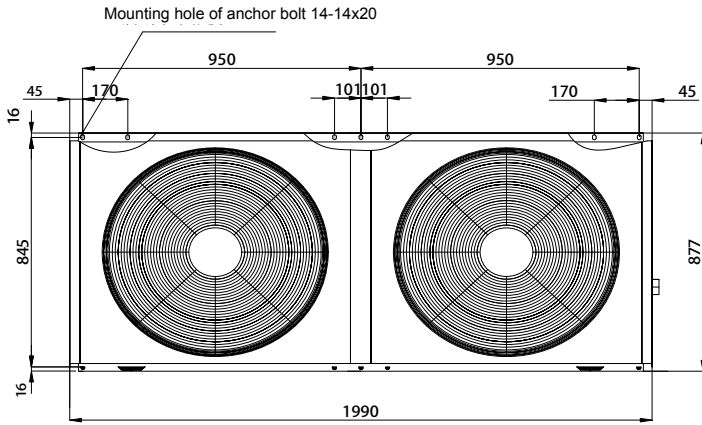
MODEL			UAL210D5	UAL210DR5	UAL230D5	UAL230DR5	UAL340DR5	UAL450DR5	
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE	PSW,H20PS						
		OPEN	MPa	4.15 ± 0.1					
		CLOSE	MPa	3.11 ± 0.1					
	LOW PRESSURE SWITCH	TYPE	N/A						
		OPEN	MPa	N/A					
		CLOSE	MPa	N/A					
	PHASE SEQUENCER		YES						
	DISCHARGE TEMPERATURE SETTING		°C/°F	130/266					

NOTE: ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

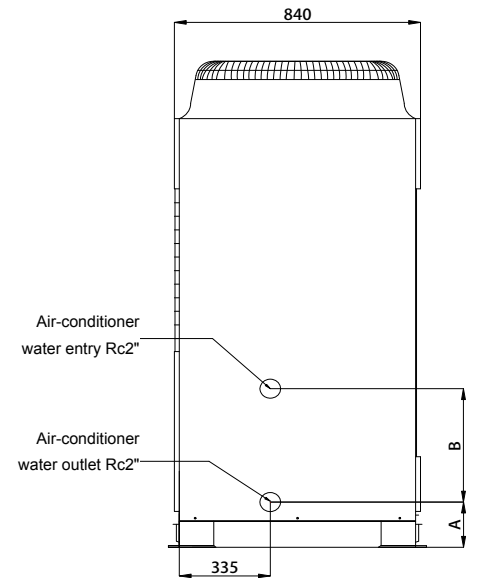
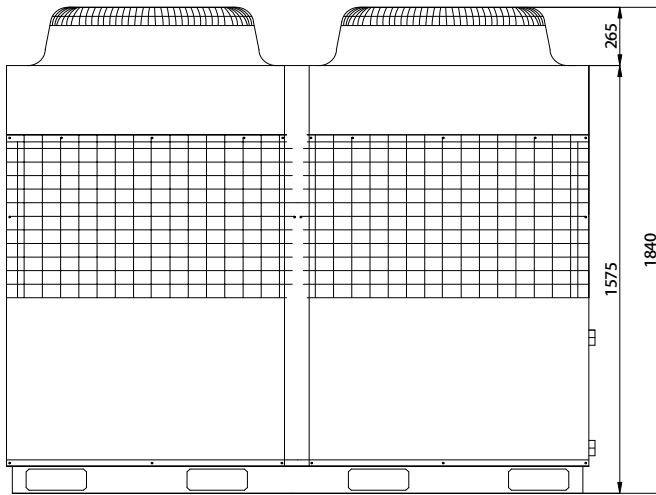


# Dimensions

Modular Air Cooled Chiller/Heat Pump  
 UAL210DM5/DS5 UAL210DRM5/DRS5  
 UAL230DM5/DS5 UAL230DRM5/DRS5



14x20 Enlarged drawing for Mounting hole of anchor bolt

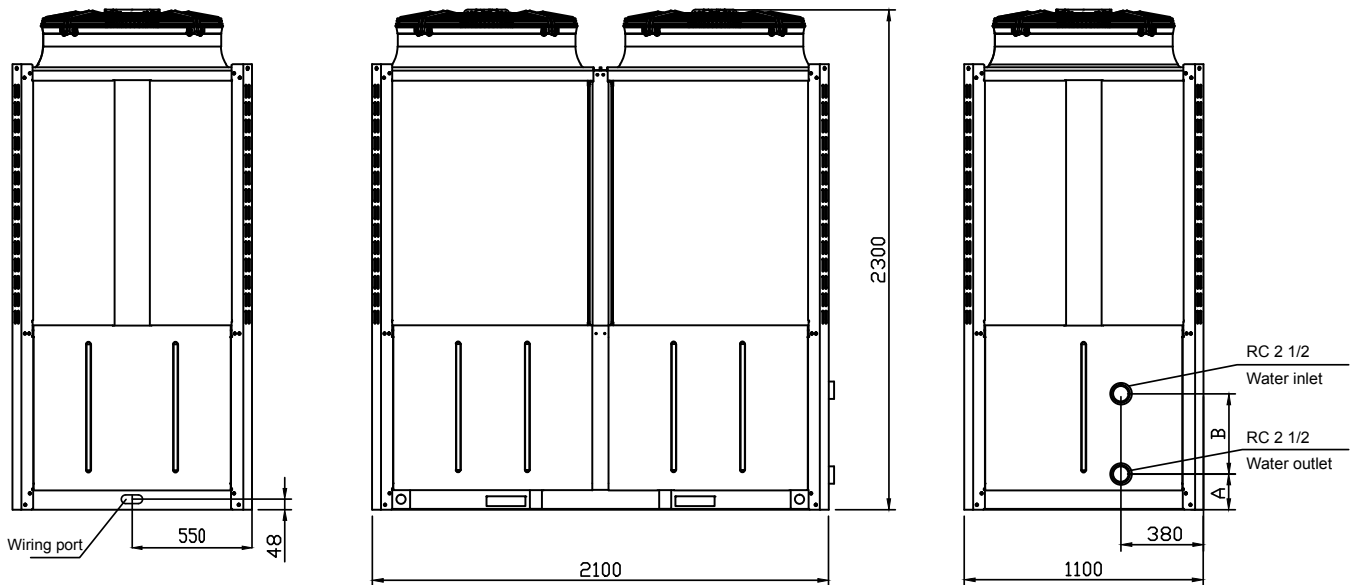
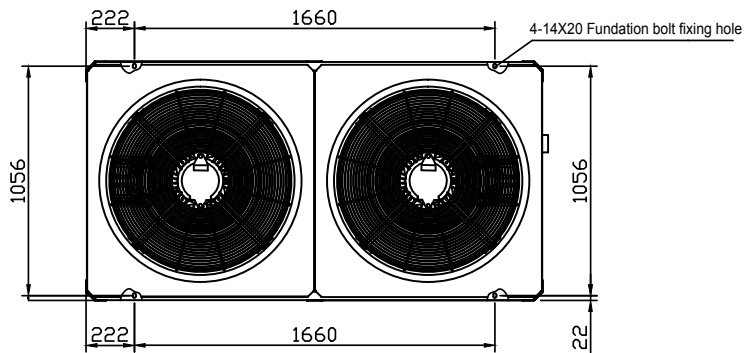


Unit: mm

Model	A (mm)	B (mm)
UAL210DM5/DS5	171	369
UAL210DRM5/DRS5		
UAL230DM5/DS5		
UAL230DRM5/DRS5		

# Modular Air Cooled Chiller/Heat Pump

UAL340DRM5/DRS5  
UAL450DRM5/DRS5



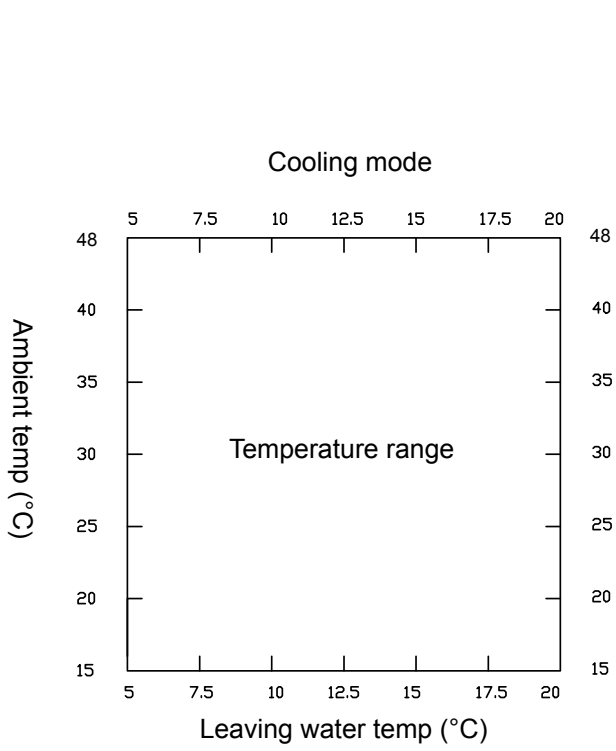
Model	A(mm)	B(mm)
UAL340 DRM5/DRS5	164	369
UAL450 DRM5/DRS5	160	390

Unit: mm

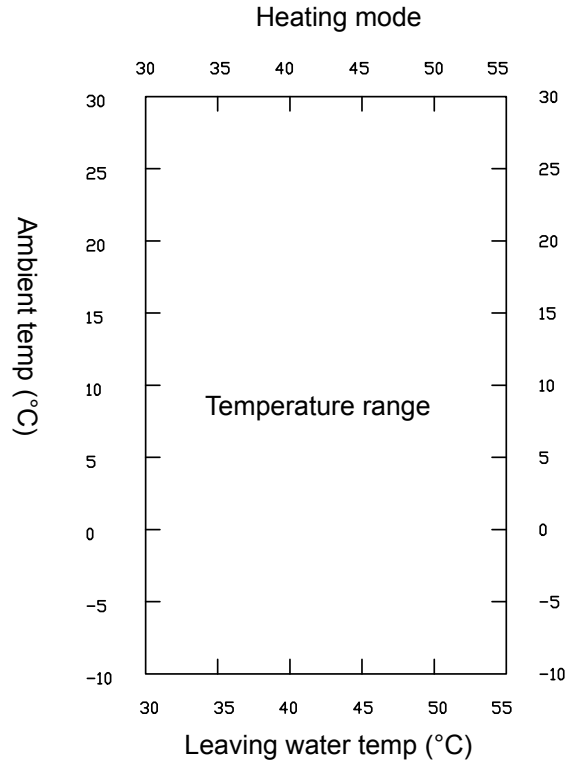
# Performance Data

## Operating Range

UAL210D5/DR5 UAL230D5/DR5

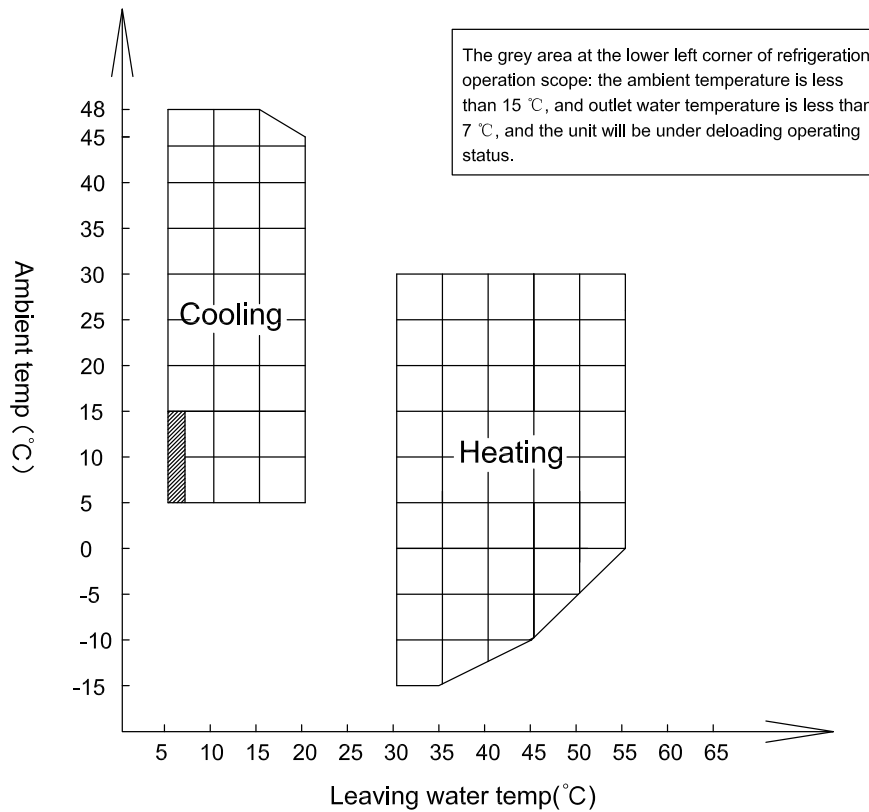


(Fig 1)



(Fig 2)

UAL340DR5 UAL450DR5



(Fig3)

# Cooling Capacity Performance Table

Model	Outlet water temp (°C)	Ambient temp. (°C)															
		15°C		20°C		25°C		30°C		35°C		40°C		45°C		48°C	
		Cooling capacity (kW)	Power Input (kW)	Cooling capacity (kW)	Power Input (kW)	Cooling capacity (kW)	Power Input (kW)	Cooling capacity (kW)	Power Input (kW)	Cooling capacity (kW)	Power Input (kW)	Cooling capacity (kW)	Power Input (kW)	Cooling capacity (kW)	Power Input (kW)	Cooling capacity (kW)	Power Input (kW)
UAL210D5	5	70.6	13.6	66.5	14.7	62.9	16	59.4	17.2	55.3	18.5	20.1	46.3	21.8	42.4	23.1	
	7	75	13.8	71	14.9	66.9	16.3	63.4	17.5	60	18.8	20.4	50.9	22.1	46.9	23.4	
	9	79.8	14.1	75.7	15.2	71.6	16.5	68.4	17.8	64.9	19	20.7	55.8	22.4	51	23.7	
	12	86.7	14.6	82.5	15.7	78.6	17	75	18.3	71.6	19.5	21.3	61.8	23	56.7	24.1	
	15	93	14.9	89.7	16.1	86.5	17.4	82.6	18.7	78.7	20	21.9	68	23.7	63.5	24.7	
	20	103.5	15.4	101.7	16.8	99.7	18.1	95.3	19.4	90.5	20.8	22.9	78.3	24.9	74.8	25.7	
UAL210DR5	5	67	14.6	65	15.7	62.9	16.7	59.8	18	56.3	19.4	21.1	47.4	22.9	42.8	24.3	
	7	71.3	15	69.3	16.1	67.3	17.1	64.1	18.4	60	19.8	21.6	50.9	23.3	46.4	24.9	
	9	75.8	15.5	73.8	16.5	71.2	17.5	67.9	18.7	64.2	20.2	22	54.7	23.7	50.3	25.1	
	12	83.2	16	81.3	16.9	78.8	18.1	75.5	19	70.6	20.7	22.4	60.8	24.1	56.3	25.5	
	15	91.1	16.6	89.4	17.6	86.6	18.6	82.9	19.7	78.3	21.1	22.9	67.7	24.7	62.4	26	
	20	104.2	17.8	102.8	18.7	99.8	19.4	95.2	20.8	91.1	21.9	23.7	79.2	25.6	72.6	26.8	
UAL230D5	5	72.5	14.2	70.3	15.2	68.1	16.2	64.7	17.4	60.9	18.8	20.5	51.3	22.2	46.3	23.6	
	7	77.2	14.6	75	15.6	72.8	16.6	69.4	17.8	65	19.2	21	55.1	22.6	50.2	24.1	
	9	82	15	79.9	16	77.1	17	73.5	18.1	69.5	19.6	21.3	59.3	23	54.4	24.3	
	12	90.1	15.5	88	16.4	85.3	17.5	81.7	18.5	76.4	20	21.7	65.8	23.4	60.9	24.8	
	15	98.6	16.1	96.7	17.1	93.8	18	89.7	19.1	84.7	20.5	22.2	73.3	23.9	67.6	25.2	
	20	112.8	17.1	111.2	18.3	108	18.8	103	20.1	98.5	21.3	23	85.8	24.7	78.8	25.9	
UAL230DR5	5	75.6	15	71.6	16	67.7	17	65	18.4	62.2	19.7	21.7	52.1	23.6	49	24.8	
	7	80.2	15.5	76.5	16.4	72.9	17.4	70.4	18.8	68	20.1	22	56.1	24	52.5	25.1	
	9	84.9	15.9	81.3	16.9	77.7	17.9	75	19.2	72.3	20.6	22.5	60.4	24.4	56.8	25.5	
	12	92	16.6	88.4	17.6	84.8	18.5	81.8	19.9	78.8	21.3	23.2	66.8	25	63.2	26.2	
	15	98.4	17.3	95.1	18.2	91.8	19.1	88.7	20.6	85.5	22	23.9	73.4	25.7	69.8	26.9	
	20	106.7	17.9	104	18.8	101.3	19.8	98.6	21.3	96	22.9	24.6	82.6	26.3	78.6	27.4	
UAL340DR5	5	119.9	20.5	113.6	22.1	105.5	25.5	99.4	27.6	94.1	30	32.7	78.6	35.6	73.8	37.7	
	7	126.4	21.4	121.5	23	111.8	26	106.5	28.2	100	30.4	33.1	86.1	36	81.3	37.9	
	9	132.7	22.3	127.1	23.9	118.7	26.8	113.4	28.7	107.5	31	33.5	93.4	36.3	88.6	38.2	
	12	141.5	23.6	136.2	25.1	128.7	27.6	123.2	29.5	116.5	31.7	34.1	103.8	36.8	99.1	38.6	
	15	150	24.9	145	26.2	137.3	28.7	132.5	30.4	126.9	32.4	34.7	113.3	37	-	-	
	20	163.4	27	158.1	28.1	150.2	29.6	146.5	31.7	142	34.2	35.7	128.5	38.1	-	-	
UAL450DR5	5	151.5	27.7	146.3	29.4	136.6	33	130	35.4	122.2	38.3	41.7	103.3	45.5	96.7	48	
	7	161.9	28.5	155.9	30.2	145.2	33.7	138.2	36.1	130	39	42.3	110.1	46.1	103.3	48.6	
	9	172.7	29.4	165.7	31	154.2	34.5	146.7	36.9	138	39.7	43	117.3	46.8	110.1	49.2	
	12	189.3	30.8	181	32.4	168.1	35.7	159.9	38.1	150.6	40.9	44.1	128.5	47.8	120.9	50.3	
	15	206.5	32.3	196.8	33.8	182.6	37.1	173.7	39.4	163.7	42.2	45.4	140.3	49	-	-	
	20	236.5	35.1	224.6	36.5	208.1	39.6	198.2	41.9	187	44.6	47.7	161.3	51.3	-	-	

