INDUSTRIAL CHILLER MANUAL



INDUSTRIAL REFRIGERATION EQUIPMENT

OPERATION MANUAL

- Air cooled chiller
- Split chiller
- Scroll chiller
- Cutting fluid cooler
- Water cooled chiller
- Low temp. chiller(-5/-15/-35°C)
- High-precision chiller(±0.1°C)
- Industrial oil cooler

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Please read the manual carefully before installation to avoid safety accidents or unit damage.
We will update products Irregularly. If you have any suggestion, please contact us.

1、Safety rules

Please abide the following safety rules to avoid personal injury and unit damage.

Icons	Project	Operation specification
	Operated by professionals	All the operations shall be operated by professionals.
	High voltage hazard	Improper operation will lead to serious consequences.
	High temperature scald	To avoid burns, don't touch areas marked with this symbol.
	Electrical connection	a) The power supply must match the nameplate. b) The cables must be selected to fits the standard. c) Grounding must be firm for safety. d) The cabinet should be waterproof & moisture-proof for safety.
	Maintenance and repair	The main power supply must be cut off before maintenance for personal safety.
	Shut down immediately when an exception occurs	When the equipment is abnormal, please shutdown immediately, and don't turn it on until the cause is found out.
	Waterproofing	It is strictly forbidden for indoor type units to installation outside.
	Don't put insert into the unit gaps	There are rotating parts in the unit. Don't put your fingers or other objects into the gaps for safety when the unit is running.
	Transportation & Installation	The unit must be firmly fixed when installation to avoid falling.
	Handling	a) Please fixed the unit before handling to prevent movement and damage. b) The tilt angle≤30°, otherwise it may cause damage to the unit.
	Installation environment	a) Don't install unit in high temperature,humidity, and strong electromagnetism. b) The unit must be installed in no direct sunlight and the source of fire. c) Do not install in dangerous places with flammable gases.
	Installation	a) The equipment must be installed horizontally to avoid causing noise and vibration. b) Please ensure air path unobstructed within 1.5m air inlet and within 4m air outlet to avoid abnormal heat dissipation.
	Clean the condenser regularly	Please clean the condenser regularly to ensure normal heat dissipation.Otherwise, it will seriously affect the refrigeration performance and reduce the unit service life.
	Wear protective gloves	a) The condenser fins pose a risk of puncturing the skin. b) High temperature of compressor discharge pipe may cause the risk of skin burns.
	Antifreeze	When it is under 0℃ and long term shutdown of the unit, please drain the water in the tank and pipeline to prevent the unit from freezing and damaging .

2、Over view

Our industrial chiller, adhering to our advanced concept, contains many advanced technologies, provides users with excellent solutions and widely used in many industries, creating safety, stability and high efficiency for modern industrial production.

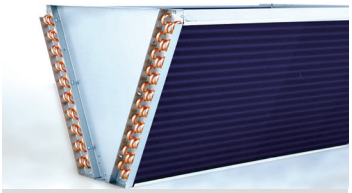
We adopts advanced production and inspection equipment to ensure the excellent performance. Every detail has been strictly controlled, and every product has condensed our spirit of unlimited exploration and excellence.

3、Characters

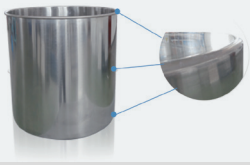
Technological innovation



SU304-shell and tube evaporater



V shape fin condenser



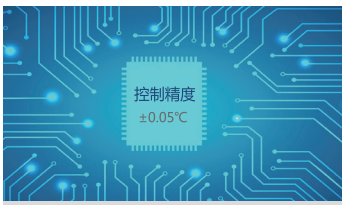
Cylindrical water tank



Efficient silent fan



Touch screen controller



High precision controller

Energy save



25% Efficiency improvement

Inner fin copper



20% Heat transfer enhancement

Sinusoidal waveform fins



6% Reduced power consumption

Electronic Expansion Valve PID



20% Uniformity improvement

Innovative refrigerant distribution



10% Increased air volume

Professional air duct design



20% Fan power reduction

Automatic air volume control

4、 Model naming

I C A - 5 S

4 Function code :
M-Middle temp.(-5°C) L-Low temp.(-15°c)
U-Ultra-low temp.(-35°C) G-High-precision(+0.1°C)
S-Split H-Heat pump J-Immersion

3 Compressor power : 5HP

2 Cooling type : A-Air cooled W-Water cooled
Function code : S-scroll Q-cut fluid

1 Series code: IC series chiller

5、Component

1. Compressor

The function of the compressor is like the function of the heart in the human body.

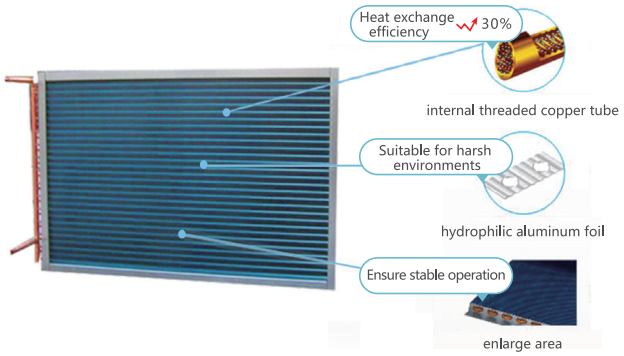
The compressor suction the gas and compresses it，then discharges into the condenser to dissipate heat,and then flows to the evaporator through expansion valve, and then absorbs heat in the evaporator, thus completing the process.





2.Condenser

Condenser is for heat dissipation.The condenser cools the gas into liquid and transfer heat to the air or water. The type of air-cooled condenser is an internal threaded copper tube with aluminum fin structure, the water-cooled condenser is shell and tube type.





3.Evaporator

Evaporator is used to chill the water.

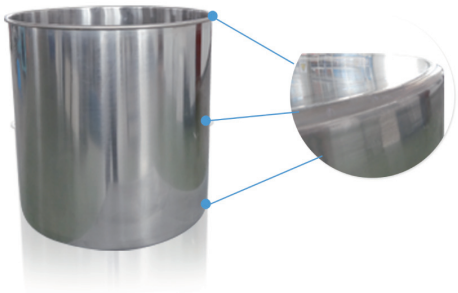
The refrigerant chill the water in the evaporator, and continuously produces the chilled water. It is stainless steel shell and tube type.





4.Water tank

The water tank is used to store chilled water. It is made of stainless steel 304.



① Cylindrical design to fully mixed the water.
and the temperature is even!
② Circular bucket bottom, easy to clean and no water leak.
③ Completely independent from the evaporator,
convenient for maintenance.

5.Water pump

Water pumps is used for conveying chilled water to complete normal water circulation.

The water pumps we used are all made of SUS304.





6.Thermal expansion valve

Thermal expansion valve is a very important component in refrigeration system.





Expansion valves serve three function:

①Throttling and pressure reduction: When the refrigerant flows into evaporator through expansion valve, then chilled the water in the evaporator.

②. Control flow rate: The expansion valve adjusts the refrigerant flow rate flowing to matches the refrigerant flow rate and the heat load of the Evaporator.

③ Control the degree of superheat: The superheat has been adjusted to keep the full use of the evaporator area and prevent the compressor liquid hammer.

7.Drier- Filter

The drier-filter is a component to removes impurities and moisture. It is usually installed between the the condenser and the expansion valve.





In the system, due to the moisture in the refrigerant and the freezing oil, there will inevitably be oxides and moisture. The refrigeration system is particularly sensitive to moisture and impurities. If the water and the impurities reaches a certain amount, it will cause serious result. so it is necessary to install a drier-filter in the system.

The working principle of the drier-filter is that the molecular sieve and glass wool layer are mixed, the molecular sieve removes water and wax, and the glass wool filters solid impurities.

8.High and low pressure controllers

It is used to control the running range of compressor and ensure its safety.

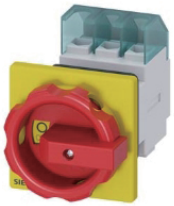
When the compressor's pressure is too high or too low, it will act to stop the compressor, and then the controller will give high or low pressure alarm.





9.Electronic accessories

The electrical accessories used in water chillers mainly include: controllers, circuit breakers, AC contactor, thermal relays, phase sequence protectors.





The controller is the is the foundation to ensure the intelligent operation of the unit.

Circuit breakers, contactor、relays are used to control and protect compressors, water pumps and fans.

⚠ Attention

Please confirm if the wiring is secure, whether the power supply is stable.Ensure water& moisture&dust proof of the cabinet, especially in the rainy weather, it is necessary to ensure that the electrical components are not damp!

⚠ Attention

In winter, if the unit is shut down for a long time, please drain the water in tank and pipeline.

Suggest setting the water temperature above 7℃, or the evaporator may freeze and be damaged.

Please keep power on,. When the water temperature is too low, the unit controller will automatically enter the antifreeze operation state.

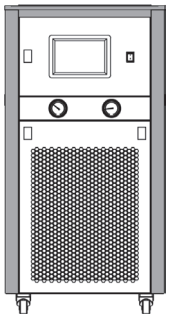
6、Specifications

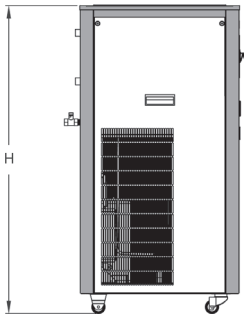
Air cooled industrial chiller（0.6HP~60HP）

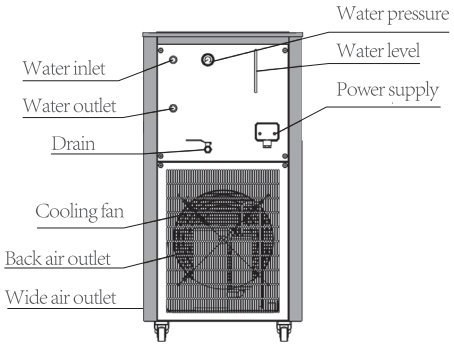
Item \ Model			ICA-0.6	ICA-1	ICA-2	ICA-3	ICA-5	ICA-6	ICA-8	ICA-10
Performance parameter										
Cooling capacity		kW	1.6	2.7	5.2	9.1	15.0	18.0	23.0	29.5
		10^3 kcal/h	1.4	2.3	4.5	7.8	12.9	15.5	19.8	25.4
Power source		V/ph/Hz	220/1/50			380/3/50				
Power input		kW	0.9	1.2	2.2	2.9	5.3	6.5	8.4	10.5
Rated current		A	4.6	5.9	11.3	8.2	11.7	12.2	20.0	23.4
Main components										
Compressor	Type		Rotor type				Scroll type			
	Power	kW	0.5	0.8	1.6	2.3	4.2	5.1	6.9	8.7
Pump	Power	kW	0.25	0.25	0.37	0.37	0.55	0.75	0.75	0.75
	Head	m	36	34	26	24	28	33	30	27
	Flow rate	m^3/h	0.28	0.46	0.89	1.6	2.6	3.1	4.0	5.1
		L/min	4.6	7.7	14.8	26.7	43.3	51.7	66.0	85.0
Tank capacity		L	12	20	35	60	70	70	100	135
Pipe size/Noise/Weight/Dimensions										
Pipe size		DN	15		20	25				40
Noise level		dB(A)	56	58	58	60	61	62	64	65
Net weight		kg	50	68	108	140	185	210	260	310
Dimensions	L	mm	420	500	600	680	750	815	1350	1510
	W	mm	420	500	600	680	750	750	680	750
	H	mm	815	950	1160	1360	1480	1480	1360	1480

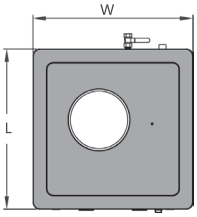
Item \ Model			ICA-12	ICA-15	ICA-20	ICA-25	ICA-30	ICA-40	ICA-50	ICA-60
Performance parameter										
Cooling capacity		kW	35	44	58.5	69.0	86.0	116.0	140.0	168.0
		10^3 kcal/h	30.1	37.8	50.3	59.3	74.1	100.0	120.0	145.0
Power source		V/ph/Hz	380/3/50							
Power input		kW	12.5	15.0	21.1	24.0	30.0	41.3	48.0	58.5
Rated current		A	24.0	27.7	41.7	46.7	57.0	76.0	88.0	110.0
Main components										
Compressor	type		Scroll type							
	Power	kW	10.1	12.5	17.4	20.2	25.0	34.8	40.6	50.0
Pump	Power	kW	1.2	1.2	2.2	2.2	2.2	3.5	3.5	4.0
	Head	m	29	27	27	26	25	34	29	25
	Flow rate	m^3/h	6.0	7.6	10.0	11.8	14.8	20.0	24.0	28.9
		L/min	100	127	167	197	247	333	400	480
Tank capacity		L	135	155	230	230	230	300	300	300
Pipe size/Noise/Weight/Dimensions										
Pipe size		DN	40		50				65	
Noise level		dB(A)	65	66	67	68	68	69	69	69
Net weight		kg	340	415	620	670	780	1100	1300	1500
Dimensions	L	mm	1510	1785	2080	2080	2080	2200	3000	3400
	W	mm	750	915	1050	1050	1050	1200	1200	1200
	H	mm	1480	1630	1920	1920	1920	2135	2120	2135

* With the technological progress, we will periodically update products. Please follow KANSA website.

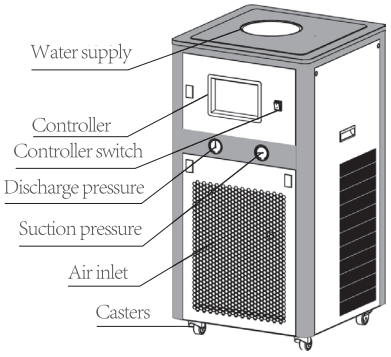


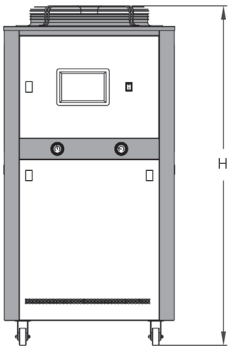


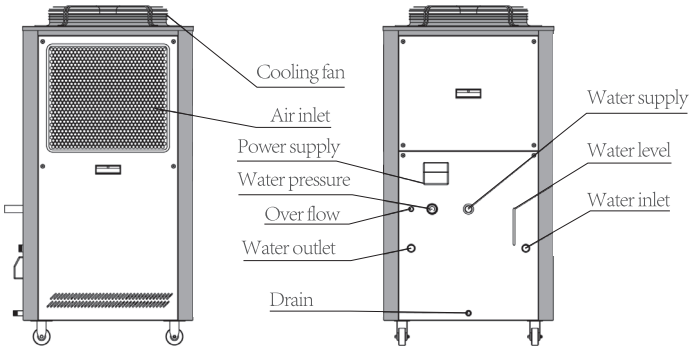


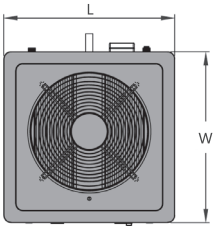


Item \ Model	ICA-0.6	ICA-1	ICA-2
L mm	420	500	600
W mm	420	500	600
H mm	815	950	1160

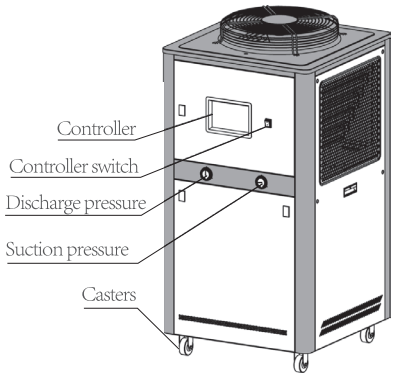


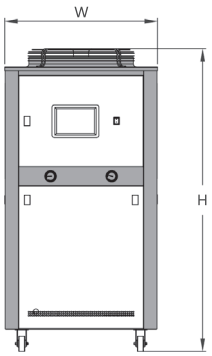


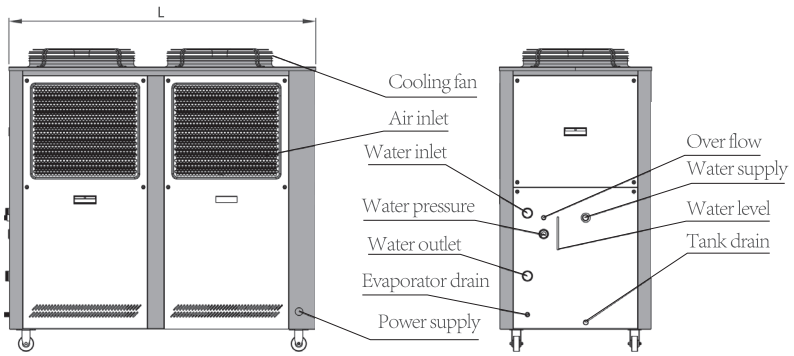


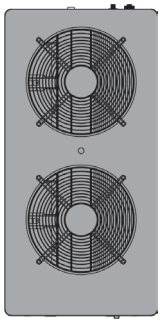


Item \ Model	ICA-3	ICA-5	ICA-6
L mm	680	750	815
W mm	680	750	750
H mm	1360	1480	1480

