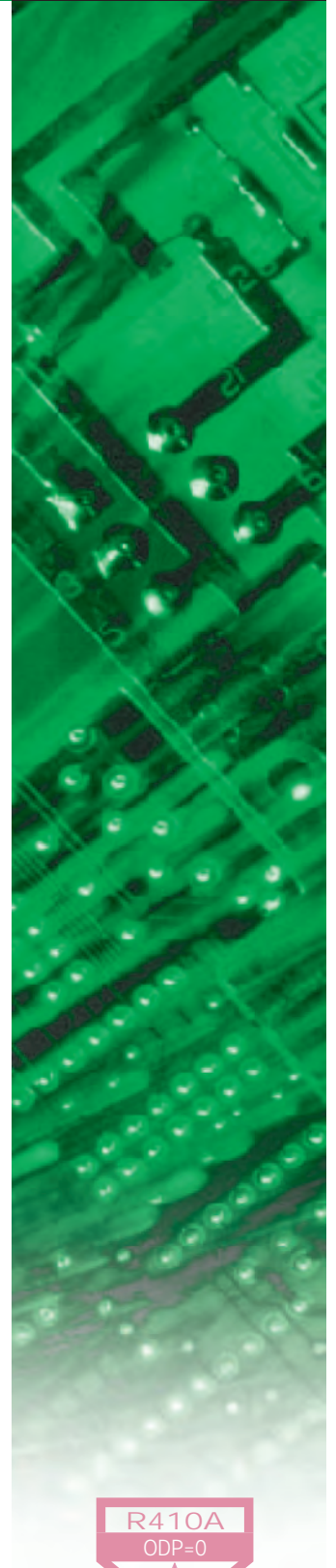


Modular Water Cooled Heat Pump

Standard efficiency series Models: UWL020/030/040/060B5-FBAE
Cooling Capacity: 69/101/140/215kW
Heating Capacity: 91/135/200/290kW

High efficiency series Models: UWL030/040B5-FAAE
Cooling Capacity: 110/145kW
Heating Capacity: 150/200kW



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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.

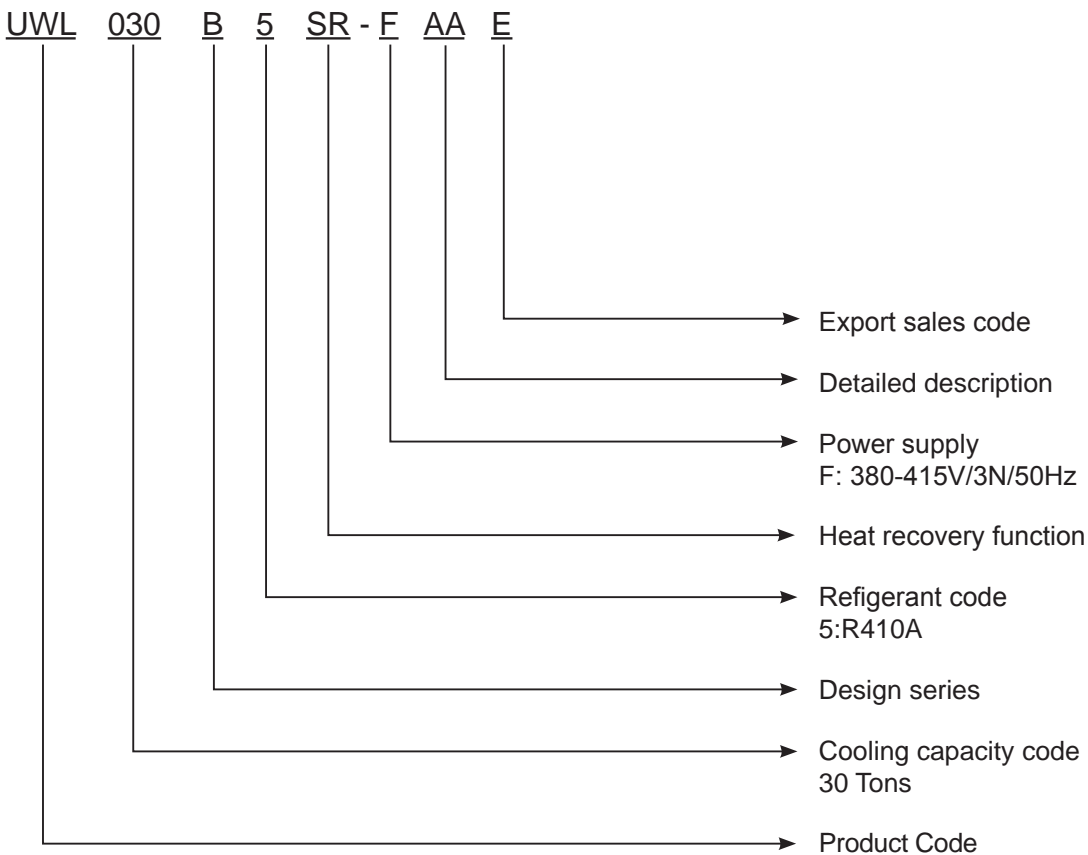
Caution: Sharp edges and coil surfaces are a potential injury hazard. Avoid contact with them.

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

Model Series

Series	Model	Cooling Capacity	Heating Capacity	Max Combination Qty
Standard efficiency	UWL020B5-FBAE	69kW	91kW	16
	UWL030B5-FBAE	101kW	135kW	16
	UWL040B5-FBAE	140kW	200kW	16
	UWL060B5-FBAE	215kW	290kW	16
High efficiency	UWL030B5-FAAE	110 kW	150kW	16
	UWL040B5-FAAE	145 kW	200kW	16

Nomenclature



Product code — UWL: Modular water cooled heat pump, DAIKIN brand

Cooling capacity code — 020, 030, 040

Design series — A, B, C

Refrigerant code — 3: R134a, 4:R407C, 5: R410A, R22: default

Product type — standard: default, LC: Low cooling, LH: Low heating, SR: Heat recovery

Power supply — F: 380-415V/3N/50Hz, A: 220-240V/50Hz

Detailed description — AA, AB, AC

Features

Low carbon and environment friendly

Cooling and heating function can be realized through different system design schemes with reusable energy as the heat exchange system, the unit can be more efficient and energy-saving. R410A environmental friendly refrigerant is adopted without limit on use term, which does not destroy the ozone layer.

Double backup operation makes double improvement of reliability

There are 2 to 4 sets of compressors in every single unit; failure of a single compressor does not affect operation of the unit, failure of unit module does not affect operation of the combination system. During use through combination it doesn't need another one master unit for standby, so that the air conditioning system is safer and more economic in investment. Double backup operation can make double increase in reliability of the air conditioning system; the air conditioning system may continue to run before maintenance personnel arrive, which can make maintenance and repair easy in remote areas.

High efficiency shell and tube heat exchanger for condenser and evaporator

Shell and tube heat exchanger with large pipe diameter is adopted for evaporator and condenser, which has high tolerance on water quality, while the unit has strong ability to resist filth blockage. Internal thread finned copper tubes are adopted inside the shell and tube heat exchanger, which can increase the effective heat transfer surface; turbulent flow type water flow process design can delay internal scale and increase thermal efficiency. Using multiple sets of electronic expansion valve for precision throttling can make precise dynamic throttling when water temperature condition changes, and it can stably control target superheat of the unit, so as to keep safe and efficient operation of the unit.

Double balance operation extends service life of the overall unit

Compressors in single unit have balance operation time function; and the operation time among modules can be balanced during multiple module combination; double balance operation design can reduce the rate of failure, which can extend the service life of the overall unit.

Self-protection and self-diagnosis function

The unit has water over-temperature protection, low water flow protection, protection for compressor frequent start-stop, refrigerant high/low pressure protection, etc.; when the water temperature is too low in winter, the unit enter anti-freezing operation protection automatic by starting up water pump. When failure occurs, self-diagnosis function can rapidly and accurately show the cause of the problem; error code display can assist rapid troubleshooting.

Compact and flexible air conditioning solution

The compact modular body can be moved via good elevator without large hoisting equipment, so that it can be easily moved into the existing water cooling machine room, and can enter the basement for replacement of old machine without dismantling the existing construction during reform of some old projects.

Rain proof body avoids investment in machine rooms

The rain proof shell can meet the requirement of outdoor installation, which can make investment in machine rooms unnecessary. The closed body can effectively reduce the operation noise of the unit.

Easily realize partitioned management

Cooling capacity is under flexible collocation, units in different areas and different floors can be control start/stop seperately, people can use air conditioning in rental office when they work overtime.

Multiple cold and heat sources

Heat pump application can be realized through switch of external water lines; the system has higher efficiency with utilization of waste heat and renewable energy, which realize energy saving and low carbon operation. The entering water temperature has wide range, which can adopt different cold and heat sources.

Large capacity unit reduces installation

DAIKIN new modular water cooled chiller (heat pump) unit has 40RT large capacity single module; the number of unit can be reduced with large refrigeration capacity requirment; there is little installation, which can greatly save the occupation area; it can realize the amount of 16 modular combination, and there will be no waste for cooling capacity selection.

Convenient for capacity increase of the system

With increase of vistors flow rate and climate warming, the cold capacity of the existing central air-conditioning of the building is not enough, UWL can be moved easily and the capacity increase of the capacity is flexible, which has outstanding performance for the small scale capacity increase in the existing system.

Primary pump variable flow design

After all compressors of the single modular of combination system are unloaded, the unit can output control signal, then the water flow of the corresponding unit will be shut down; the requirement of the total water flow of the system is reduced; automatic adjustment is made through the frequency conversion pump, so as to easily realize primary pump variable flow, which can make the air conditioning system with higher energy saving.

Higher efficiency of combining operation

In the area where it is hot in summer while cool in water, the cooling is long in summer while requirement for heating is few in winter. UWL can be combined with air cooled heat pump; UWL water cooled modular heat pump has high efficiency for cooling in summer, and the air cooled heat pump is mainly for heating. This air conditioning system has high efficiency with economic investment.

Specifications

General data

Model			UWL020B5-FBAE	UWL030B5-FBAE	UWL040B5-FBAE	UWL060B5-FBAE	UWL030B5-FAAE	UWL040B5-FAAE	
Water loop	Cooling	Normal cooling capacity	kW	69	101	140	215	110	145
		Rated cooling power input	kW	15.5	23.7	31.5	44.5	23.9	31.1
		EER		4.5	4.3	4.4	4.83	4.6	4.7
		Rated running current	A	29.3	44.0	59.7	84.1	43.5	56.7
		Evaporator water flow (user side)	m ³ /h	11.9	17.4	24.1	37.0	18.9	24.9
		Condenser water flow (heat source side)	m ³ /h	14.8	21.7	30.1	46.2	23.7	31.2
		Evaporator WPD (user side)	kPa	36.0	28.0	45.0	39.0	41.0	48.0
	Condenser WPD (heat source side)	kPa	56.0	47.0	68.0	60.0	68.0	45.0	
	Heating	Normal heating capacity	kW	91	135	200	290	150	200
		Rated heating power input	kW	19.9	30.1	44.0	56.0	30.0	40.0
		COP		4.6	4.5	4.5	5.18	5.0	5.0
		Rated running current	A	35.3	52.9	73.4	101.3	53.1	68.3
		Evaporator water flow (heat source side)	m ³ /h	14.8	21.7	30.1	46.2	23.7	31.2
		Condenser water flow (user side)	m ³ /h	11.9	17.4	24.1	37.0	18.9	24.9
Evaporator WPD (heat source side)		kPa	57.0	44.0	68.0	60.0	68.0	73.0	
Condenser WPD (user side)	kPa	35.0	29.0	45.0	39.0	45.0	31.0		
Ground water	Cooling	Normal cooling capacity	kW	75	110	148	223.0	118	150
		Rated cooling power input	kW	14.0	20.7	27.0	40.0	20.0	25.3
		EER		5.4	5.3	5.5	5.58	5.9	5.9
		Rated running current	A	26.5	40.5	54.6	78.7	38.7	50.4
		Evaporator water flow (user side)	m ³ /h	12.9	18.9	25.5	38.4	20.3	25.8
		Condenser water flow (heat source side)	m ³ /h	7.7	11.3	15.2	23.0	12.2	15.5
		Evaporator WPD (user side)	kPa	42.0	32.0	50.0	42.0	49.0	49.0
	Condenser WPD (heat source side)	kPa	15.0	12.0	20.0	15.0	20.0	12.0	
	Heating	Normal heating capacity	kW	81	120	165	245.0	130	170
		Rated heating power input	kW	19.0	28.5	40.0	55.5	28.8	38.0
		COP		4.3	4.2	4.1	4.41	4.5	4.5
		Rated running current	A	34.7	52.3	69.6	100.1	52.3	67.1
		Evaporator water flow (heat source side)	m ³ /h	7.7	11.3	15.2	23.0	12.2	15.5
		Condenser water flow (user side)	m ³ /h	12.9	18.9	25.5	38.4	20.3	25.8
Evaporator WPD (heat source side)		kPa	16.0	11.5	20.0	15.0	18.0	19.0	
Condenser WPD (user side)	kPa	42.0	33.0	50.0	42.0	52.0	32.0		
Refrigerant			R410A						
Power supply			380-415V/3N~/50Hz						
Unit dimensions	WxDxH	mm	1800×650×1600			1800×740×1600	1800×650×1600		
Packing dimension	WxDxH	mm	1915×715×1750			1935×780×1750	1915×715×1750		
Net weight		kg	490	630	745	950	655	804	
Gross weight		kg	510	650	765	975	670	820	
Operating weight		kg	539	693	820	1055	720	885	
Accessories in controller kit UWL-A1E			IOMM/remote controller/communication cable between controller and master unit (40m)						

Notes:

- Water loop condition:
Cooling: evaporator leaving water 7°C/0.172m³/(h.kW), condenser entering water 30°C/0.215m³/(h.kW).
Heating: evaporator entering water 20°C, condenser leaving water 45°C, water flow same as cooling mode.
- Ground water condition:
Cooling: evaporator leaving water 7°C/0.172m³/(h.kW), condenser entering water 18°C/0.103m³/(h.kW).
Heating: evaporator entering water 15°C, condenser leaving water 45°C, water flow same as cooling mode.
- Units can be modular combined based on the same or different unit as per the requirement during actual application, the quantity of units combined is 1-16, and the above table shows the parameters for the single unit.
- The parameters of water loop condition is for nameplate of the unit, and the parameters of ground water condition is for reference for design.