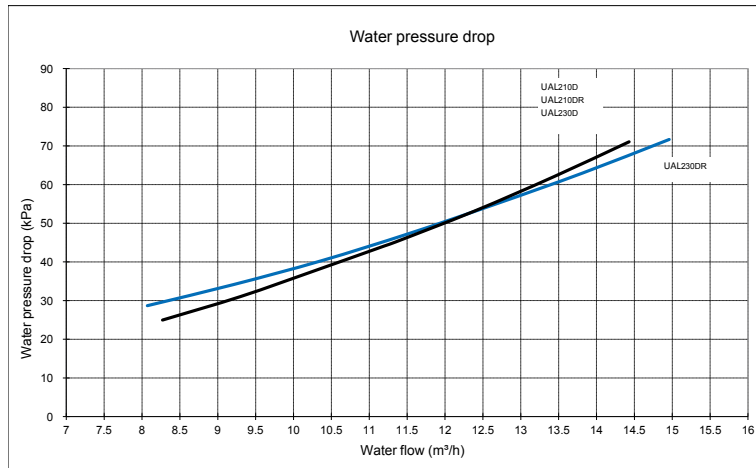
## Heating Capacity Performance Table

Model	Outlet water Temp (°C)	Ambient temp. (°C)																	
		-15°C		-10°C		-5°C		0°C		7°C		10°C		15°C		21°C		30°C	
		Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)	Heating capacity (kW)	Power Input (kW)
UAL210DR5	-	-	42.6	15	50.7	15.2	60.8	15.4	69.8	15.5	73.4	15.7	78.2	16	82.9	16.3	90	16.7	-
	35	-	-	41.5	16.6	16.7	58.3	16.9	67.8	17.1	71.5	17.3	75.8	17.5	80.7	17.7	17.7	88.1	18
	40	-	-	40.3	18.1	18.2	55.8	18.4	65.9	18.7	69.6	18.9	73.5	19	78.6	19.1	19.1	86.3	19.2
	45	-	-	39.1	19.7	19.9	53.9	20.3	64	20.5	67.2	20.7	71.3	20.9	76.3	21.1	21.1	83.8	21.3
	50	-	-	38.4	21.4	21.8	51.4	22	60.5	22.2	64.1	22.4	68.9	22.6	73.2	22.8	22.8	80.7	23
UAL230DR5	55	-	-	37.3	23.5	24	48.3	24.3	57.4	24.5	61	24.6	65.6	24.7	70.5	24.8	24.8	77.9	25
	30	-	-	42.1	14.6	14.7	55.1	15	70	15.1	71	15.2	72.6	15.3	80.8	15.4	15.4	88.3	15.6
	35	-	-	41.1	16	16.2	53.9	16.3	68.6	16.6	69.7	16.7	71.5	16.7	79.9	17	17	87.9	17.2
	40	-	-	39.9	17.5	17.6	52.4	17.9	67.4	18.1	68.4	18.3	70.2	18.4	78.7	18.6	18.6	86.8	18.8
	45	-	-	38.5	19.4	19.6	51.1	19.8	66	20	67.1	20.1	68.8	20.3	77.3	20.5	20.5	85.7	20.7
UAL340DR5	50	-	-	37.7	21.3	21.5	49.4	21.7	63.9	21.9	65	22	67	22.2	75.5	22.5	22.5	84.3	22.6
	55	-	-	36.4	23.4	23.7	47.9	23.9	61.7	24	63	24.2	65.2	24.4	73.8	24.7	24.7	82.6	24.9
	30	51.4	21.5	62.8	22.7	23.2	88.6	23.8	106.1	24.1	111.4	24.5	121.8	24.8	130.9	25	25	141.7	25.1
	35	50.6	23.9	61.8	24.6	25.2	86.4	25.7	102.9	26.3	109	26.5	118	26.7	126.7	26.9	26.9	135.6	26.9
	40	-	-	61	27.5	27.6	85.4	28.1	100.8	28.7	106.4	28.8	114.6	29.1	122.4	29.2	29.2	129.8	29.2
UAL450DR5	45	-	-	60.2	30.3	30.8	84.2	30.8	100	31.4	104.7	31.6	113.5	31.9	120	31.9	31.9	123.9	31.8
	50	-	-	-	-	33.9	83.3	34	94.8	34.8	102.8	34.7	111.8	34.7	117.7	35	35	119.7	34.9
	55	-	-	-	-	-	81.6	37.6	92.3	38.2	98.7	38.2	107.1	38	112.6	38.5	-	-	
	30	91.5	28.6	97.8	29.3	29.6	117.8	29.9	137.1	30.2	146.4	30.5	163.6	31	186.7	31.7	31.7	226.4	33.1
	35	90.9	31	96.9	32	32.3	117.4	32.8	135.7	33.1	144.7	33.3	161.1	33.7	183.4	34.4	34.4	221.9	35.8
UAL450DR5	40	-	-	96.6	35.6	35.8	116.1	36	133.3	36.3	141.9	36.5	157.7	36.9	179.1	37.5	37.5	216.4	38.7
	45	-	-	96.3	39.1	39.4	113.7	39.6	130	39.8	138.1	40	153.2	40.3	173.9	40.9	40.9	210	42.1
	50	-	-	-	-	43.6	110.3	43.5	125.7	43.7	133.4	43.8	147.8	44.1	167.6	44.6	44.6	202.5	45.7
55	-	-	-	-	-	105.9	47.8	120.3	47.9	127.6	48	141.4	48.2	160.4	48.7	48.7	-	-	

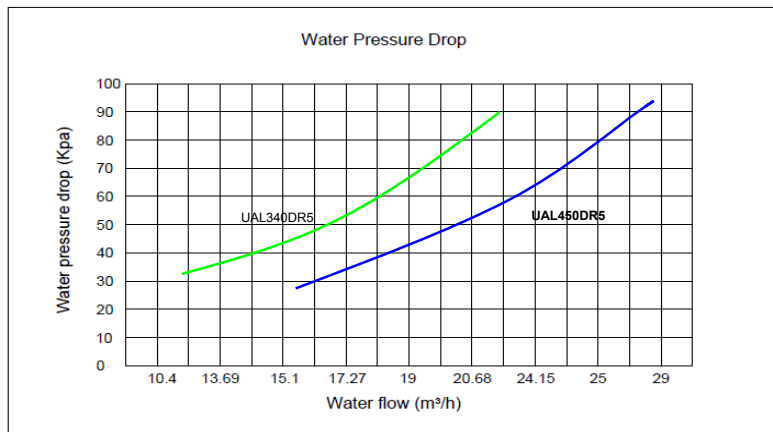
NOTE: PARAMETERS IN THE ABOVE TABLE ARE MEASURED WHEN THE UNIT OPERATES AT THE RATED WATER FLOW.

# Water Pressure Drop Curve

## UAL210D5/DR5 UAL230D5/DR5



## UAL340DR5 UAL450DR5



**NOTES:**

- 1) THE WATER PRESSURE DROP OF THE UNIT IS THE TEST RESULT WHEN A PLATE HEAT EXCHANGER AND THE ACCESSORY Y-SHAPED FILTER ARE INSTALLED.
- 2) THE WATER RESISTANCE OF THE PLATE HEAT EXCHANGER AND THE Y-SHAPED FILTER ARE TESTED WITH PURE WATER. IF THE ONSITE WATER QUALITY CHANGES, THE TEST RESULT MAY BE DIFFERENT FROM THAT SHOWN IN THE FIGURE.

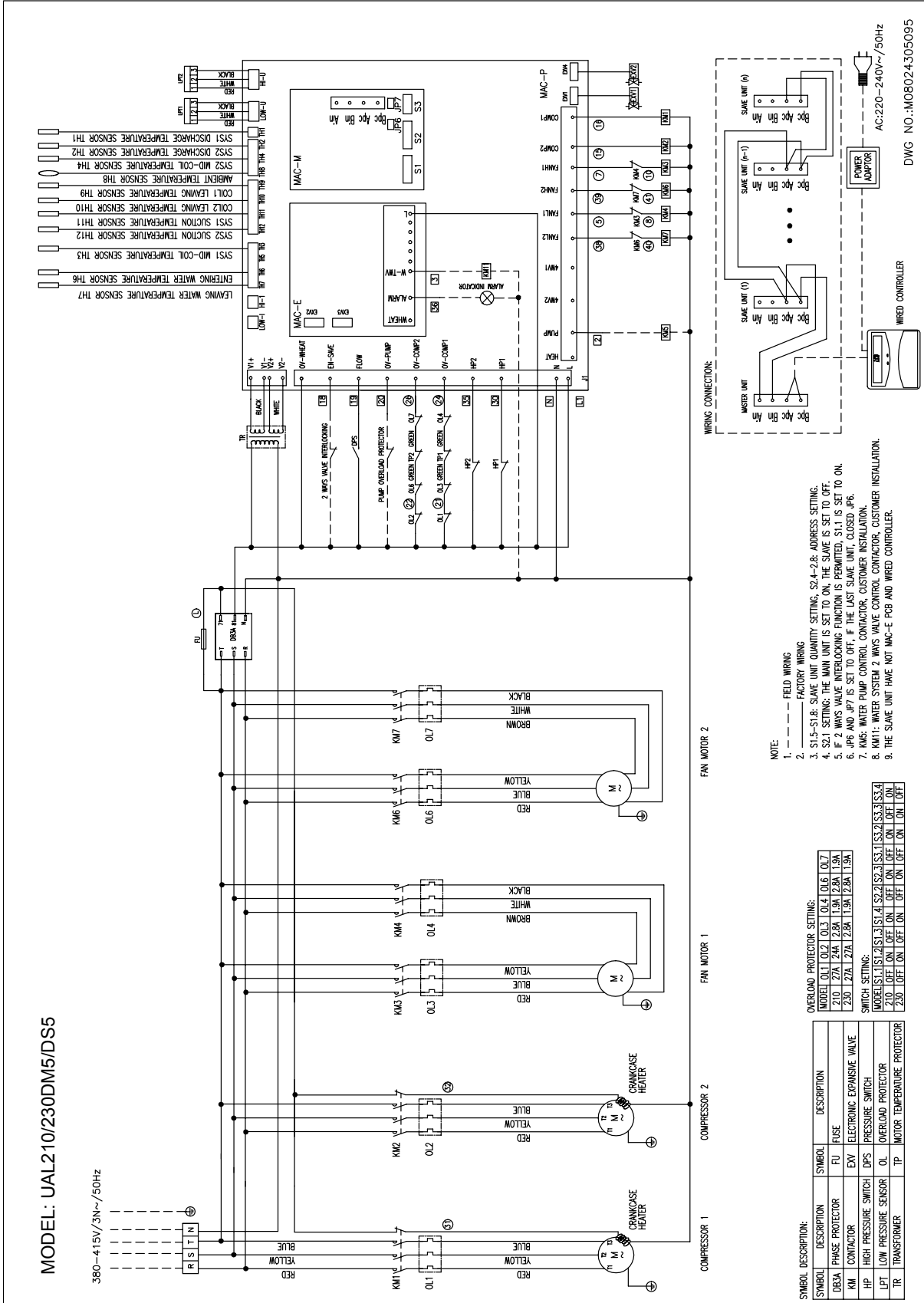
# Sound Data

## Acoustic Noise

Units	Octave Band Level (dB,ref20µPa)								dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
<b>UAL210D5/DR5</b>	43.9	50.1	54	57.7	56.2	54.2	50.5	40.7	63.7
<b>UAL230D5/DR5</b>	45.3	52.6	55.5	59.6	59.8	57.7	50.2	41.2	65.8
<b>UAL340DR5</b>	40.5	46.9	57.4	58.2	61.9	57.7	51.5	43	67
<b>UAL450DR5</b>	52.9	53.9	58.1	61.4	62.1	60	55.3	51.9	67.5

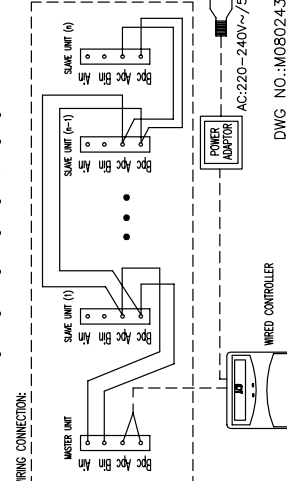
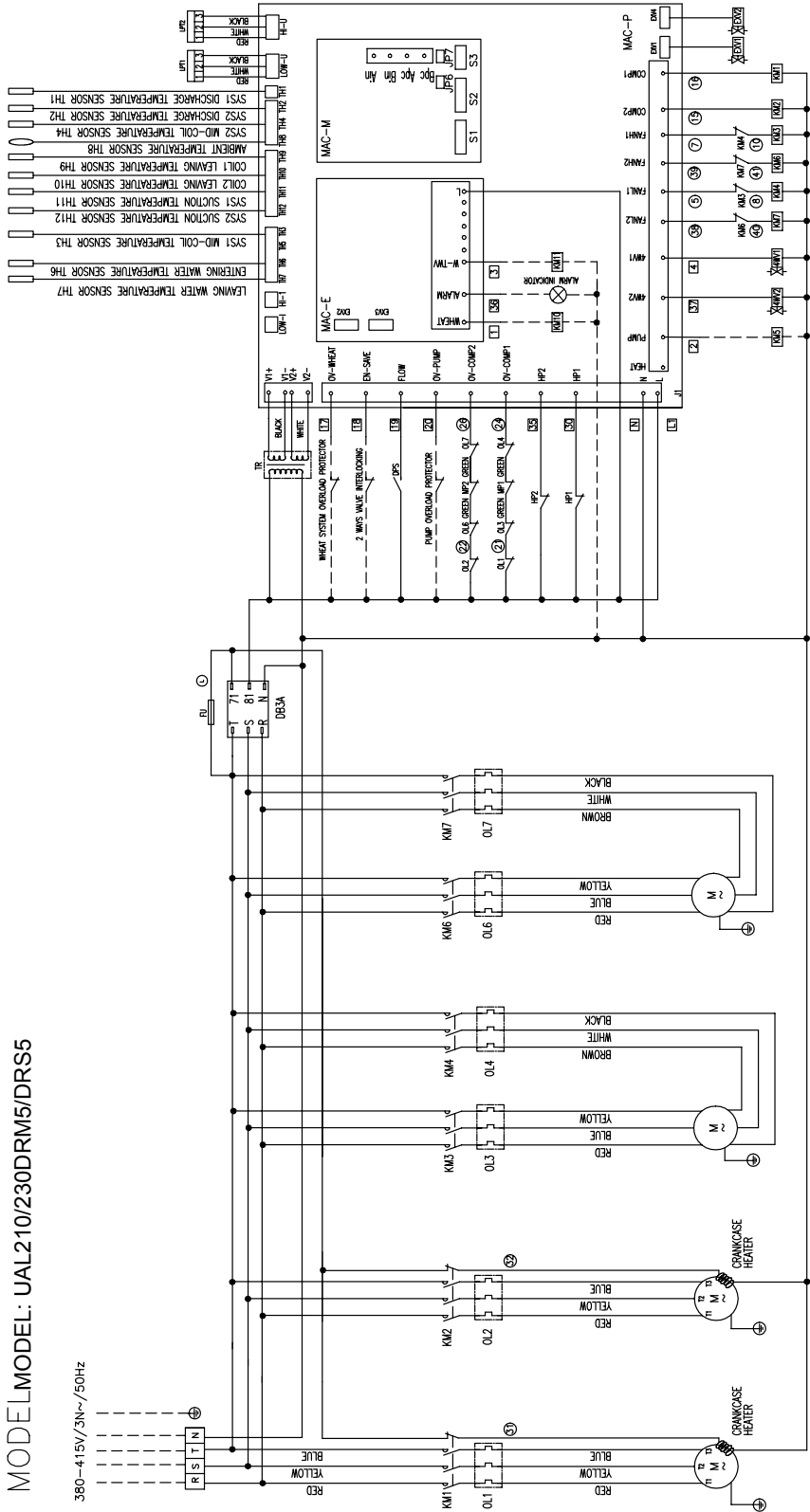
Test condition: Octave band level noise is tested base on 15dB(A) background noise semi-anechoic room.

# Wiring Diagrams



# MODEL: UAL210/230DRM5/DRS5

360-415V/3N~/50Hz



- NOTE:**
1. --- FIELD WIRING
  2. - - - - - FACTORY WIRING
  3. S1.5-S1.8: SLAVE UNIT QUANTITY SETTING. S2.4-2.8: ADDRESS SETTING.
  4. S2.1 SETTING: THE MAIN UNIT IS SET TO ON, THE SLAVE IS SET TO OFF.
  5. IF 2 WAYS VALVE INTERLOCKING FUNCTION IS PERMITTED, S1.1 IS SET TO ON.
  6. „P6 AND „P7 IS SET TO OFF. IF THE LAST SLAVE UNIT CLOSED „P6.
  7. KM5: WATER PUMP CONTROL CONTACTOR, CUSTOMER INSTALLATION.
  8. KM10: WATER HEATING CONTROL CONTACTOR, CUSTOMER INSTALLATION.
  9. KM11: WATER SYSTEM 2 WAYS VALVE CONTROL CONTACTOR, CUSTOMER INSTALLATION.
  10. THE SLAVE UNIT HAVE NOT MAC-E PCB AND WIRED CONTROLLER.