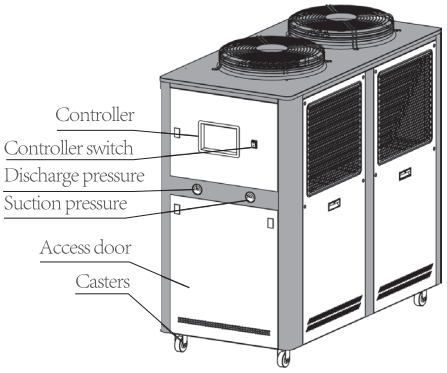


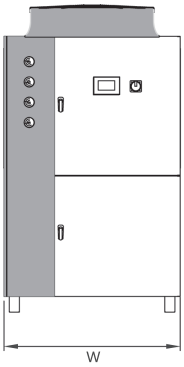


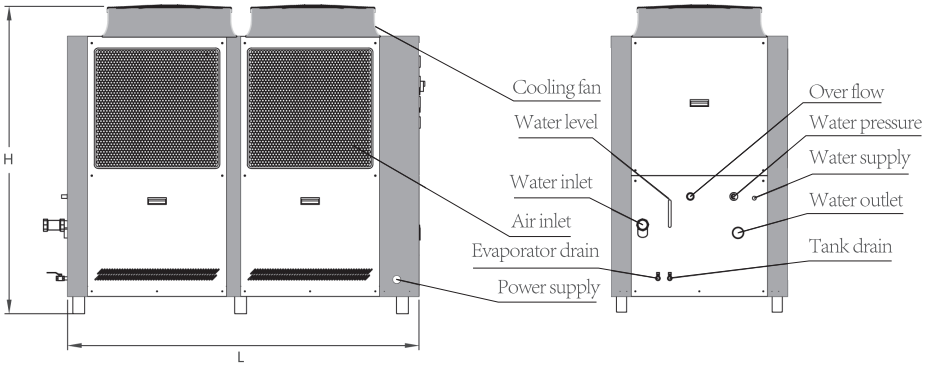


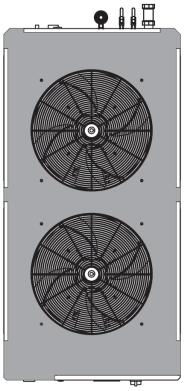


Item \ Model	ICA-8	ICA-10	ICA-12
L mm	1350	1510	1510
W mm	680	750	750
H mm	1360	1480	1480

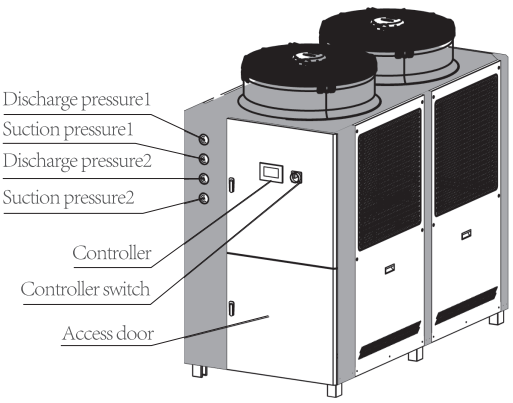


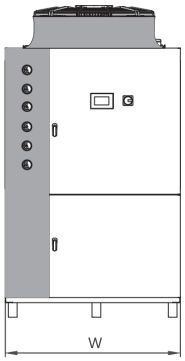


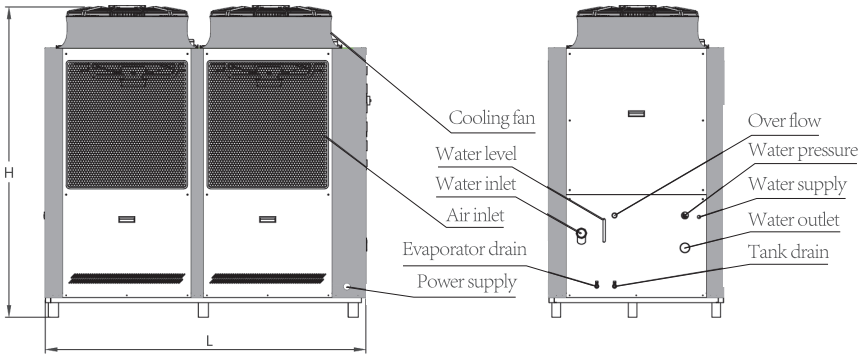


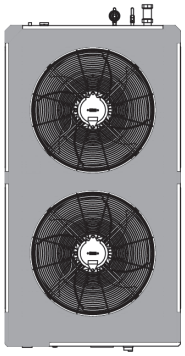


Item \ Model	ICA-15	ICA-20	ICA-25
L mm	1785	2080	2080
W mm	915	1050	1050
H mm	1630	1820	1820

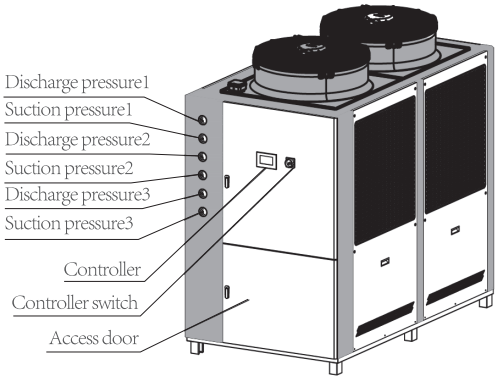


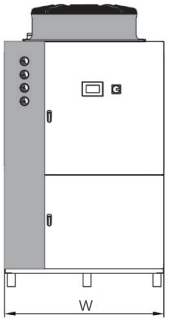


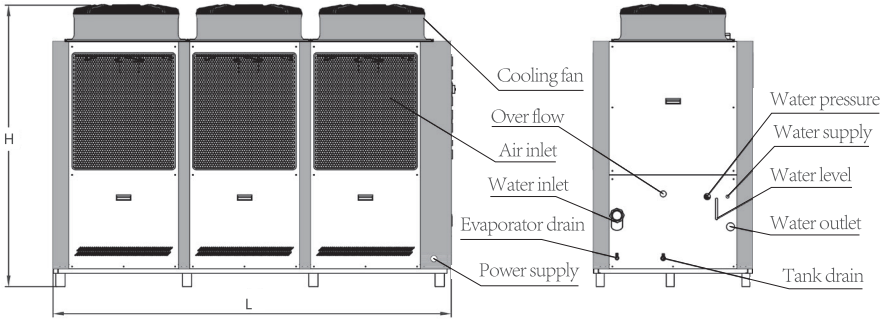


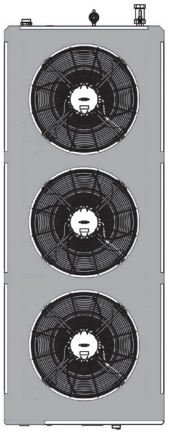


Item \ Model	ICA-30	ICA-40
L mm	2080	2200
W mm	1050	1200
H mm	1910	2135

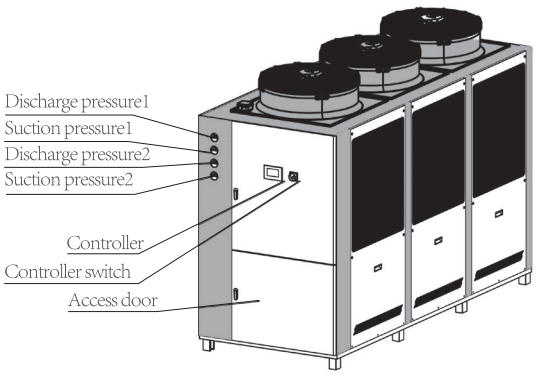








Item \ Model	ICA-50	ICA-60
L mm	3000	3400
W mm	1200	1200
H mm	2120	2135

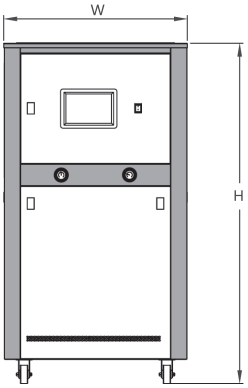


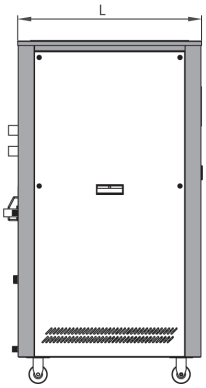
Water cooled industrial chiller（3HP~75HP）

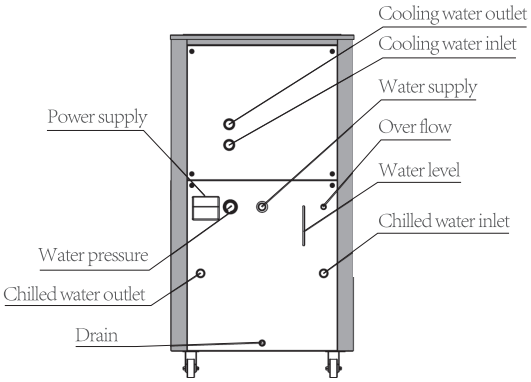
Item \ Model			ICW-3	ICW-5	ICW-6	ICW-8	ICW-10	ICW-12	ICW-15
Performance parameter									
Cooling capacity		kW	9.9	16.5	19.6	26.5	33.0	38.5	48.5
		10^3 kcal/h	8.5	14.2	16.8	22.8	28.4	33.1	41.7
Power source		V/ph/Hz	380/3/50						
Power input		kW	2.3	4.0	4.9	6.3	8.0	9.6	11.2
Rated current		A	6.7	8.0	9.5	13.0	16.3	19.0	21.0
Main components									
Compressor power		kW	1.9	3.4	4.1	5.5	7.2	8.4	10.0
Pump	Power	kW	0.37	0.55	0.75	0.75	0.75	1.2	1.2
	Head	m	24	28	32	28	25	29	27
Condenser flow	Flow rate	m^3/h	2.1	3.6	4.2	5.7	7.1	8.3	10.4
	Pipe size	DN	25				40		
Evaporator flow	Flow rate	m^3/h	1.7	2.8	3.4	4.6	5.7	6.6	8.3
	Pipe size	DN	25				40		
Tank capacity		L	60	70	70	100	135	135	155
Noise/Weight/Dimensions									
Noise level		dB(A)	55	55	56	57	57	58	60
Net weight		kg	120	150	170	200	250	280	400
Dimensions	L	mm	680	750	750	1350	1510	1510	1785
	W	mm	680	750	750	680	750	750	915
	H	mm	1270	1390	1390	1270	1390	1390	1545

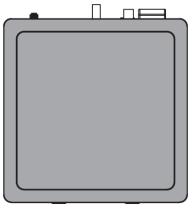
Item \ Model			ICW-20	ICW-25	ICW-30	ICW-40	ICW-50	ICW-60	ICW-75
Performance parameter									
Cooling capacity		kW	66.0	78.0	96.0	128.0	152.0	182.0	240.0
		10^3 kcal/h	56.8	67.1	82.6	110.0	130.7	156.5	206.4
Power source		V/ph/Hz	380/3/50						
Power input		kW	16.4	19.0	22.2	32.0	36.7	44.0	57.3
Rated current		A	34.0	38.0	42.0	59.0	67.0	83.0	105
Main components									
Compressor power		kW	14.4	16.8	20.0	28.4	33.2	40.0	49.8
Pump	Power	kW	2.2	2.2	2.2	3.5	3.5	4.0	7.5
	Head	m	27	26	24	32	26	22	20.5
Condenser flow	Flow rate	m^3/h	14.2	16.8	20.6	27.5	32.7	39.1	51.6
	Pipe size	DN	50				65		80
Evaporator flow	Flow rate	m^3/h	11.4	13.4	16.5	22.0	26.1	31.3	41.3
	Pipe size	DN	50				65		80
Tank capacity		L	230	230	230	300	300	300	400
Noise/Weight/Dimensions									
Noise level		dB(A)	62	63	64	65	66	67	68
Net weight		kg	550	620	720	1030	1200	1330	1550
Dimensions	L	mm	2080	2080	2080	2200	3000	3000	3400
	W	mm	1050	1050	1050	1200	1200	1200	1200
	H	mm	1630	1630	1630	1845	1845	1845	1845

*With the technological progress, we will periodically update products. Please follow KANSA website.

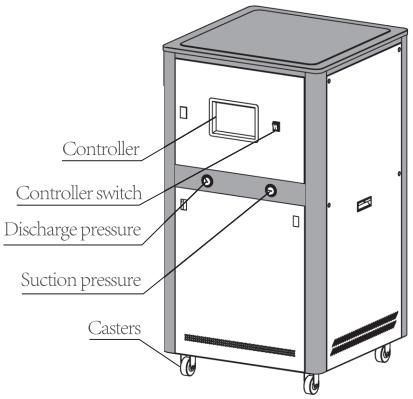


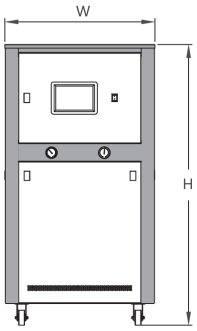


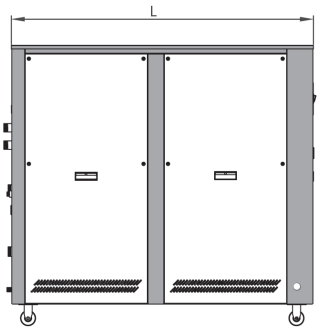


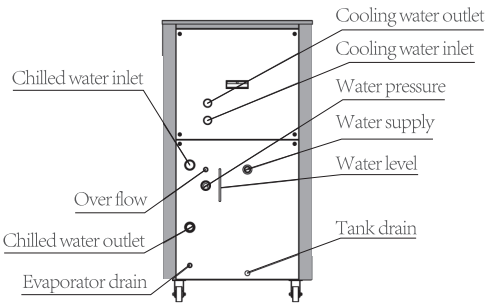


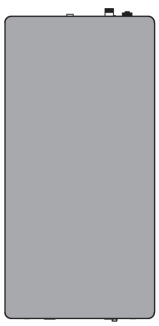
Item \ Model	ICW-3	ICW-5	ICW-6
L mm	680	750	750
W mm	680	750	750
H mm	1270	1390	1390



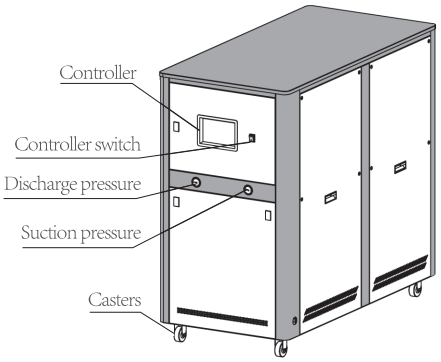


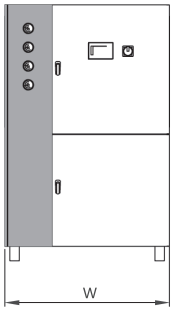


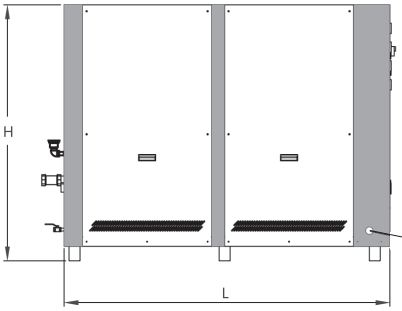


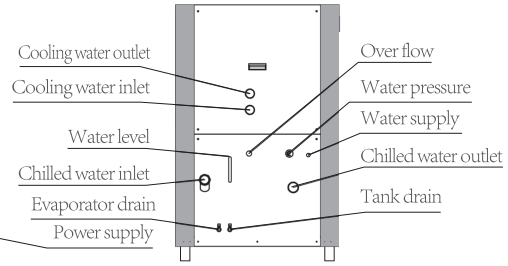


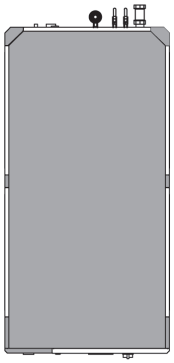
Item \ Model	ICW-8	ICW-10	ICW-12
L mm	680	750	750
W mm	1350	1510	1510
H mm	1270	1390	1390



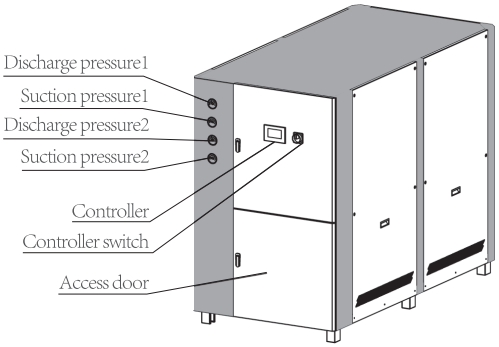


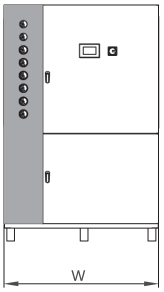


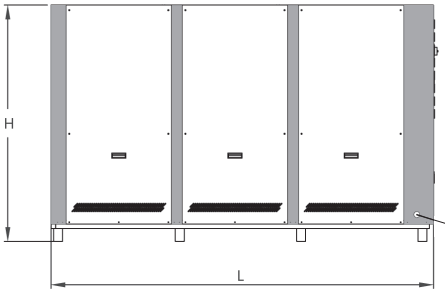


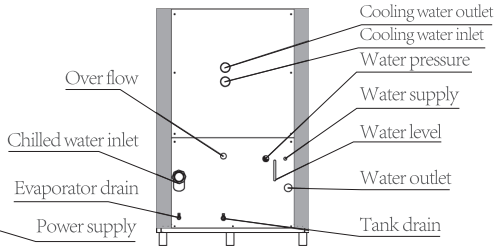


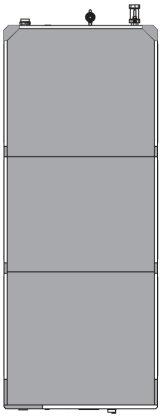
Item \ Model	ICW-15	ICW-20/25/30	ICW-40
L mm	1785	2080	2200
W mm	915	1050	1200
H mm	1545	1630	1845