Components data

Model		UWL020B5-FBAE	UWL030B5-FBAE	UWL040B5-FBAE	UWL060B5-FBAE	UWL030B5-FAAE	UWL040B5-FAAE	
Evaporator	Type	High efficiency shell and tube heat exchanger						
	Water volume	L	31	58	56	83	65	71.6
	Piping connecting	Inch	R2	R2	R2-1/2	R3	R2-1/2	R2-1/2
Condenser	Type	High efficiency shell and tube heat exchanger						
	Water volume	L	31	58	56	17.9	65	71.6
	Piping connecting	Inch	R2	R2	R2-1/2	R3	R2-1/2	R2-1/2
Compressor	Type	Scroll compressor						
	Qty		2	3	4	3	3	4
Throttle device		EXV						
Numbers of circuits			2	3	4	3	3	4
Refrigerant	Type	R410A						
	Charge	kg	2.9×2	2.9×3	2.9×4	6.4×3 *	3.4×3	3.5×4 *
Oil	Type	FVC68D			3MAF POE		FVC68D	
	Charge	L	3	3	3	4.4	3	3
Casing	Colour	RAL 7032 Pebble Grey						
	Material	Electro-galvanized Mild Steel						
Protection devices		High pressure switch /Thermal and current overload protector						

Note:

1. All specifications are subjected to change by the manufacturer without prior notice.
2. *The value is the full charge amount of refrigerant. Factory only charges 11kg, the rest amount shall be replenished at site.

Electrical data

Model			UWL020B5-FBAE	UWL030B5-FBAE	UWL040B5-FBAE	UWL060B5-FBAE	UWL030B5-FAAE	UWL040B5-FAAE
Compressor	Rated running current	A	18.3*2	18.3*3	18.3*4	36.8*3	18.3*3	18.3*4
IP/ Insulation grade			IPX4/E					
Unit max running current		A	49.6	72.9	93.5	151.7	74	95
Unit max power input		kW	27.1	39.3	52.2	76.9	40.5	51.8
Minimum power cable diameter	Main line (R/S/T)	mm ²	10	25	35	50	25	35
	Neutral line	mm ²	10	16	25	35	16	25
	Earth line	mm ²	10	16	16	25	16	16

Notes:

1. Unit max running current and max power input is tested under ground water source condition: cooling mode, user side EWT 30°C, heat source side EWT 50°C (FAA) / 45°C (FBA).
2. Compressor rated running current is compressor manufacturer design data which is based on condition of 7.2°C evaporating temperature, 54.4°C condensing temperature and 35°C ambient.
3. All specifications are subjected to change by the manufacturer without prior notice.

Safety devices

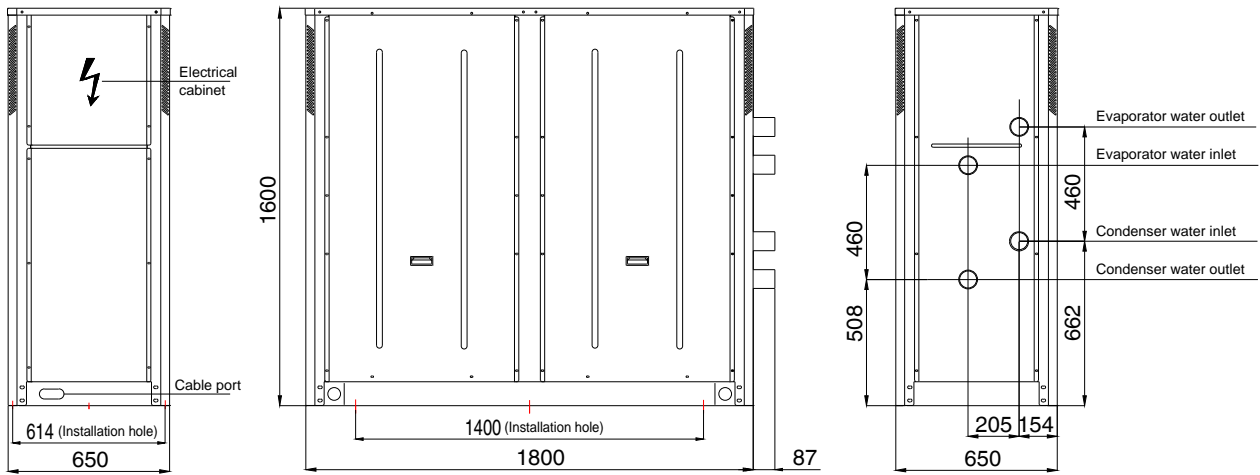
Model			UWL020B5-FBAE	UWL030B5-FBAE	UWL040B5-FBAE	UWL060B5-FBAE	UWL030B5-FAAE	UWL040B5-FAAE
Safety device	High pressure switch	Type		PSW,H20PS B				
		Open	MPa	4.15 ± 0.1			4.0 + 0	4.15 ± 0.1
		Close	MPa	3.11 ± 0.1			3.0 ± 0.15	3.11 ± 0.1
	Low pressure switch	Type		N/A				
		Open	MPa	N/A				
		Close	MPa	N/A				
	Phase sequencer		YES					
	Discharge temperature setting		°C/°F	130/266				

Notes:

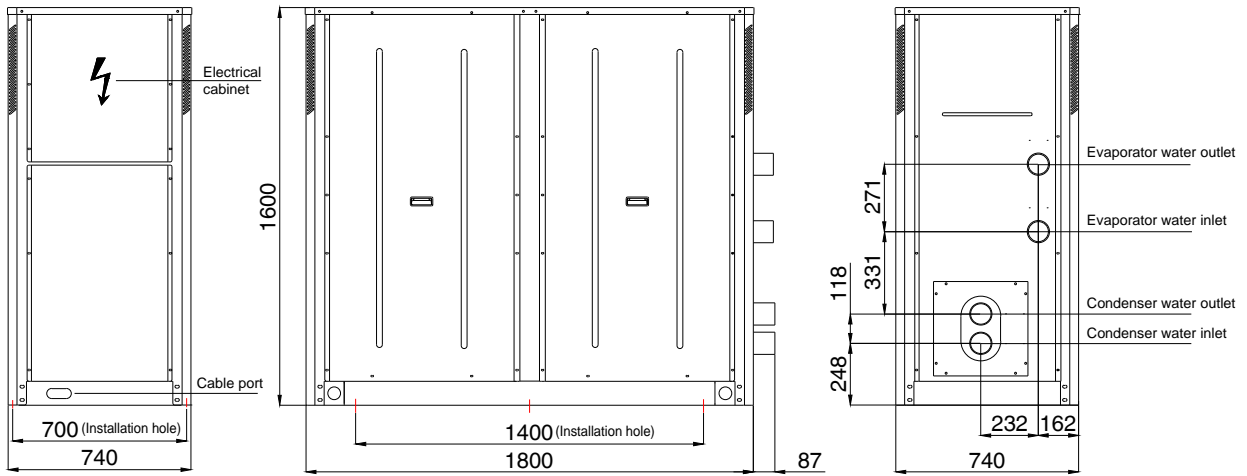
1. All specifications are subjected to change by the manufacturer without prior notice.

Dimensions

UWL020/030/040B5



UWL060B5



Unit: mm

Water pipes connecting dimension:

Model	Pipe
UWL020B5-FBAE	R2
UWL030B5-FBAE	R2
UWL040B5-FBAE	R2-1/2
UWL060B5-FBAE	R3
UWL030B5-FAAE	R2-1/2
UWL040B5-FAAE	R2-1/2

Unit: inch

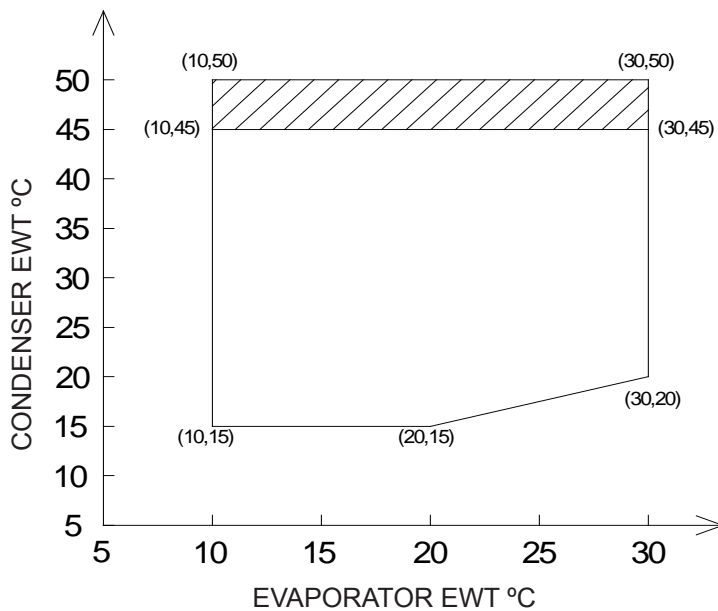
Performance Data

Operating range

Model	Evaporator Entering Water Temperature	Condenser Entering Water Temperature
UWL020B5-FBAE	10°C to 30°C	15°C to 45°C
UWL030B5-FBAE	10°C to 30°C	15°C to 45°C
UWL040B5-FBAE	10°C to 30°C	15°C to 45°C
UWL060B5-FBAE	10°C to 30°C	15°C to 45°C
UWL030B5-FAAE	10°C to 30°C	15°C to 50°C
UWL040B5-FAAE	10°C to 30°C	15°C to 50°C

Note:

1. The water flow should be set to 70~130% of the standard water flow as a guide(except the shaded area in the drawing below).
2. Make sure the chiller is within the recommended operating range within one hour after starting operation.



Note:

- *1. The shaded area at top of operation range: the condenser EWT is more than 45°C, the unit will be under restrictions in this area during the running. The condenser water flow should be set 100%~130% of the standard water flow.
- *2. If the evaporator LWT is lower than 5°C, the anti-freezing temperature should be adjusted on site (factory default is 5°C).
- *3. Ensure that the water flow is within the specified 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.

Note:

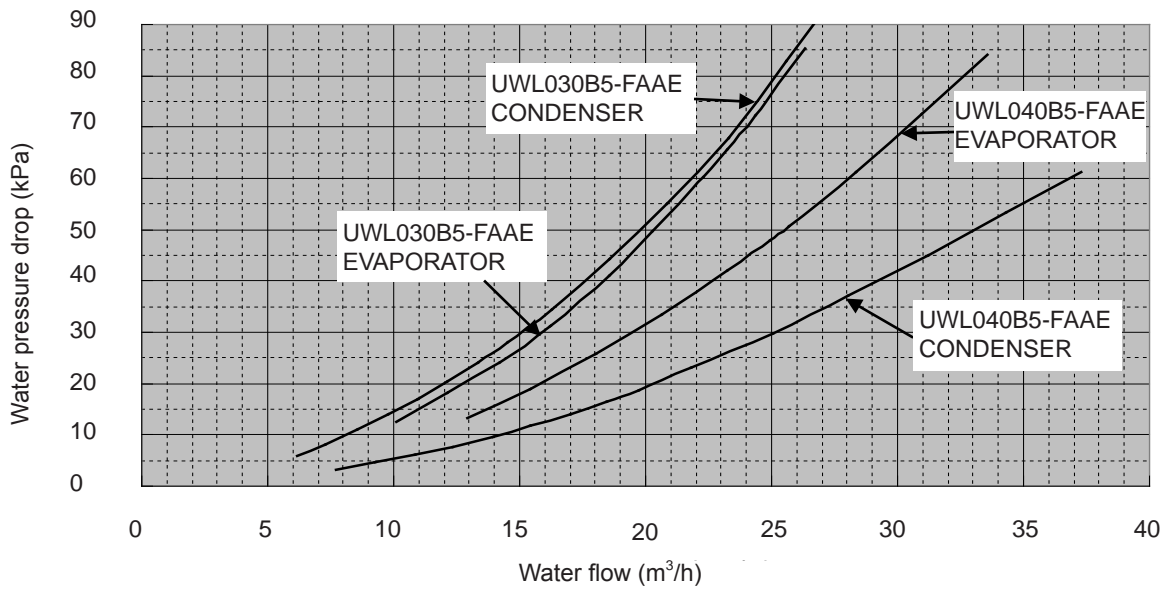
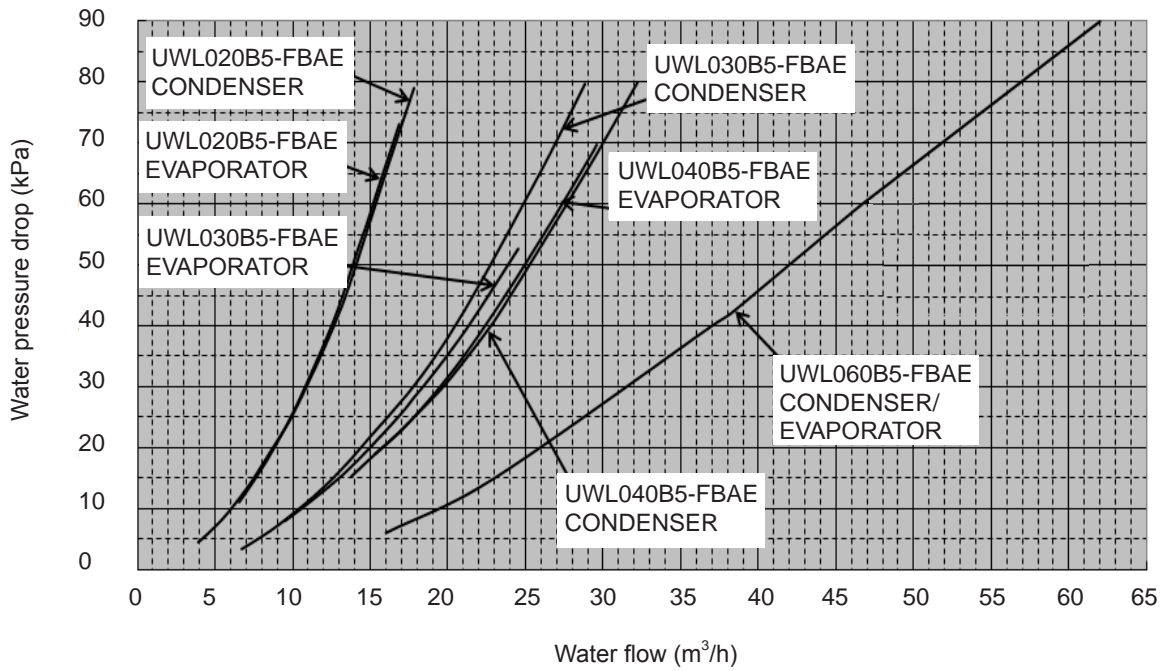
- *1. Standard efficiency series models can't operate in this temperature range.
- *2. Unit may displays antifreeze when running at this range, please contact service staff to set antifreeze temperature range if need to run at this range.