**OVERLOAD PROTECTOR SETTING:**

MODEL	OL1	OL2	OL3	OL4	OL6	OL7
210	2.7A	2.4A	2.8A	1.9A	1.9A	1.9A
230	2.7A	2.7A	2.8A	1.9A	2.8A	1.9A

**SWITCH SETTING:**

MODEL	S1.1	S1.2	S1.3	S1.4	S1.5	S1.6	S1.7	S1.8	S1.9	S1.10	S1.11	S1.12
210	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
230	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

**SYMBOL DESCRIPTION:**

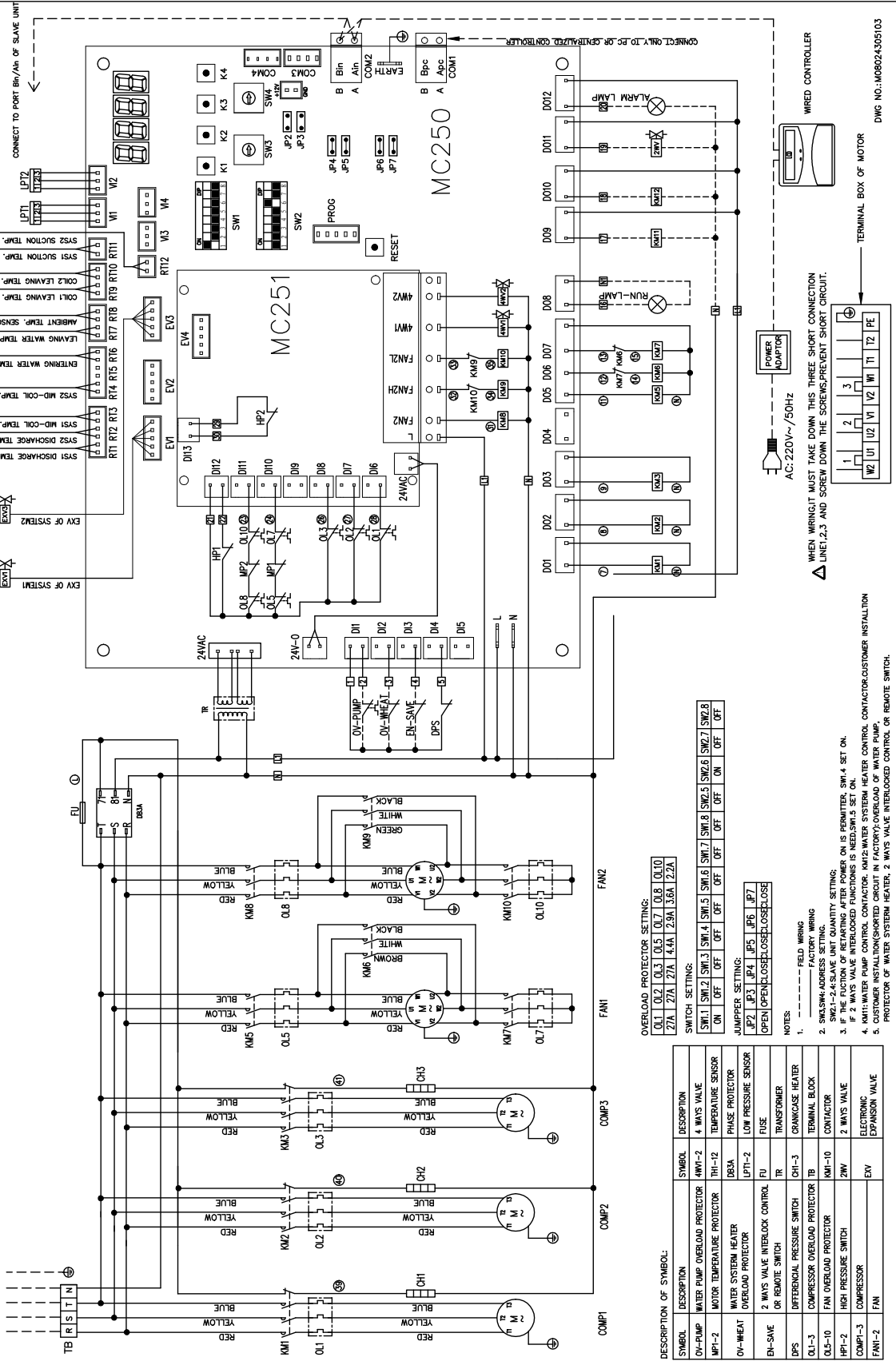
SYMBOL	DESCRIPTION
DBSA	PHASE PROTECTOR
FU	FUSE
EVV	ELECTRONIC EXPANSIVE VALVE
4WV	4 WAYS VALVE
KM	CONTACTOR
DPS	PRESSURE SWITCH
HP	HIGH PRESSURE SWITCH
LP	LOW PRESSURE SWITCH
TR	TRANSFORMER
MP	MOTOR TEMPERATURE PROTECTOR

DWG NO.: M08024305083



Model: UAL340DR5/DRM5

380V/3N~/50Hz



OVERLOAD PROTECTOR SETTING:

0.1	0.2	0.3	0.5	0.7	0.8	0.10
2.7A	2.7A	2.7A	4.4A	2.9A	3.6A	2.2A

SWITCH SETTINGS:

SW1.1	SW1.2	SW1.3	SW1.4	SW1.5	SW1.6	SW1.7	SW1.8	SW1.9	SW1.10	SW1.11	SW1.12
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF

JUMPER SETTINGS:

JP2	JP3	JP4	JP5	JP6	JP7
OPEN	OPEN	CLOSE	CLOSE	CLOSE	CLOSE

NOTES:

1. --- FIELD WIRING
2. --- FACTORY WIRING
3. SW1.1-4: SLAVE UNIT QUANTITY SETTING.
4. SW1.5: FUNCTION OF RETARDING AFTER POWER ON IS PERMITTED. SW1.4: SET ON.
5. IF 2 WAYS VALVE INTERLOCK FUNCTIONS IS NEEDED, SW1.5 SET ON.
6. IN THE CASE OF USING A CONTACTOR FOR WATER PUMP CONTROL, CONTACTOR CUSTOMER INSTALLATION.
7. CUSTOMER MUST DISCONNECT POWER FROM THE UNIT BEFORE PERFORMING MAINTENANCE.
8. PROTECTOR OF WATER SYSTEM HEATER, 2 WAYS VALVE INTERLOCKED CONTROL OR REMOTE SWITCH.

DESCRIPTION OF SYMBOL:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
WPI-2	WATER PUMP OVERLOAD PROTECTOR	WPI-2	4 WAYS VALVE
THI-12	TEMPERATURE SENSOR	DB3A	PHASE PROTECTOR
LPT1-2	WATER SYSTEM HEATER OVERLOAD PROTECTOR	LPT1-2	LOW PRESSURE SENSOR
FU	FUSE	TR	TRANSFORMER
CHI-3	DIFFERENTIAL PRESSURE SWITCH	CHI-3	CRANKCASE HEATER
THI-10	COMPRESSOR OVERLOAD PROTECTOR	TR	TERMINAL BLOCK
CHI-10	FAN OVERLOAD PROTECTOR	MHI-10	CONTACTOR
HPI-2	HIGH PRESSURE SWITCH	WPI-2	2 WAYS VALVE
COMP1-3	COMPRESSOR	ZW	ELECTRONIC EXPANSION VALVE
FAN1-2	FAN	EVV	FAN

AC: 220V~/50Hz

POWER ADAPTOR

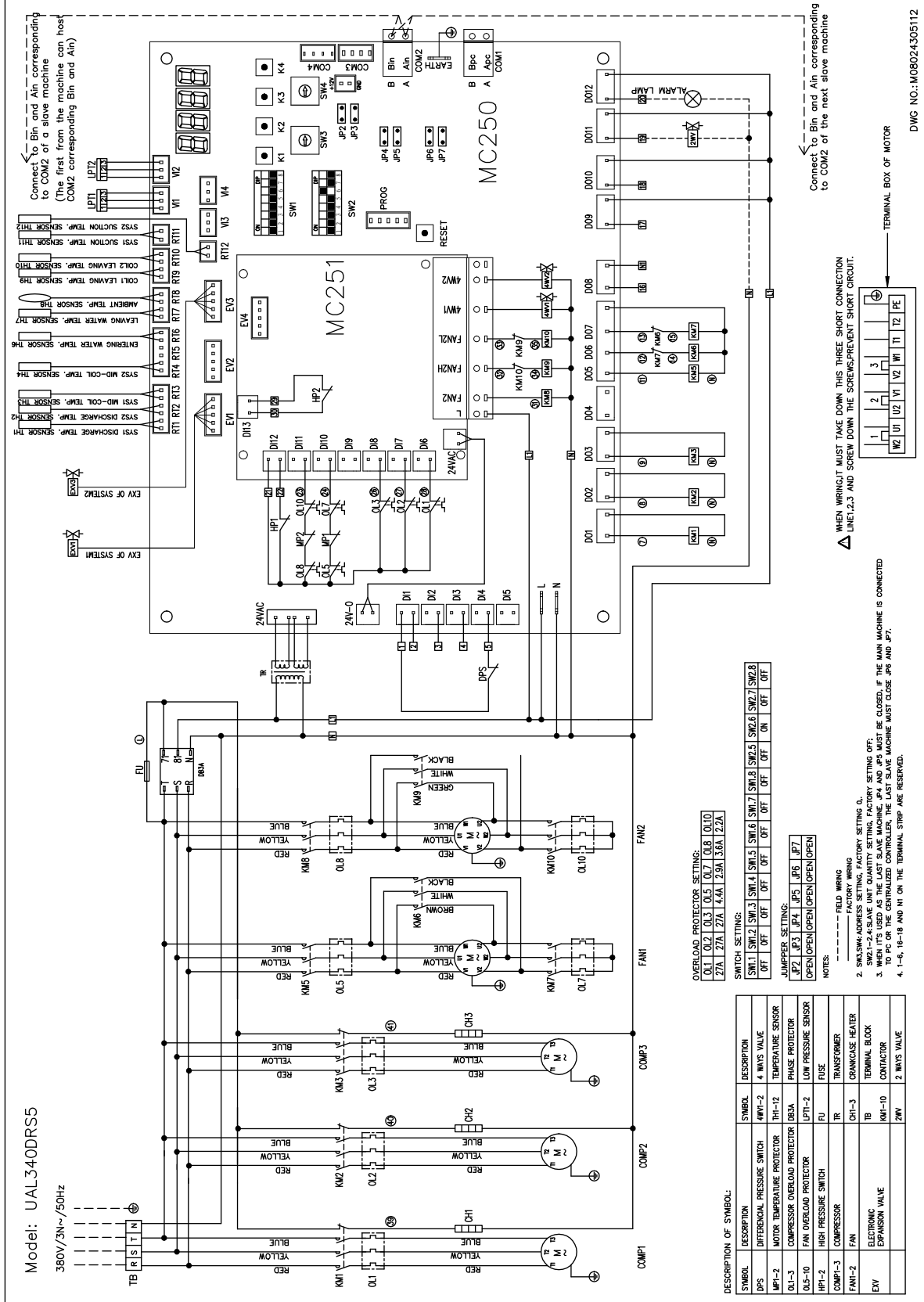
WIRED CONTROLLER

TERMINAL BOX OF MOTOR

DWG NO.: H06024505103

Model: UAL340DRS5

380V/3N~/50Hz



Connect to Bin and Air corresponding to COM2 of a slave machine (The first from the machine can host COM2 corresponding Bin and Air)

Connect to Bin and Air corresponding to COM2 of the next slave machine

OVERLOAD PROTECTOR SETTING:

0.1	0.2	0.3	0.5	0.7	0.8	1.0	1.0
2.7A	2.7A	2.7A	4.4A	3.8A	3.8A	2.2A	

SWITCH SETTINGS:

SW1.1	SW1.2	SW1.3	SW1.4	SW1.5	SW1.6	SW1.7	SW1.8	SW1.9	SW1.10	SW1.11	SW1.12	SW1.13	SW1.14	SW1.15	SW1.16	SW1.17	SW1.18	SW1.19	SW1.20	
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

JUMPPER SETTINGS:

JP2	JP3	JP4	JP5	JP6	JP7
OPEN	OPEN	OPEN	OPEN	OPEN	OPEN

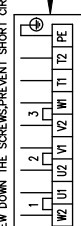
NOTES:

- FIELD WIRING
- SW1.1-2.4-SLAVE UNIT QUANTITY SETTING. FACTORY SETTING 0.
- WHEN IT'S USED AS THE LAST SLAVE MACHINE, JP4 AND JP5 MUST BE CLOSED. IF THE MAIN MACHINE IS CONNECTED TO PC OR THE CENTRALIZED CONTROLLER, THE LAST SLAVE MACHINE MUST CLOSE JP6 AND JP7.
- 1-6, 10-18 AND N1 ON THE TERMINAL STRIP ARE RESERVED.

DESCRIPTION OF SYMBOL:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
DPS	DIFFERENTIAL PRESSURE SWITCH	4W1-2	4 WAYS VALVE
MP1-2	MOTOR TEMPERATURE PROTECTOR	TH1-12	TEMPERATURE SENSOR
OL1-3	COMPRESSOR OVERLOAD PROTECTOR	DB3A	PHASE PROTECTOR
OL5-10	FAN OVERLOAD PROTECTOR	LPT1-2	LOW PRESSURE SENSOR
HPI-2	HIGH PRESSURE SWITCH	FU	FUSE
COMP1-3	COMPRESSOR	TR	TRANSFORMER
FAN1-2	FAN	CHI-3	CRANKCASE HEATER
EV	ELECTRONIC EXPANSION VALVE	TB	TERMINAL BLOCK
		KM1-10	CONTACTOR
		2WV	2 WAYS VALVE

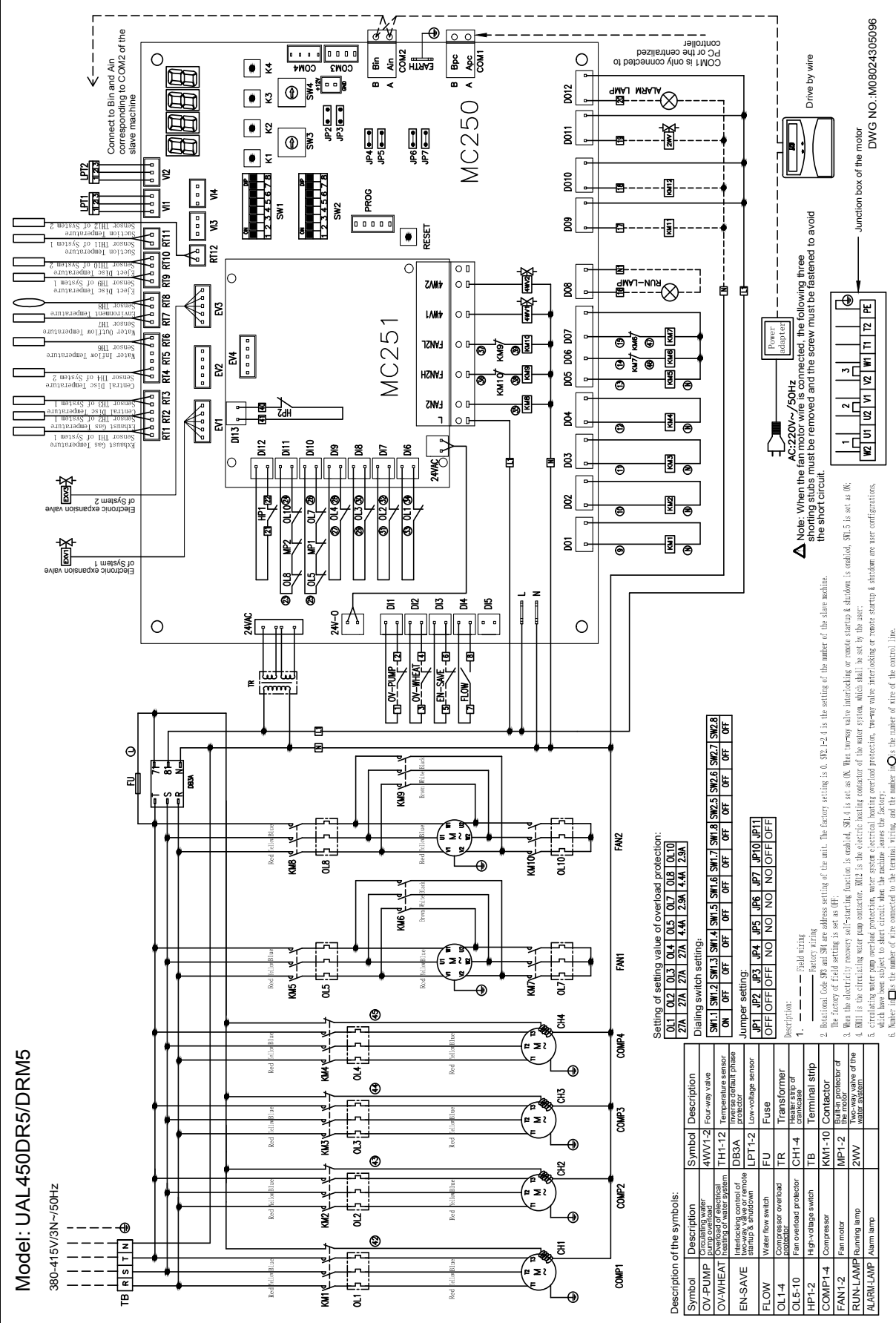
WHEN WIRING, IT MUST TAKE DOWN THIS THREE SHORT CONNECTION LINE1,2,3 AND SCREW DOWN THE SCREWS PREVENT SHORT CIRCUIT.



DWG NO: M08024305112

Model: UAL450DR5/DRM5

380-415V/3N~50HZ



Setting of setting value of overload protection:

0L1	0L2	0L3	0L4	0L5	0L7	0L8	0L10
Z7A	Z7A	Z7A	Z7A	Z7A	Z7A	Z7A	Z7A

Dialing switch setting:

SW1.1	SW1.2	SW1.3	SW1.4	SW1.5	SW1.6	SW1.7	SW1.8	SW1.9	SW1.10	SW1.11	SW1.12	SW1.13
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Jumper setting:

JP1	JP2	JP3	JP4	JP5	JP6	JP7	JP10	JP11
OFF	OFF	OFF	NO	NO	NO	NO	NO	OFF

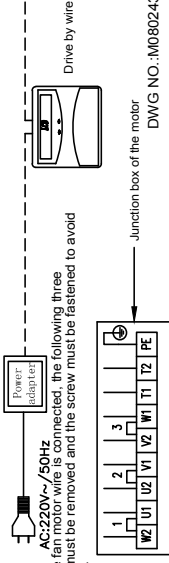
Description:

- Field wiring
- Factory wiring
- Rotational Code SW and SW are address setting of the unit. The factory setting is 0, 3P, L, L. L is the setting of the number of the slave machine.
- When the electricity memory self-starting function is enabled, SW1.4 is set as ON. When tripping valve interlocking or remote startup & shutdown is enabled, SW1.5 is set as ON.
- SW1.1 is the circulating water pump protector, SW1.2 is the electric heating controller of the water system, which shall be set by the user.
- SW1.3 is the circulating water pump overload protection, water system electrical heating overload protection, tripping valve interlocking or remote startup & shutdown are user configurations, which have been subject to short circuit when the machine leaves the factory.
- Number of COM1 is the number of COM1 connected to the terminal, SW1.13, and the number of COM2 is the number of COM2 of the control.

Description of the symbols:

Symbol	Description	Symbol	Description
4WV1-2	Four-way valve	TR	Transformer
OV-PUMP	Overload of electrical pump overload	CHT-4	Heater stop of emcasse
OV-WHEAT	Overload of electrical heating of water system	TB	Terminal strip
EN-SAVE	Emergency stop of remote startup & shutdown	KM1-10	Contactors
FLOW	Water flow switch	MP1-2	Running protector of fan motor
OL1-4	Compressor overload	2WV	Alarm lamp
OL5-10	Fan overload protector		
HP1-2	High-voltage switch		
COMP1-4	Compressor		
FAN1-2	Fan motor		
ALARM-LAMP	Running lamp		

Note: When the fan motor wire is connected, the following three shorting stubs must be removed and the screw must be fastened to avoid the short circuit.