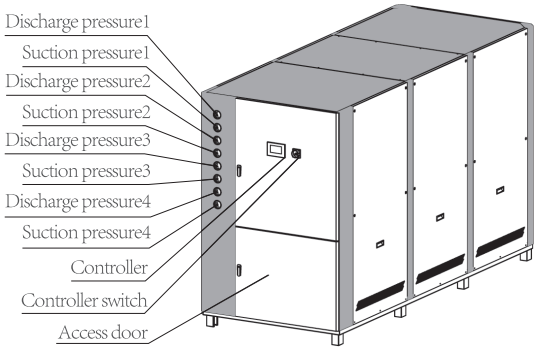








Item \ Model	ICW-50	ICW-60
L mm	3000	3000
W mm	1200	1200
H mm	1645	1645

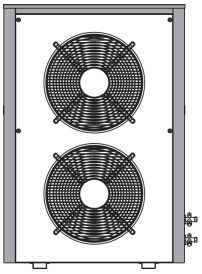


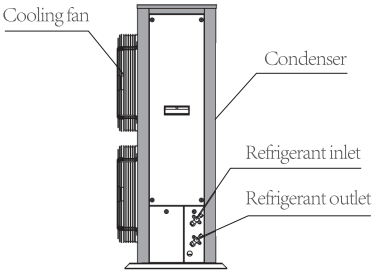
Split industrial chiller（3HP~50HP）

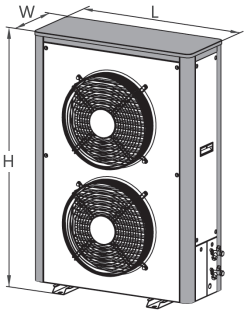
Item \ Model			ICA-3S	ICA-5S	ICA-6S	ICA-8S	ICA-10S	ICA-12S
Performance parameter								
Cooling capacity		kW	9.1	15.0	18.0	23.0	29.5	35.0
		10^3 kcal/h	7.8	12.9	15.5	19.8	25.4	30.1
Power source		V/ph/Hz	380/3/50					
Power input		kW	2.9	5.3	6.5	8.4	10.5	12.5
Rated current		A	8.2	11.7	12.2	20.0	23.4	24.0
Main components								
Compressor	Type		Scroll type					
	Power	kW	2.3	4.2	5.1	6.9	8.7	10.1
Pump	Power	kW	0.37	0.55	0.75	0.75	0.75	1.2
	Head	m	24	28	33	30	27	29
	Flow rate	m^3/h	1.6	2.6	3.1	4.0	5.1	6.0
		L/min	26.7	43.3	51.7	66.7	85.0	100.0
Tank capacity		L	60	70	70	100	135	135
Pipe size		DN	25				40	
Noise/Weight/Dimensions								
Noise level		dB(A)	60	61	62	64	65	65
Net weight (indoor/outdoor)		kg	120/70	140/90	160/120	180/140	210/170	230/200
Dimensions (indoor/outdoor)	L	mm	680/800	750/800	750/1055	1350/1055	1510/1055	1510/1400
	W	mm	680/490	750/490	750/540	680/540	750/540	750/540
	H	mm	1263/765	1386/1165	1386/1165	1262/1165	1400/1500	1400/1500

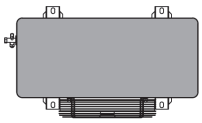
Item \ Model			ICA-15S	ICA-20S	ICA-25S	ICA-30S	ICA-40S	ICA-50S
Performance parameter								
Cooling capacity		kW	44.0	58.5	69.0	86.0	116.0	140.0
		10^3 kcal/h	37.8	50.3	59.3	74.1	100.0	120.0
Power source		V/ph/Hz	380/3/50					
Power input		kW	15.0	21.1	24.0	30.0	41.3	48.0
Rated current		A	27.7	41.7	46.7	57.0	76.0	88.0
Main components								
Compressor			Scroll type					
	Power	kW	12.5	17.4	20.2	25.0	34.8	40.6
Pump	Power	kW	1.2	2.2	2.2	2.2	3.5	3.5
	Head	m	27	27	26	25	34	29
	Flow rate	m^3/h	7.6	10.0	11.8	14.8	20.0	24.0
		L/min	127.0	167.0	197.0	247.0	333.0	400.0
Tank capacity		L	155	230	230	230	300	300
Pipe size		DN	40	50				65
Noise/Weight/Dimensions								
Noise level		dB(A)	66	67	68	68	69	69
Net weight (indoor/outdoor)		kg	260/230	380/330	420/330	460/380	750/1450	880/580
Dimensions (indoor/outdoor)	L	mm	1785/1400	2080/1610	2080/1610	2080/2035	2200/2035	2200/1610
	W	mm	915/540	1050/1000	1050/1000	1050/1100	1200/1100	1200/1000
	H	mm	1554/1500	1353/1560	1353/1560	1353/1600	1365/1750	1365/1560

*With the technological progress, we will periodically update products. Please follow KANSA website.



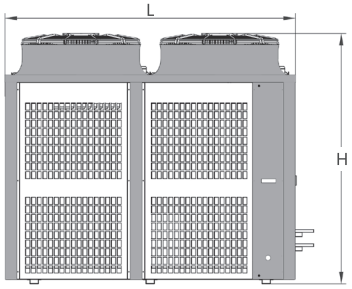


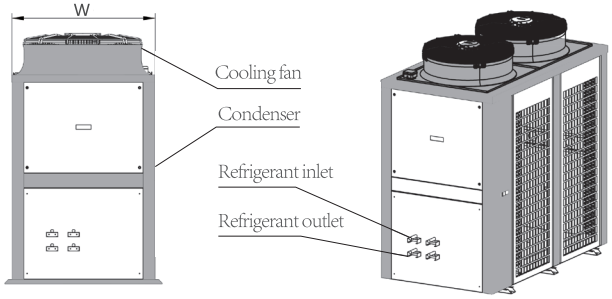


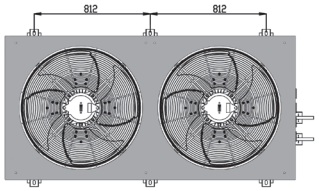


Outdoor unit (ICA-3S~ICA-15S)

Item \ Model	ICA-3S	ICA-5S	ICA-6S	ICA-8S	ICA-10S	ICA-12S	ICA-15S
L mm	800	800	1055	1055	1055	1400	1400
W mm	350	350	350	350	400	400	400
H mm	765	1165	1165	1165	1475	1475	1475
Refrigerant outlet mm	12.7	15.88	15.88	22.2	22.2	22.2	22.2



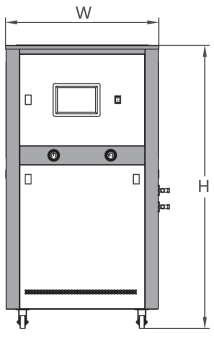


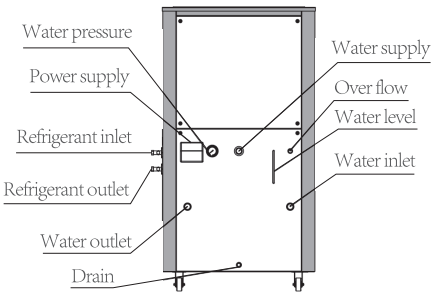


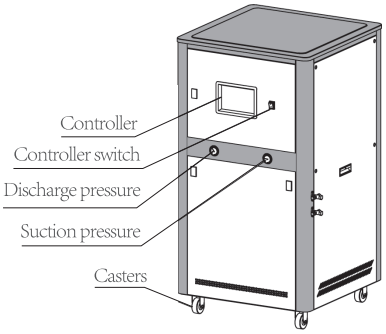
Outdoor unit (ICA-20S~ICA-40S)

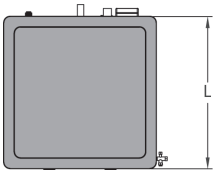
Item \ Model	ICA-20S	ICA-25S	ICA-30S	ICA-40S
L mm	1610	1610	2035	2035
W mm	1000	1000	1100	1100
H mm	1560	1560	1735	1750
Refrigerant inlet mm	22.2*2	22.2*2	22.2*2	22.2*3
Refrigerant outlet mm	22.2*2	22.2*2	22.2*2	22.2*3

Note
ICA-50 has two ICA-25S indoor units.



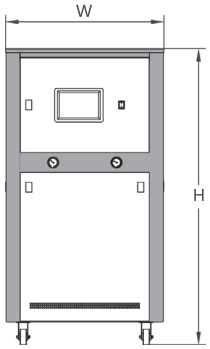


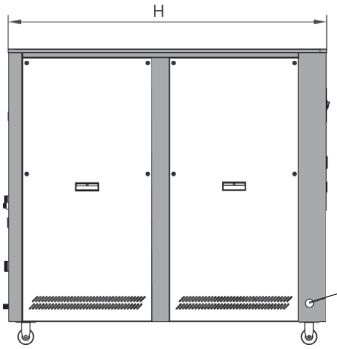


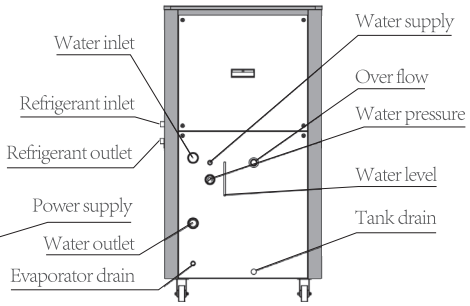


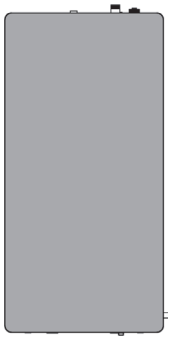
Indoor unit (ICA-3S~ICA-6S)

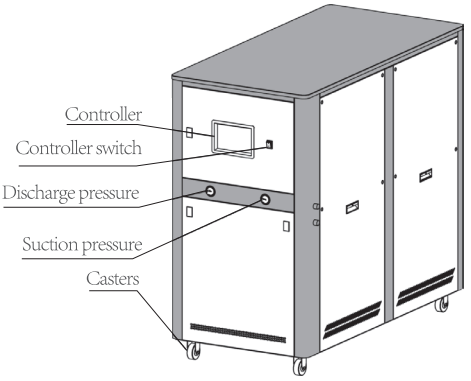
Item \ Model	ICA-3S	ICA-5S	ICA-6S
L mm	680	750	750
W mm	680	750	750
H mm	1270	1390	1390
Refrigerant tube size mm	12.7	15.88	15.88





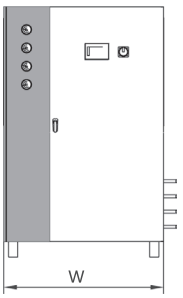


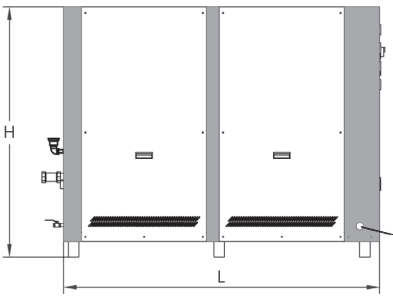


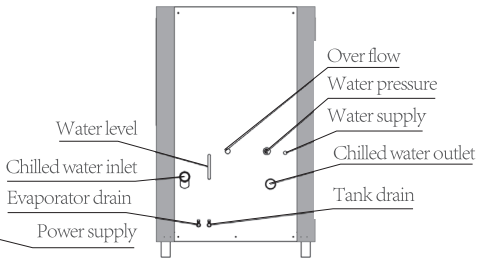


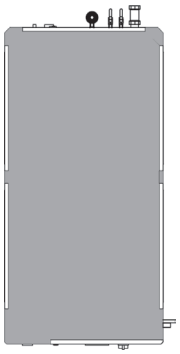
Indoor unit (ICA-8S~ICA-12S)

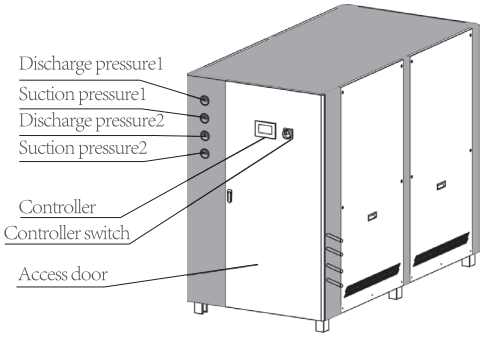
Item \ Model	ICA-8S	ICA-10S	ICA-12S
L mm	1350	1510	1510
W mm	680	750	750
H mm	1270	1390	1390
Refrigerant tube size mm	12.7	15.88	15.88











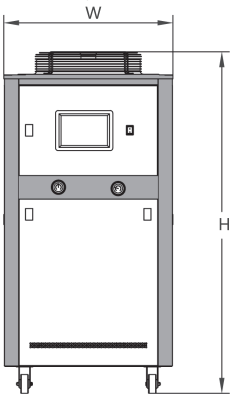
Indoor unit (ICA-15S~ICA-50S)

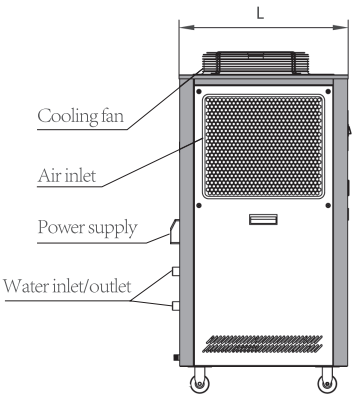
Item \ Model	ICA-15S	ICA-20/25/30S	ICA-40S	ICA-50S
L mm	1785	2080	2200	3000
W mm	915	1050	1200	1200
H mm	1545	1570	1570	1570
Refrigerant inlet mm	22.2*2	22.2*2	22.2*3	22.2*3
Refrigerant outlet mm	22.2*2	22.2*2	22.2*3	22.2*3

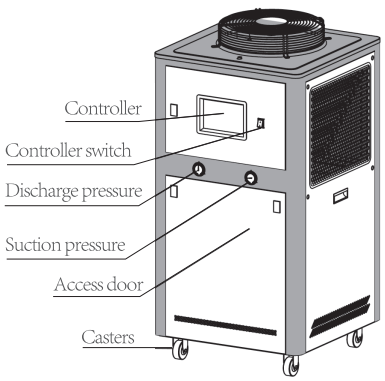
High precision chiller（1HP~10HP）±0.1℃

Item \ Model			ICA-1G	ICA-2G	ICA-3G	ICA-5G	ICA-8G	ICA-10G
Performance parameter								
Cooling capacity		kW	2.7	5.0	9.1	15.0	23.0	29.5
		10^3 kcal/h	2.3	4.5	7.8	12.9	19.8	25.4
Power source		V/ph/Hz	220/1/50		380/3/50			
Power input		kW	1.2	2.2	2.9	5.3	8.4	10.5
Rated current		A	5.9	11.3	8.2	11.7	20.0	23.4
Main components								
Controller	Type		High precision touch screen controller					
Compressor	Power	kW	0.8	1.6	2.3	4.2	6.9	8.7
	Type		Rotor type			Scroll type		
Condenser	Type		Efficient internally threaded copper tube fins					
	Fan type		Efficient axial flow type					
Evaporater	Type		Stainless steel pipe			Stainless steel stell and tube type		
	Tank	L	20	40	50	70	100	135
Pump	Type		Stainless steel centrifugal type					
	Power	kW	0.25	0.37	0.37	0.55	0.75	0.75
	Head	m	34	26	25	30	30	27
	Flow	m^3/h	0.46	0.89	1.6	2.6	4.0	5.1
		L/min	7.7	14.8	26.7	43.3	66.0	85.0
Refrigerant	Type		HCF/CHFC					
	Refrigerant controll		Electric expansion valve					
Pipe size/Noise/Weight/Dimensions								
Pipe size		DN	15	20	25	25	25	40
Noise level		dB(A)	58	63	63	67	68	69
Net weight		kg	90	120	160	200	280	320
Dimensions	L	mm	500	600	680	750	1350	1510
	W	mm	500	600	680	750	680	750
	H	mm	950	1160	1360	1480	1360	1480

* With the technological progress, we will periodically update products. Please follow KANSA website.