Heating capacity and power input performance table - Water loop

Model	Evaporator inlet water temp. (°C)	Condenser outlet water temp. (°C)															
		25		28		30		33		36		40		45		50	
		Heating Capacity (kW)	Power (kW)	Heating Capacity (kW)	Power (kW)	Heating Capacity (kW)	Power (kW)	Heating Capacity (kW)	Power (kW)	Heating Capacity (kW)	Power (kW)	Heating Capacity (kW)	Power (kW)	Heating Capacity (kW)	Power (kW)	Heating Capacity (kW)	Power (kW)
UWL020B5-FBAE	10	63.6	13.3	65.8	14	67	14.5	68.3	15.3	69.2	16.2	69.7	17.5	69.1	19.3	67.2	21.3
	13	72.8	13.4	74.8	14.1	75.9	14.6	77	15.4	77.8	16.4	78	17.7	77.1	19.5	74.9	21.5
	15	78.2	13.4	80.1	14.1	81.1	14.7	82.2	15.5	82.8	16.4	82.9	17.8	81.8	19.6	79.4	21.7
	17	83.1	13.4	84.9	14.2	85.8	14.7	86.7	15.6	87.2	16.5	87.2	17.9	85.9	19.7	83.3	21.8
	18	85.3	13.4	87	14.2	87.9	14.7	88.8	15.6	89.2	16.5	89.1	17.9	87.7	19.8	85	21.9
	20	89.4	13.5	91	14.2	91.7	14.8	92.5	15.7	92.9	16.6	92.5	18	91	19.9	88.1	22
	23	94.4	13.5	95.8	14.3	96.5	14.8	97.1	15.7	97.2	16.7	96.7	18.1	94.8	20	91.7	22.1
	25	97	13.5	98.3	14.3	98.9	14.9	99.4	15.8	99.5	16.8	98.8	18.2	96.7	20.1	93.4	22.3
	27	99.1	13.5	100.3	14.3	100.8	14.9	101.2	15.8	101.1	16.8	100.3	18.2	98	20.2	94.5	22.4
	30	101.2	13.6	102.2	14.4	102.6	15	102.8	15.9	102.6	16.9	101.5	18.3	99	20.3	95.1	22.5
UWL030B5-FBAE	10	94.4	20.1	97.6	21.2	99.4	22	101.4	23.2	102.7	24.6	103.4	26.5	102.5	29.3	99.7	32.3
	13	108.1	20.2	111	21.3	112.6	22.1	114.3	23.4	115.4	24.7	115.8	26.7	114.4	29.5	111.2	32.6
	15	116.1	20.3	118.9	21.4	120.3	22.2	121.9	23.5	122.8	24.9	123	26.9	121.4	29.7	117.8	32.8
	17	123.4	20.3	125.9	21.4	127.3	22.3	128.7	23.6	129.5	25	129.3	27	127.4	29.8	123.6	33
	18	126.7	20.3	129.2	21.5	130.5	22.3	131.8	23.6	132.4	25	132.2	27.1	130.2	29.9	126.2	33.1
	20	132.6	20.4	135	21.5	136.2	22.4	137.3	23.7	137.8	25.1	137.4	27.2	135	30.1	130.8	33.2
	23	140.1	20.4	142.2	21.6	143.2	22.5	144.1	23.8	144.3	25.3	143.5	27.4	140.8	30.3	136.1	33.5
	25	144	20.5	145.9	21.7	146.8	22.5	147.6	23.9	147.6	25.4	146.6	27.5	143.5	30.4	138.6	33.7
	27	147.1	20.5	148.9	21.7	149.6	22.6	150.2	24	150.1	25.4	148.8	27.6	145.5	30.6	140.2	33.8
	30	150.2	20.5	151.7	21.8	152.3	22.6	152.6	24	152.2	25.6	150.6	27.8	146.9	30.8	141.2	34.1
UWL040B5-FBAE	10	139.9	29.5	144.6	31	147.2	32.2	150.2	34	152.1	36	153.2	38.8	151.8	42.8	147.6	47.3
	13	160	29.6	164.4	31.2	166.7	32.3	169.4	34.2	170.9	36.2	171.5	39.2	169.5	43.2	164.7	47.7
	15	172	29.7	176.1	31.3	178.2	32.5	180.6	34.4	181.9	36.4	182.1	39.4	179.7	43.5	174.5	48
	17	182.7	29.7	186.5	31.4	188.5	32.6	190.6	34.5	191.7	36.6	191.6	39.6	188.8	43.7	183.1	48.3
	18	187.6	29.8	191.3	31.4	193.2	32.6	195.2	34.6	196.2	36.6	195.8	39.6	192.8	43.8	186.9	48.4
	20	196.5	29.8	199.9	31.5	201.7	32.7	203.4	34.7	204.1	36.8	203.4	39.8	200	44	193.7	48.7
	23	207.5	29.9	210.6	31.6	212	32.9	213.4	34.9	213.7	37	212.5	40.1	208.5	44.4	201.5	49
	25	213.3	30	216.1	31.7	217.4	33	218.5	35	218.6	37.1	217.1	40.3	212.6	44.6	205.2	49.3
	27	217.9	30	220.5	31.8	221.6	33	222.5	35.1	222.3	37.3	220.4	40.4	215.5	44.8	207.7	49.5
	30	222.5	30	224.7	31.9	225.6	33.1	226	35.2	225.5	37.4	223.1	40.6	217.6	45	209.1	49.9
UWL060B5-FBAE	10	255.2	45.5	257.6	46.7	258.8	47.5	260.0	48.9	260.5	50.3	260.1	52.4	257.5	55.2	253.9	58.6
	13	267.1	45.7	269.5	46.9	270.7	47.7	271.9	49.1	272.5	50.5	272.1	52.7	269.4	55.4	265.8	58.8
	15	274.0	45.9	276.4	47.0	277.6	47.9	278.9	49.2	279.4	50.7	279.0	52.8	276.3	55.6	272.7	58.9
	17	280.1	46.0	282.5	47.2	283.7	48.0	284.9	49.4	285.5	50.8	285.1	53.0	282.4	55.7	278.8	59.1
	18	282.9	46.1	285.3	47.3	286.5	48.1	287.7	49.5	288.2	50.9	287.8	53.0	285.2	55.8	281.5	59.2
	20	287.7	46.3	290.1	47.5	291.3	48.3	292.5	49.7	293.0	51.1	292.6	53.3	290.0	56.0	286.4	59.4
	23	293.4	46.5	295.8	47.6	297.0	48.5	298.2	49.8	298.8	51.3	298.4	53.4	295.7	56.1	292.1	59.5
	25	296.2	46.6	298.6	47.8	299.8	48.6	301.0	50.0	301.5	51.4	301.2	53.5	298.5	56.3	294.9	59.7
	27	298.2	46.8	300.6	47.9	301.8	48.7	303.0	50.1	303.5	51.6	303.1	53.7	300.5	56.4	296.8	59.8
	30	299.5	46.9	301.9	48.1	303.2	48.9	304.4	50.3	304.9	51.7	304.5	53.9	301.9	56.6	298.2	60.0
UWL030B5-FAAE	10	104.9	20.1	108.5	21.1	110.4	21.9	112.6	23.1	114.1	24.5	114.9	26.5	113.9	29.2	110.7	32.2
	13	120.1	20.2	123.3	21.3	125.1	22	127	23.3	128.2	24.7	128.6	26.7	127.1	29.4	123.5	32.5
	15	129	20.2	132.1	21.3	133.7	22.1	135.5	23.4	136.5	24.8	136.6	26.8	134.8	29.6	130.9	32.7
	17	137	20.3	139.9	21.4	141.4	22.2	143	23.5	143.8	24.9	143.7	26.9	141.6	29.8	137.3	32.9
	18	140.7	20.3	143.5	21.4	144.9	22.2	146.4	23.5	147.1	25	146.9	27	144.6	29.8	140.2	33
	20	147.4	20.3	150	21.5	151.3	22.3	152.6	23.6	153.1	25.1	152.6	27.1	150	30	145.3	33.2
	23	155.6	20.4	157.9	21.6	159.1	22.4	160.1	23.7	160.3	25.2	159.4	27.3	156.4	30.2	151.2	33.4
	25	160	20.4	162.1	21.6	163.1	22.5	163.9	23.8	164	25.3	162.8	27.4	159.5	30.4	153.9	33.6
	27	163.4	20.4	165.4	21.6	166.2	22.5	166.9	23.9	166.7	25.4	165.3	27.5	161.6	30.5	155.8	33.7
	30	166.9	20.5	168.5	21.7	169.2	22.6	169.6	24	169.1	25.5	167.4	27.7	163.2	30.7	156.9	34
UWL040B5-FAAE	10	139.9	26.8	144.6	28.2	147.2	29.2	150.2	30.9	152.1	32.7	153.2	35.3	151.8	38.9	147.6	42.9
	13	160	26.9	164.4	28.3	166.7	29.4	169.4	31.1	170.9	32.9	171.5	35.6	169.5	39.3	164.7	43.3
	15	172	27	176.1	28.4	178.2	29.5	180.6	31.2	181.9	33.1	182.1	35.7	179.7	39.5	174.5	43.6
	17	182.7	27	186.5	28.5	188.5	29.6	190.6	31.3	191.7	33.2	191.6	35.9	188.8	39.7	183.1	43.8
	18	187.6	27.1	191.3	28.6	193.2	29.6	195.2	31.4	196.2	33.3	195.8	36	192.8	39.8	186.9	44
	20	196.5	27.1	199.9	28.6	201.7	29.7	203.4	31.5	204.1	33.4	203.4	36.2	200	40	193.7	44.2
	23	207.5	27.2	210.6	28.7	212	29.9	213.4	31.7	213.7	33.6	212.5	36.4	208.5	40.3	201.5	44.6
	25	213.3	27.2	216.1	28.8	217.4	29.9	218.5	31.8	218.6	33.7	217.1	36.6	212.6	40.5	205.2	44.8
	27	217.9	27.3	220.5	28.9	221.6	30	222.5	31.9	222.3	33.8	220.4	36.7	215.5	40.7	207.7	45
	30	222.5	27.3	224.7	28.9	225.6	30.1	226	32	225.5	34	223.1	36.9	217.6	40.9	209.1	45.3