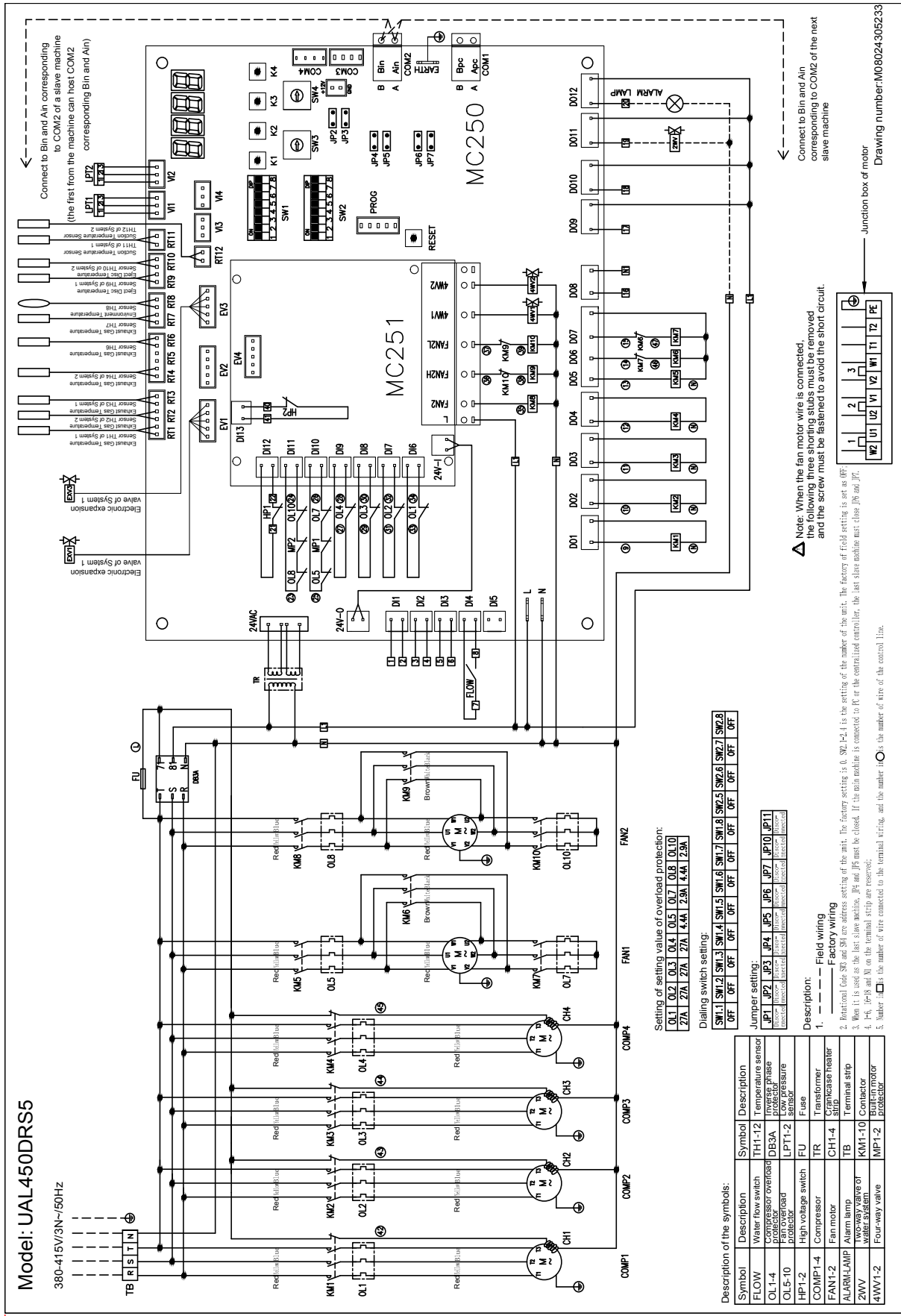
Drive by wire

Junction box of the motor

DWG NO.: M08024305096

# Model: UAL450DRS5

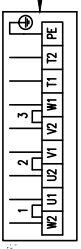
380-415V/3N~/50HZ



Connect to Bin and Ah corresponding to COM2 of a slave machine (the first from the machine can host COM2 corresponding Bin and Ah)

Connect to Bin and Ah corresponding to COM2 of the next slave machine

Note: When the fan motor wire is connected, the following three shorting stubs must be removed and the screw must be fastened to avoid the short circuit.



Setting of setting value of overvoltage protection:  
 OL1 0L1 0L3 0L4 0L5 0L7 0L8 0L10  
 ZZA 1 ZZA 1 ZZA 1 4.4A 1 2.9A 1 4.4A 1 2.9A

Dialing switch setting:

SW1.1	SW1.2	SW1.3	SW1.4	SW1.5	SW1.6	SW1.7	SW1.8	SW1.9	SW1.10	SW1.11	SW1.12	SW1.13	SW1.14	SW1.15	SW1.16	SW1.17	SW1.18	SW1.19	SW1.20
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Jumper setting:

JP1	JP2	JP3	JP4	JP5	JP6	JP7	JP10	JP11
ON	ON	ON	ON	ON	ON	ON	ON	ON

Description:

1. --- Field wiring
2. --- Factory wiring
3. When it is used as the last slave machine, JP6 and JP5 must be closed. If the main module is connected to PC or the centralized controller, the last slave module must close JP6 and JP5.
4. L, N, PE (L, N, PE) on the terminal strip are reserved.
5. Number:  $\square$  is the number of wire connected to the terminal wiring, and the number  $\bigcirc$  is the number of wire of the control line.

Symbol	Description	Symbol	Description
FLOW	Water flow switch	TH1-12	Temperature sensor
OL 1-4	Compressor overload protector	DB3A	Inverse phase protector
OL5-10	Fan overload protector	LPT1-2	Low pressure sensor
HP1-2	High voltage switch	FU	Fuse
COMP1-4	Compressor	TR	Transformer
FAN1-4	Fan motor	CH1-4	Cylindrical heater
ALARM-LAMP	Alarm lamp	TB	Terminal strip
2WV	Water system water valve	KM1-10	Contactors
4WV1-2	Four-way valve	MP1-2	Motor protector

Drawing number: M08024.305233

# Installation

## Working Condition

Item	Description
Power supply voltage	380 - 415V
Power supply frequency	Rated frequency $\pm$ 1%
Variations between phases	Rated voltage $\pm$ 2%
Air quality	Must not contain solute that can corrode copper, aluminum or iron.
Flow rate of chilled water	0.5 - 2.0m/s
Pressure of chilled water	< 0.7MPa
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 Requirement (page 21)."
Installation site	Take anti-snow and ventilation measures as required.
Ambient temp.	Refer to the Performance Data (Fig 1. 2).
Relative humidity	< 90%

### NOTES:

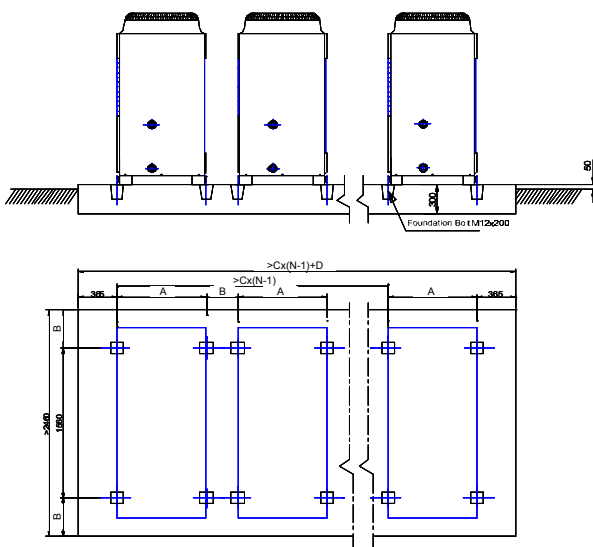
1. THE UNIT IS STRICTLY TESTED BEFORE DELIVERY AND CAN WORK SAFELY IN THE RATED WORKING CONDITIONS.
2. FOR THE PERFORMANCE PARAMETERS OF THE UNIT IN DIFFERENT WORKING CONDITIONS, REFERENCE TABLE FOR PERFORMANCE PARAMETERS.
3. THIS IS THE NORMAL OPERATING TEMPERATURE RANGE FOR THE UNIT. BEYOND THIS TEMPERATURE RANGE, THE UNIT CAN ONLY OPERATE FOR A SHORT MOMENT BEFORE A FAILURE ALARM IS TRIGGERED.

## Installation Dimensions and Environment Limits

### Machine Installation Space

Units must be installed by DAIKIN service staff or by specially trained personnel. Units must installed by following relevant national and local electric, building and environment protection standards as well as the installation manual.

### Assembling Unit Modules



Installation size map

Unit: mm

	A	B	C	D
UAL210/UAL230	845	400	1245	1575
UAL340/UAL450	1056	544	1600	1786

### NOTE:

THE GROUNDWORK MUST BE A CONCRETE FLOOR OR A V-IRON STRUCTURE THAT IS STRONG ENOUGH TO BEAR THE OPERATION PRESSURE OF THE UNIT.

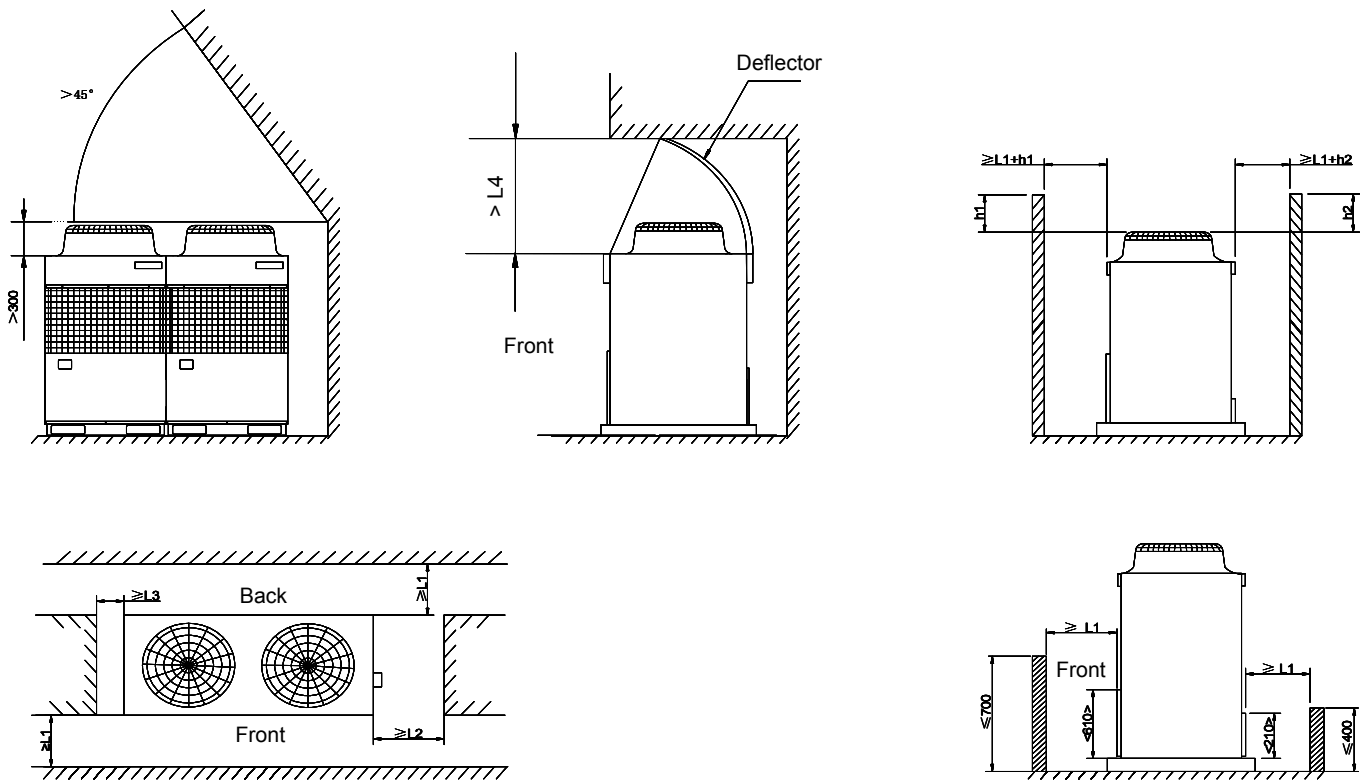
N REPRESENTS THE NUMBER OF MODULES INSTALLED.

EACH UNIT MUST BE FIXED BY 4 M12 BOLTS;

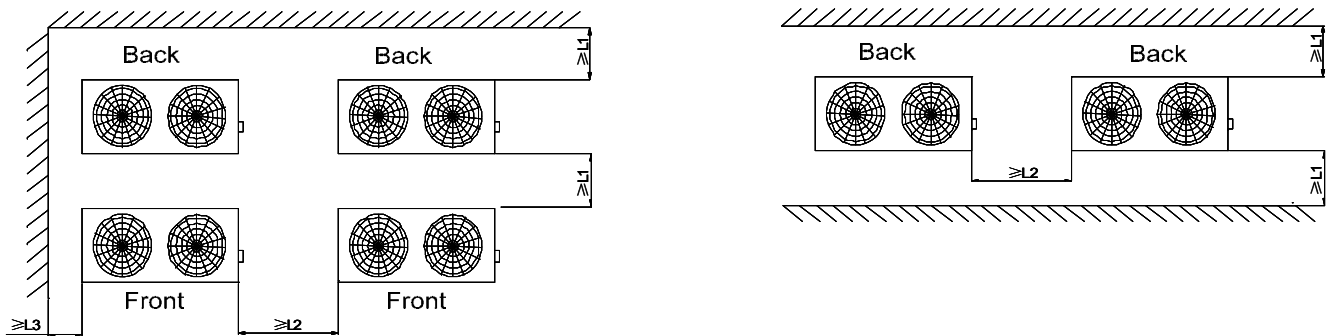
6 RUBBER CUSHIONS OF 20MM THICK MUST BE INSTALLED BETWEEN THE UNIT AND THE GROUNDWORK.

THE GROUNDWORK MUST HAVE DRAINING FACILITIES TO DISCHARGE CONDENSATE WATER AND DEFROSTING WATER.

### Space Allocated for A Single Chilled Water Unit



### Space Allotted for An Array of Chilled Water Units

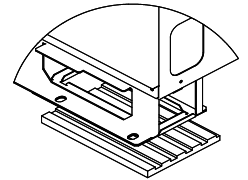


	L1	L2	L3	L4
UAL210/UAL230	400	800	100	1000
UAL340/UAL450	500	800	600	1200

Unit: mm

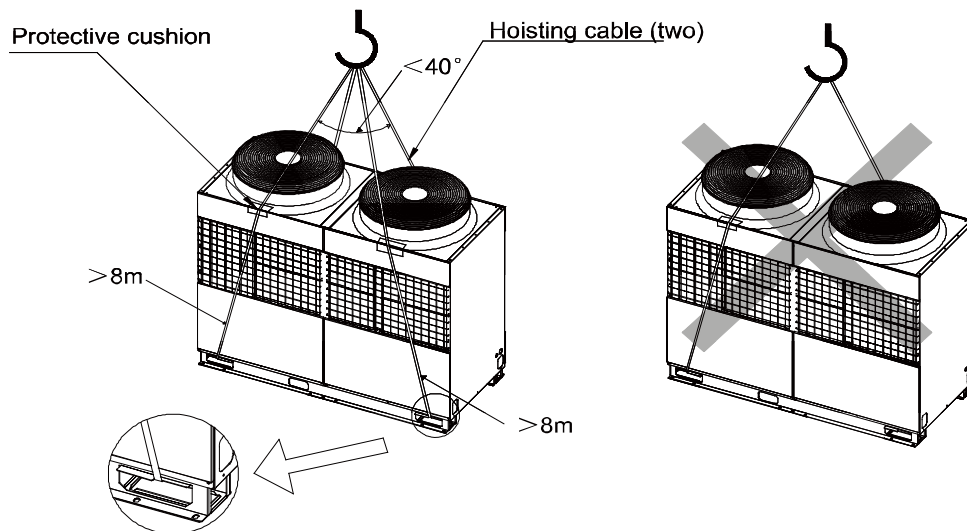
## Installing Chiller

- The user manual, warranty card, accessories, and packing list are placed at the right side of the unit, as illustrated by the shaded part of the figure on the left.
- Reserve sufficient maintenance space if possible.
- If the unit is installed in a place where it snows in winter, proper measures must be taken to protect the unit against snow and ensure that the unit works properly.
- The groundwork should be made of concrete or supporting structures. While designing the groundwork, you must fully consider the strength of the floor, water discharge (the unit discharges water while working), pipelining and wiring. If the floor is not strong enough, the unit might fall off and breakdown, even incur bodily injuries.
- Screw down the chilled water unit using anchor bolts so that it will not fall off in case of strong wind or earthquakes. To avoid damages caused by strong wind or earthquakes, The unit must be securely installed at a proper place to avoid direct hit of strong winds.
- Depending on mounting conditions, operation vibration might pass through the groundwork and generate noises in the floor and walls. Therefore, proper vibration dampening mechanisms (such as bumper cushion, bumper frame etc.) should be in place.
- Corners and edges should be properly installed. Otherwise, the unit might get unbalanced and cause the grounding pins to bend. The unit might fall off and cause bodily injuries if it is not properly installed.



## Hoisting Chillers

Please hoist the unit according to the following illustrations. Tie the cables to the four corners of the unit while moving it. If you tie the cables to only two corners of the unit, the unit might get unbalanced and fall off.



### NOTES:

- CHILLED WATER UNITS MUST BE MOVED WITH GREAT CARE.
- ACCESSORY STRIPS CANNOT BE USED TO HOIST OR MOVE THE UNIT AS THEY MIGHT BREAK AND CAUSE UNEXPECTED ACCIDENTS.
- DO NOT TOUCH THE HEAT SINKS OF THE HEAT EXCHANGER BARE-HANDEDLY AS THEY MIGHT CUT YOUR FINGERS.
- DISPOSE ALL PLASTIC BAGS PROPERLY AND KEEP THEM AWAY FROM CHILDREN.
- DUE TO THE DIFFERENT APPEARANCE OF THE UNIT, THE ABOVE HOISTING PICTURE IS ONLY FOR REFERENCE.

# Water System Installation

## 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		Benchmark value	Tendencies		
			Corrosion	Scaling	
Benchmark items	pH (25°C)		7.0 - 9.0	○	○
	Conductivity (25°C)	μS/cm	< 800	○	○
	Cl <sup>-</sup>	mg (Cl <sup>-</sup> )/L	< 200	○	
	SO <sub>4</sub> <sup>2-</sup>	mg (SO <sub>4</sub> <sup>2-</sup> )/L	< 200	○	
	Acid consumption (pH = 4.8)	mg (CaCO <sub>3</sub> )/L	< 100		○
	Total hardness				○
Reference items	Fe	mg (Fe)/L	< 1.0	○	○
	S <sup>2-</sup>	mg (S <sup>2-</sup> )/L	0	○	
	NH <sub>4</sub> <sup>+</sup>	mg (NH <sub>4</sub> <sup>+</sup> )/L	< 1.0	○	
	SiO <sub>2</sub>	mg (SiO <sub>2</sub> )/L	< 50		○

*NOTE: ○ REPRESENTS FACTORS THAT MAY CAUSE CORROSION OR SCALING.*

## Water System Installation Schematic Diagram

### Connecting Water Pipes

No water pump is provided as an accessory. A proper water pump must be installed to overcome resistance of the water pipes.