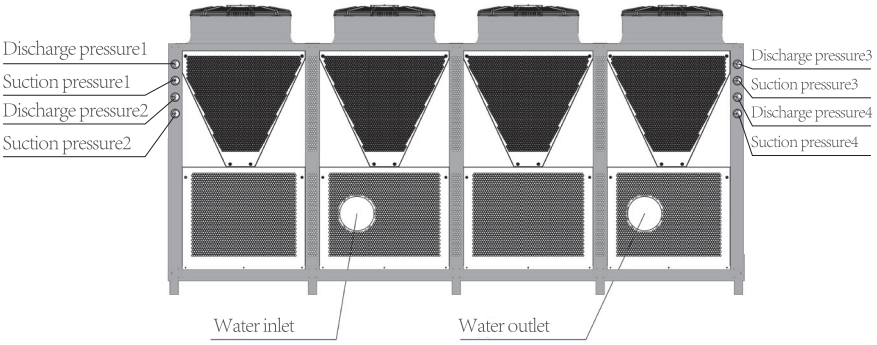


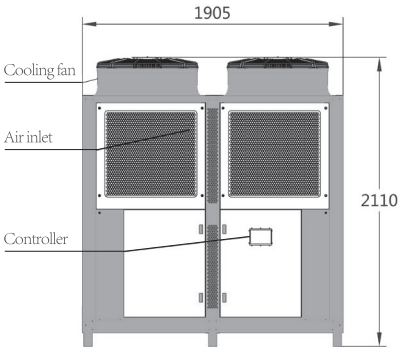
Air cooled scroll chiller

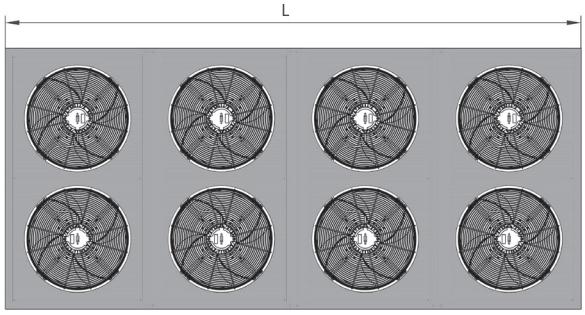
Item \ Model			ICS-20A	ICS-25A	ICS-40A	ICS-50A
Performance parameter						
Cooling capacity		kW	58.5	69.0	116	140
		10^3 kcal/h	50.3	59.3	100.0	120.0
Power source		V/ph/Hz	380/3/50			
Power input		kW	18.9	21.8	37.8	44.5
Rated current		A	37.0	42.0	69.0	81.0
Main components						
Compressor	Type		Scroll type			
	Power	kW	17.4	20.2	35.0	40.6
Pump	Type		Centrifugal			
	Pressurization		16 bar			
Chilled water flow rate		m^3/h	10.0	11.8	20.0	24.0
		L/min	167	197	333	400
Pipe size/Noise/Weight/Dimensions						
Pipe size		DN	50			65
Noise level		dB(A)	69	70	72	72
Net weight		kg	600	750	1100	1300
Dimensions	L	mm	2080	2080	2200	2100
	W	mm	1050	1050	1200	1905
	H	mm	1920	1920	2135	2120

Item \ Model			ICS-75A	ICS-100A	ICS-125A	ICS-150A
Performance parameter						
Cooling capacity		kW	210.0	280.0	350.0	420.0
		10^3 kcal/h	180.6	240.8	301.0	361.2
Power source		V/ph/Hz	380/3/50			
Power input		kW	65.5	87.0	109.0	131.0
Rated current		A	120.0	160.0	200.0	240.0
Main components						
Compressor	Type		Scroll type			
	Power	kW	60.9	81.2	101.5	121.8
Pump	Type		Centrifugal			
	Pressurization		16 bar			
Chilled water flow rate		m^3/h	36.1	48.2	60.2	72.3
		L/min	600	803	1003	1204
Pipe size/Noise/Weight/Dimensions						
Pipe size		DN	80		100	
Noise level		dB(A)	73	74	75	76
Net weight		kg	1850	2450	2950	3450
Dimensions	L	mm	3155	4205	5255	6305
	W	mm	1905	1905	1905	1905
	H	mm	1920	1920	1920	1920

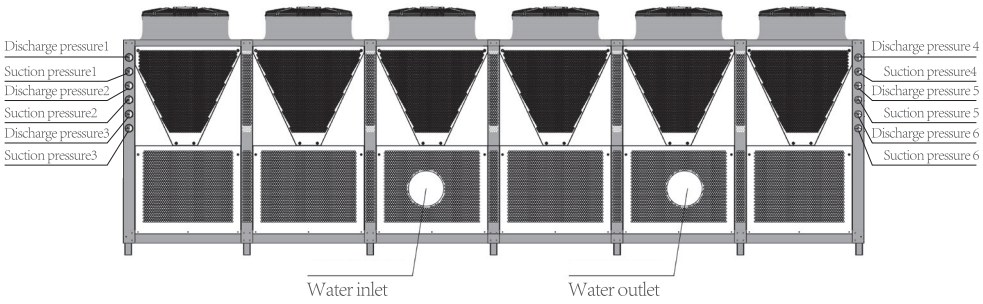
* With the technological progress, we will periodically update products. Please follow KANSA website.

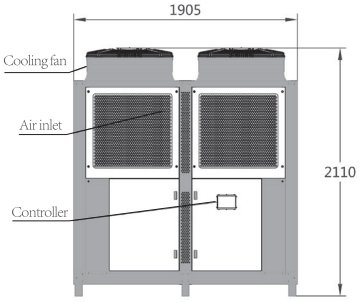


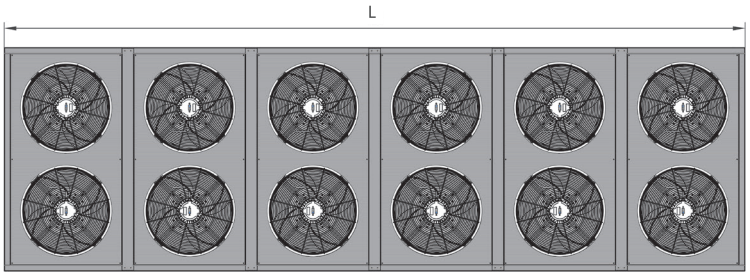




Item \ Model	ICS-75A	ICS-100A
L mm	3155	4205







Item \ Model	ICS-125A	ICS-150A
L mm	3155	4205

Water cooled scroll chiller

Item \ Model			ICS-20W	ICS-25W	ICS-30W	ICS-40W	ICS-50W
Performance parameter							
Cooling capacity		kW	66.0	80.0	98.0	128.0	160.0
		10^3 kcal/h	56.8	68.8	84.3	110.0	137.6
Power source		V/ph/Hz	380/3/50				
Main components							
Compressor	Quan.	net	2	2	3	3	4
	Power	kW	14.4	16.8	20.0	28.4	33.2
	Curent	A	28.8	33.0	37.2	51.4	59.6
Condenser	Type						
	Water flow	m^3/h	14.2	18.0	21.1	27.5	34.4
	Pipe size	DN	50				65
Evaporater	Type						
	Water flow	m^3/h	11.4	13.8	16.9	22.1	27.5
	Pipe size	DN	50				65
Noise/Weight/Dimensions							
Noise level		dB(A)	64	65	66	67	67
Net weight		kg	360	400	465	530	760
Dimensions	L	mm	1800	1900	2200	2400	2500
	W	mm	800	800	800	800	800
	H	mm	1400	1400	1400	1400	1500

Item \ Model			ICS-60W	ICS-75W	ICS-100W	ICS-125W	ICS-150W
Performance parameter							
Cooling capacity		kW	196	240	320	400	480
		10^3 kcal/h	168.6	206.4	275.2	344.0	412.8
Power source		V/ph/Hz	380/3/50				
Main components							
Compressor	Quan.	net	3	3	4	5	6
	Power	kW	42.6	49.8	66.4	83.0	99.6
	Curent	A	77.0	89.5	120.0	150.0	180.0
Condenser	Type		Shell and tube type				
	Water flow	m^3/h	42.0	51.6	68.8	86.0	103.2
	Pipe size	DN	65	80		100	
Evaporater	Type		Shell and tube type				
	Water flow	m^3/h	33.7	41.3	55.0	68.8	82.6
	Pipe size	DN	65	80		100	
Noise/Weight/Dimensions							
Noise level		dB(A)	67	67	68	69	70
Net weight		kg	870	980	1460	1580	1890
Dimensions	L	mm	2500	2600	3000	3000	3200
	W	mm	800	800	900	950	950
	H	mm	1500	1500	1500	1500	1500

* With the technological progress, we will periodically update products. Please follow KANSA website.

-5℃ Air cooled industrial chiller

Item \ Model			ICA-2M	ICA-3M	ICA-5M	ICA-8M	ICA-10M	ICA-12M
Performance parameter								
Cooling capacity		kW	3.0	4.5	7.0	11.0	15.0	18.0
		10^3 kcal/h	2.6	3.9	6.0	9.5	12.9	15.5
Power source		V/ph/Hz	220/1/50	380/3/50				
Power input		kW	2.0	2.9	5.0	7.8	9.6	11.2
Rated current		A	11.0	7.2	10.8	15.0	18.0	25.0
Main components								
Compressor	Type		Rotor type		Scroll type			
	Power	kW	1.5	2.3	3.9	6.2	8.0	9.0
Pump	Head	m	26	25	30	25	22	29
	Power	kW	0.37	0.37	0.55	0.75	0.75	1.2
	Flow rate	m^3/h	0.52	0.78	1.2	1.9	2.6	3.1
		L/min	8.7	13.0	20.0	31.7	43.3	51.7
Tank capacity		L	40	60	70	100	135	135
Pipe size		DN	20	25			40	
Noise/Weight/Dimensions								
Noise level		dB(A)	58	60	61	64	65	66
Net weight		kg	108	140	185	260	310	320
Dimensions	L	mm	600	680	750	1350	1510	1510
	W	mm	600	680	750	680	750	750
	H	mm	1160	1360	1480	1360	1480	1480

Item \ Model			ICA-15M	ICA-20M	ICA-25M	ICA-30M	ICA-40M	ICA-50M
Performance parameter								
Cooling capacity		kW	23.0	30.0	36.0	46.0	60.0	72.0
		10^3 kcal/h	19.8	25.8	30.1	39.6	51.6	61.9
Power source		V/ph/Hz	380/3/50					
Power input		kW	14.0	19.8	21.8	27.5	36.5	42.5
Rated current		A	30.5	45.0	49.0	62.0	79.0	91.0
Main components								
Compressor	Type							
	Power	kW	11.5	16.0	18.0	23.0	32.0	36.0
Pump	Head	m	27	27	26	25	33	29
	Power	kW	1.2	2.2	2.2	2.2	3.5	3.5
	Flow rate	m^3/h	4.0	5.2	6.2	7.9	10.3	12.5
		L/min	66.7	86.7	103.3	131.7	171.7	208.3
Tank capacity		L	155	230	230	230	300	300
Pipe size		DN	40	50				65
Noise/Weight/Dimensions								
Noise level		dB(A)	66	68	68	69	69	69
Net weight		kg	415	620	670	780	1100	1300
Dimensions	L	mm	1785	2080	2080	2080	2200	3000
	W	mm	915	1050	1050	1050	1200	1200
	H	mm	1630	1920	1920	1920	2135	2120

* With the technological progress, we will periodically update products. Please follow KANSA website.

-15℃ Air cooled industrial chiller

Item \ Model			ICA-2L	ICA-3L	ICA-5L	ICA-8L	ICA-10L	ICA-12L
Performance parameter								
Cooling capacity		kW	1.9	3.1	5.2	7.4	10.6	13.5
		10^3 kcal/h	1.6	2.7	4.5	6.5	9.1	11.6
Power source		V/ph/Hz	220/1/50	380/3/50				
Power input		kW	2.6	3.7	5.8	9.0	11.3	13.6
Rated current		A	6.0	8.4	12.8	20.5	24.0	28.0
Main components								
Compressor	Type		Scroll type					
	Power	kW	2.0	2.8	4.8	7.2	9.1	11.0
Pump	Head	m	42	44	41	45	42	40
	Power	kW	0.45	0.75	0.75	1.3	1.3	1.3
	Flow rate	m^3/h	0.32	0.53	0.89	1.3	1.8	2.3
		L/min	5.5	8.8	14.8	21.7	30.0	38.3
Tank capacity		L	40	60	70	100	135	135
Pipe size		DN	20	25		40		
Noise/Weight/Dimensions								
Noise level		dB(A)	58	60	61	64	65	66
Net weight		kg	120	160	200	240	280	320
Dimensions	L	mm	600	680	750	1350	1510	1510
	W	mm	660	680	750	680	750	750
	H	mm	1160	1360	1480	1360	1480	1480

Item \ Model			ICA-15L	ICA-20L	ICA-25L	ICA-30L	ICA-40L	ICA-50L
Performance parameter								
Cooling capacity		kW	15.8	21.2	27.0	31.8	42.5	54.0
		10^3 kcal/h	13.6	18.2	23.2	27.3	36.5	46.5
Power source		V/ph/Hz	380/3/50					
Power input		kW	14.3	19.7	23.5	30.0	40.8	45.5
Rated current		A	32.0	45.0	52.0	72.0	88.0	100.0
Main components								
Compressor	Type		Scroll type					
	Power	kW	11.5	16.0	18.0	23.0	32.0	36.0
Pump	Head	m	40	42	41	45	42	40
	Power	kW	2.2	2.2	4.0	4.0	4.0	4.0
	Flow rate	m^3/h	2.7	3.6	4.6	5.5	7.3	9.3
		L/min	45	60	77	92	122	155
Tank capacity		L	155	230	230	230	300	300
Pipe size		DN	40	50				65
Noise/Weight/Dimensions								
Noise level		dB(A)	66	68	68	69	69	69
Net weight		kg	415	620	670	780	1100	1300
Dimensions	L	mm	1785	2080	2080	2080	2200	3000
	W	mm	915	1050	1050	1050	1200	1200
	H	mm	1630	1920	1920	1920	2135	2120

* With the technological progress, we will periodically update products. Please follow KANSA website.

-35℃ Air cooled industrial chiller

Item \ Model			ICA-2U	ICA-3U	ICA-5U	ICA-8U	ICA-10U	ICA-12U
Performance parameter								
Cooling capacity		kW	1.2	1.6	4.8	6.3	7.3	8.9
		10^3 kcal/h	1.03	1.4	4.1	5.4	6.3	7.7
Power source		V/ph/Hz	380/3/50					
Power input		kW	2.2	2.7	4.2	5.7	7.2	8.7
Rated current		A	4.9	6.0	9.3	12.5	15.2	17.5
Main components								
Compressor	Type		Scroll type					
	Power	kW	1.2	1.7	3.0	4.1	4.9	5.5
Pump	Head	m	42	44	41	45	42	40
	Power	kW	0.75	0.75	0.75	1.3	1.3	2.2
	Flow rate	m^3/h	0.21	0.28	0.79	1.08	1.26	1.53
		L/min	3.4	4.6	13.2	18.0	21.0	25.5
Tank capacity		L	40	50	70	100	155	155
Pipe size		DN	20	25			40	
Noise/Weight/Dimensions								
Noise level		dB(A)	62	63	65	68	68	69
Net weight		kg	110	162	188	210	260	310
Dimensions	L	mm	600	680	750	1350	1510	1510
	W	mm	600	680	750	680	750	750
	H	mm	1160	1360	1480	1360	1480	1480

Item \ Model			ICA-15U	ICA-20U	ICA-25U	ICA-30U	ICA-40U	ICA-50U
Performance parameter								
Cooling capacity		kW	10.9	15.0	17.8	21.8	30.0	35.6
		10^3 kcal/h	9.4	12.9	15.3	18.7	25.8	30.6
Power source		V/ph/Hz	380/3/50					
Power input		kW	10.2	15.3	16.5	20.0	26.6	30.0
Rated current		A	22.5	33.7	36.3	45.0	58.5	66.0
Main components								
Compressor			Scroll type					
	Power	kW	6.7	9.8	11.0	13.4	19.6	22.0
Pump	Head	m	40	42	41	45	42	40
	Power	kW	2.2	4.0	4.0	4.0	4.0	4.0
	Flow rate	m^3/h	1.88	2.58	3.06	3.75	5.16	6.12
		L/min	31.3	43.0	51.0	62.5	86.0	102.0
Tank capacity		L	155	230	230	230	300	300
Pipe size		DN	40	50				
Noise/Weight/Dimensions								
Noise level		dB(A)	69	68	68	68	69	69
Net weight		kg	415	620	670	780	1100	1300
Dimensions	L	mm	1785	2080	2080	2080	2200	3000
	W	mm	915	1050	1050	1050	1200	1200
	H	mm	1630	1920	1920	1920	2135	2120

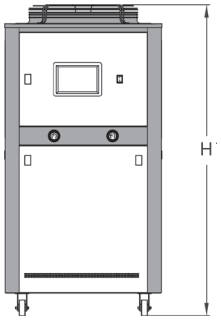
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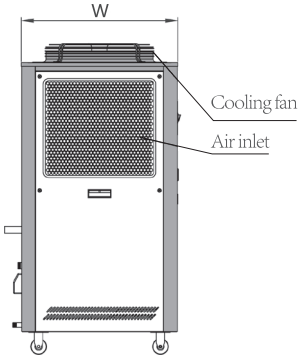
Industrial oil cooler