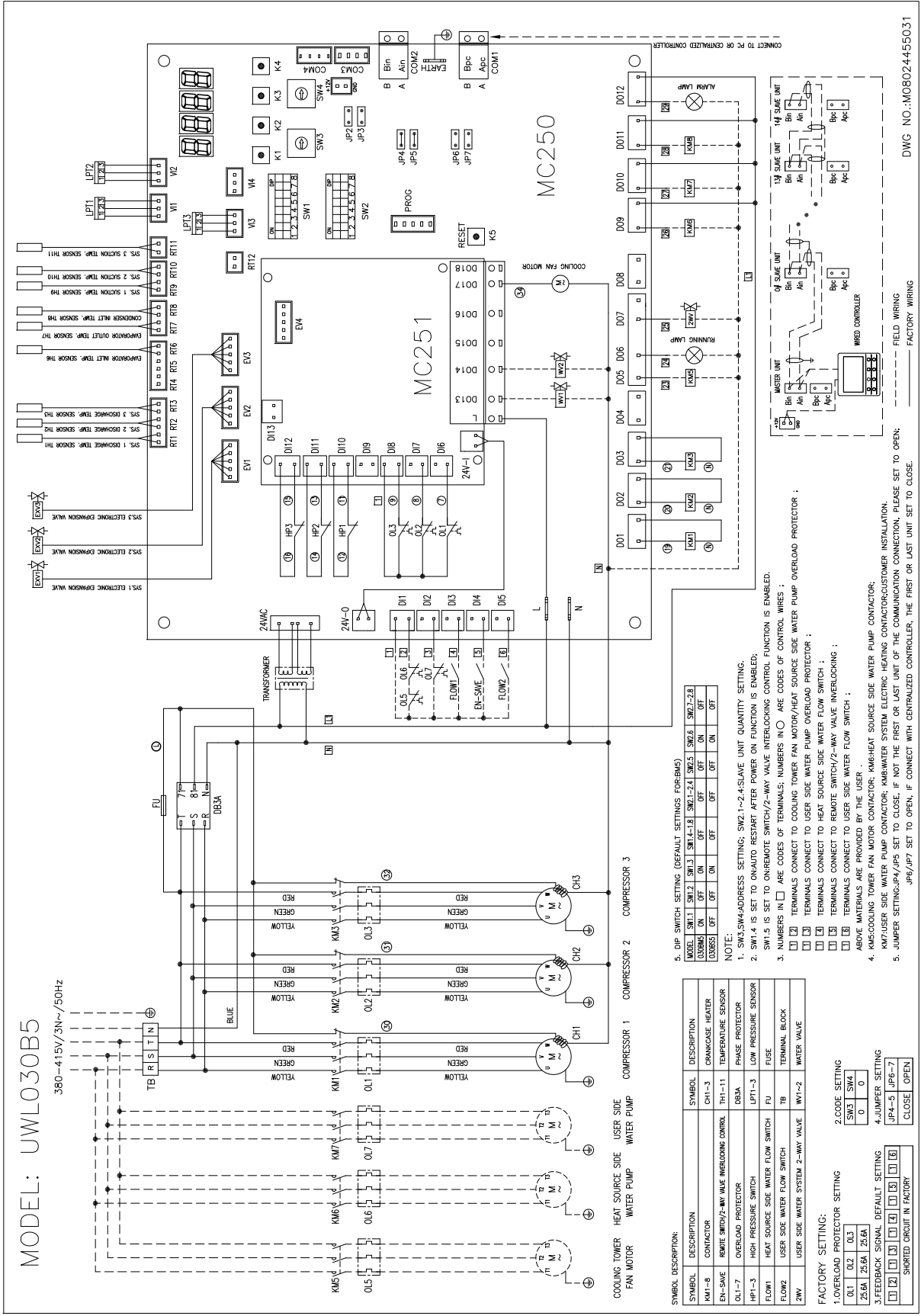
Note: Parameters in the above table are measured when the unit operates at water loop condition rated water flow.

Water Pressure Drop Curve



UWL030B5-FBAE

UWL030B5-FAAE



MODEL: UWL030B5

380-415V/3N~/50Hz

COOLING TOWER FAN MOTOR
HEAT SOURCE SIDE WATER PUMP
USER SIDE WATER PUMP
COMPRESSOR 1
COMPRESSOR 2
COMPRESSOR 3

SYMBOL DESCRIPTION:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
KM1-B	CONTACTOR	CH1-3	CRANKCASE HEATER
EN-SW1	EN-SW1/2-WAY VALVE INTERLOCKING CONTROL	TH1-11	TEMPERATURE SENSOR
OLL-7	OVERLOAD PROTECTOR	DBSA	PHASE PROTECTOR
HP1-3	HIGH PRESSURE SWITCH	LPT1-3	LOW PRESSURE SENSOR
FLOW1	HEAT SOURCE SIDE WATER FLOW SWITCH	FU	FUSE
FLOW2	USER SIDE WATER FLOW SWITCH	FB	TERMINAL BLOCK
2WV	USER SIDE WATER SYSTEM 2-WAY VALVE	WP1-2	WATER VALVE

FACTORY SETTING:

1.OVERLOAD PROTECTOR SETTING		2.CODE SETTING	
0.1	0.2	0.3	SW4
25.6A	25.6A	25.6A	0

3.FEEDBACK SIGNAL DEFAULT SETTING

JP4-5	JP6-7
<input type="checkbox"/> []	<input type="checkbox"/> []
<input type="checkbox"/> []	<input type="checkbox"/> []
<input type="checkbox"/> []	<input type="checkbox"/> []

4.JUMPER SETTING

JP4-5	JP6-7
<input type="checkbox"/> []	<input type="checkbox"/> []
<input type="checkbox"/> []	<input type="checkbox"/> []

SHORTED CIRCUIT IN FACTORY

<input type="checkbox"/> []	<input type="checkbox"/> []	<input type="checkbox"/> []	<input type="checkbox"/> []
<input type="checkbox"/> []	<input type="checkbox"/> []	<input type="checkbox"/> []	<input type="checkbox"/> []

5. DIP SWITCH SETTING (DEFAULT SETTINGS FORBMS)

MODEL	SW1.1	SW1.2	SW1.3	SW1.4-1.8	SW1.1-2.4	SW2.5	SW2.6	SW2.7-2.8
COOLING	ON	OFF	ON	OFF	OFF	OFF	ON	OFF
COOLING	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF

NOTE:

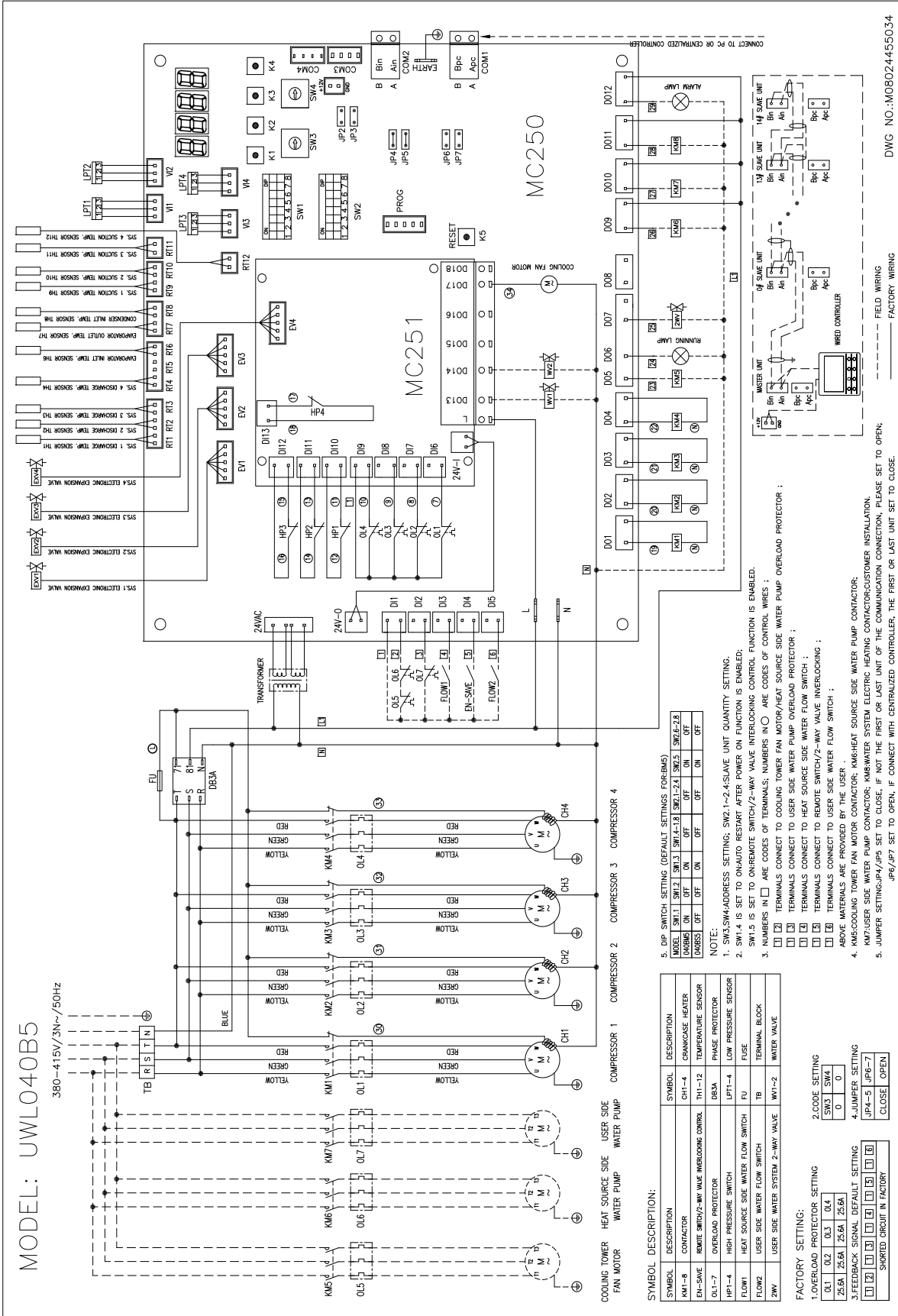
- SW2.5/SW4-ADDRESS SETTING; SW2.1-2.4-SLAVE UNIT QUANTITY SETTING.
- SW1.4 IS SET TO ON/AUTO RESTART AFTER POWER ON FUNCTION IS ENABLED.
- SW1.5 IS SET TO ON/REMOTE SWITCH/2-WAY VALVE INTERLOCKING CONTROL FUNCTION IS ENABLED.
- NUMBERS IN ARE CODES OF TERMINALS; NUMBERS IN ARE CODES OF CONTROL WIRES ;
- TERMINALS CONNECT TO COOLING TOWER FAN MOTOR/HEAT SOURCE SIDE WATER PUMP OVERLOAD PROTECTOR ;
- TERMINALS CONNECT TO HEAT SOURCE SIDE WATER FLOW SWITCH ;
- TERMINALS CONNECT TO USER SIDE WATER PUMP OVERLOAD PROTECTOR ;
- TERMINALS CONNECT TO REMOTE SWITCH/2-WAY VALVE INTERLOCKING ;
- TERMINALS CONNECT TO USER SIDE WATER FLOW SWITCH ;
- ABOVE MATERIALS ARE PROVIDED BY THE USER .
- KMS-COOLING TOWER FAN MOTOR CONTACTOR; KM/HEAT SOURCE SIDE WATER PUMP CONTACTOR; KM/USER SIDE WATER PUMP CONTACTOR; KM/WATER SYSTEM ELECTRIC HEATING CONTACTOR;CUSTOMER INSTALLATION.
- JUMPER SETTINGS:JP4/JP5 SET TO CLOSE, IF NOT THE FIRST OR LAST UNIT OF THE COMMUNICATION CONNECTION, PLEASE SET TO OPEN; JP6/JP7 SET TO OPEN, IF CONNECT WITH CENTRALIZED CONTROLLER, THE FIRST OR LAST UNIT SET TO CLOSE.

DWG NO.:M0802445031

FIELD WIRING

FACTORY WIRING

UWL040B5-FBAE
UWL040B5-FAAE



MODEL: UWL040B5

380-415V/3N~/50Hz

5. DIP SWITCH SETTING (DEFAULT SETTINGS FORBMS)

MODEL	SW1.1	SW1.2	SW1.3	SW1.4	SW1.5	SW1.6-2.8
OVERLOAD	ON	OFF	ON	OFF	ON	OFF
OVERPRESS	OFF	OFF	OFF	OFF	OFF	OFF

- NOTE:
- SW1.5 IS SET TO ON-AUTO RESTART AFTER POWER ON FUNCTION IS ENABLED.
 - SW1.6 IS SET TO ON-REMOTE SWITCH/2-WAY VALVE INTERLOCKING CONTROL FUNCTION IS ENABLED.
 - NUMBERS IN [] ARE CODES OF TERMINALS; NUMBERS IN () ARE CODES OF CONTROL WIRES ;
 - TERMINALS CONNECT TO COOLING TOWER FAN MOTOR/HEAT SOURCE SIDE WATER PUMP OVERLOAD PROTECTOR :
 - TERMINALS CONNECT TO USER SIDE WATER PUMP OVERLOAD PROTECTOR :
 - TERMINALS CONNECT TO HEAT SOURCE SIDE WATER FLOW SWITCH :
 - TERMINALS CONNECT TO REMOTE SWITCH/2-WAY VALVE INTERLOCKING ;
 - ABOVE MATERIALS ARE PROVIDED BY THE USER.
 - KMS-COOLING TOWER FAN MOTOR CONTACTOR; KMH-HEAT SOURCE SIDE WATER PUMP CONTACTOR; KMP-USER SIDE WATER PUMP CONTACTOR; KMW-WATER SYSTEM ELECTRIC HEATING CONTACTOR-CUSTOMER INSTALLATION.
 - JUMPER SETTINGS: JPA/JPS SET TO CLOSE, IF NOT THE FIRST OR LAST UNIT OF THE COMMUNICATION CONNECTION, PLEASE SET TO OPEN; JPB/JPT SET TO OPEN, IF CONNECT WITH CENTRALIZED CONTROLLER, THE FIRST OR LAST UNIT SET TO CLOSE.