- Water pressure gauges and thermometers must be installed at the water inlets and outlets to facilitate the reading of unit operation status.
- The heat exchanger at the water side is made of stainless steel. Water scale may accumulate depending on the water quality and must be cleared using chemicals from time to time. Therefore, a chemical cleaning pipe connector needs to be installed at the water pipes (see the following figure).

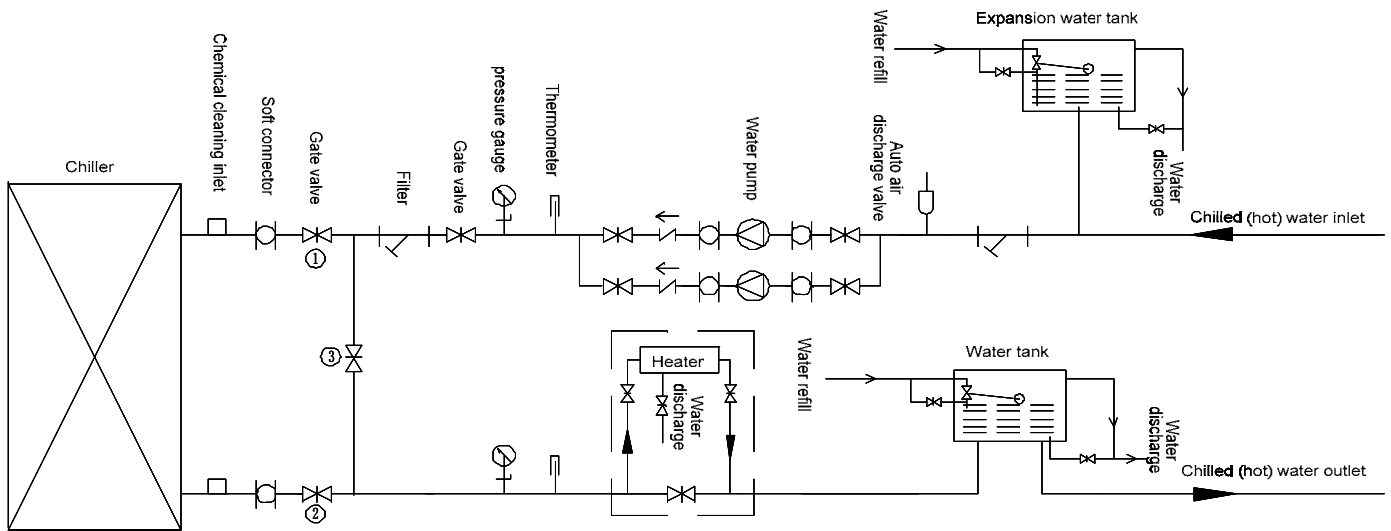


The water flow must be in the rated range. If the water flow is too small, scale may accumulate and degrade the performance of the unit, cause the antifreeze device to activate, or cause rust points and refrigerant leakage. If the water flow is too large, the unit may be corroded due to water impact.

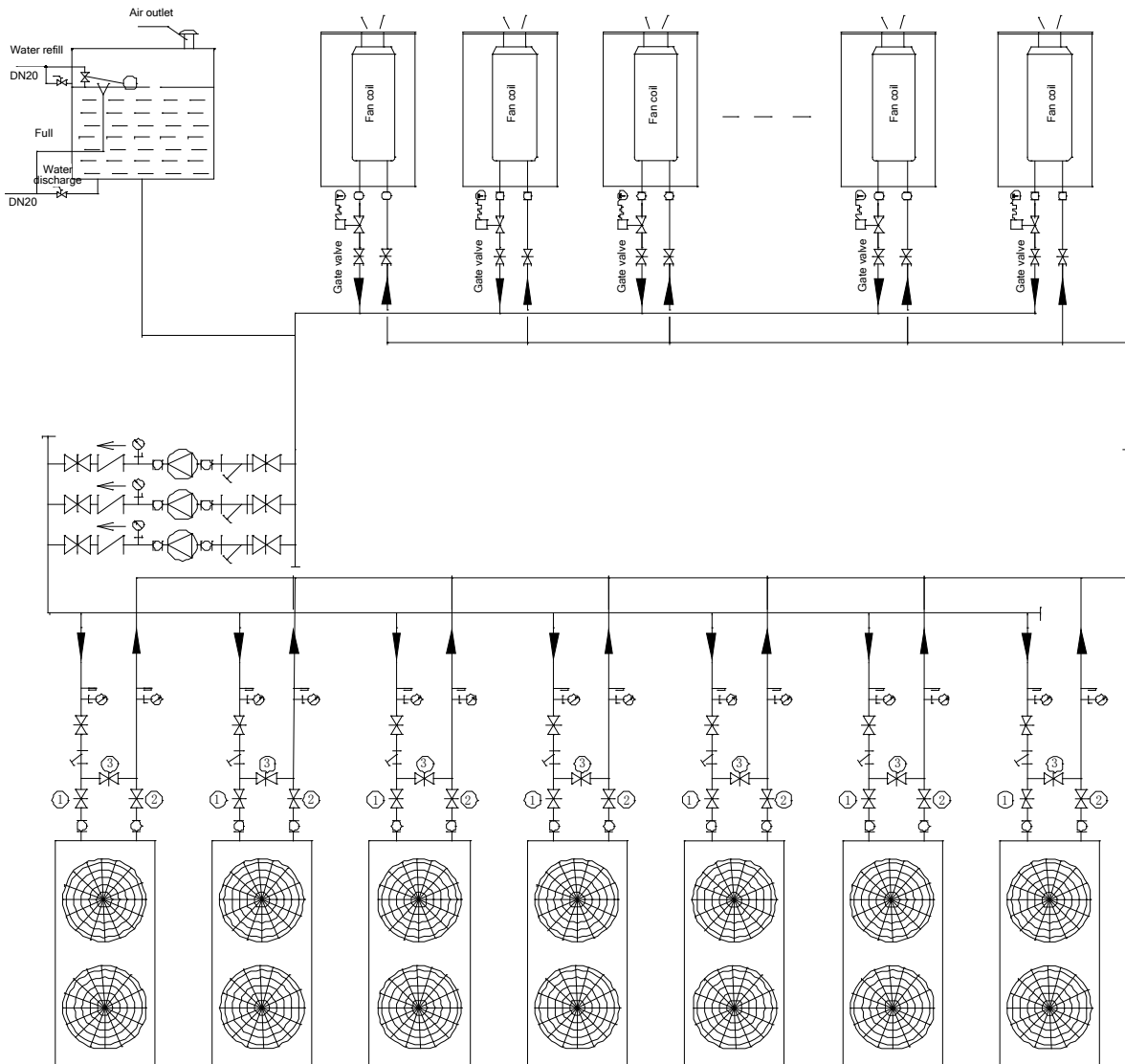
- Thermal insulated water tank with a proper volume is suggested to install. If the capacity is too small, the unit might frequently restart, which causes wear and tear on the compressor.
- An expansion water tank must be installed at the return water side of the water system to adapt to water pressure variations in the water supply system caused by ambient temperature changes.
- An auto relief valve must be installed at the highest point in the water system. A suitable water discharge valve must be installed at the lowest point in the water system.
- The water pipes must be thermal insulated to avoid heat loss and condensate water.
- Please follow the "Illustration for water system installation" and drawings from the design institute while installing the water system.
- Install the Y-shaped water filter inside the water inlet pipe and rinse the filter screen after commissioning.
- Before injecting water, make sure that no sand, rubble, rust, soldering tin residue or other impurities exist in the pipe, as these things might damage the heat exchanger.

While rinsing the water system, please bypass the unit and the terminal heat exchanger using by-pass valves.

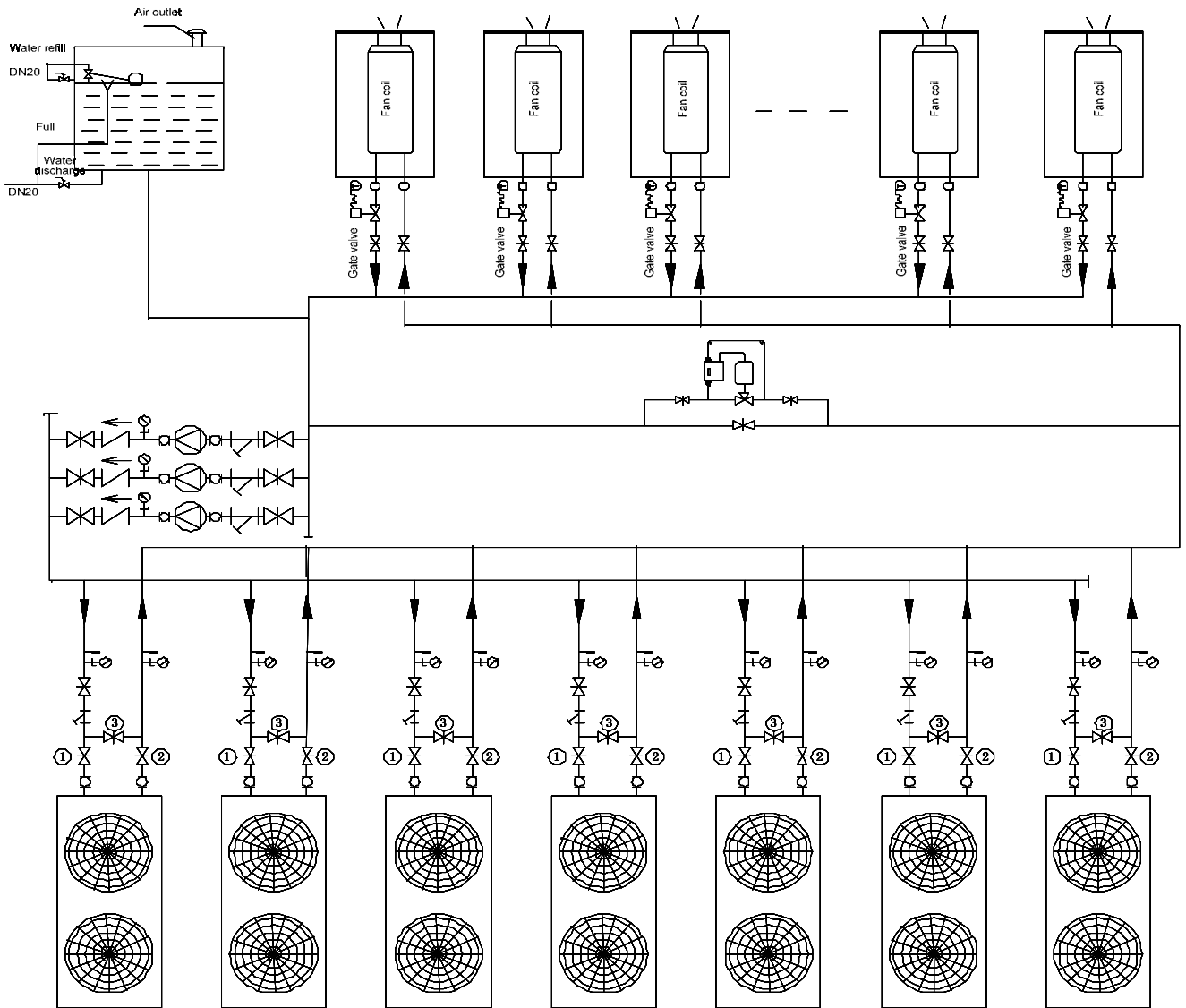
- Installation illustration for the water system of a single unit:



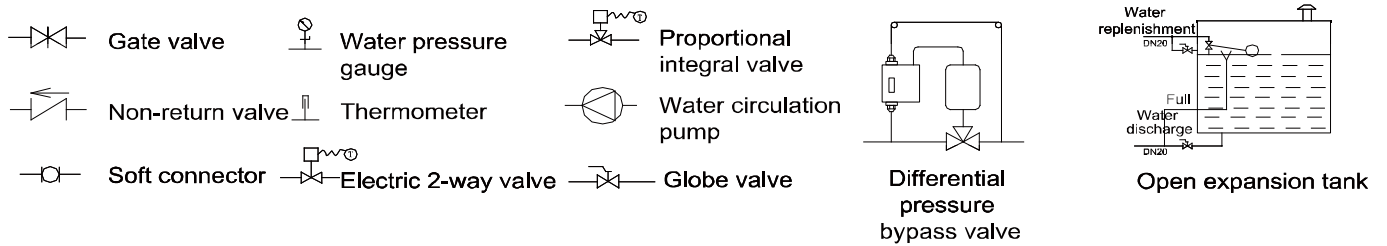
- Multi-unit combination, illustration for water system with fixed chilled water flow which conditions indoor air by modulating the terminal air rate



- Illustration for variable flow rate water system which adjusts indoor temperature by adjusting flow rate of chilled water (modular combination of multiple units)



Legends for the water system illustration:



Size of the main connecting pipe for modular combinations:

Unit Qty.	1	2-3	4-5	6-10
Size of main connecting pipe (inch)	≥2	≥3	≥4	≥5

NOTE: WHEN CLEANING THE WATER SYSTEM, PLEASE SHUT ① ② GATE VALVE AND OPEN ③ GATE VALVE MARKED IN THE DIAGRAM OF ALL THE UNITS, IN ORDER TO BYPASS THE UNITS, SO THE IMPURITIES CAN BE PREVENTED FROM ENTERING THE PLATE HEAT EXCHANGER AND THE EFFICIENCY AND SERVICE LIFE OF PLATE HEAT EXCHANGER CAN NOT BE AFFECTED.

## 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:

$$d = \sqrt{\frac{4m_w}{3.14 v}}$$

In the formula:  $m_w$ -----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 <sup>3</sup> /h)	kPa/100m	Water flow (m <sup>3</sup> /h)	kPa/100m
15	0 - 0.5	0 - 60	--	--
20	0.5 - 1.0	10 - 60	--	--
25	1 - 2	10 - 60	0 - 1.3	0 - 43
32	2 - 4	10 - 60	1.3 - 2.0	11 - 40
40	4 - 6	10 - 60	2 - 4	10 - 40
50	6 - 11	10 - 60	4 - 8	--
65	11 - 18	10 - 60	8 - 14	--
80	18 - 32	10 - 60	14 - 22	--
100	32 - 65	10 - 60	22 - 45	--
125	65 - 115	10 - 60	45 - 82	10 - 40

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

Setting temperature of return water (°C)	UAL210DM5/DS5 UAL210DRM5/DRS5	UAL230DM5/DS5 UAL230DRM5/DRS5	UAL340DRM5/DRS5 UAL450DRM5/DRS5
14	198	224	359
13	234	265	413
12	286	324	484
11	367	416	586
10	514	583	743
9	857	971	1013

#### NOTES:

- THE MINIMUM WORKING VOLUME REFERS TO THE ADDED-UP VOLUME OF THE MAIN WATER PIPE, WATER TANK AND CONSTANTLY-OPEN TERMINALS OF 2-WAY VALVES IN THE WATER CIRCULATION SYSTEM.
- THE ACTUAL WORKING VOLUME OF THE WATER SYSTEM MUST BE LARGER THAN V<sub>MIN</sub>; OTHERWISE THE UNIT WILL SEND OUT ALARMS AND SHUT DOWN FREQUENTLY.
- IF THE ACTUAL RESULTFUL VOLUME OF THE WATER SYSTEM V IS LESS THAN V<sub>MIN</sub>, PLEASE INSTALL A TANK THE VOLUME OF WHICH IS L (L=V<sub>MIN</sub>-V).

Example for water system volume calculation:

There are 2 UAL230DR5 modular units with temperature of return water set to 12°C, a main inlet/out water pipe of DN80 and 50m long and 10 fans with coils constantly open (each has a volume of 1.5 L)

Calculation: Volume of main inlet/outlet water pipe =  $3.14 * [(80/2)/100]^2 * 500 = 251 \text{ L}$

Volume of terminal fan coils =  $10 * 1.5 = 15$   
According to the table above,  $V_{min.} = 324 \text{ L}$

To avoid frequent unit startup/shutdown and alarms, the volume of the water tank should be no less than  $V_{min.}$   
-  $V = 324 - 251 - 15 = 58 \text{ L}$

**Calculating Volume of Expansion Water Tank**

An expansion water tank with a proper volume must be installed to adapt to water volume changes as the temperature changes and avoid freezing burst and pressure instability at the water pump inlet.

The expansion water tank can also be used to supplement water and discharge air.

Calculating volume of expansion water tank.

$V_p = \alpha * \Delta t * V_s$

$V_p$ ----effective volume of the expansion water tank (volume of water between the signal pipe and the overflow pipe).  $m^3$

$\alpha$ ----volume expansion coefficient of water ( $\alpha = 0.0006/^\circ C$ )

$\Delta t$ ----max. water temperature variation  $^\circ C$

$V_s$ ----water volume in the system (total water volume in the system and pipes)  $m^3$

**Model Selection Principles for the Water Circulation Pump**

- Water flow in the water circulation pump  $\geq$  rated water flow  $\times 1.1$   
Closed water circulation system: Water circulation pump lift  $\geq$  (Pipe resistance of the water system + Partial resistance of the water system + Water pressure drop of the unit)  $\times 1.1$
- Open water circulation system: Water circulation pump lift  $\geq$  (Static resistance of the water system + Pipe resistance of the water system + Partial resistance of the water system + Water pressure drop of the unit)  $\times 1.1$
- In the case that multiple units share the same pump, the pump lift is calculated according to the circuit that has the maximum resistance (usually the unit that is farthest away from the pump).

*NOTE: THE WATER FLOW OF THE UNIT SHOULD CALCULATE ACCORDING THE WATER FLOW RANGE.*

■ Water flow range

Model		UAL210DM5/ DS5	UAL210DRM5/ DRS5	UAL230DM5/ DS5	UAL230DRM5/ DRS5	UAL340DRM5/ DRS5	UAL450DRM5/ DRS5
Flow range	Max. value ( $m^3/h$ )	13.4	13.4	14.6	15	22.36	29.1
	Rated value ( $m^3/h$ )	10.3	10.3	11.2	11.52	17.2	22.4
	Min. value ( $m^3/h$ )	7.2	7.2	7.8	8	12.11	15.7

# Commissioning and Operation

## Items to be Confirmed before Turning on Unit



*Note: Before the pilot run, check that the following conditions are met and read the "Safety Precautions" again.*

- Ensure that the water pump and the unit are connected.  
Use the PCB controller to Control the on and off the water pump using the water pump output on the PCB controller; otherwise the BPHE may burst due to freezing.  
The water pump connection point must have no voltage. If a voltage circuit is connected, basic components may be damaged.
- Power on the unit to preheat the crankcase for at least 12 hours before starting up the unit for the first time or after a long-term stoppage. This ensures that the compressor works properly.
- Before turning on the unit, check that the water pump is filled with water.  
Before turning on the water pump, open the water supply valve, fill the pump with water, and discharge free air in the system
- Wiring of the unit: Check that the diameter of the wires meets requirements; the wires are correctly connected; the grounding line is securely connected;
- Before turning on the unit, clean the water system and ensure that pipes are clean without contaminants. For the cleaning method, see 17, 18 Connecting Water Pipes
- Make sure that the working conditions do not exceed the rated working range.