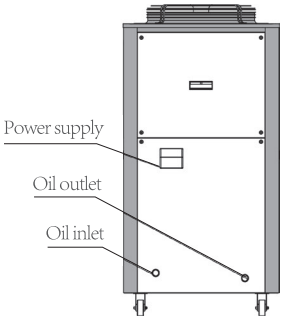
Item \ Model			COA-1.6	COA-2.5	COA-4.0	COA-6.0	COA-9.0	COA-15	COA-23
Performance parameter									
Cooling capacity		kW	1.6	2.5	4.0	6.0	9.0	15.0	23.0
		10^3 kcal/h	1.4	2.2	3.5	5.2	7.8	12.9	18.9
Power source		V/ph/Hz	220/1/50				380V/3/50Hz		
Power input		kW	1.4	1.7	2.4	2.9	4.2	5.9	8.1
Rated current		A	5.5	6.4	10.0	11.8	9.5	13.0	17.0
Temperature			Constant temperature or room temperature homology						
Main components									
Compressor	Type		Rotor type					Scroll type	
	Power	kW	0.5	0.8	1.2	1.7	2.5	4.0	6.0
Pump	Power	kW	0.75	0.75	1.5	1.5	1.5	1.5	1.5
	Flow rate	L/min	20	20	40	40	40	60	90
Pipe size/Noise/Weight/Dimensions									
Pipe size		DN	15	15	20	20	20	25	32
Noise level		dB(A)	60	60	62	62	65	65	66
Net weight		kg	50	68	105	130	150	180	265
Dimensions	L	mm	420	500	600	600	680	750	680
	W	mm	420	500	600	600	680	750	680
	H	mm	815	950	1160	1160	1360	1480	1360

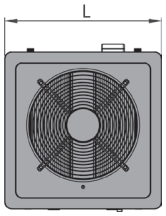
Item \ Model			COA-29	COA- 35	COA-45	COA-58	COA-69	COA-86	COA-116
Performance parameter									
Cooling capacity		kW	29.0	35.0	45.0	58.0	69.0	86.0	116.0
		10^3 kcal/h	25.0	30.1	37.8	50.3	59.3	74.1	100.0
Power source		V/ph/Hz	380V/3/50Hz						
Power input		kW	11.0	13.0	15.5	20.1	23.3	34.5	40.7
Rated current		A	24.5	28.8	34.5	44.2	51.3	75.9	89.5
Temperature			Constant temperature or room temperature homology						
Main components									
Compressor	Type								
	Power	kW	7.5	9.2	11.5	15.0	18.2	24.8	30.6
Pump	Power	kW	3.0	3.0	3.0	4.0	4.0	7.5	7.5
	Flow rate	L/min	170	170	170	250	250	390	390
Pipe size/Noise/Weight/Dimensions									
Pipe size		DN	40	40	40	50	50	65	65
Noise level		dB(A)	67	68	69	69	69	69	70
Net weight		kg	310	330	420	620	670	780	1100
Dimensions	L	mm	1510	1510	1785	2080	2080	2080	2200
	W	mm	750	750	915	1050	1050	1050	1200
	H	mm	1480	1480	1630	1920	1920	1920	2135

* With the technological progress, we will periodically update products. Please follow KANSA website.

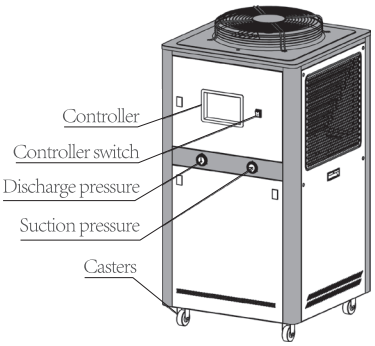


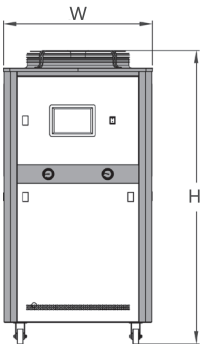


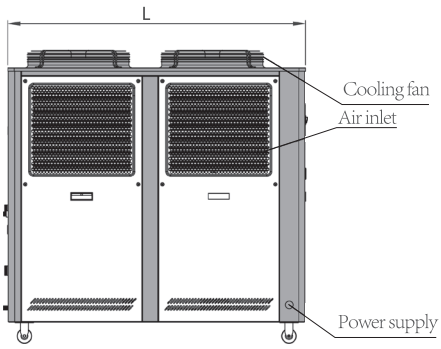


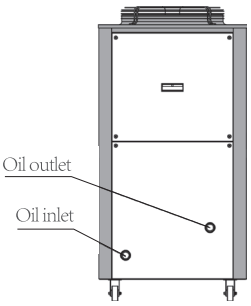


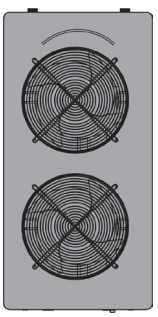
Item \ Model	COA-1.6	COA-2.5	COA-4.0/6.0	COA-9.0	COA-15
L mm	420	500	600	680	750
W mm	420	500	600	680	750
H mm	850	950	1160	1360	1480



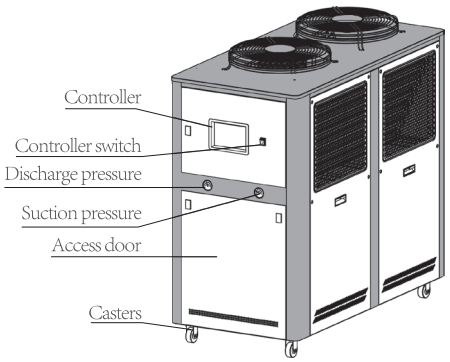


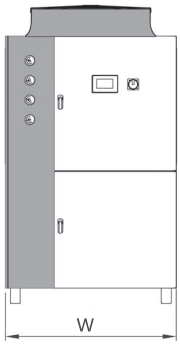


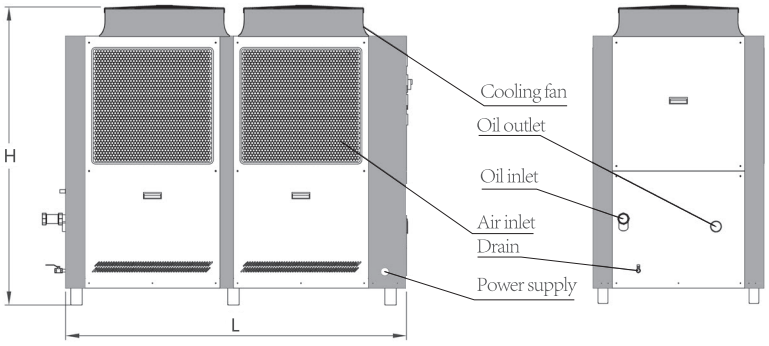


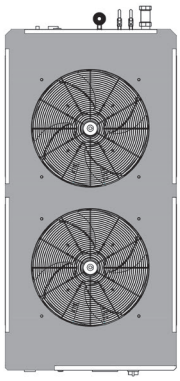


Item \ Model	COA-23	COA-29	COA-35
L mm	1350	1510	1510
W mm	680	750	750
H mm	1360	1480	1480

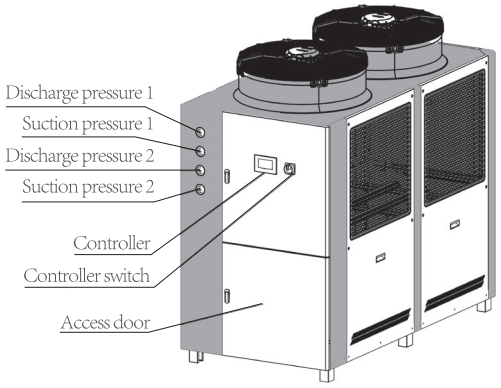


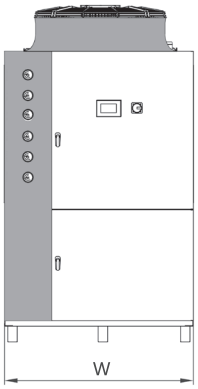


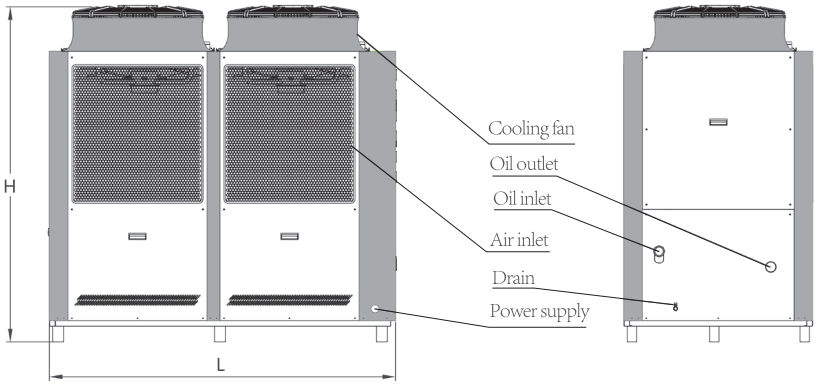


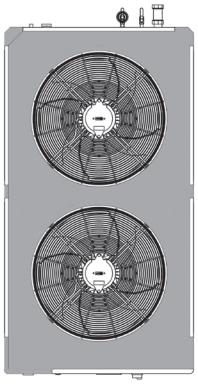


Item \ Model	COA-45	COA-58	COA-69
L mm	1785	2080	2080
W mm	915	1050	1050
H mm	1630	1820	1820

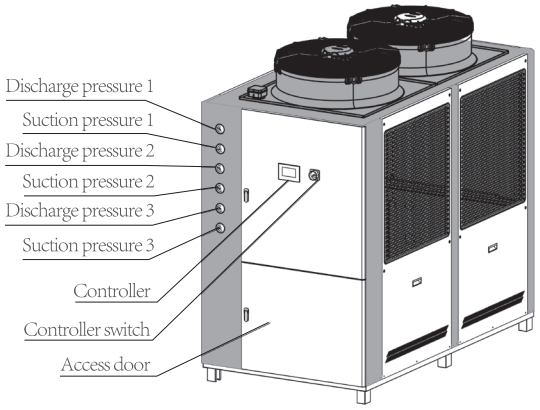








Item \ Model	COA-86	COA-116
L mm	2080	2200
W mm	1050	1200
H mm	1910	2135



Cutting fluid cooler

Item \ Model			ICQ-0.6	ICQ-1	ICQ-1.5	ICQ-2	ICQ-3	ICQ-4
Performance parameter								
Cooling capacity		kW	1.6	2.7	3.5	5.2	9.0	12.0
		10^3 kcal/h	1.4	2.3	3.0	4.5	7.8	10.3
Power source		V/ph/Hz	220V/1/50Hz				380V/3/50Hz	
Power input		kW	0.8	1.3	1. 8	2.2	3.1	4.0
Rated current		A	3.8	6.6	8.2	10.0	7.0	9.0
Main components								
Compressor	Type		Rotor type					Scroll
	Power	kW	0.5	0.8	1.2	1.7	2.4	3.2
Condenser	Type		Efficient internally threaded fins					
Evaporater	Type		Shell and tube type					
Noise/Weight/Dimensions								
Noise level		dB(A)	56	58	62	63	63	67
Net weight		kg	40	70	80	90	110	140
Dimensions	L	mm	420	500	600	600	680	750
	W	mm	420	500	600	600	680	750
	H	mm	815	950	1160	1160	1360	1480

Item \ Model			ICQ-5	ICQ-6	ICQ-8	ICQ-10	ICQ-12	ICQ-15
Performance parameter								
Cooling capacity		kW	15.0	18.0	24.0	30.0	35.0	45.0
		10^3 kcal/h	12.9	15.5	20.7	25.8	30.1	38.7
Power source		V/ph/Hz	380V/3/50Hz					
Power input		kW	5.0	5.7	7. 9	9.8	11	13
Rated current		A	11.0	12.5	15.0	18.0	22.5	28.5
Main components								
Compressor	Type		scroll type					
	Power	kW	4.2	4.7	6.6	8.5	11.5	14.0
Condenser	Type		Efficient internally threaded fins					
Evaporater	Type		Shell and tube type					
Noise/Weight/Dimensions								
Noise level		dB(A)	67	68	69	69	70	70
Net weight		kg	180	200	230	260	290	320
Dimensions	L	mm	750	750	1350	1510	1510	1785
	W	mm	750	750	680	750	750	915
	H	mm	1480	1480	1360	1480	1480	1630

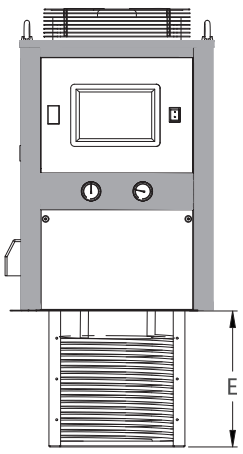
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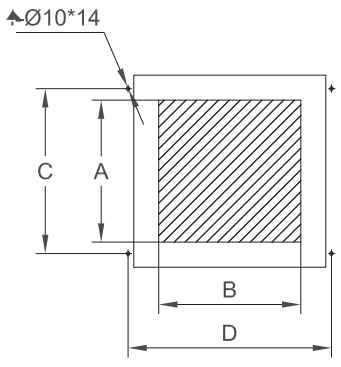
Immersion cutting fluid cooler

Item \ Model			ICQ-0.6J	ICQ-1J	ICQ-1.5J	ICQ-2J	ICQ-3J
Performance parameter							
Cooling capacity		kW	1.6	2.7	3.5	5.2	9.0
		10^3 kcal/h	1.4	1.1	1.5	2.2	3.1
Power source		V/ph/Hz	220/1/50				380/3/50
Main components							
Compressor	Power	kW	0.5	0.8	1.2	1.7	2.5
Condenser	Type		Efficient internally threaded fins				
Evaporater	Type		Stainless steel pipe				
Noise/Weight/Dimensions							
Noise level		dB(A)	56	58	59	60	61
Net weight		kg	40	55	75	95	120
Dimensions	L	mm	450	500	500	600	680
	W	mm	450	500	500	600	680
	H	mm	750	1125	1125	1120	1340

Item \ Model			ICQ-5J	ICQ-6J	ICQ-8J	ICQ-10J	ICQ-12J
Performance parameter							
Cooling capacity		kW	15.0	18.0	23.0	29.5	35.0
		10^3 kcal/h	5.2	5.9	7.9	9.8	11.0
Power source		V/ph/Hz	380/3/50				
Main components							
Compressor	Power	kW	4.2	4.9	6.6	8.5	9.2
Condenser	Type		Efficient internally threaded fins				
Evaporater	Type		Stainless steel pipe				
Noise/Weight/Dimensions							
Noise level		dB(A)	62	63	64	66	68
Net weight		kg	150	170	210	260	290
Dimensions	L	mm	750	750	1000	1000	1000
	W	mm	750	750	1000	1000	1000
	H	mm	1790	1990	1935	1935	1935

* With the technological progress, we will periodically update products. Please follow KANSA website.





Dim. / Model	A*B (mm)	C*D (mm)	E (mm)
ICQ-0.6J	320*320	380*480	300
ICQ-1J	370*370	430*530	350
ICQ-1.5J	370*370	430*530	350
ICQ-2J	500*500	530*630	380
ICQ-3J	570*570	610*710	450

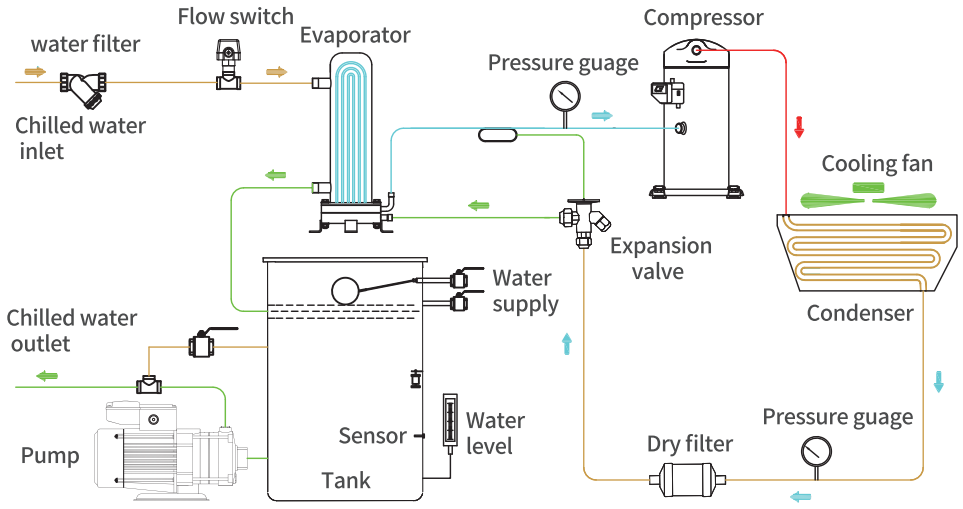
Dim. / Model	A*B (mm)	C*D (mm)	E (mm)
ICQ-5J	570*570	680*780	600
ICQ-6J	570*570	680*780	600
ICQ-8J	720*720	930*1030	600
ICQ-10J	820*820	930*1030	600
ICQ-12J	820*820	930*1030	600

7、Refrigeration Principle

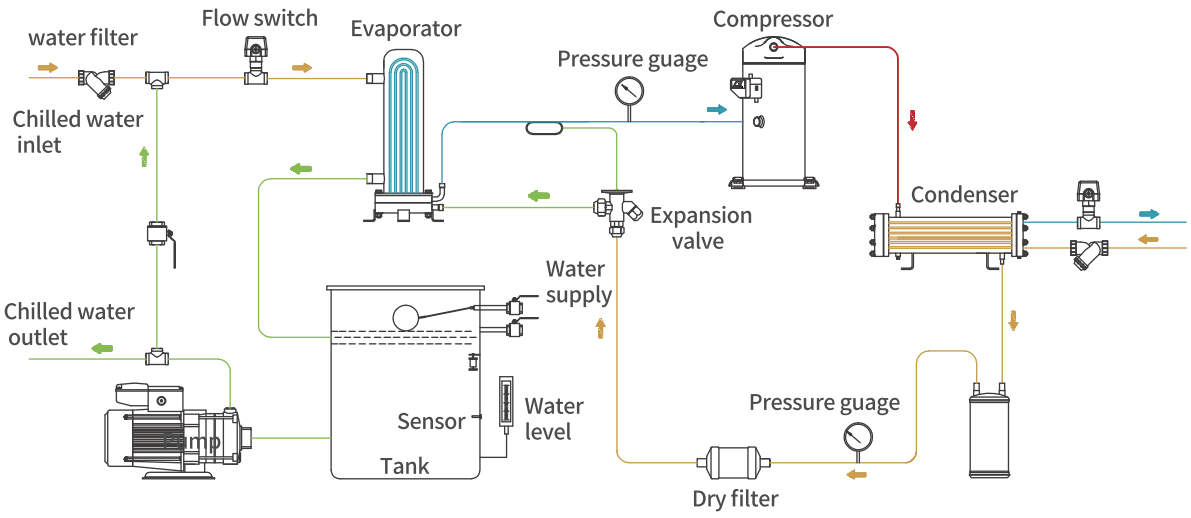
The system schematic diagram is as follows, include compressor, condenser, fan, drier filter, throttling device, evaporator, water pump, water tank and various protective devices.