SYMBOL DESCRIPTION:

SYMBOL	DESCRIPTION
KM1-8	CONTACTOR
CH1-4	CRANKCASE HEATER
TH1-12	TEMPERATURE SENSOR
DB3A	REMOTE SWITCH/2-WAY VALVE INTERLOCKING CONTROL
OL1-7	OVERLOAD PROTECTOR
PH1-4	PHASE PROTECTOR
FT1-4	LOW PRESSURE SENSOR
FU	FUSE
TB	TERMINAL BLOCK
WV1-2	WATER VALVE

FACTORY SETTING:

1. OVERLOAD PROTECTOR SETTING

OL1	OL2	OL3	OL4
25.6A	25.6A	25.6A	25.6A

2. CODE SETTING

SW3	SW4
0	0

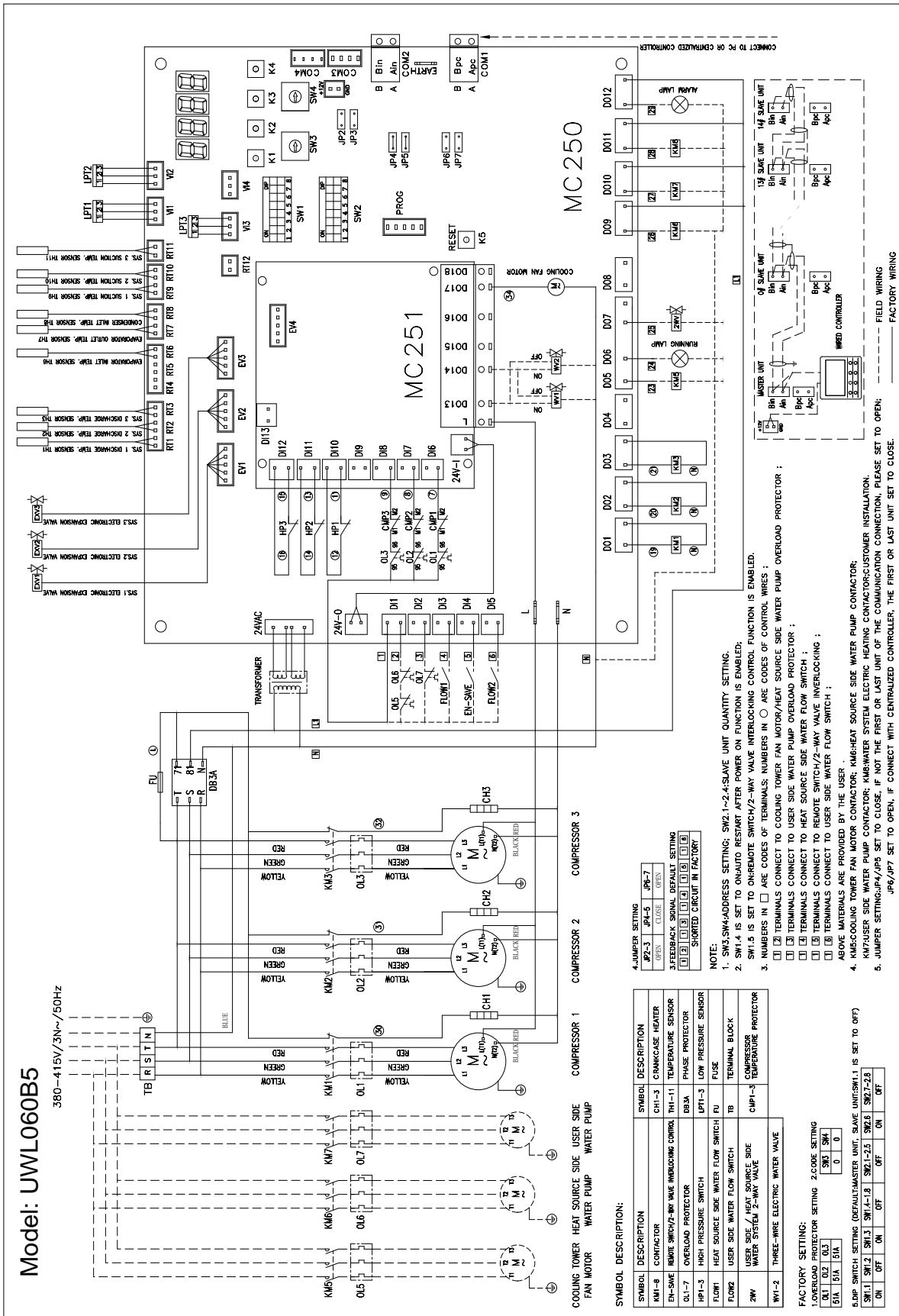
3. FEEDBACK SIGNAL DEFAULT SETTING

JPA=5	JPB=7
[]	[]

4. JUMPER SETTING

JPA=5	JPB=7
CLOSE	OPEN

DWG NO.: M08024455034



Installation

Working condition

Item	Description
Power supply voltage	380V±10%
Power supply frequency	Rated frequency ±1%
Variations between phases	Rated voltage ±2%
Flow rate of chilled water	0.5 - 2.0m/s
Pressure of chilled water	< 1.0Mpa
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 Management".
Installation site (outdoor)	Take anti-snow and ventilation measures as required.
Ambient temp.	-20°C~48°C
Relative humidity	<90%

Note:

1. The unit is strictly tested before delivery and can work safely in the rated working conditions.
2. For the performance of the unit in different working conditions, please refer to performance data.

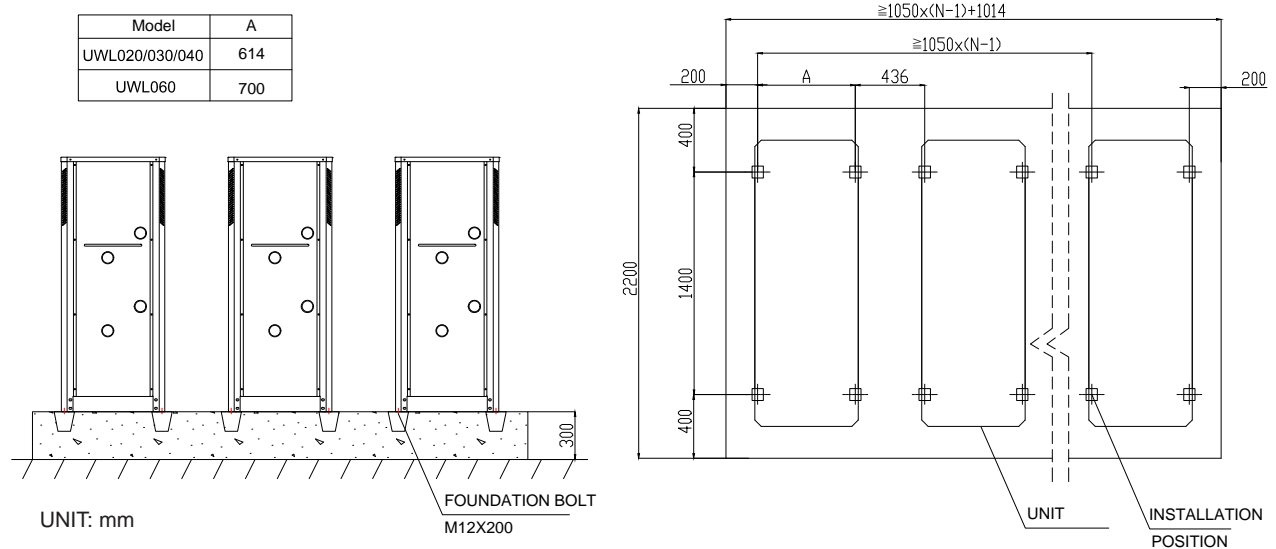
Installation dimensions and environment limits

Machine installation space

Units must be installed by DAIKIN service staff or by specially trained personnel.

Units must be installed by following relevant national and local electric, building and environment protection standards as well as the installation manual.

Assembling unit modules

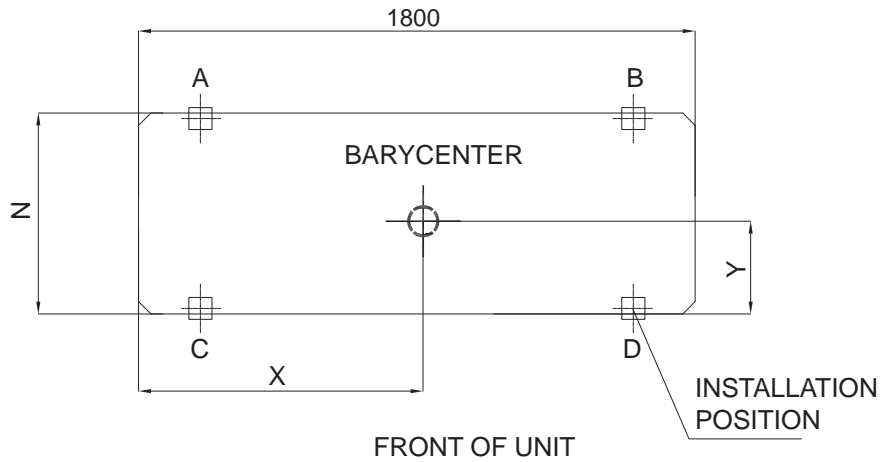


Note:

1. The groundwork must be a concrete floor or a V-iron structure that is strong enough to bear the operation pressure of the unit.
2. The groundwork must have draining facilities to discharge condensate water and defrosting water.
3. Installation on roof, strength of building must be checked and drainage measures must be adopted.
4. Each unit must be fixed by 4 pcs of M12x220 bolts;
5. Rubber cushions of 20mm thickness must be installed between the unit and the groundwork.
6. N represents the number of modules installed.

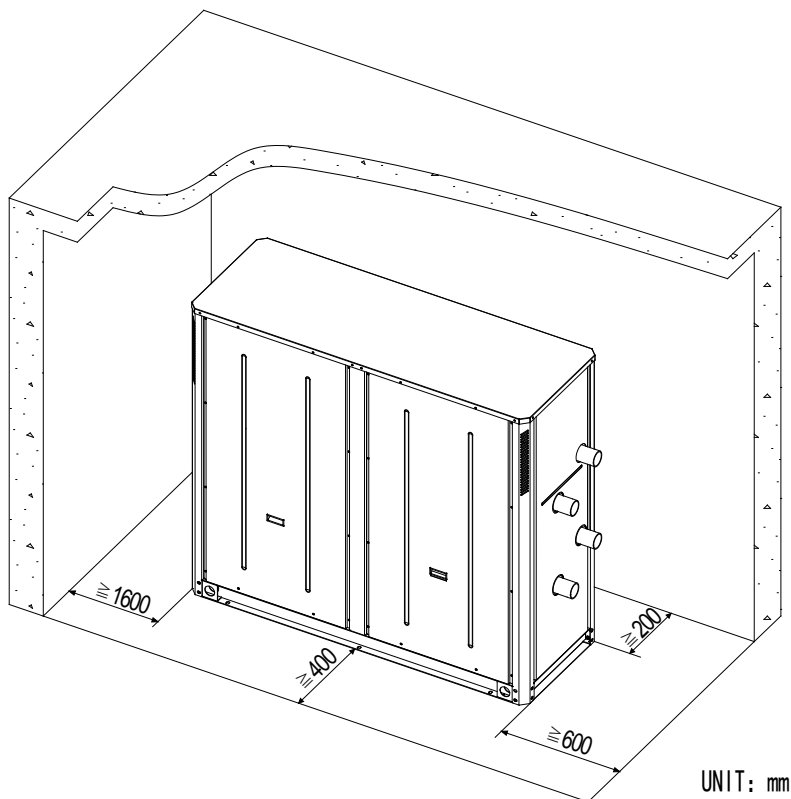
Unit barycenter and bearing

UNIT OPERATION BARYCENTER AND POINT BEARING (TOP VIEW)

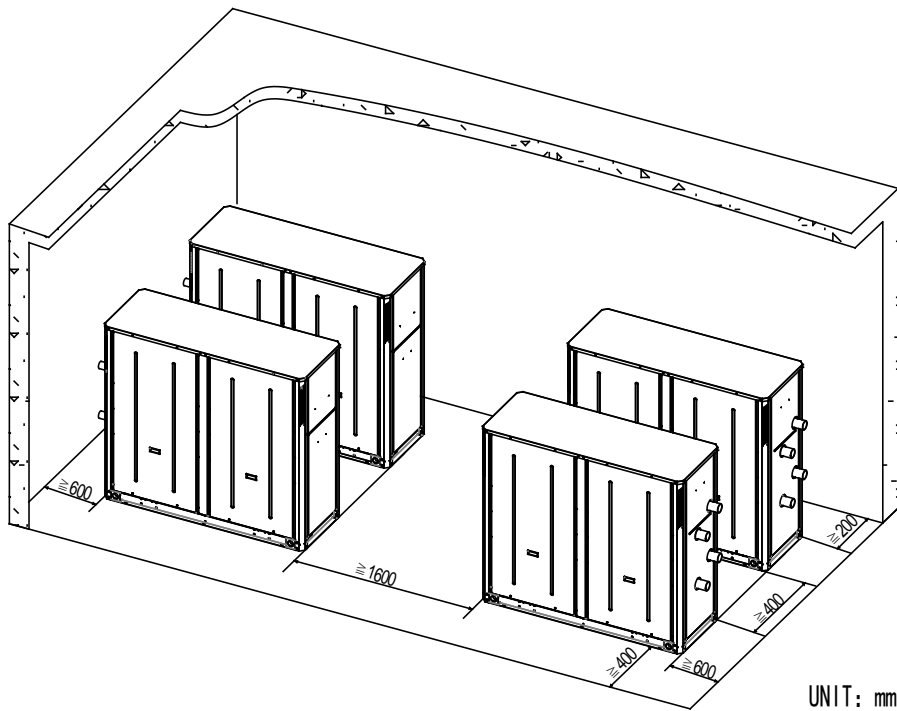


Model	N(mm)	X(mm)	Y(mm)	A(Kg)	B(Kg)	C(Kg)	D(Kg)
UWL020B5-FBAE	650	890	300	118	124	146	151
UWL030B5-FBAE	650	910	300	156	162	185	190
UWL040B5-FBAE	650	920	300	181	192	217	230
UWL060B5-FBAE	740	890	360	232	243	285	295
UWL030B5-FAAE	650	910	300	163	168	192	197
UWL040B5-FAAE	650	920	300	197	209	233	246

Space allocated for a single chilled water unit



Space allotted for an array of chilled water units



Installing chiller

Reserve sufficient maintenance space if possible.

If the unit is installed in a place where it snows in winter, proper measures better be taken to protect the unit against snow and ensure that the unit works properly.