## Items to be Checked during the Pilot Run

Check the following items after the unit has worked properly for a period of time:

S/N	Item	Checking Method	Reference Standard
1	Power supply voltage	Voltage	Rated voltage $\pm$ 10%
2	Working current of a single compressor	Current	13 - 23A
3	Working current of a single fan	Current	2 - 5A
4	Inlet water temperature in cooling operation	Temperature	15- 20°C
5	Outlet water temperature in cooling operation	Temperature	6 -15°C
6	Inlet water temperature in heating operation	Temperature	30 - 45°C
7	Inlet/outlet water temperature difference	Temperature	2 - 7°C
8	Discharge air temperature of the compressor	Temperature	65 -115°C
9	Low pressure in cooling mode	Pressure	6.5 - 10.0bar
10	High pressure in cooling mode	Pressure	22 - 41.5bar
11	Low pressure in heating mode	Pressure	3.0 - 10.0bar
12	High pressure in heating mode	Pressure	22 - 33bar
13	Vibration and operation noise	Listen or touch	No abnormal vibration or noise

**NOTE: THE REFERENCE STANDARDS ARE USED TO CHECK WHETHER A UNIT WORKS PROPERLY ONSITE. REFERENCE STANDARDS ARE DETERMINED BASED ON THE MAXIMUM AND MINIMUM WORKING CONDITIONS. IF REFERENCE STANDARDS ARE EXCEEDS AFTER THE UNIT HAS PROPERLY WORKED FOR A PERIOD OF TIME, CONTACT THE LOCAL DEALER OR DAIKIN FOR HELP.**

# Maintenance

## Repair



*Note: Before checking and maintaining the unit, confirm the safety precautions again.*



*Note: Before delivery, strict factory test is conducted to ensure the unit works at optimal performance. The unit must be maintained from time to time.*

- The unit can only be repaired and serviced by specially-trained technicians. After a unit is serviced, safety controls must be checked and analyzed before the unit is turned on.

## Items to be Checked Periodically

- Clean the fins of heat exchanger periodically.  
To optimize heat exchange efficiency of the condenser, check that the external part of the condenser is clean without leaves, cotton fibers, insects or other impurities which might clog up fins of the condenser. Use water or water vapor while cleaning to clean it.
- Check the status of the chilled water from time to time.  
Discharge water by loosening the air or water discharge plug.  
If the water quality degrades, replace water in the system timely. (for the reference standards, see page 16)  
Contaminated water can degrade the cooling capacity and corrode the heat exchanger and water pipes.
- Check whether free air exists in the water pipe system.  
Free air may get into the system even during the air discharging process. Discharge air from time to time.
- Clean the Y-shaped water filter in the water system periodically.
- Replenishing refrigerant and lubricant.  
Each unit is filled with enough refrigerant and lubricant before delivery.  
If the system operates smoothly, customers neither need nor are allowed to replenish or change the refrigerant or lubricant.  
If replenishment is necessary due to leakage, please refill the quantity specified in the nameplate of the unit.



## Maintenance

The unit must be checked on a routine basis to ensure performance. Routine check is the best way to reduce downtime and waste. The following needs to be checked on a routine basis:

Items	Monthly	Quarterly	Once half a year	Once a year	If necessary
<b>1. Compressor</b>					
Performance appraisal; whether there is abnormal sound	•				
Whether wires are securely connected	•				
Whether the working current is abnormal (fluctuation: 10%)		▲			
Discharge air temperature of the compressor		▲			
Check the oil level					▲
Check the color of the lubricant					▲
<b>2. Controller</b>					
Check parameter settings			▲		
Check protective device			▲		
Delay protector			▲		
Phase order protector			▲		
High/low pressure switch					▲
Differential water pressure switch/water flow switch					▲
Overload protector			▲		
Protector against extreme temperature of discharged air			▲		
<b>3. Plate heat exchanger</b>					
Check the water quality	•				
Clean the plate heat exchanger					▲
Seasonal protection measures (anti-freeze in winter)					▲
<b>4. Fin heat exchanger</b>					
Clean the fin heat exchanger		▲			
<b>5. Others</b>					
Whether the Y-shaped filter needs to be cleaned or replaced	•				
Whether bolts have loosened		•			

NOTE: THE PRECEDING MAINTENANCE PLAN IS FOR REFERENCE ONLY. THE MAINTENANCE PLAN MAY VARY BASED ON REGION.

• INDICATES ITEMS TO BE CHECKED BY CUSTOMERS; ▲ INDICATES ITEMS TO BE CHECKED BY SERVICE PERSONNEL.

## Water Processing Method

To ensure effective operation and durability, cleaning, washing and chemical processing are very important for water systems. Different types of water circuits need to be cleaned in different ways.

### ■ Close Re-Circulation System

Water systems of this type generally require no adjustment to subdue scale, and require no chemical to suppress mud and alga. This type of water system is recommended. Closed recycle systems may need anti-corrosion measures, including the following (for reference only):

NaNO<sub>2</sub>, borate and inhibitors for organic materials

- a. NaNO<sub>2</sub>, borate and silicate
- b. High density chromate solution and pH control
- c. pH and sulfite control
- d. Polyphosphate salt and silicate
- e. Alkali, phosphate and sulfite control

Because it is hard to control water quality, for closed recycle systems, we recommend that the total density of copper pipe inhibitors such as NaNO<sub>2</sub>, borax, silicate and benzothiazole should be no less than 1400 ppm. The inhibitor NaNO<sub>2</sub> is soluble in glycol, and can be used in northern areas or in the subsystem of solar power systems.

### ■ Open Re-circulation System

This type of water system is generally not recommended. They are exposed to the atmosphere, and are susceptible to scale, corrosion, mud and alga. Therefore, they might degrade the performance and reduce the service life of the unit.

### ■ Once-through System

Generally, once-through systems are only used for cooling only air conditioners. Water systems of this type use water from taps, lakes, rivers, and wells. Although the once-through system exchanges heat with the closed water circuit, it is not considered as an integral part of the water source heat pump system. Once-through systems may be troubled by either scale or corrosion. This type of water system requires large amount of adjustment water. Therefore, you need to consider the scale coefficient, the equipment used for cleaning work, and necessary anti-corrosion materials.



**Caution**

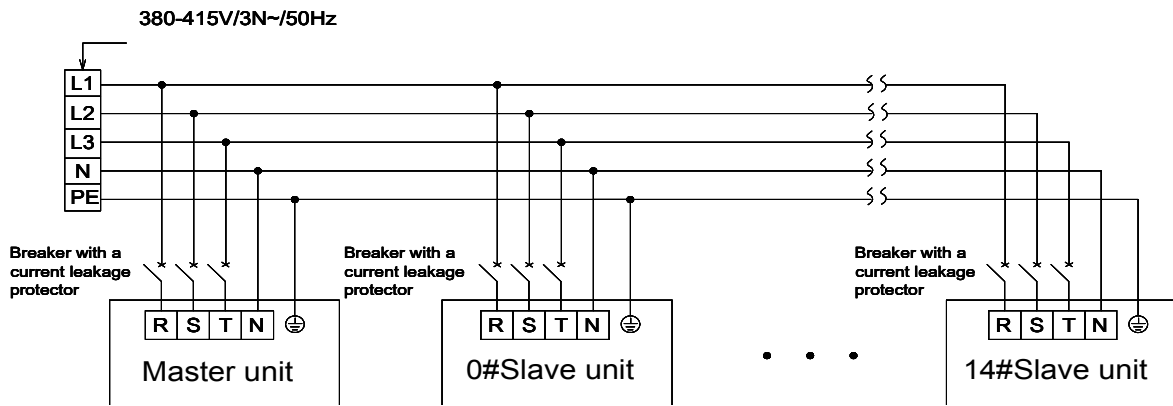
Water from lakes and rivers may cause problems such as mud and alga!

Comparison among closed recycle systems, open recycle systems and once-through systems

	Once-through System	Open Recycle System	Closed Recycle System
Scale control	<ol style="list-style-type: none"> <li>1. Surface activator such as polyphosphate salt</li> <li>2. Increased acidity</li> <li>3. pH adjustment</li> <li>4. Other considerations include: surface temperature, water temperature and system cleaning</li> </ol>	<ol style="list-style-type: none"> <li>1. Discharge</li> <li>2. Surface activator such as polyphosphate salt</li> <li>3. Increased acidity</li> <li>4. pH adjustment</li> <li>5. Softening (other considerations include: surface temperature, water temperature and system cleaning).</li> </ol>	No control is necessary
Corrosion control	<ol style="list-style-type: none"> <li>1. Low density corrosion inhibitor</li> <li>2. Anti-CaCO<sub>2</sub> plate</li> <li>3. pH control</li> <li>4. Proper material</li> </ol>	<ol style="list-style-type: none"> <li>1. High density (200 - 500 ppm) corrosion inhibitor</li> <li>2. Low density (20 - 30 ppm) corrosion inhibitor</li> <li>3. pH control</li> <li>4. Proper material</li> </ol>	<ol style="list-style-type: none"> <li>1. High density corrosion inhibitor</li> <li>2. Proper material</li> </ol>
Mud and alga control	<ol style="list-style-type: none"> <li>1. Chloridized hydroxybenzene</li> <li>2. Other chemicals</li> <li>3. Chlorine formed by hypochlorite and liquid chlorine</li> </ol>	<ol style="list-style-type: none"> <li>1. Chloridized hydroxybenzene</li> <li>2. Other chemicals</li> <li>3. Chlorine formed by hypochlorite and liquid chlorine</li> </ol>	No control is necessary

# Control System Instruction

## Power Cable Connection Diagram

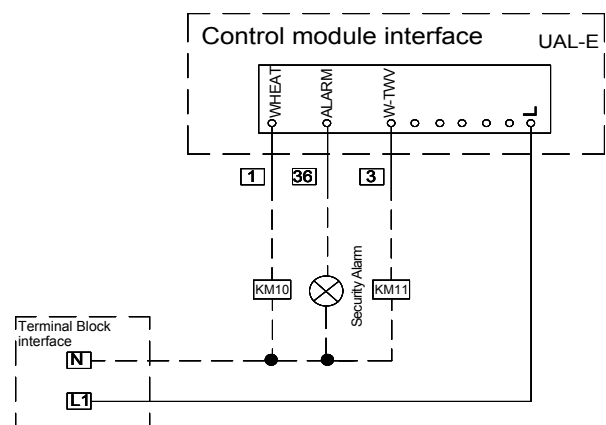
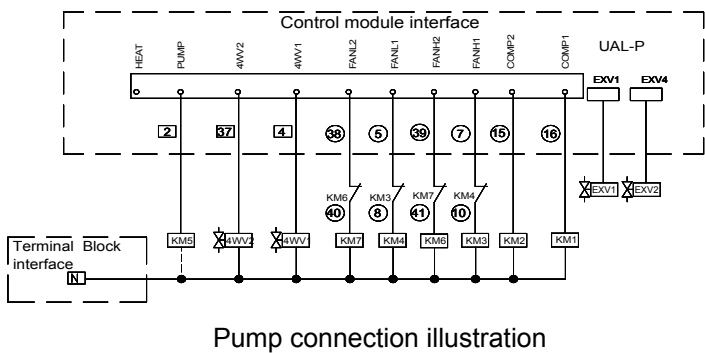


- The dimension of power cable connection refer to electrical parameters.
- All wires must be securely connected.
- Wires must not contact the refrigerating pipes or moving parts of the compressor and the fan.

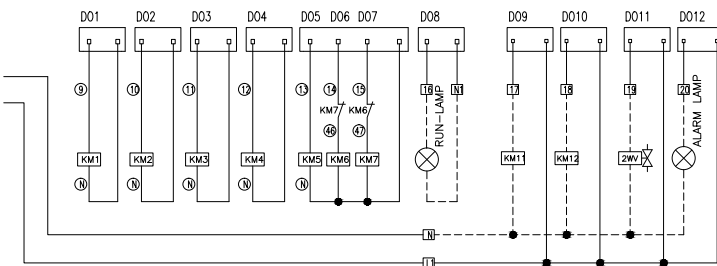
## PCB Instruction

- Connection illustration for the pump and the auxiliary heat exchanger

UAL210/UAL230



UAL340/UAL450



NOTE:

PARTS WITHIN THE DASHED BOX ARE TO BE CONNECTED ONSITE. THE OUTPUT VOLTAGE OF THE MODULE INTERFACE IS 220-240 V.

PARTS WITHIN THE REAL-LINE BOX ARE CONNECTED BEFORE DELIVERY.

A COOLING ONLY UNIT HAS NO 4WV1 AND 4WV2 OUTPUT. A SLAVE UNIT HAS NO EXTENSION BOARD UAL-E.

HEAT—BPHE ELECTRIC HEATER; PUMP—WATER PUMP; 4WV—4-WAY VALVE; FANL—FAN AT LOW SPEED

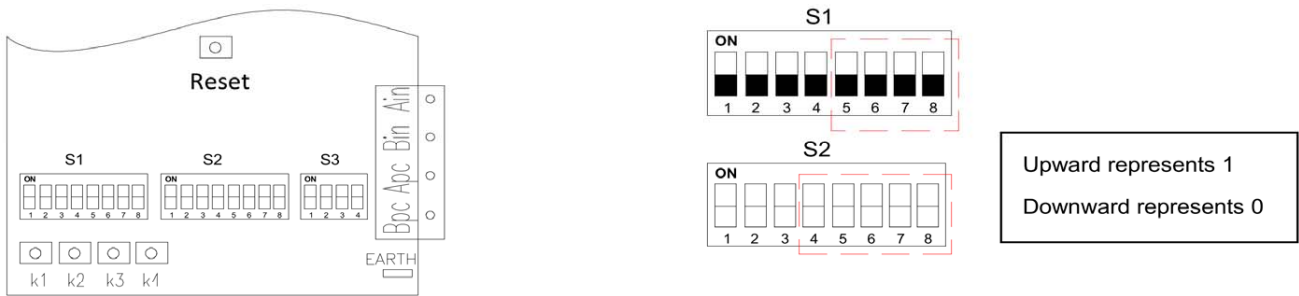
FANH—FAN AT HIGH SPEED; COMP—COMPRESSOR; EXV—ELECTRONIC EXPANSION VALVE

WHEAT—AUXILIARY ELECTRIC HEATER OF THE WATER SYSTEM; W-TWV—2-WAY VALVE INTERLOCK OF THE WATER SYSTEM

■ **Setting up Address Using DIP Switch**

The controller can be used to set the unit's capacity, address 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.

**UAL210/UAL230**



■ **A slave unit number must be set for the master unit (not for slave units) (bits 5~8 of S1):**

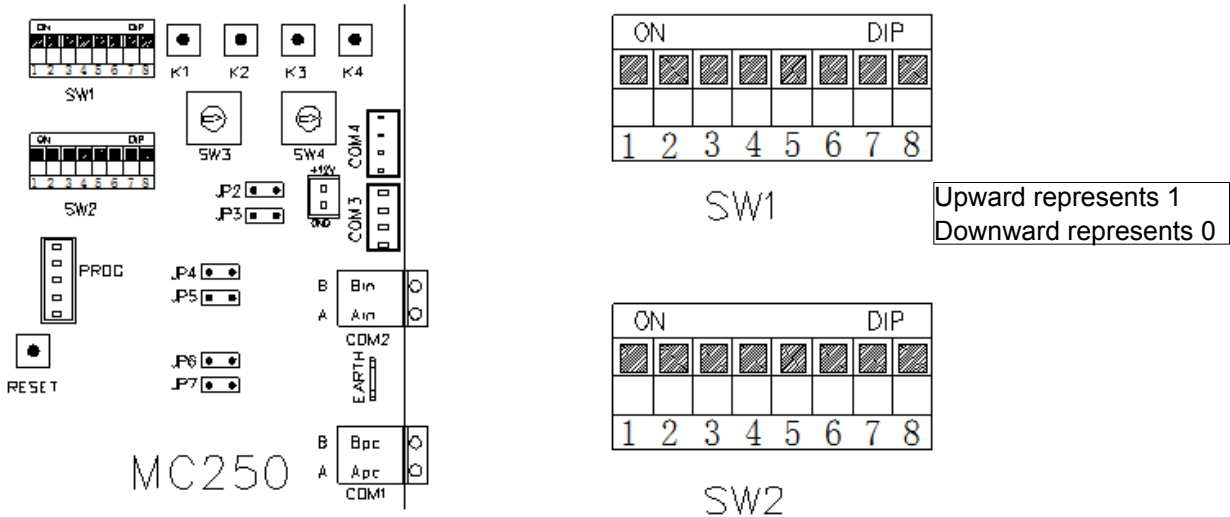
Slave unit Qty.	5	6	7	8	Slave unit Qty.	5	6	7	8
0	0	0	0	0	8	1	0	0	0
1	0	0	0	1	9	1	0	0	1
2	0	0	1	0	10	1	0	1	0
3	0	0	1	1	11	1	0	1	1
4	0	1	0	0	12	1	1	0	0
5	0	1	0	1	13	1	1	0	1
6	0	1	1	0	14	1	1	1	0
7	0	1	1	1	15	1	1	1	1

■ **DIP address setting (4~8 bits of S2): When the unit is accessed to the BMS system, the address of the master unit must be set as below:**

Address number	4	5	6	7	8	Address number	4	5	6	7	8
0	0	0	0	0	0	8	0	1	0	0	0
1	0	0	0	0	1	9	0	1	0	0	1
2	0	0	0	1	0	10	0	1	0	1	0
3	0	0	0	1	1	11	0	1	0	1	1
4	0	0	1	0	0	12	0	1	1	0	0
5	0	0	1	0	1	13	0	1	1	0	1
6	0	0	1	1	0	14	0	1	1	1	0
7	0	0	1	1	1	15	0	1	1	1	1

The address number of the master unit must be set to 0#, and that of the slave units should follow this. Address numbers must be unique in the same system.