The protection devices include discharge pressure, suction pressure, compressor overload, water flow, water level, low temperature, and over temperature protection.

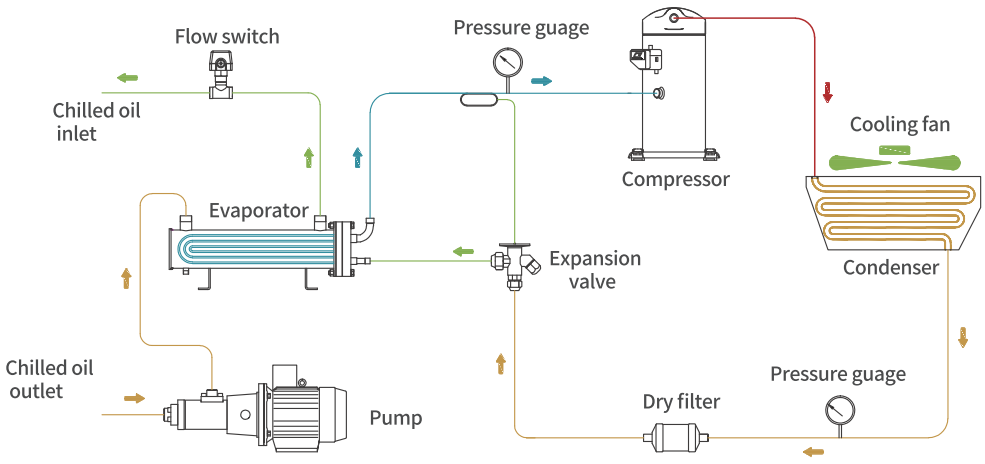
Air cooled unit system chart



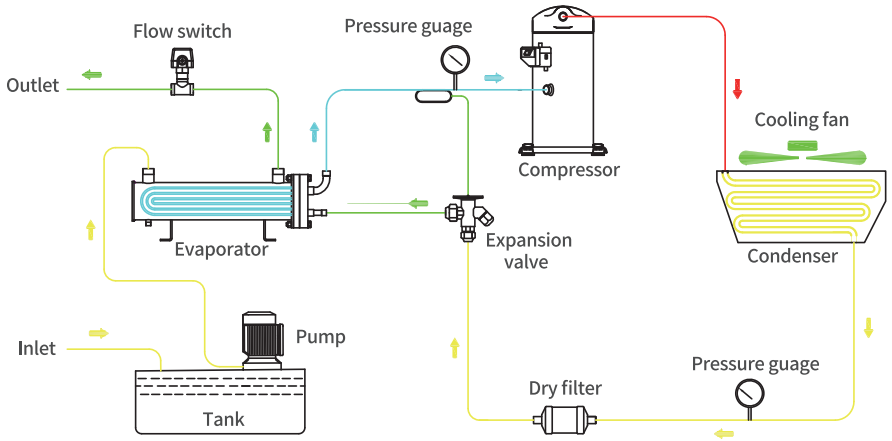
Water cooled unit system char



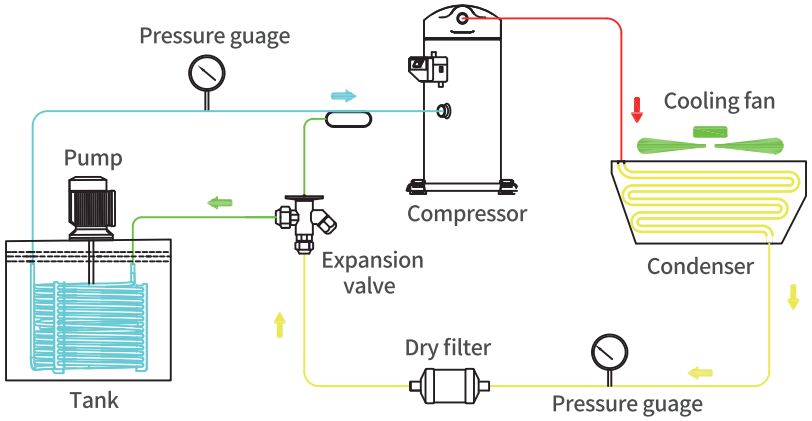
Oil cooler unit system chart



Cutting fluid cooler system chart



Immersion cutting fluid cooler system chart



■ Working Principle

Refrigerant gas is sucked into the compressor and compressed into high-temperature, high-pressure gas. Then the gas enters the condenser and becomes a high-pressure liquid. Next, the liquid is being throttled and depressurized by the thermal expansion valve, then the refrigerant becomes low-temperature & pressure. It then enters the evaporator and evaporates into low-temperature, low-pressure gas after chilling the water. Finally, this gas sucked into the compressor, and the cycle repeats.

8、Conditions of Use

1) Environmental requirements

- Ambient temperature: 0 ~ 45℃;
- Relative humidity: ≤ 90%;
- Altitude: ≤ 3000m.
- Prohibit use in special environments such as strong electromagnetic interference;
- Equipment must be installed in a place far away from fire and heat sources;

Note: The above scope fits our standard product, please contact us for extra requirement.

2) Cooling medium requirements

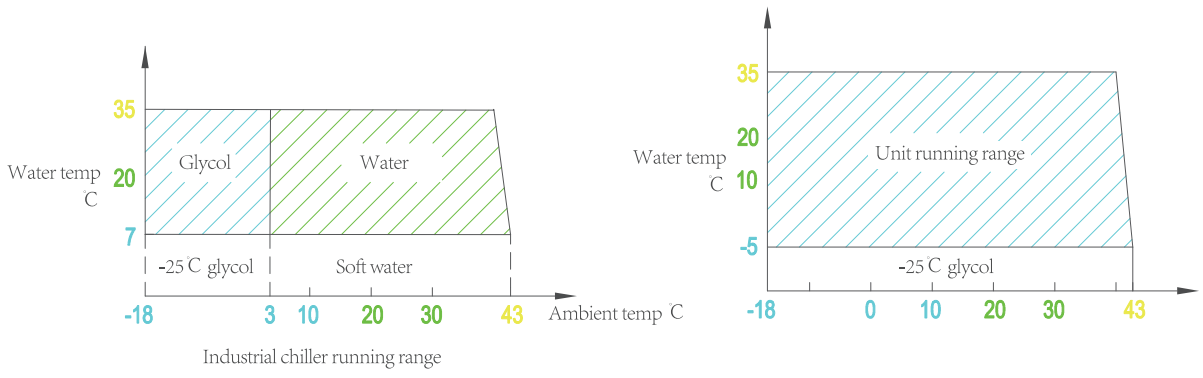
The cooling medium must be softened water, such as softened tap water etc. Ethanol with a concentration of ≤ 20% can also be used.

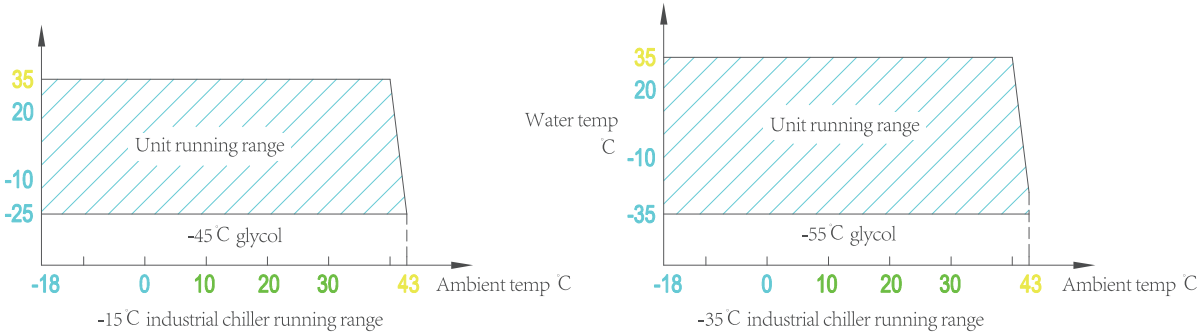
Units can use glycol when the ambient temperature is low. Low temperature units use antifreeze as required in the figure below.

Attention: Please choose high quality antifreeze liquid. Poor quality glycol will damage to the unit seriously!

It is forbidden to use liquids with solid particles that are corrosive to aluminum and SUS.

The unit running range diagram as follow:





9、System Installation

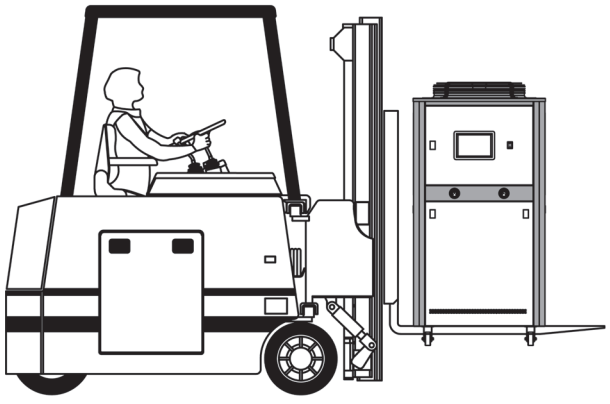
Inspection of unit

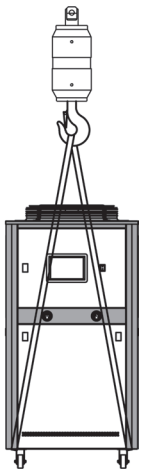
All units are wooden packing. The units have been filled with refrigerant and refrigerator oil. The type and standard charges are indicated on the nameplate of the unit.

Please inspect the unit upon receipt. In case of damage, promptly notify the carrier and our company, and file a claim as per the relevant terms.

Transport

The units below 15 HP are equipped with casters. Units above 15 HP, without wheels, should be transported by cranes or forklifts. Please maintain level during transportation.





Installation

1) Select installation site

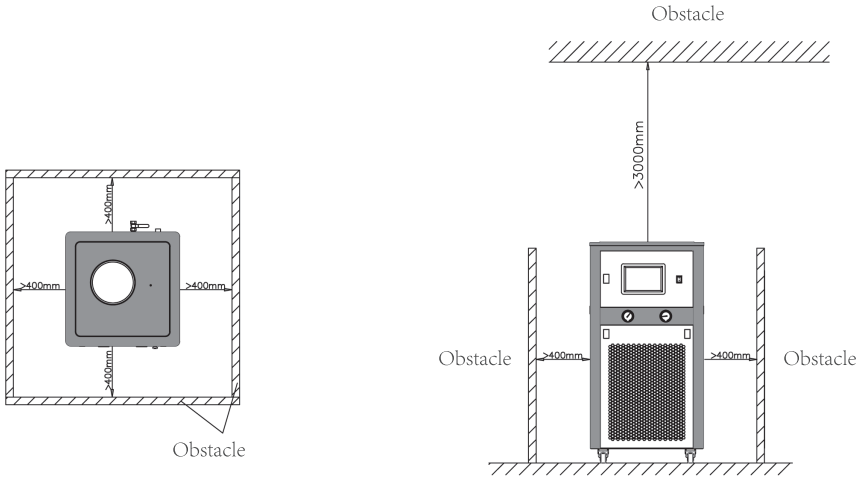
The unit can be installed on the place where it enable to bear the weight of the unit. Leave space around the unit for installation, maintenance, and upkeep.

2) Unit installation space

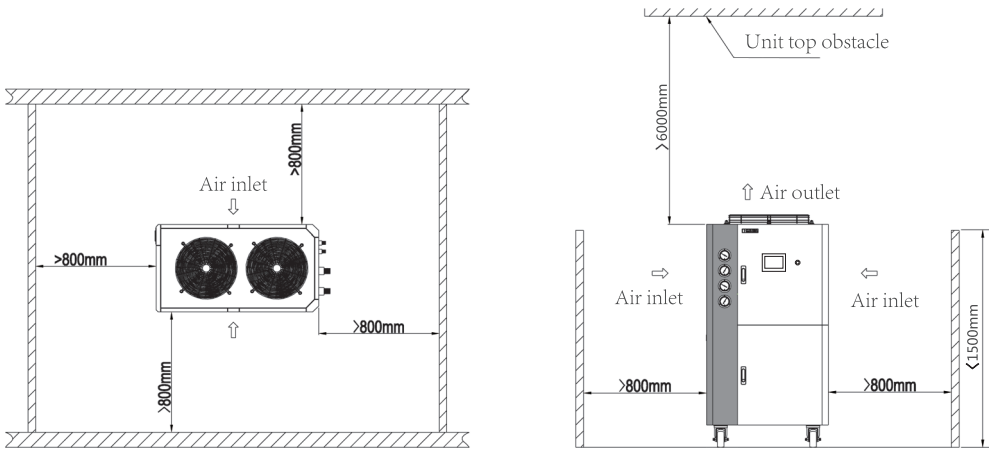
The unit should be installed close to the power supply and water source. The ambient temperature does not exceed 40℃. No strong heat source and other equipment exhaust ports.

3) Installation method

The unit can be fixed on the base with expansion bolts or be placed on the ground, roof or wall with angle steel. The supporting bracket capacity should be greater than 4 times the weight of the unit; When handling the unit, keep the inclination angle of less than 30°.



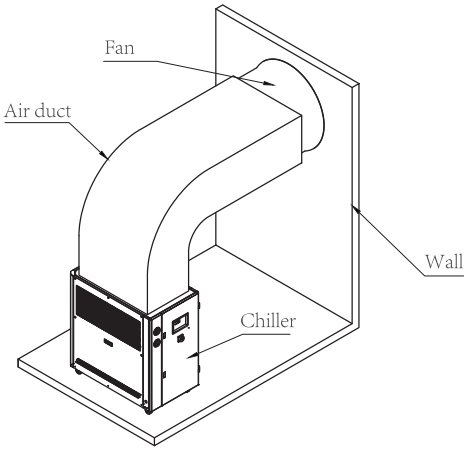
Side air out unit installation condition



Top air out unit installation condition

4) Air duct installation

If the installation space is narrow and when the ambient temperature exceeds 40 ℃, it will cause the failure. Installing the air duct can discharges the heat to the outside. The air volume of the guide fan is selected according to 1200 m ³/HP.



Piping system connection

Use the same pipe diameter for the chiller, and confirm the direction of water flow. Pay attention to the following points during pipeline construction:

1) The water system shall be piped in accordance with the construction standards specified in the manual.

2) According to the unit's pipe size, select the corresponding water pipe size.

3) In the design and construction of piping, the automatic exhaust valves should be set at the highest points of water pipes to remove air from the system.