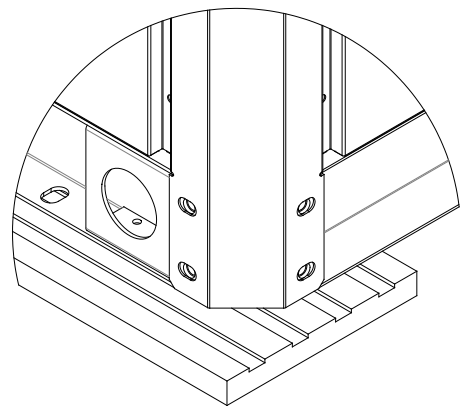
Avoid installing the unit at below place as dirty, oil dirty, high salt and high sulfide gas, installation at place with flammable gas is forbidden.

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), pipeline 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. Rubber cushions specification is recommended at right side.

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.



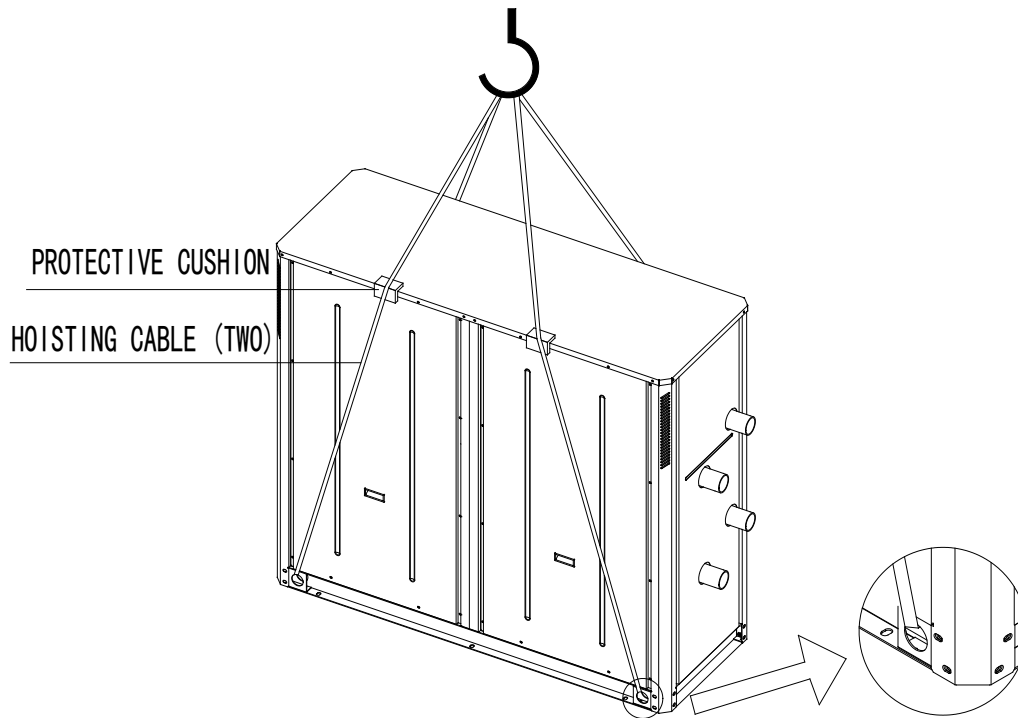
Rubber cushions

Qty	4
Size	280X180X20

UNIT: mm

Hoisting chiller

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 three corners of the unit, the unit might get unbalanced and fall off.



Note:

- 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.
- Dispose all plastic bags properly and keep them away from children.

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	Base Value	Tendency			
		Corrosion	Scale Formation		
Standard item	pH (25°C)	7.5~9.0	○	○	
	Conductivity (25°C)	μS/cm	<800	○	○
	Cl ⁻	mg(Cl ⁻)/L	<200	○	
	SO ₄ ²⁻	mg(SO ₄ ²⁻)/L	<200	○	
	Acid consumption (pH=4.8)	mg(CaCO ₃)/L	<100		○
	Full hardness	mg(CaCO ₃)/L	<200		○
	Free Cl ₂	mg(Cl ₂)/L	<1	○	
Reference item	Fe	mg(Fe)/L	<1.0	○	○
	S ²⁻	mg(S ²⁻)/L	Not detectable	○	
	NH ₄ ⁺	mg(NH ₄ ⁺)/L	<1.0	○	
	SiO ₂	mg(SiO ₂)/L	<50		○

Note: ○ represents factors that may cause corrosion or scaling.

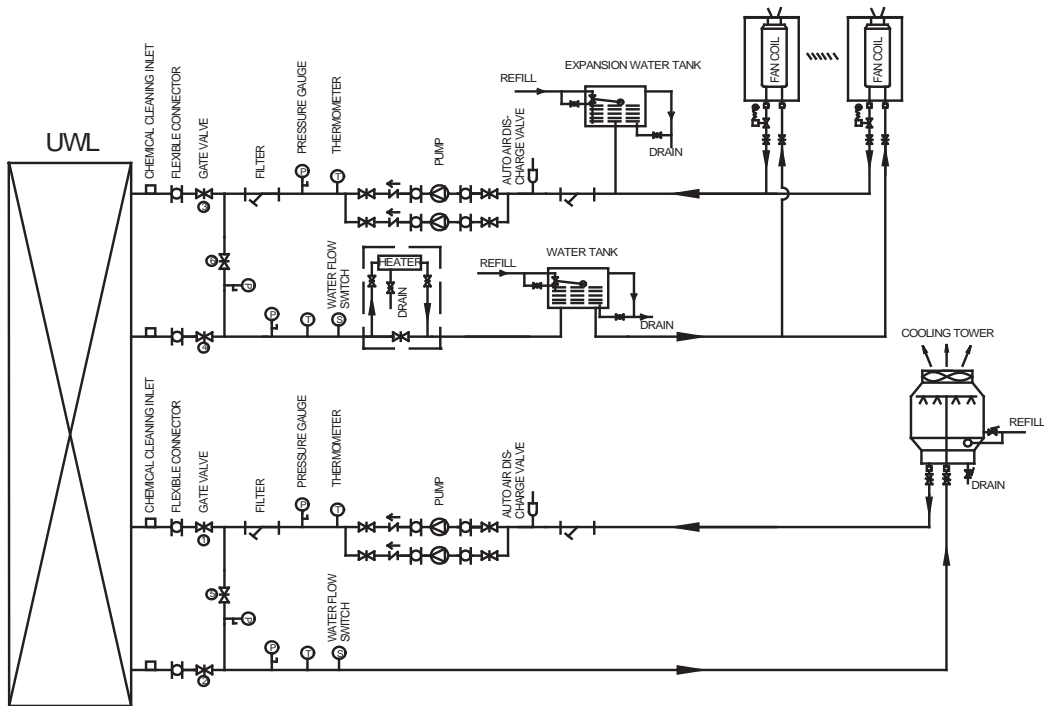
Water system installation schematic diagram

Connecting water pipes

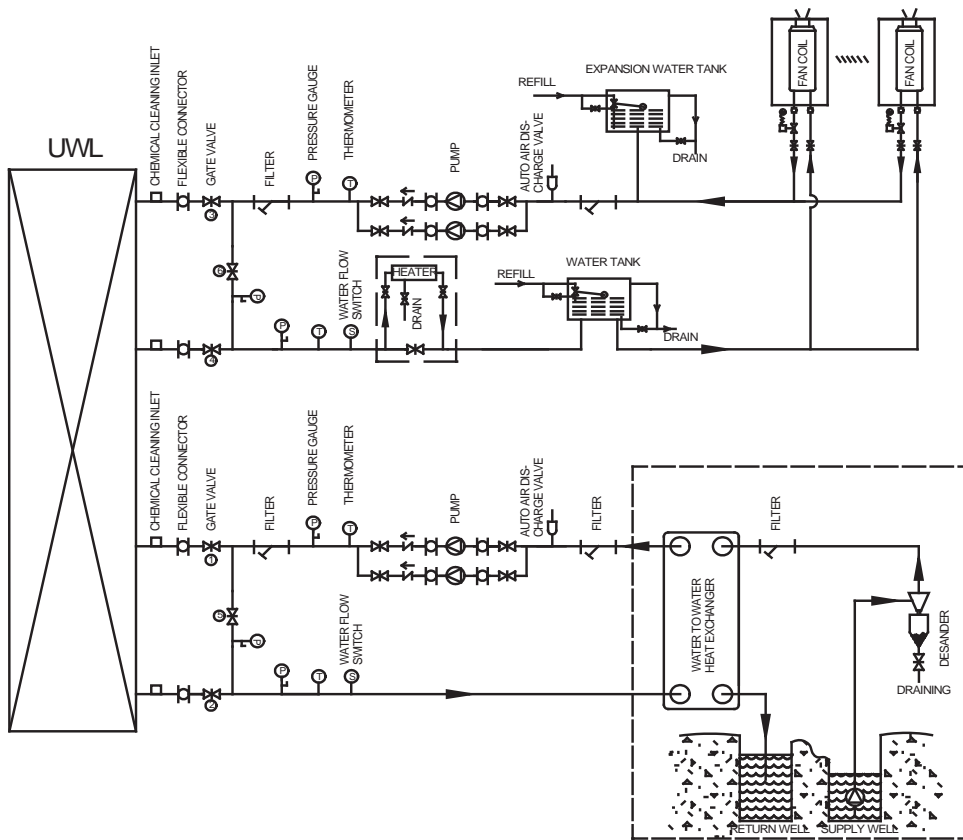
- No water pump is provided as an accessory. A proper water pump must be installed to overcome resistance of the water pipes.
- Water pressure gauges and thermometers must be installed at the water inlets and outlets to facilitate the reading of unit operation status.
- Water scale may accumulate depending 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 water system illustration).
- 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.
- A adiabatic water tank with a proper volume is suggested to installed. 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 drainage valve must be installed at the lowest point in the water system.
- The water pipes must be adiabatic 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 more than 18 meshes (customer prepares) 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:

Water system - water loop

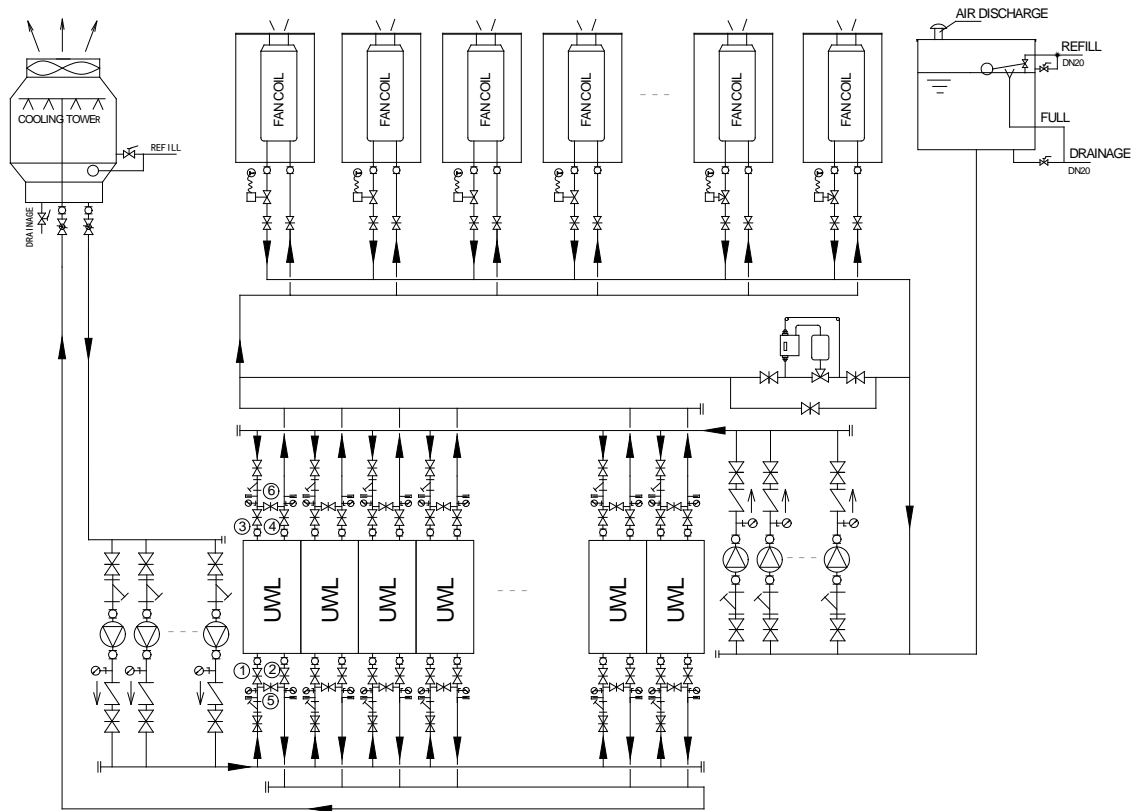


Water system - Groud water

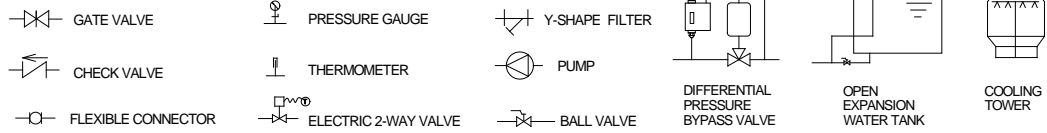


If use ground water for heat source, a water to water heat exchanger should be adopted for decreasing the risk of scaling of unit's shell and tube heat exchanger and extend unit's working life.