**Address code setting**



The master machine must set the number of slave machines connected. The slave machine doesn't have to be set (bits 1~4 of SW2):

Slave unit Qty.	1	2	3	4	Slave unit Qty.	1	2	3	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

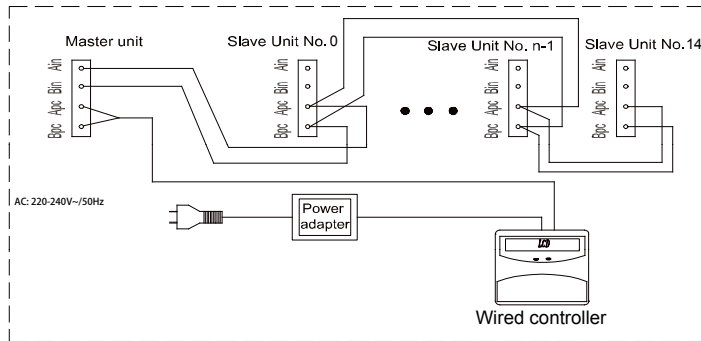
Address setting (SW3 and SW4: When SW1.1 is set as the master machine, the modbus equipment address corresponding to the master machine shall add 1; when SW1.1 is set as the slave machine, it has the address of the slave machine. The range is 0 ~ 14) :

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

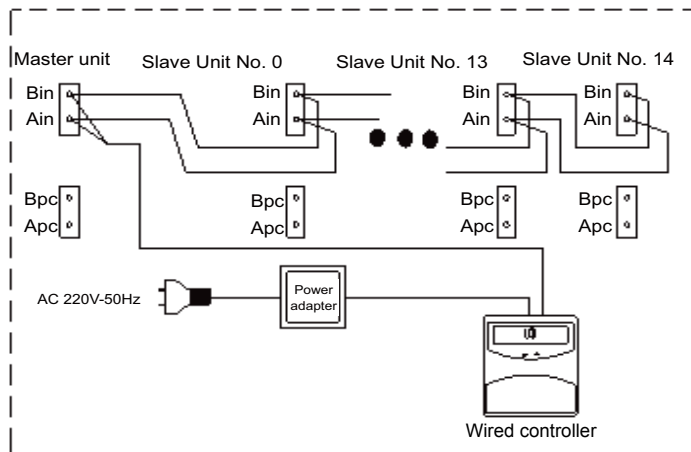
■ **Communication between master and slave unit**

- A) The unit can only be powered on and commissioned after the address numbers are configured.
- B) Control (Communication) Wire Connection

UAL210/UAL230



UAL340/UAL450



A) conductor (WTC pair with cross section area of at least 0.5mm<sup>2</sup> or 20AWG);  
 B) insulator;  
 C) Screen layer (twisted WTC with a screening factor no less than 95%);  
 D) Outer jacket (PVC);

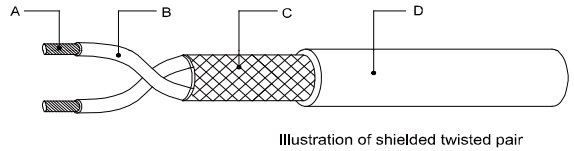


Illustration of shielded twisted pair

**NOTE:**

*BETTER CHOOSE NETWORK CABLES WITH A TENSER SHIELDING LAYER AND SMALLER TWISTING DISTANCE.*

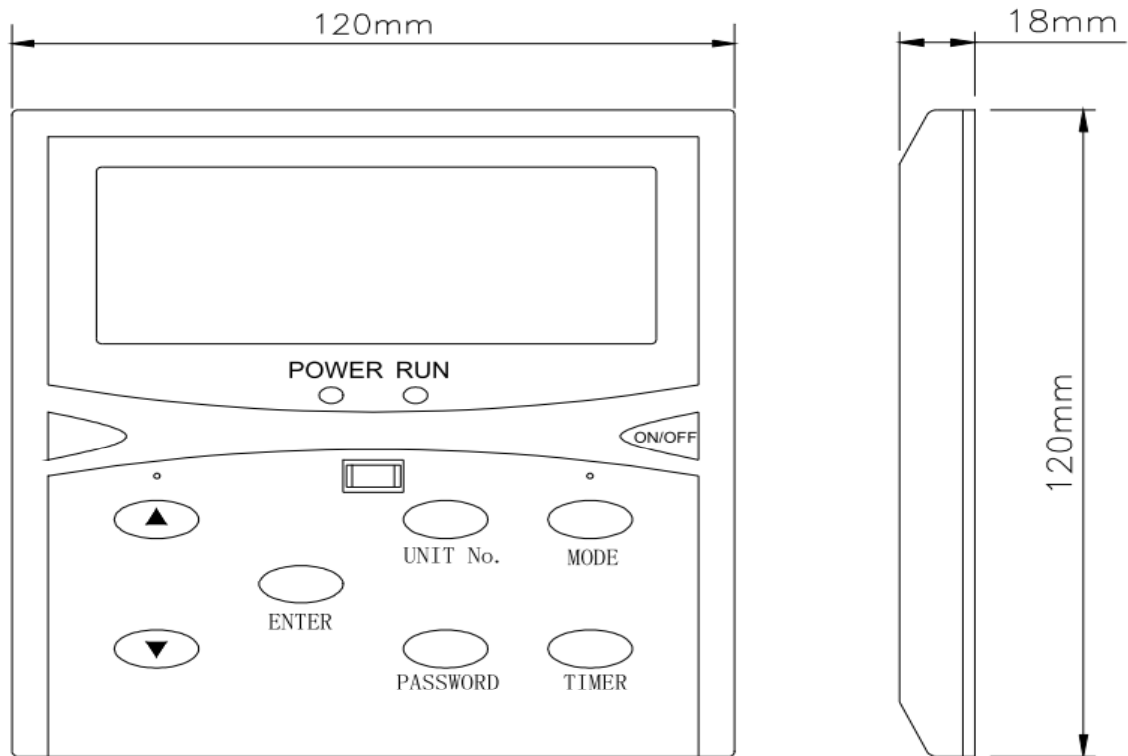
*PLEASE REFER TO THE UL2547 OR UL2791 WIRE SPECIFICATION.*

*THE CONTROL WIRE MUST NOT BE LONGER THAN 1000 METERS.*

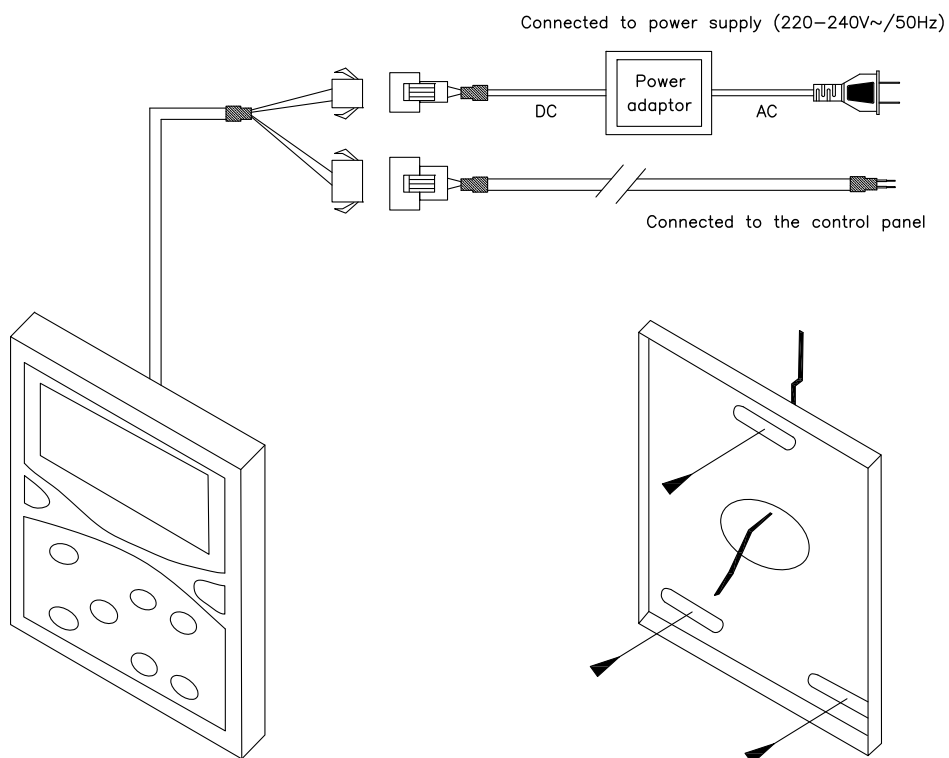
*THE CONTROL WIRE MUST BE AT LEAST 20CM AWAY FROM MAJOR CURRENT WIRE.*

# Wired Controller Instruction

## Dimensions



## Controller Installation



# Functions

MC305 is a wall-mounted LCD controller which directly controls air conditioners through keys on its panel.

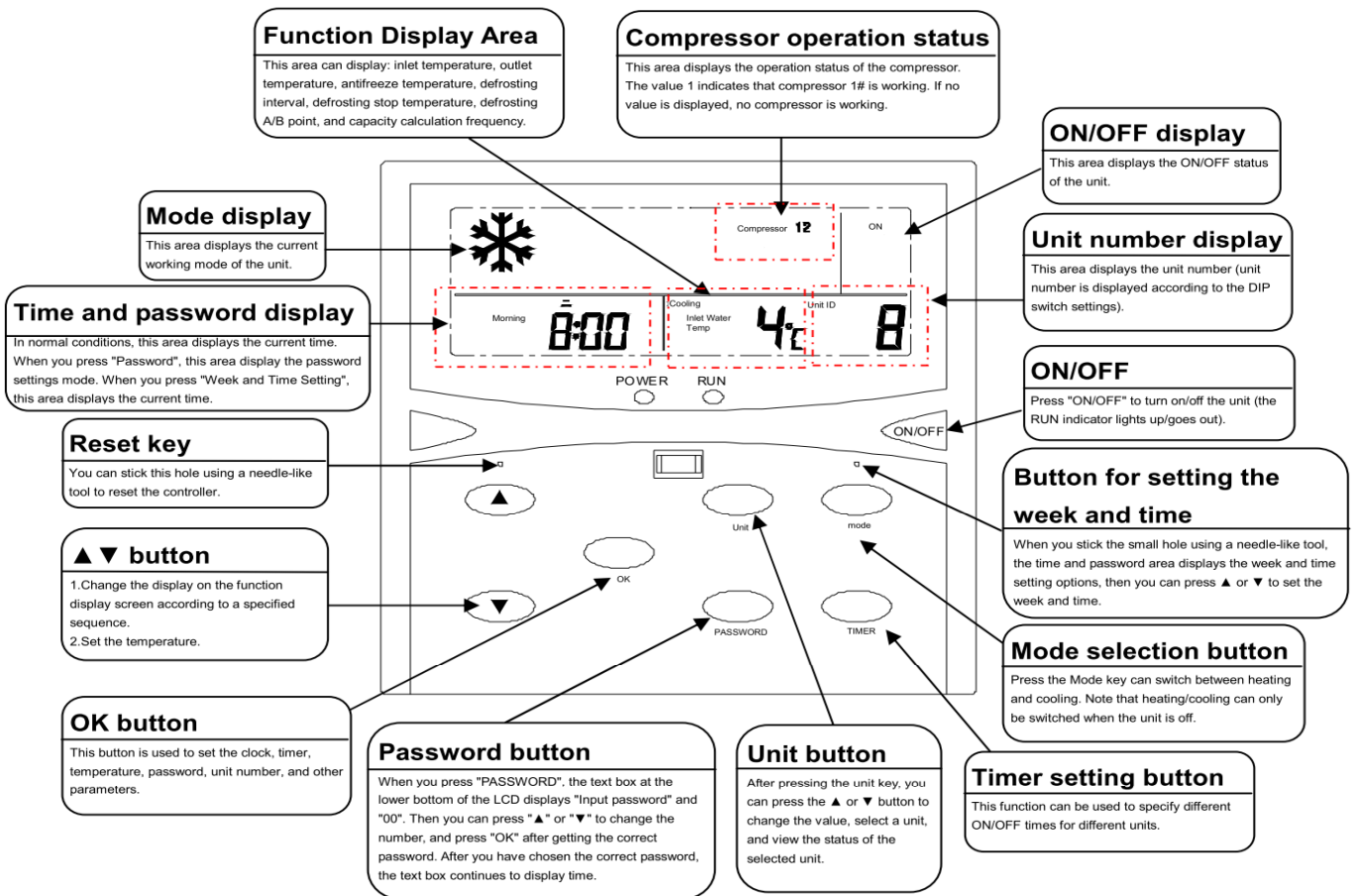
## 1) Features

Two operation modes: heating/cooling (note: operation modes can only be switched when the unit is off)

Temperature setting range for inlet water: cooling 9°C - 25°C; heating 25°C - 50°C; Temperature setting range for inlet water: cooling 9°C - 25°C (-10°C - 10°C for units with low water temperature); heating 25°C - 50°C.

- Temperature setting range for anti-freeze: 2°C - 5°C.
- A LED is used to indicate the status of the unit (ON/OFF).
- Timed ON/OFF: a timing schedule can be set for a maximum of 7 days with up to 4 timed actions each day.
- Real-time clock.
- Error code display speeds up diagnosis.
- Blue back light will shine 8 second if any key is pressed, it makes sure that we can browse or modify parameters even in dark.

## 2) Use Specification





The control system has the following functions:

S/N	Function	S/N	Function
1	Controlling the 2-way valve of the water system (relevant accessories need to be purchase separately);	11	Timing
2	Anti-freeze protection for plate heat exchanger	12	Protection for Compressors in Operation
3	Alternative defrosting	13	Averaging Workload among Compressors
4	Manual defrosting	14	Failure alarm, viewing and output
5	2-way Valve Interlock Control	15	Memorizing parameters in the case of a power failure
6	Week Setting	16	Setting and resetting the operating parameters of the unit
7	Status display	17	Electric heater
8	Auto-startup at power on	18	Setting the clock of the system
9	Setting the serial number of a unit	19	Displaying the indoor and inlet water temperatures
10	Memorizing the clock settings in the case of a power failure		

## Settings

### 1) Parameter Viewing

The controller can be used to view the operation status and parameters of any unit connected to it. Parameters can be view include operation status of the compressor, inlet/outlet water temperature, timer setting, cooling antifreeze temperature setting, antifreeze temperature setting in winter, defrosting temperature, and so on. After pressing the "UNIT" key, you can increase/decrease the blinking unit No. and view the parameters of the current unit by pressing "▲" or "▼". To view more working parameters of a unit, you can press "OK" and "▲" or "▼" after reaching the unit No.

### 2) Setting Parameters (parameters can be set only when the unit is turned off)

- ① When you press "PASSWORD", the text box at the lower bottom of the LCD displays "Input password" and "00". Then you can press "▲" or "▼" to change the number, and press "OK" after getting the correct password (the default password set in factory is "55"). After you have chosen the correct password, the parameters to be set blinks, and you can perform the following settings:
- ② Change operation parameters: after choosing the correct password, you can change operation parameters by following steps ② → ③ → ④ .  
Change password: after choosing the correct password, you can change the password by pressing "PASSWORD" again. In this case, the text box displays "00" and you can change the number by pressing "▲" or "▼". After reaching the number you want to set as the password, you can complete password setting and exit the parameter setting mode by pressing "OK".  
After pressing the "UNIT" key, you can increase/decrease the blinking unit No. by pressing "▲" or "▼", and set operation parameters (including inlet water temperature for cooling/heating mode) for the desired unit by pressing "OK" after reaching the unit No. You can choose and set parameters by pressing "▲" or "▼" and then press "OK" to save the setting.  
Repeat step ② to set other parameters (note: the controller quits the parameter setting mode if no key is pressed within 60 seconds).

### 3) Real Time Setting

To set week and time, stick the small hole above the "MODE" key using a needle-like tool (the LCD displays "Weekday Setting"); press "▲" or "▼" to choose the weekday; stick the small hole again to save weekday setting (the LCD displays "Time Setting" and the time starts to blink); press "▲" to change the hour and "▼" to change the minute; and stick the small hole again to save time setting.

#### 4) Timer Setting

- ① After pressing "TIMING", the LCD displays "Week Setting" and "Timer Setting" at the same time. Then you can press "▲" or "▼" to choose the weekday and press "OK" to save the weekday setting. The LCD now displays "Timer Setting", and you can continue to set the times of timing.
- ② Press "▲" or "▼" to set the number of timed actions for the day (you can set 4, as indicated above Unit No.) Select a timed action and press OK to select the action (timed ON/OFF).
- ③ Press "▲" or "▼" to select "Timed On" or "Timed Off" and press "OK". Now the LCD displays "Timer Setting" and "Time Setting" and the time displayed starts to blink.
- ④ You can press "▲" to change the hour and "▼" to change the minute" and press "OK" to save the time setting. Now the LCD displays "Timer Setting" and returns to step ③ . You can continue to set other timed actions for a whole week and then quit this setting mode.
- ⑤ To cancel a timed action, set the time for this action to 00:00. To cancel all timed actions, press "MODE" + "UNIT" until you hear a long beeping sound.

*NOTE: TIMED ON/OFF ACTIONS ARE TRIGGERED WHEN THE TIME OF THE WIRED CONTROLLER REACHES THE SET TIME. THEREFORE, IF THE TIME OF THE WIRED CONTROLLER IS INACCURATE, THE ACTUAL ON/OFF TIME COULD ALSO BE INACCURATE. IN THE TIMING PROCESS, IF YOU DO NOT PRESS ANY KEY IN FIVE SECONDS AFTER PRESSING THE UNIT, MODE, OR PASSWORD BUTTON, THE TIMING PROCESS IS TERMINATED AND THE RESULT IS NOT SAVED. THE DEFAULT TIME SETTING IS 00:00.*

#### 5) Manual Defrost

When the unit works in heating mode, press "▲" or "▼" until "Manual Defrosting" appears, and then press "OK" to enter Manual Defrosting mode.

#### 6) Reset

The controller can be reset by sticking the small hole above the "▲" key using a needle-like tool.