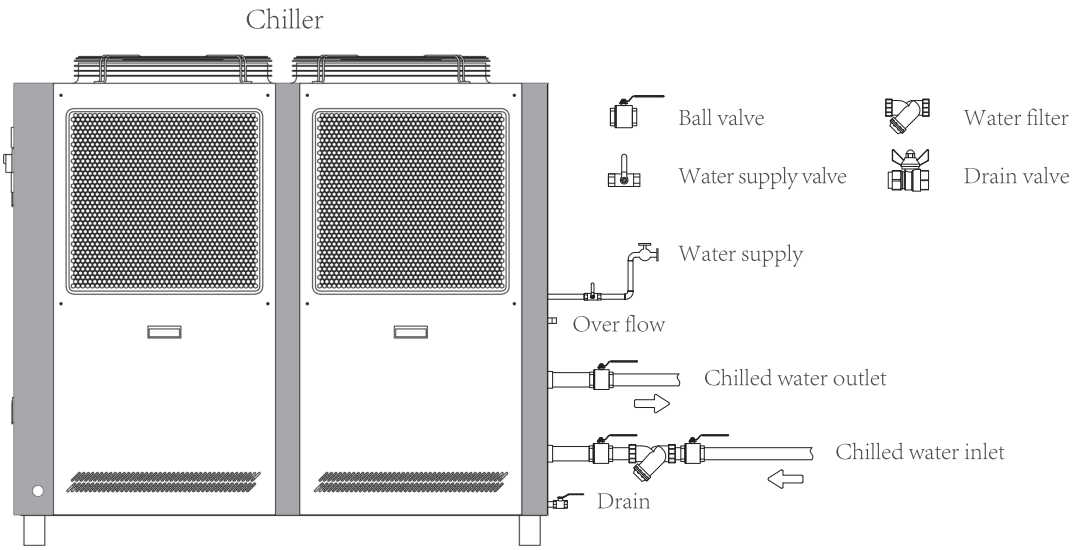
4) A water filter must be installed at the water inlet to prevent the dirt from blocking the evaporator. Install valves at both ends of the water filter to allow for disassembly and cleaning.

5) When the unit will be stopped for an extended period in winter, please drain all the water to prevent pump and the heat exchanger from freezing, which could damage the unit.

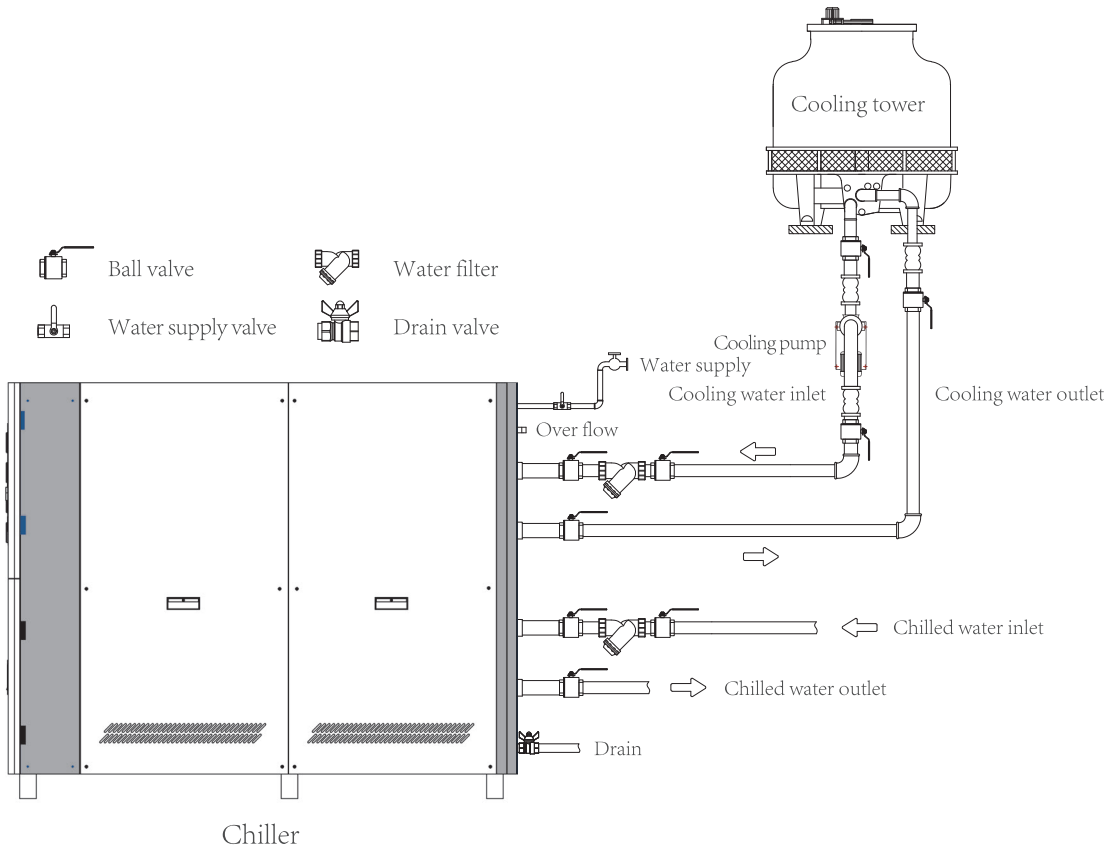
6) After the installation, the water pressure leakage test should be performed. The water filter should be clean to prevent the blockage of the pipeline that could damage the unit.

The poor quality of water is easy to scale in the heat transfer tube, also corrode the heat transfer tube and cause major accidents of the unit. During the operation of the unit, the cooling water (including the cooling water of the open system) should be sampled and analyzed regularly, and the water quality should meet the relevant requirements.

Attention: When the external pipe is more than 1m higher, install a check valve at the outlet and a solenoid valve at the inlet. The signal is taken from the water pump to prevent backflow into the tank when the unit is shut down, which could cause the water tank to overflow.



Installation Diagram of Air Cooled Chiller



Installation Diagram of Water Cooled Chiller

Electrical wiring

1. The power supply voltage must be stable. The operating voltage must be kept within ±5%. Unstable voltage will have adverse effects on the unit.

2. The voltage and current difference between phases, as well as the frequency shall not exceed ± 2% to prevent compressor overheating.

3. The wiring should be strictly constructed, and the insulation should be good condition. The insulation between the terminal of the electrical fittings and the body should be at least 3MΩ.

4. In order to protect personal safety, the shell of the unit should have a good and reliable grounding protection device to prevent electric shock accidents.

5. Please refer to the table below for unit wiring. Please consult us for non-standard models.

Model	Wire diameter	Wire type
ICA-0.6 ICA-1	1mm²	1 phase 3 wires
ICA-1	1.5mm²	
COA-2.5	1.5mm²	
ICA-2	2.5mm²	3 phase 5 wires
COA-4.0 COA-6.0	2.5mm²	
ICA-3 ICW-3	1.5mm²	
COA-9.0		
ICA-5 ICW-5	4mm²	
COA-15		
ICA-6 ICW-6		
ICA-8 ICW-8	6mm²	
COA-23		
ICA-10 ICW-10		
COA-29		
ICA-12 ICW-12	10mm²	
COA-35		

Model	Wire diameter	Wire type
ICA-15 ICW-15	10mm²	3 phase 5 wires
COA-45		
ICA-20 ICW-20	16mm²	
COA-58		
ICA-25 ICW-25		
COA-69		
ICA-30 ICW-30	25mm²	
COA-86		
ICA-40 ICW-40	35mm²	
COA-116		
ICA-50 ICW-50	35mm²	
ICA-60 ICW-60	50mm²	
ICS-75A ICS-75W	70mm²	
ICS-100A ICS-100W	95mm²	
ICS-125A ICS-125W	120mm²	
ICS-150A ICS-150W	150mm²	

Check before starting up

a.Please start the unit according to the correct steps to reduce the failure and prolong the life; b.

b.Check whether the chilled water valves are open and whether the drain valves are closed;

c.Checking waterways for leaks;

d.Check whether the power supply type is correct;

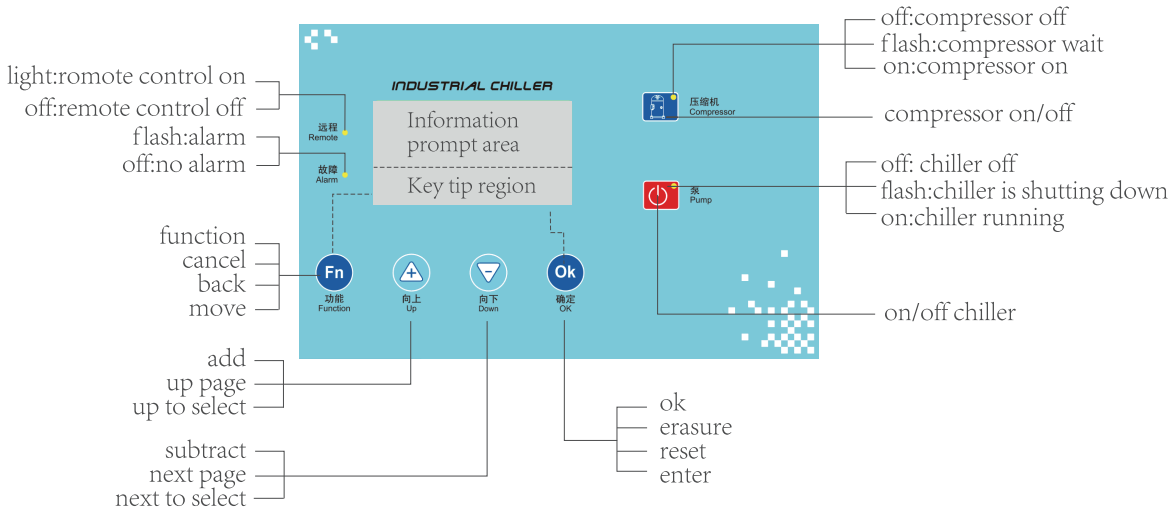
e.Check whether the power supply is grounded;

f.Check whether the water level is normal. If the unit runs without water, an alarm will be triggered;

g.All the parameters have been set, please do not adjust them at will.

10、Unit control

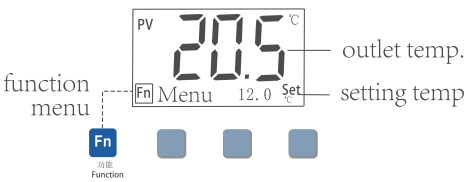
1.Controller Panel



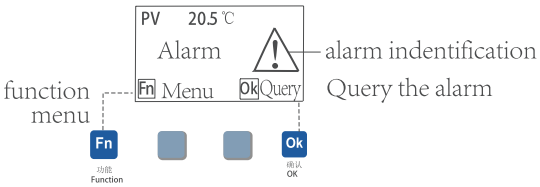
2.Common Interface

2.1 Main interface

After countdown, enter main interface.



2.2 Alarm interface



3.Common Operation

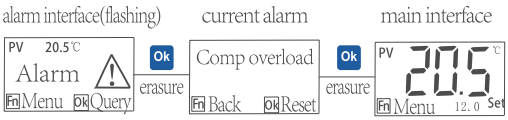
3.1 Modify the set point

Press(+)or(-)to modify the set-point,
then press(Ok)to confirm. Press(Fn)to exit.



3.2 Query/Reset faults

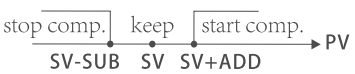
When alarm occurs, there will be a flash, press(Ok)to query the fault.



4.Function Menu

Name	Factory values	Range	Note
Lock T.set	No	Yes/No	Lock set temp.
T.set point	12.0℃	-38.0~99.9℃	temp. limits
Contrast	32	20~44	LCD contrast
Run type	Local	Local~Remote	Remote on/off
Backlight/on	0	0~255minutes	Always backlight
Language	English	Chinese~English	Select language

5.Control Logic



Control logic:

When temp rising: PV>=SV+ADD, start the compressor,

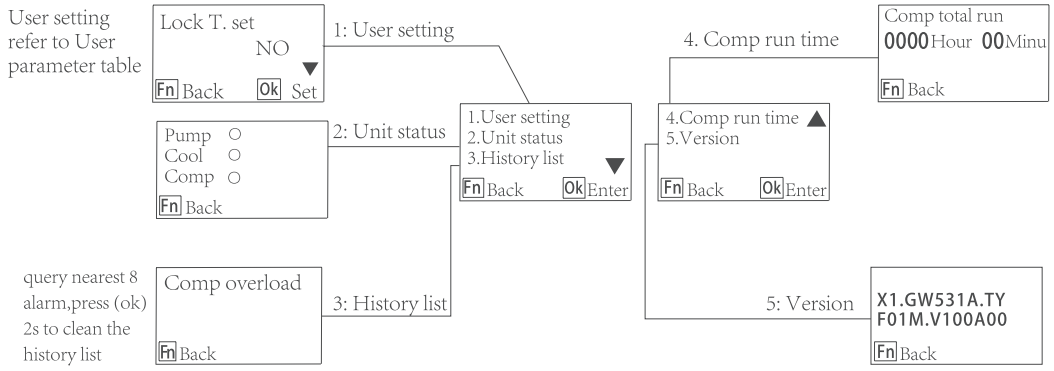
When temp cooling: PV<=SV-SUB, stop the compressor

Note: PV: actual temperature SV: setting point

ADD: temperature of adding SUB: temperature of subtracting

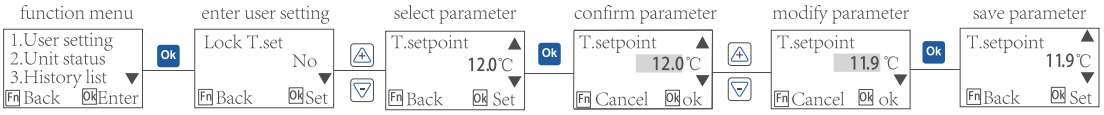
6.Fuction Menu

Press(Fn)to enter function menu, as follow:



7.Parameter Setting

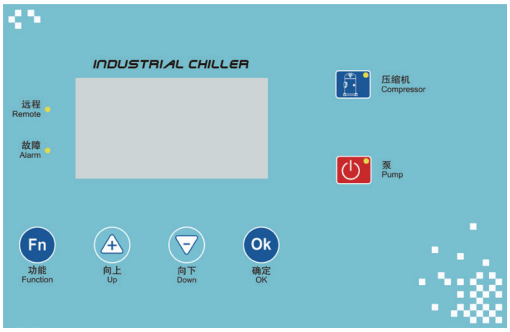
The parameter values of the modified operation, using the set temperature modification as an example.



8.The Fault Code Table

Name of failure	Test conditions	Fault handling	The solution
Comp.P high AL	Comp. operation detection	Stop the Comp.	Check if input matches the digital input setting
Comp.P low AL			
Comp overload			
Temp. low AL	Operation monitoring	Stop the Comp., delay the pump	Raising the temp.
T. high AL		Alarm only	Cool the Temp.
T. high AL		Stop the Comp., delay the pump	Cool the Temp.
Anti-freeze. AL	Power-on check	Stop the Comp., delay the pump	Detect input and switch settings
Probe break			Detect the sensor contact
Probe short			
Cool overload	Cooling pump post-start check	Stop the Comp. and cooling pump	Check cooling overload input and switch settings
Low flow AL	Check after chilled pump low flow delay	Stop the pump	Check the water flow and switch settings
Chiller overload AL	Cooling pump post-start check	Stop the unit	Check whether frozen overload input and switch settings
Power failure	Power-on check	Stop the unit	check power supply or test switch Setting
Water level AL	Power-on check	Add water or test switch Settings	
Maint Required	Start-up check	Unit can’ t restart once stop. Comp. running time has exceeded the preset limit.	

9.Operation steps



1) Turn on the controller switch, if the power supply is 3-phase 380V, the unit will detect the phase sequence, if there is a power failure alarm, please adjust the phase sequence.

2)Water addition and exhaust

Please use the softened water. Otherwise, scale may form and affect the unit's performance.

ICA-0.6 ~ ICA-2, add water from the observation port until the heat exchange is submerged.

ICA-3 ~ ICA-8 add water from the filler until the level reaches the yellow-green transition zone;

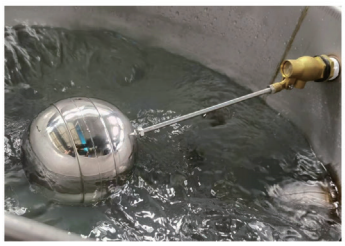
ICA-10 and above, box ball float valve is standard. Please connect tap water, it will fill automatically.



Observation port



Filler



Box Ball float valve



Water level

After the first fill or water replacement, air may remain in the pipes and unit, please vent it.

Start the water pump, the unit will automatically vent air. Flow alarms may occur one or more times. After the fault is reset, continue to start the water pump until the air is exhausted.

3） Press to turn on the water pump. The pump indicator will remain on.

4） Press and to set the temperature, and press Ok to confirm.

5） Press to start the compressor, when the temperature is 1.5 ℃ above the set point, the compressor and the fan will start, the compressor indicator remain on. When the temperature drops 1.5 ℃ below the set point, the compressor and the fan will stop, the indicator light flash.

6） Press Fn to enter the function menu, press and to select user parameters, unit status, historical faults, etc., press Ok to query parameters.

7） When there is a fault, the buzzer rings, press Ok to inquire, refer to the manual to troubleshoot.

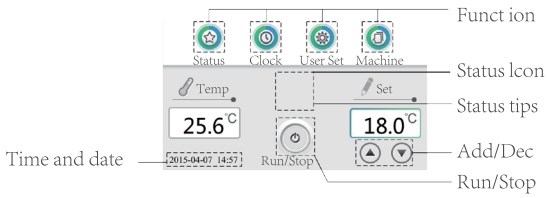
8） Press to the shutdown, the compressor, fan, and pump will be shut down in turn.

Attention: Please shut down the machine follow the correct steps to prolong the unit life.