Installation illustration for water system of multi-unit combination:



LENGENDS:



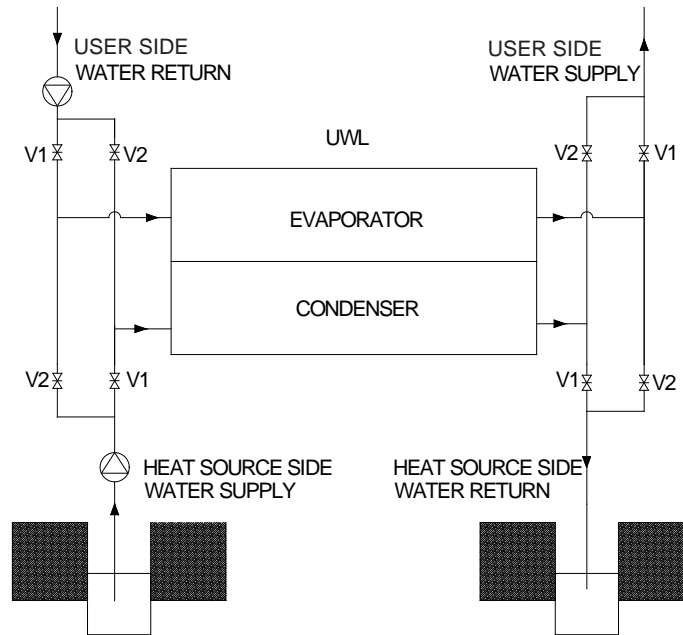
Note:

1. When cleaning the water system, close all the gate valves as shown in position ①② or ③④. Open the ⑤ or ⑥ valve to bypass the units to avoid foreign matters in water system entering the plate of units, which may influence the efficiency of heat exchange and life expectancy of the plate.
2. Adopt the reversed return system in hydraulic system when two more units are combined. If the direct return system is used, it may cause the unbalanced distribution of water flow which influences the operation of units.

Valves installation for operation mode switch

The switchover between water-cooled chilled water and water-source hot water modes can be achieved easily by the opening and closing of valves in the water system to meet the annual demand for cooling or heating. The cold and heat source can be waste heat, geothermal source, water source and others. The operation is more efficient and more ecofriendly.

COOLING/HEATING MODE



Mode	V1	V2
Cooling	Open	Close
Heating	Close	Open

Valves V1 and V2 used in water system need to be three-wire valves.

Hydraulic calculation and pipe system

Pipe design for the air-conditioning system

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

* Determining the diameter of pipes in the air conditioning system

The pipe diameter is determined based on the following:

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

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^3/h)	kPa/100m	Water flow (m^3/h)	kPa/100m
15	0 - 0.5	0 - 60	--	--
20	0.5 - 1.0	10 - 60	--	--
25	1.0 - 2.0	10 - 60	0 - 1.3	0 - 43
32	2.0 - 4.0	10 - 60	1.3 - 2.0	11 - 40
40	4.0 - 6.0	10 - 60	2.0 - 4.0	10 - 40
50	6.0 - 11.0	10 - 60	4.0 - 8.0	--
65	11.0 - 18.0	10 - 60	8.0 - 14.0	--
80	18 - 32	10 - 60	14 - 22	--
100	32 - 65	10 - 60	22 - 45	--
125	65 - 115	10 - 60	45 - 82	10 - 40

Note: Parameters in the preceding table is base on HVAC design manual in China, for actual calculation refer to local standard.

Water storage tank volume calculating

V_{min} is referred to the below table:

Setting EWT (°C)	System minimum water volume- V_{min} (L)					
	UWL020B5-FBAE	UWL030B5-FBAE	UWL040B5-FBAE	UWL060B5-FBAE	UWL030B5-FAAE	UWL040B5-FAAE
20	129	118	116	237	127	117
19	140	128	125	256	137	126
18	154	139	135	279	149	137
17	170	153	148	305	164	150
16	190	169	163	338	181	165
15	215	189	182	379	203	184
14	248	215	205	430	231	208
13	293	249	236	498	267	239
12	358	296	277	592	317	280
11	461	364	335	728	390	339
10	645	473	424	947	507	430

Note:

1. The total water volume of the entire hydraulic system includes the water in main pipe, water tank and terminal equipments, in which the 2-way valve is open.
2. If the water volume (V) while the unit is running is less than V_{min} , it's recommended to install a water tank of $(V_{min}-V)L$, or it will cause the unit frequent ON/OFF.
3. The V_{min} in the table is calculated based on nominal cooling water flow and 5°C anti-freeze. If the water flow and anti-freeze temperature change, related V_{min} will change.
4. The table is applied for the water volume selection of normal chiller, not for the chiller under low leaving water temperature with glycol.

Example for water system volume calculation:

The water system is equipped with one unit of UWL030B5-FAAE, the set water return temperature is 12°C, the main water pipe size is 2-1/2"(DN65), the total length of main water inlet/outlet pipes is 50 m, 10 fan coils are normally open, and the internal volumes are all 1.5 L.

Volume of fan coils = $10 \times 1.5 = 15$ L.

Volume of water pipes = $3.14 \times (65/2/1000)^2 \times 50 \times 10^3 = 166$ L.

According to the table above, $V_{min} = 317$ L.

To avoid frequent unit startup/shutdown and alarms, the volume of the water tank should be no less than $V_{min} - V = 317 - 166 - 15 = 136$ 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.

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

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

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

Δt : 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.

Caution for charging refrigerant

- After the unit is installed at site, UWL040B5-FAAE and UWL060B5-FBAE's refrigerant shall be replenished by qualified worker according the corresponding content of refrigerant. The R410A refrigerant must be charged in **liquid form**, otherwise unit's operation and performance might be affected.
- After the refrigerant is fully charged, worker shall sign the NAME OF COMPANY, NAME OF WORKER and RECORD OF INSTALLATION DATE on the corresponding position of the refrigerant charging label.

Please refer to following refrigerant charging label:

This machine does not contain a full amount of refrigerant according to regulations for the carriage and storage of dangerous goods in ship. Please fill a refrigerant, please enter the following table.

After filling the refrigerant, please enter the value in a blank column in the table with permanent marker.

TOTAL(kg)

=

TABLE A
REFRIGERANT AMOUNT
OF FACTORY CHARGE(kg)

+

TABLE B
REFRIGERANT AMOUNT OF
FIELD ADDITIONAL CHARGE(kg)

NAME OF COMPANY

NAME OF WORKER

RECORD OF INSTALLATION DATE

DA ____ MO ____ YR ____

TABLE A REFRIGERANT AMOUNT OF FACTORY CHARGE(kg)					
MODEL NAME	REFRIGERANT NAME	SYSTEM 1	SYSTEM 2	SYSTEM 3	SYSTEM 4
UWL040B5-FAA*	R410A	2.75	2.75	2.75	2.75
UWL060B5-FBA*	R410A	3.4	3.4	3.4	-

TABLE B REFRIGERANT AMOUNT OF FIELD ADDITIONAL CHARGE(kg)					
MODEL NAME	REFRIGERANT NAME	SYSTEM 1	SYSTEM 2	SYSTEM 3	SYSTEM 4
UWL040B5-FAA*	R410A	0.75	0.75	0.75	0.75
UWL060B5-FBA*	R410A	3	3	3	-

Remark:
* represents the characteristics of the model, which can be any combination of letters and numbers.

Commissioning and Operation

Items to be confirmed before turning on unit



Note: Before the trial 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 of water pump by using the water pump output on the PCB controller;
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 30 minutes 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.**
- **Make sure that the working conditions do not exceed the rated working range.**

Items to be checked during the trial 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	380V±10%
2	Working current of a single compressor	Current	13 - 25A
3	Difference between EWT and LWT	Temperature	2 - 7°C
4	Discharge temperature of the compressor	Temperature	45 - 115°C
5	Low pressure during operating	Pressure	6.5 - 11.0bar
6	High pressure during operating	Pressure	13.0 - 39.0bar

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 exceeded 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 shell and tube heat exchanger periodically.

To optimize heat exchange efficiency of the shell and tube heat exchanger, please clean the shell and tube heat exchanger periodically.

■ Heat exchanger inspection and cleaning.

To ensure if heat exchanger water side is clean or not, please check entering water temperature and leaving water temperature of the heat exchanger and compare with evaporating temperature. For example, at rated water flow, if the difference between leaving water temperature and evaporating temperature is bigger than 5~7°C, it means efficiency of heat exchanger decreased and need to clean it.

Because during cleaning there must be some chemical treatment, so the cleaning must be carried out by Professional Staff.

■ 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. Please refer to Page 23 for the water quality requirement.

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 of Heat Exchangers

Shell-and-tube heat exchanger may encounter silting and scale deposits during use. Scale deposits result from the dissolution of substances (these substances can accumulate on the surface of heat exchangers) in water. Generally, scale deposits are more likely to occur with the rise of the temperature, concentration, and pH value. Clogging may be incurred if there is soil, sand, or other particles in the heat exchange medium. Particle clogging mainly depends on the velocity, flow distribution, heat exchanger surface roughness, and particle size.

If there are impurities or scale deposits in a heat exchanger, the pressure difference of the heat exchanger increases gradually and its performance becomes worse. Note that the excessively high operating pressure of a unit is not necessarily caused by scale deposits on the heat exchanger. Check the following aspects when the operating pressure is very high:

- Whether excessive refrigerant is infused.
- Whether there is air in the system.
- Whether the water regulating valve is correctly set or whether it malfunctions
- Whether the temperature of water entering the heat exchanger is too high.

In an open recycle system, correct operation of the cooling tower can substantially prolong the cleaning cycle. Therefore, it is necessary to frequently check the overflow amount of the cooling tower. If the cooling tower runs in the case of insufficient overflow amount, the concentration of mineral substances in water increases and they will quickly and severely attach themselves to the copper wall of the shell-and-tube heat exchangers. This situation requires frequent cleaning and will lead to severe corrosion.

Scale deposits on heat exchangers affect the unit performance. It is recommended to regularly ask professionals to conduct cleaning and maintenance. Pay attention to the following points in cleaning:

- a) Install one shutoff valve in front of the water inlet of the unit and one at the back of the water outlet, to prevent dirt and detergent entering the water system.
- b) Before using a detergent sold in the market, learn about the corrosiveness of the detergent, must reduce corrosion to metal.
- c) For detailed cleaning method, consult the detergent manufacturer.

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:

Item	Monthly	Quarterly	Once half a year	Once a year	If necessary
1. Compressor					
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 oil					▲
2. Controller					
Check parameter settings			▲		
Check protective device			▲		
Time-delay protector			▲		
Phase sequence protector			▲		
High pressure switch					▲
Differential water pressure switch/water flow switch					▲
Overload protector			▲		
Low pressure sensor					▲
3. Shell and tube heat exchanger					
Check the water quality	●				
Clean the shell and tube heat exchanger (evaporator and condenser)					▲
Seasonal protection measures (anti-freeze in winter)					▲
4. Others					
Whether the Y-shaped filter needs to be cleaned or replaced	●				
Whether bolts have loosened		●			

Note:

1. The preceding maintenance plan is for reference only. The maintenance plan may vary based on region.
2. ● indicates items to be checked by customers; ▲ indicates items to be checked by professional technicians.

Control System Instruction

Electric connection for the unit

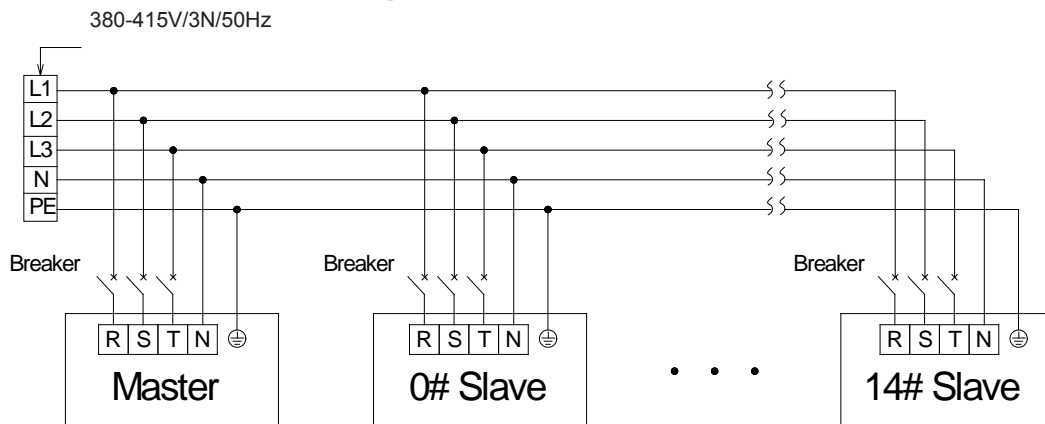
Before connecting the circuit, strictly abide by the following safety rules and measures:

- The units must be installed by Daikin service personnel or personnel who are specially trained. The installation must abide by local laws and regulations in aspects of electricity, construction and environment protection as well as meet the requirement of product installation instructions. Users are not allowed to remove or add control components. For units damages and personal injuries caused by operations which fail to follow the rules, Daikin air-conditioner company assumes no responsibility.
- Circuit connecting must refer to electrical data and power cable connection diagram. Each machine is provided with wiring diagram which is put inside the power cabinet.
- The earthing wires of the air conditioning unit must be grounded well. Earthing wires cannot be connected to gas pipes, water pipes, and telephone lines, because poor earthing may result in electric shock.
- Check whether the power supply is of standards before starting.

◇ Connection for all the conductors must be secure.

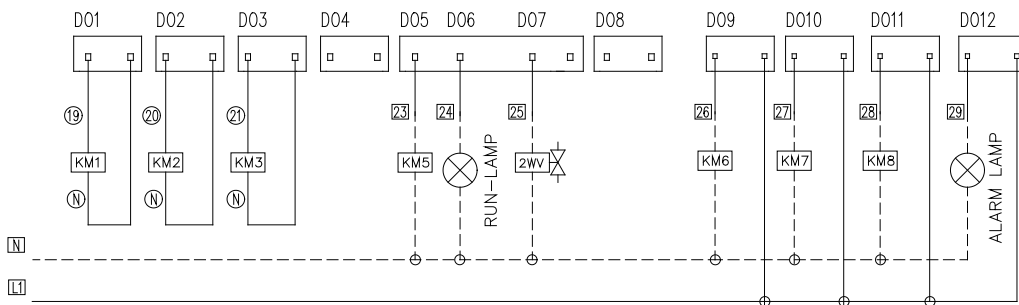
◇ Keep all the conductors away from refrigerant pipes and movable components like compressor and fan.