# Error Code

S/N	Code	Symptoms	S/N	Code	Symptoms
1	0	0#-slave communication failure	26	43	TH4 temperature sensor malfunction
2	01 ~ 14	1# ~ 14# slave communication failure	27	44	Header pipe water outlet temperature sensor failure
3	16	Overload of compressor/fan in #1	28	45	TH6 temperature sensor malfunction
4	17	Overload of compressor/fan in #2	29	46	TH7 temperature sensor malfunction
5	18	Pump overload	30	47	TH8 temperature sensor malfunction
6	19	Water flow is too small	31	48	TH9 temperature sensor malfunction
7	20	High pressure of #1	32	49	TH10 temperature sensor malfunction
8	21	Low pressure of #1	33	50	TH11 temperature sensor malfunction
9	24	High pressure of #2	34	51	TH12 temperature sensor malfunction
10	25	Temperature of inlet/outlet water is too low	35	52	Low pressure sensor malfunction of #2
11	26	Overload of electric heater in water system	36	53	Low pressure sensor malfunction of #1
12	27	Ambient temperature is too high/low	37	54	Memory failure
13	29	Superheat of #1 is too low	38	60	No system can be started
14	31	and master machine communication failure	39	63	Fan overload failure of System 1
15	32	suction temperature #1 is too high	40	64	Fan overload failure of System 2
16	33	discharge temperature #1 is too high	41	65	Too large water inlet and outlet water temperature difference failure
17	34	suction temperature #2 is too high	42	66	Reverse connection of water inlet and outlet water temperature sensors
18	35	discharge temperature #2 is too high	43	67	Failure of water inlet temperature sensor of the master machine
19	36	Low pressure of #2	44	68	Overload failure of Compressor 2 of System 1
20	37	Superheat of #2 is too low	45	69	Overload failure of Compressor 2 of System 2
21	38	Refrigerant leakage in #1	46	70	Abnormal exhaust temperature of System 1
22	39	Refrigerant leakage in #2	47	71	Abnormal exhaust temperature of System 2
23	40	TH1 temperature sensor malfunction	48	78	Communication failure of all the slave machines
24	41	TH2 temperature sensor malfunction	49	F6	Communication failure between wired controller and master unit
25	42	TH3 temperature sensor malfunction	50	ERRO	Dialing setting error

## Error Code and Running Status

■ Characters displayed by the LED indicator are explained in the following table

Character	Meaning	Character	Meaning	Character	Meaning	Character	Meaning	Character	Meaning	Character	Meaning
0	0/O	2	2	4	4	6	6	8	8	A	A
1	1	3	3	5	5	7	7	9	9	B	B

Character	Meaning	Character	Meaning	Character	Meaning	Character	Meaning	Character	Meaning	Character	Meaning
C	C	E	E	H	H	N	N	R	R	U	U
D	D	F	F	L	L	P	P	T	T	Y	Y

■ Codes representing normal operation statuses are explained in the following table

<b>Code</b>	<b>Status</b>	<b>Code</b>	<b>Status</b>	<b>Code</b>	<b>Status</b>
<i>NULL</i>	NULL: standby	<i>CSP</i>	CSP: shutdown during cooling	<i>HEAT</i>	HEAT: heating
<i>REST</i>	REST: reset	<i>DEF</i>	DEF: defrosting	<i>HSP</i>	HSP: shutdown during heating
<i>COOL</i>	COOL: cooling	<i>ToFS</i>	ToFS: system with changing water flow rate	<i>ToUS</i>	ToUS: system with constant water flow rate

## Cause for Failure and Troubleshooting

S/N	Error code	Description	Possible causes for the failure	Solution
1	Wired controller	Communication failure between wired controller and master unit	1. A/B communication lines of the wired controller and master unit are incorrectly connected.	Check and troubleshoot the communication lines.
	F6 alarm		2. The communication line has broken off.	
			3. Communication wires between the wired controller and the master unit cross over strong-current cables.	Rewire the unit, use shielded communication lines or keep the communication lines away from strong current cables.
			4. Control panel of the master unit is not powered on.	Check and troubleshoot the control panel
			5. The communication line between the master unit and the wired controller is too long.	1. Use shield lines 2. Short the JP7 jumper on the control panel
			6. Can communicate with the monitoring software while the wired controller sends out the alarm F6	Remove the R44 resistor on the wired controller or replace the wired controller
			7. Failure of communication ports on the control panel of the master unit	Replace
			8. Failure of communication ports on the wired controller	Replace
	9. Incorrect address setting for the master unit		Reset the S2 DIP switch of the master unit according to the technical specifications.	
2	The LED indicator of the unit displays ECXX and the wired controller displays XX (XX represents 00 ~ 14)	Communication failure of Slave Unit No. XX	1. Communication line of Slave Unit No. XX has broken off	Check and troubleshoot the communication lines.
			2. The control panel of Slave Unit No. XX is not powered on.	Check and troubleshoot the control panel
			3. Incorrect DIP address setting for the slave unit	Reset the addresses of all slave units and check that there is no duplicate address
			4. The number of slave unit is set incorrectly for the master unit.	Reset the number of slave units and check that the number match with all the addresses
			5. The PC communication port of the slave unit has broken down	1. Exchange positions of the two 485 on Slave Unit No. XX 2. Replace the control panel
			6. The communication line of Slave Unit No. XX is incorrectly connected.	Connect the communication line of Slave Unit No. XX to Apc/Bpc port
3	The LED indicator of the unit displays EC78	Communication failure for all slave units	1. The Bin/Ain communication line of the master unit has broken off	Reconnect the communication line to the Bin/Ain port and screw down the wire terminal
			2. One of the A/B communication lines is connected incorrectly	Check the communication line
			3. The Bin/Ain port of the master unit has broken down	Replace the control panel of the master unit

S/N	Error code	Description	Possible causes for the failure	Solution
4	The LED indicator of the unit displays ER16 and the wired controller displays 16	Compressor overload in #1	Over current in the compressor has triggered the overload protector.	<ol style="list-style-type: none"> <li>1. Check whether the electric current parameter of the overload protector is configured correctly by referring to the electric circuit.</li> <li>2. Check whether the resistor of the malfunctioned compressor meets specification requirements.</li> </ol>
		Fan overload in #1	Over current in the fan has triggered the overload protector.	<ol style="list-style-type: none"> <li>1. Check whether the electric current parameter of the overload protector is configured correctly by referring to the electric circuit.</li> <li>2. Check whether the resistor of the malfunctioned fan meets specification requirements.</li> </ol>
5	The LED indicator of the unit displays ER17 and the wired controller displays 17	Compressor overload in #2	Over current in the compressor has triggered the overload protector.	<ol style="list-style-type: none"> <li>1. Check whether the electric current parameter of the overload protector is configured correctly by referring to the electric circuit.</li> <li>2. Check whether the resistor of the malfunctioned compressor meets specification requirements.</li> </ol>
		Fan overload in #2	Over current in the fan has triggered the overload protector.	<ol style="list-style-type: none"> <li>1. Check whether the electric current parameter of the overload protector is configured correctly by referring to the electric circuit.</li> <li>2. Check whether the resistor of the malfunctioned fan meets specification requirements.</li> </ol>
6	The LED indicator of the unit displays ER18 and the wired controller displays 18	Pump overload	Over current in the pump has triggered the overload protector.	<ol style="list-style-type: none"> <li>1. Check whether the electric current parameter of the overload protector is configured correctly for the pump by referring to the electric circuit.</li> <li>2. Check whether the resistor of the malfunctioned pump meets specification requirements.</li> </ol>
7	The LED indicator of the unit displays ER19 and the wired controller displays 19	Alarm from the differential water pressure switch	The pump model is too small	Replace the pump
			The water filter is clogged up	Clean the water filter
			Air in the water system is not completely discharged	Turn on the pump to further discharge residual air
			The differential water pressure switch is clogged up	Repair or replace the differential water pressure switch
			The differential water pressure switch has broken down	Replace the differential water pressure switch
			Pressure drop in the water system is too sharp and unbalanced	Optimize the water system
			Other parts in the water system are clogged up	Check and repair

S/N	Error code	Description	Possible causes for the failure	Solution
8	The LED indicator of the unit displays ER20 and the wired controller displays 20	Low pressure of #1	The motor has broken down (cooling)	Check and troubleshoot
			Circulatory air is shorted (cooling)	
			The heat exchanger needs cleaning (cooling)	
			The fluorine-side filter is clogged up	Check and replace
			The water temperature is too high (heating)	Tune down the water temperature
			The water flow is too small (heating)	Check and troubleshoot
			The water filter is clogged up (heating)	Clean the water filter
			The ambient temperature is too high (cooling)	OFF
			Too much refrigerant	Release a proper amount of refrigerant
			Failure of high-voltage modular output port	Replace the module
			The switch has broken down	Replace pressure switch
9	The LED indicator of the unit displays ER21 and the wired controller displays 21	Low pressure of #1	Malfunction of heat exchanger during heating	Check and troubleshoot the outdoor unit
			Malfunction of motor during heating	Check and troubleshoot the outdoor motor
			Insufficient refrigerant or leakage	Check and replenish refrigerant
			Failure of low-voltage modular input port	Replace the module
			The low pressure sensor has broken down	Replace the pressure sensor
10	The LED indicator of the unit displays ER24 and the wired controller displays 24	High pressure of #2	The motor has broken down (cooling)	Check and troubleshoot
			Circulatory air is shorted (cooling)	
			The heat exchanger needs cleaning (cooling)	
			The fluorine-side filter is clogged up	Check and replace
			The water temperature is too high (heating)	Tune down the water temperature
			The water flow is too small (heating)	Check and troubleshoot
			The water filter is clogged up (heating)	Clean the water filter
			The ambient temperature is too high (cooling)	OFF
			Too much refrigerant	Release a proper amount of refrigerant
			Failure of high-voltage modular output port	Replace the module
			The switch has broken down	Replace pressure switch
11	The LED indicator of the unit displays ER25 and the wired controller displays 25	Temperature of inlet/outlet water is too low	The temperature of return water is set too low	Change the temperature setting for return water
			The water flow is too small, resulting in a large pressure drop	Check the water system (see Item 7 in the table)
12	The LED indicator of the unit displays ER26 and the wired controller displays 26	Overload of electric heater in water system	Check whether the water system is equipped with an electric heater	Short the overload switch for the electric heater if there is no electric heater in the water system
			The heating wire of the electric heater in the water system is shorted	Replace the electric heater of the water system

S/N	Error code	Description	Possible causes for the failure	Solution
13	The LED indicator of the unit displays ER27 and the wired controller displays 27	Ambient temperature is too high/low	The ambient temperature sensor has broken down	Replace the ambient temperature sensor
			The ambient temperature is too high/low	OFF
14	The LED indicator of the unit displays ER29 and the wired controller displays 29	Superheat of #1 is too low	The low pressure sensor or temperature sensor has broken down	Replace
			The electronic expansion valve fails to provide proper control	Upgrade the modular program
15	The LED indicator of the unit displays ER31	Communication failure between the master unit and slave units	Communication line of the slave unit has broken off	Check and troubleshoot the communication lines.
			Incorrect DIP address setting for the slave unit	Reset the addresses of all slave units and check that there is no duplicate address
			The number of slave unit is set incorrectly for the master unit	Reset the number of slave units and check that the number match with all the addresses
			The PC communication port of the slave unit has broken down	1. Exchange positions of the two 485 on the slave unit 2. Replace the control panel of the unit
			The communication line of the slave unit is incorrectly connected	Connect the communication line of the slave unit to the Apc/Bpc port
16	The LED indicator of the unit displays ER32 and the wired controller displays 32	Temperature of return air in #1 is too high (40°C)	The slider of the 4-way valve is jammed in the middle	Restart the unit and slap slightly on both sides of the 4-way valve. If the problem persists, replace the 4-way valve.
			The winding of the 4-way valve operates abnormally	Replace the winding
			The temperature of discharge air is too high and has triggered the racing protector of the compressor	(see Item 17 in the table)
17	The LED indicator of the unit displays ER33 and the wired controller displays 33	Temperature of discharge air in #1 is too high	The fan motor has broken down (cooling)	Check and troubleshoot the unit
			Circulatory air is shorted (cooling)	
			The heat exchanger needs cleaning (cooling)	
			The electronic expansion valve is not opened as expected (heating)	Check and troubleshoot the electronic expansion valve
			The water temperature is too high	Change the setting for return water temperature (to be performed by service personnel)
			Insufficient refrigerant or leakage	Replenish a proper amount of refrigerant
			Incomplete defrosting	Change the defrosting parameter (to be performed by service personnel)
18	The LED indicator of the unit displays ER34 and the wired controller displays 34	Temperature of return air in #2 is too high (40°C)	The slider of the 4-way valve is jammed in the middle	Restart the unit and slap slightly on both sides of the 4-way valve. If the problem persists, replace the 4-way valve.
			The winding of the 4-way valve operates abnormally	Replace the winding
			The temperature of discharge air is too high and has triggered the racing protector of the compressor	(see Item 19 in the table)



S/N	Error code	Description	Possible causes for the failure	Solution
19	The LED indicator of the unit displays ER35 and the wired controller displays 35	Temperature of discharge air in #2 is too high	The fan motor has broken down (cooling)	Check and troubleshoot the unit
			Circulatory air is shorted (cooling)	
			The heat exchanger needs cleaning (cooling)	
			The electronic expansion valve is not opened as expected (heating)	Check and troubleshoot the electronic expansion valve
			The water temperature is too high	Change the setting for return water temperature (to be performed by service personnel)
			Insufficient refrigerant or leakage	Replenish a proper amount of refrigerant
			Incomplete defrosting	Change the defrosting parameter (to be performed by service personnel)
20	The LED indicator of the unit displays ER36 and the wired controller displays 36	Low pressure of #2	Malfunction of heat exchanger during heating	Check and troubleshoot the outdoor unit
20	The LED indicator of the unit displays ER36 and the wired controller displays 36	Low pressure of #2	Malfunction of motor during heating	Check and troubleshoot the outdoor motor
			Insufficient refrigerant or leakage	Check and replenish refrigerant
			Failure of low-voltage modular input port	Replace the module
			The low pressure sensor has broken down	Replace the pressure sensor
21	The LED indicator of the unit displays ER37 and the wired controller displays 37	Superheat of #2 is too low	The low pressure sensor or temperature sensor has broken down	Replace
			The electronic expansion valve fails to provide proper control	Upgrade the modular program
22	The LED indicator of the unit displays ER38 and the wired controller displays 38	Refrigerant leakage in #1	Low pressure sensor failure	Replace the low pressure sensor
			Insufficient refrigerant	Add refrigerant
23	The LED indicator of the unit displays ER39 and the wired controller displays 39	Refrigerant leakage in #2	Low pressure sensor failure	Replace the low pressure sensor
			Insufficient refrigerant	Add refrigerant
24	The LED indicator of the unit displays ER40	TH1 temperature sensor failure	TH1 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH1 temperature sensor is shorted/open	Test whether the resistance of TH1 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
25	The LED indicator of the unit displays ER41	TH2 temperature sensor failure	TH2 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH2 temperature sensor is shorted/open	Test whether the resistance of TH2 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module

S/N	Error code	Description	Possible causes for the failure	Solution
26	The LED indicator of the unit displays ER42	TH3 temperature sensor failure	TH3 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH3 temperature sensor is shorted/open	Test whether the resistance of TH3 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
27	The LED indicator of the unit displays ER43	TH4 temperature sensor failure	TH4 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH4 temperature sensor is shorted/open	Test whether the resistance of TH4 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
28	The digital pipe of the unit displays ER44	Failure of water outlet temperature sensor of the header pipe	If TH5 Temperature Sensor falls off or is not inserted well	Check the control module, and insert the temperature sensor
			If TH5 Temperature Sensor has short circuit/open circuit	Determine whether the resistance on both ends of the TH4 Sensor is normal with the multimeter/ Replace
			In case of temperature sensor detection circuit problem of control module	Replace the control module
29	The LED indicator of the unit displays ER45	TH6 temperature sensor failure	TH6 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH6 temperature sensor is shorted/open	Test whether the resistance of TH6 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
30	The LED indicator of the unit displays ER46	TH7 temperature sensor failure	TH7 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH7 temperature sensor is shorted/open	Test whether the resistance of TH7 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
31	The LED indicator of the unit displays ER47	TH8 temperature sensor failure	TH8 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH8 temperature sensor is shorted/open	Test whether the resistance of TH8 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
32	The LED indicator of the unit displays ER48	TH9 temperature sensor failure	TH9 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH9 temperature sensor is shorted/open	Test whether the resistance of TH9 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module

S/N	Error code	Description	Possible causes for the failure	Solution
33	The LED indicator of the unit displays ER49	TH10 temperature sensor failure	TH10 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH10 temperature sensor is shorted/open	Test whether the resistance of TH10 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
34	The LED indicator of the unit displays ER50	TH11 temperature sensor failure	TH11 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH11 temperature sensor is shorted/open	Test whether the resistance of TH11 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
35	The LED indicator of the unit displays ER51	TH12 temperature sensor failure	TH12 temperature sensor is not properly plugged or has broken off	Check the control module and re-plug the temperature sensor
			TH12 temperature sensor is shorted/open	Test whether the resistance of TH12 sensor meets specification requirements/replace if not
			There is something wrong with the test circuit of the temperature sensor in the control module	Replace the control module
36	The LED indicator of the unit displays ER52	Low pressure sensor failure of #2	Three lines of the low pressure sensor is incorrectly connected	Reconnect the connecting lines of the low pressure sensor
			The low pressure sensor is shorted/open	Repair or replace the lines of the low pressure sensor
			The Low pressure sensor has broken down	Replace the low pressure sensor
			There is something wrong with the test circuit of the low pressure sensor in the control module	Replace the control module
37	The LED indicator of the unit displays ER53	Low pressure sensor failure of #1	Three lines of the low pressure sensor is incorrectly connected	Reconnect the connecting lines of the low pressure sensor
			The low pressure sensor is shorted/open	Repair or replace the lines of the low pressure sensor
			The Low pressure sensor has broken down	Replace the low pressure sensor
			There is something wrong with the test circuit of the low pressure sensor in the control module	Replace the control module
38	The digital pipe of the unit displays ER54	Memory failure	Memory damage	Replace the control module
39	The digital pipe of the unit displays ER60	No system can be started	SYS1 and SYS2 cannot be automatically recovered	Check the failures of SYS1 SYS2 and recover
40	The digital pipe of the unit displays ER63	Fan overload failure of System 1	The running current of the fan is too large. Action of overload protector	<ol style="list-style-type: none"> <li>1. According to the circuit diagram, check whether the setting value of current of the corresponding overload protector is correct;</li> <li>2. Check whether the resistance of the corresponding fan is abnormal.</li> </ol>

S/N	Error code	Description	Possible causes for the failure	Solution
41	The digital pipe of the unit displays ER64	Fan overload failure of System 2	The running current of the fan is too large. Action of overload protector	1. According to the circuit diagram, check whether the setting value of current of the corresponding overload protector is correct; 2. Check whether the resistance of the corresponding fan is abnormal.
42	The digital pipe of the unit displays ER65	The water inlet and water outlet temperature difference is too large	The water flow is too small	Check whether the water flow of water system is normal
			TH6 and TH7 falls off	Check whether TH6 and TH7 are inserted reversely/fall off
			Detection circuit problem of control module temperature sensor	Replace the control module
43	The digital pipe of the unit displays ER66	Reverse connection of water inlet and outlet water temperature sensors	TH6 and TH7 are inserted reversely or fall off	Check whether TH6 and TH7 are inserted reversely/fall off
			Detection circuit problem of control module temperature sensor	Replace the control module
44	The digital pipe of the unit displays ER67	Failure of water inlet temperature sensor of the master machine	TH6 Temperature Sensor falls off or is not inserted well	Check the control module and insert the temperature sensor
			If TH6 Temperature Sensor has short circuit/open circuit	determine whether the resistance on both ends of the TH9
			Detection circuit problem of control module temperature sensor	Sensor is normal with the multimeter/Replace
45	The digital pipe of the unit displays ER68	Overload failure of Compressor 2 of System 1	The running current of the compressor is too large. Action of overload protector	Replace the control module
46	The digital pipe of the unit displays ER69	Overload failure of Compressor 2 of System 2	The running current of the compressor is too large. Action of overload protector.	1. According to the circuit diagram, check whether the setting value of current of the corresponding overload protector is correct;
47	The digital pipe of the unit displays ER70	Abnormal exhaust temperature of System 1	The exhaust temperature of compressor is too high	2. Check whether the resistance of the corresponding compressor is abnormal.
48	The digital pipe of the unit displays ER71	Abnormal exhaust temperature of System 2	The exhaust temperature of compressor is too high	To Shut down or manually reset to remove alarm
49	The digital pipe of the unit displays ERRO	Dialing setting error	Dialing setting error on the module	According to the circuit diagram, complete the dialing setting again

**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 confirm with 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 qualified 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 specified by Daikin. Ask a qualified installer 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.



The air conditioners manufactured by Daikin Industries have received **ISO 9001 series** certification for quality assurance.

Certificate Number. 9601019



The airconditioning factories of Daikin Industries have received environmental management system standard **ISO 14001** certification.

Certificate Number. EMS80362

**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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