Power cable connection diagram



PCB instruction

■ Connection illustration for pumps and other parts



KM5 is contactor for cooling tower fan.

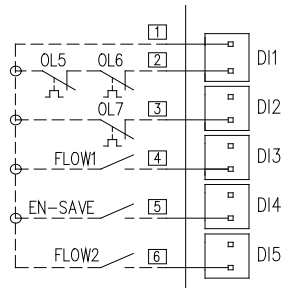
KM6 is contactor for heat source side pump.

KM7 is contactor for user side pump.

KM8 is contactor for auxiliary heater.

PCB output voltage is 220-240V

■ **Passive dry contact (Feedback signal 24V input)**

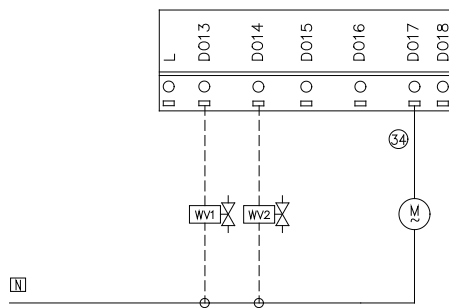


OL5: cooling tower fan overload, OL6: heat source side water pump overload, OL7: user side water pump overload.

FLOW1: heat source side water flow switch, FLOW2: user side water flow switch.

EN-SAVE is for 2-way valve interlocking function connection.

■ **Operation mode switching valve connection**



WV1 and WV2 are for unit operation mode (heating and cooling) switching, for detailed installation position of the valves please refer to "Water System Insallation".

PCB output voltage is 220-240V

Note:

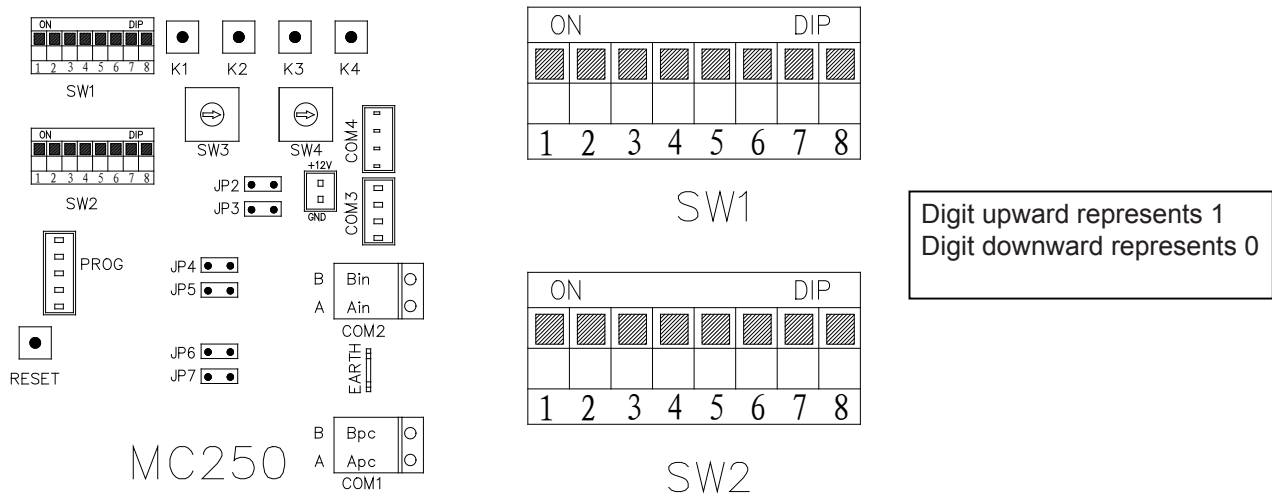
----- Parts within the dashed box are to be connected onsite.

———— Parts within the real-line box are connected before delivery.

For more detials of onsite wiring instrucion please refer to wiring digrams.

■ 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.



- The first digit of SW1 indicates the DIP of master/slave unit. It is set to ON for the master unit, and set to OFF for the slave unit.
- The second and third digit of SW1 indicates the DIP of unit function, 00: Cooling only, 01: Heat pump, 10: Heat recovery, 11: Reserved.
- The fourth digit of SW1 indicates automatic startup after power restoration. It is set to ON when this function is used.
- The fifth digit of SW1 indicates FCU/AHU 2-way valve interlock or remote ON/OFF switch. It is set to ON when this function is used.
- The sixth digit of SW1 indicates user side water flow control. ON: Air conditioning system for variable water flow system; OFF: Air conditioning system for constant water flow system.
- The seventh digit of SW1 indicates the refrigerant type. ON: reserved; OFF: R410A.
- The eighth digit of SW1 indicates the control mode.
 ON: Leaving water temperature control(optional configuration).
 OFF: Entering water temperature control(standard configuration of factory).

Note: the unit with leaving water temperature control needs to be customized. The leaving water temperature sensor of main pipe (Th5) and connecting wire should be equipped by factory. In order to avoid frequent start-stop of units, the number of compressors should be ≥8 when module combination uses the leaving water temperature control.

- 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

- The fifth and sixth digit of SW2 indicate unit capacity, 00: UWL020, 01: UWL030/UWL060, 10: UWL040, 11: reserve.

- Address setting (SW3 and SW4: when SW1.1 is set as the master unit, the setting is for master address, range is 0 ~ 99. when SW1.1 is set as the slave unit, the setting is for slave address, range is 0 ~ 14).

Address of outdoor unit	SW3	SW4	Address of outdoor unit	SW3	SW4	Address of outdoor unit	SW3	SW4	Address of 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

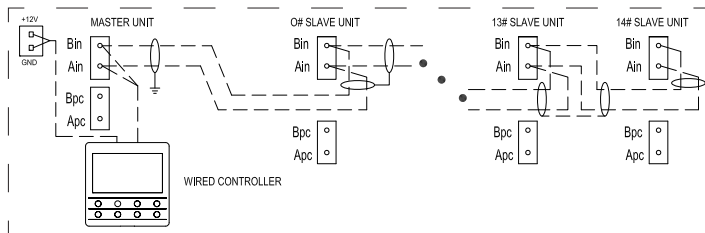
Note:

Address numbers must be unique in the same system.

The unit can only be powered on and commissioned after the address numbers are configured.

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

■ Control (communication) wire connection.



A) conductor (WTC pair with cross section area of at least 0.5mm² or 20AWG); B) insulator; C) Screen layer (twisted WTC with a screening factor no less than 95%); D) Outer jacket (PVC);

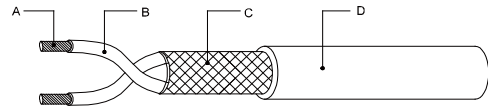


Illustration of shielded twisted pair

Note:

Better choose network cables with a tensor 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.

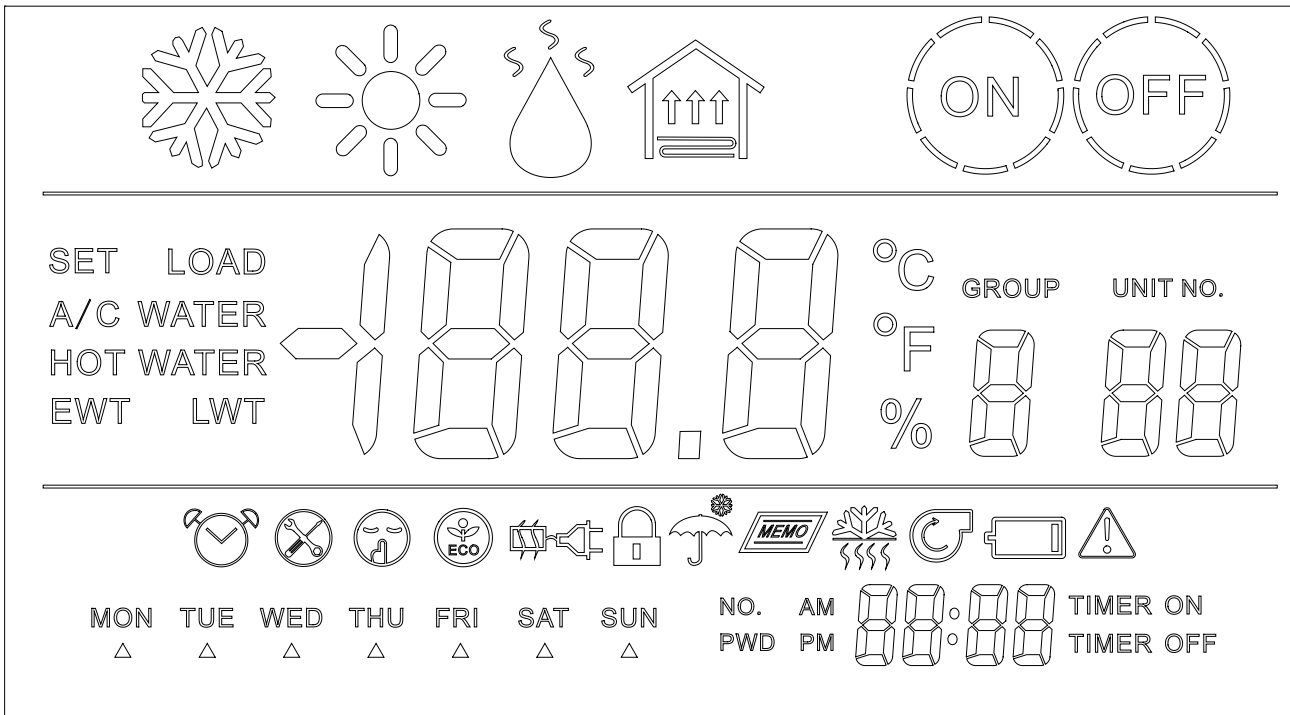
The control wire must be at least 20cm away from major current wire.

Wired Controller Instruction

Overview

The MC325 is a wired controller with touch keys. It supports power-on/off control, mode switching, parameter setting, real-time clock, timed setting, status display, and malfunction-indication.

Display Screen of the Wired Controller











Icon and description

Icon	Description	Icon	Description
	Cooling mode		Alarm
	Heating mode		Weekday
	Hot water mode	NO.	No.
SET	Set	PWD	Password
A/C WATER	Air conditioning chilled water temperature	AM	a.m.
HOT WATER	Hot water temperature	PM	p.m.

Icon	Description	Icon	Description
	Timer	TIMER ON	Timer ON
	Defrost	TIMER OFF	Timer OFF
	Locked	UNIT NO.	Unit No.
	Quiet		Auto startup upon power restoration
	Water pump		Low battery
LOAD	Compressor load		Floor heating mode
EWT	Entering water temperature		Anti-freezing
LWT	Leaving Water temperature		Electric heater
GROUP	Group		Load rate
	Maintenance		ON
	Energy-saving mode		OFF

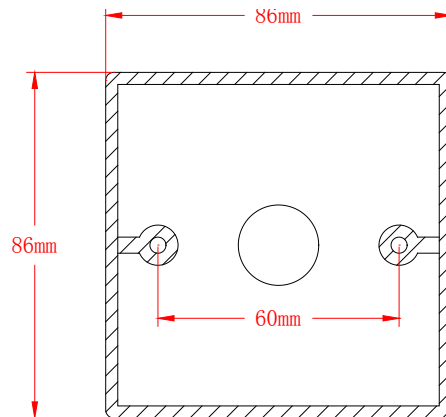
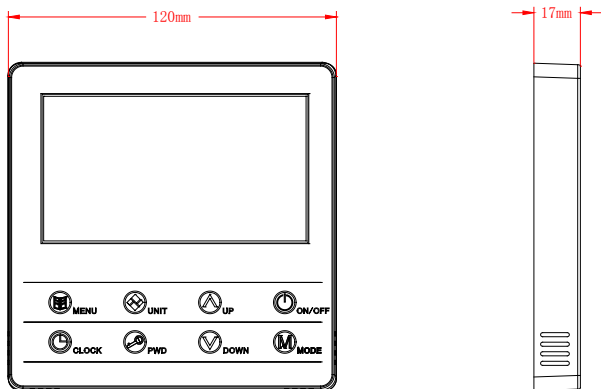
Keys of the Wired Controller

The wired controller has eight keys. The following table lists the key icons and meanings.

Icon	Description	Icon	Description
	Menu		Unit
	Clock		Password
	Up		ON/OFF
	Down		Mode

Installation of the Wired Controller

Dimensions:



The wired controller is installed using the standard 86 mm box.

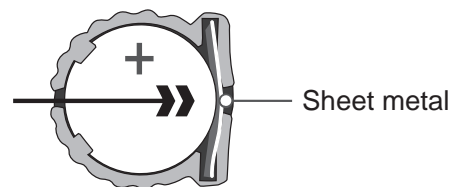
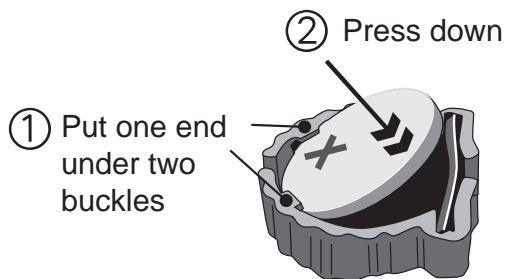
For detailed installation steps, see the installation manual inside the package box of the wired controller.

For detailed operation steps, ask factory for operation manual.

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

Installing the battery

Removing the battery



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

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

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 or 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.

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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