1、user interface & operate

1.1 Main interface

the main interface is as follows



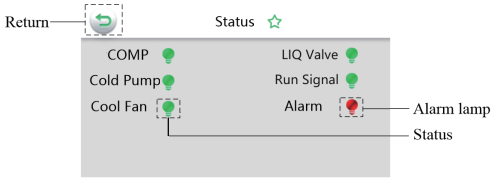
Function button: Press them to enter corresponding interface.

Status icon: antifreeze , Comp.off , comp on , alarm

ON/OFF button: press it operate unit off: , von:

1.2 Status

Press Status enter status interface:



Press to return

alarm lamp: red: alarm, gray: no alarm

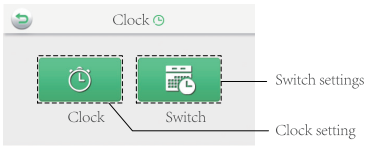
current value: motor ampere status lamp: green:on gray: off

press cold pump lamp to force pump on, invalid when unit on

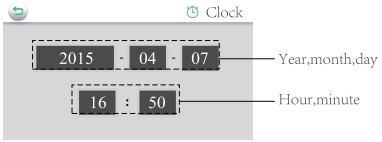
display ambient temp, cooling temp on water cold model

1.3 Clock set

Press to enter clock setting interface:

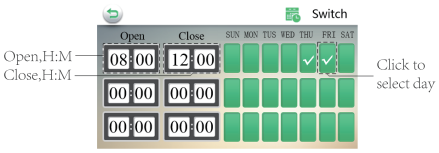


1.3.1 Clock set



press clock to change the time

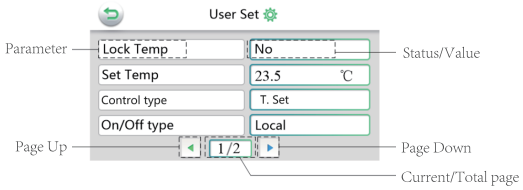
1.3.2 week timer



Press enter switch interface, enter time then select working day.

1.4 User set

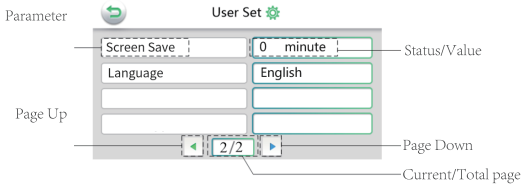
Press User set to enter follow interface:



Press parameter to change setting.

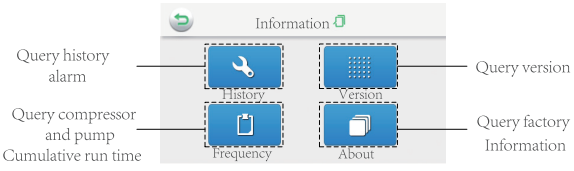
1.4.1 User set

Press User set to enter follow interface:

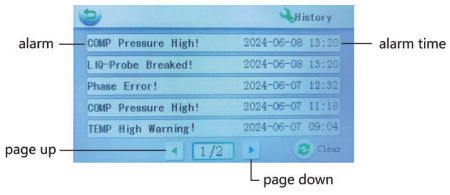


Press parameter to change setting.

1.5 Chiller information

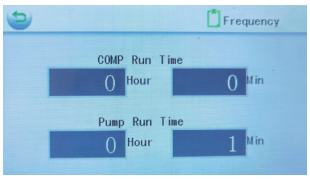


1.5.1 History alarm



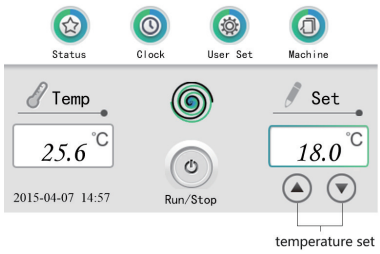
1.5.2 Chiller utilization rate

Press Frequency to query compressor and pump Cumulative run time



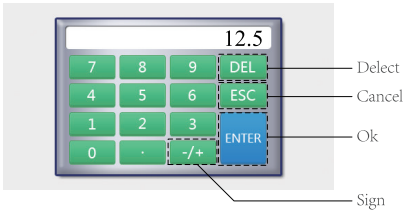
1.7 Temperature Set

Click the arrow on the main interface to set the temperature, You can also click on the temperature to enter the temperature setting keyboard for temperature setting.



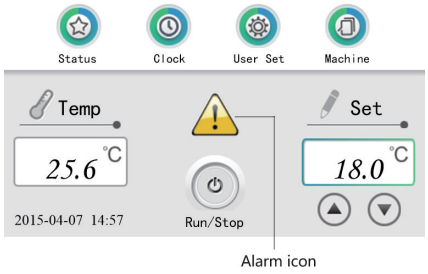
1.7.1 Temperature Set Number keyboard

After clicking the set temperature, enter the keyboard and set the temperature according to the diagram.



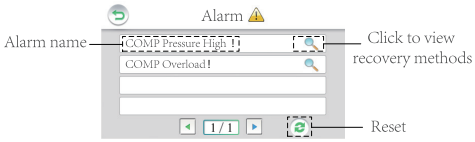
1.6 Real time alarm

When a fault occurs, the main interface alarm icon flashes



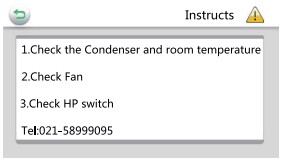
1.6.1 Query real-time faults

⚠ flashing when alarm happen, press ⚠ enter alarm Interface:



1.6.2 Alarm instructs

press 🔍 enter instructs interface,for example: Comp. pressure high:



Please check the unit follow the prompts

2、alarm sheet

Alarm name	Computer action	Solutions
COMP.Pressure High!	Stop compressor, stop fan delay, cold pump running	1.Check the Condenser and room t. 2.Check Fan. 3.Check HP switch.
COMP.Pressure Low!		1.Check medium. 2.Check water filter. 3.Check LP switch.
COMP Overload!	Stop compressor, stop fan delay, cold pump running	1.Check the condenser and fan. 2.Check the COMP.I detect wire. 3.Check the COMP.I set.
TEMP Too Low!	Stop compressor, stop fan delay, cold pump running	1.Check the Liquid Temperature. 2.Check the alarm temperature se.
Unit open TEMP Too Low!	Stop unit	1.Check the Liquid Temperature. 2.Check the alarm temperature se.
TEMP High Warning!	Only alarm	1.Check the Liquid Temperature. 2.Check the alarm temperature se.
TEMP Too High !	Stop compressor, stop fan delay, cold pump running	1.Check the Liquid Temperature. 2.Check the alarm temperature se.
LIQ-Probe Broken!		
T probe Shorted!		Check the resistance of probe.
Cold Lack of Flow!	Stop unit	1.Check the water pipe line. 2.Check the water filter.
Cold Pump Overload!	Stop unit	1.Check the current of pump. 2.Check the pump’s status. 3.Check the pump.I set.
Phase Error!	Stop unit	1.Check the power. 2.Check the phase wire.
Liquid Level Low!	Stop compressor, stop fan delay, cold pump running	1.Check the water level. 2.Check the water level switch.
Clean the water Condenser	Prompt only	Please Clean Condenser.
Clean the water filter		Please Clean water Filter.

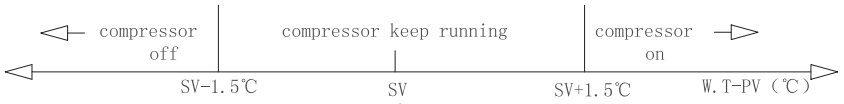
3、User parameter list

The meanings of the parameters are shown in the following table:

NO.	parameter name	Defaults	Setting range	Note
1	Lock Temp.	No	Yes ～ No	YES: Can modify set temp.in main interface after locked No:: Can not modify
2	Set Temp	20. 0℃	-38.0 ～ 99.9℃	Set range between up limit and down limit
3	Control type	T.set	T set or T.Environ	T.set
4	On/off type	local	Local or remote1	Local or remote (connect from terminal)
5	Screen save	0	0~600mi	No backlight when set 0
6	language	English	Chinese ～ English	Select display language

4、Control logic:

1 compressor

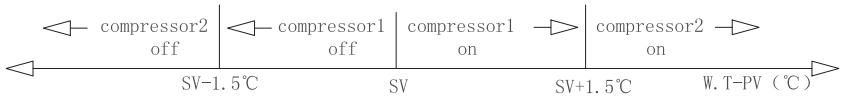


When temperature rising: W.T≥S.T+1.5℃, the compressor on

When temp dropping cooling: S.T≤S.T-1.5℃, the compressor off

Note: W.T: water temperature. S.T: set temperature comp.: compressor

2 compressors

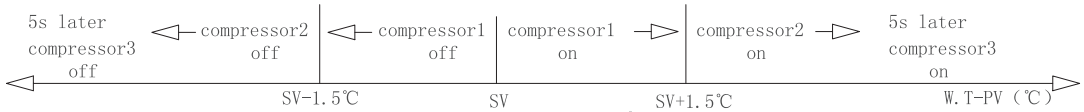


When temperature rising: W.T≥S.T, compressor1 on W.T≥S.T+1.5℃, compressor2 on

When temp dropping: W.T≤S.T, compressor1 off W.T≤S.T-1.5℃, compressor2 off

Note: W.T: water temperature. S.T: set temperature comp.: compressor

3 compressors

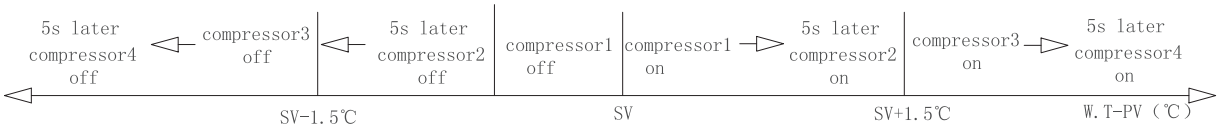


When temperature rising: W.T≥S.T, compressor1 on, W.T≥S.T+1.5℃, compressor2 on, 5 seconds later, W.T≥S.T+1.5℃, compressor3 on.

When temp dropping: there are 3 compressors running, W.T≤S.T, compressor1 off W.T≤S.T-1.5℃, compressor2 off, 5 seconds later, W.T≤S.T-1.5℃, compressor3 off

Note: W.T: water temperature. S.T: set temperature comp.: compressor

4 compressors



When temperature rising:

W.T≥S.T, compressor1 on, 5 seconds later, W.T≥S.T, compressor2 on.

W.T≥S.T+1.5℃ compressor3 on, 5 seconds later, W.T≥S.T+1.5℃, compressor4 on.

When temp dropping: there are 4 compressors running,

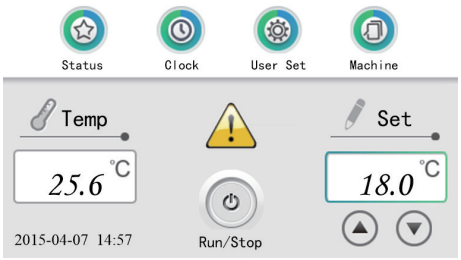
W.T≤S.T, compressor1 off, 5 seconds later, W.T≤S.T, compressor2 off,

W.T≤S.T-1.5℃, compressor3 off, 5 seconds later, W.T≤S.T-1.5℃, compressor4 off,

Note: W.T: water temperature. S.T: set temperature comp.: compressor

10.Turn on and off steps

1) Turn on the controller switch, if the power supply is 3-phase 380V, the unit will detect the phase sequence, if there is a power failure alarm, please adjust the phase sequence.



2)Water addition and exhaust

Please ensure that the water added is softened. Otherwise, scale may form and affect the unit's performance.

ICA-0.6 ~ ICA-2, add water from the observation port until the heat exchange is submerged.

ICA-3 ~ ICA-8 add water from the filler until the level reaches the yellow-green transition zone;

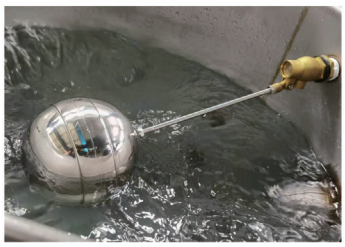
ICA-10 and above, add water ball float valve. Please connect tap water, it will fill automatically.



Observation port



Filler



Box Ball float valve



Water level

After the first fill or water replacement, air may remain in the pipes and unit, please vent it.

Start the pump, the unit will automatically vent air. Flow alarm may occur one or more times. Please reset it then continue to start the water pump until the air is exhausted.

3） Press then press to start the pump , when the light turn green the pump runs.

4 ） Press and to set the temperature.

5 ） Press to start the unit. The power icon will turn colored , and the pump will start.

When the temperature is 1.5 ℃ above set point, the compressor and fan will run, icon colored.

When the temperature is 1.5 ℃ below the set point, the compressor and fan will stop, icon gray.

For high-precision temperature units, the compressors and fans running continuously.

6 ） Press to enter the function menu, check the status of the compressors, pumps, fans etc.

7 ） Press to enter the clock setting menu, set the time and weekly timer.

8 ） Press enter user settings menu, to lock, set temperature and startup mode, etc.

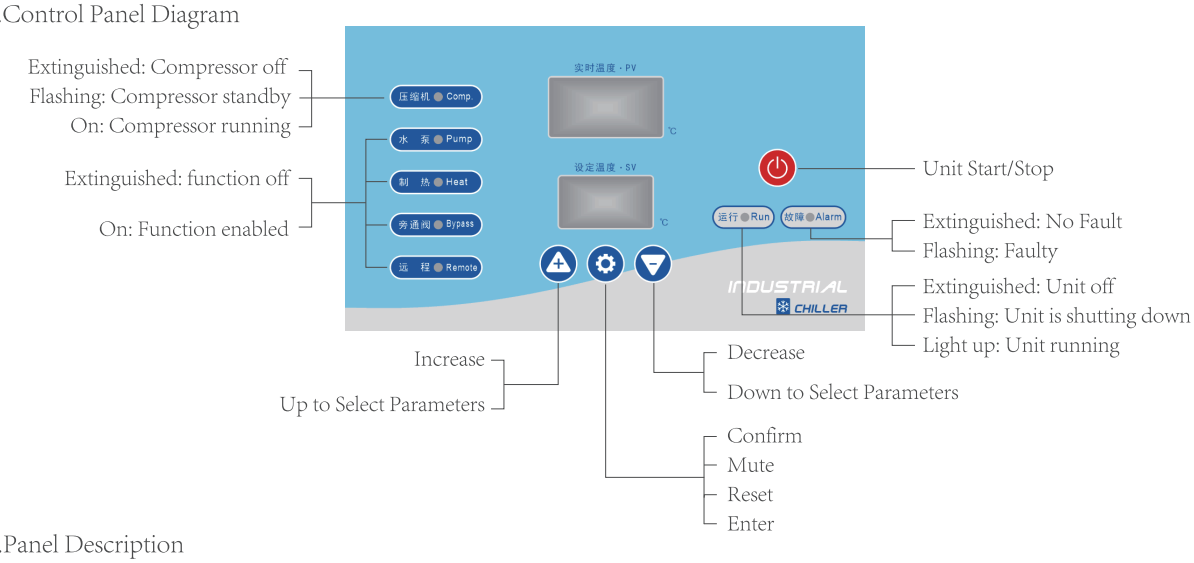
9 ） Press enter the unit Info menu, view fault history, compressor and pump run time, ect.

10 ）When a fault occurs, the buzzer will sound and icon will flash . Press to check details. Refer to the instructions to troubleshooting.

11 ）Press to shut down the unit. The compressor, fan and pump will stop, icon turns gray.

Digital Display Controller

1.Control Panel Diagram



2.Panel Description

Digital	Function
Actual temperature (PV)	Displays the actual fluid temperature and alarm codes.
Set temperature (SV)	Displays "Set temperature"
Indicator	Function
Compressor	On: Compressor is running; Flashing: Compressor standby; Off: Compressor off.
Pump	On: pump on; Off: Pump off.
Heat	On: Heating on; Off: Heating off.
Valve	On: Solenoid valve on; Off: Solenoid valve off.
Remote	On: Remote switch closed; Off: Remote switch open.
Run	On: Unit working; Off: Unit shutdown.
Alarm	Flashing: Failure; Off: No Failure.
Key	Function
On/Off	Power On or Off
Set	Press <Set> to enter or exit the set temperature mode if no fault is present.
Up/Down（▲ ▼）	Modify parameters.

3.Display

When power on, the temperature will be displayed after about 7 seconds.

4.Temperature Display

PV area displays actual temperature; SV displays "Set Temperature.

5.Modify the Set Temperature

In non-fault state, press< Set >, SV area will flash and display the (Set Temperature), press < Up > or < Down > to modify it, then press the < Set > key to save and exit.

6. Control Logic

a. The pump keeps running after starting

b. Compressor control

15 seconds after the pump starts, the compressor starts.

(1) When the compressor is in on/off mode

Compressor: ① Liquid temperature ⩾ the control temperature +1.5℃, compressor on;

② Liquid temperature ⩽ control temperature, compressor off.

c. Antiifreeze logic:

(1) When the compressor is in on/off mode

① When the liquid temperature⩽ 3℃, turn on the pump;

② When the liquid temperature ⩾ 5℃, turn off the pump.

d. On-off control:

The < On/Off > key and the remote switch can start or stop the unit.

e. When the compressor is turned off, wait 180 seconds before starting it again.

7. Fault Display

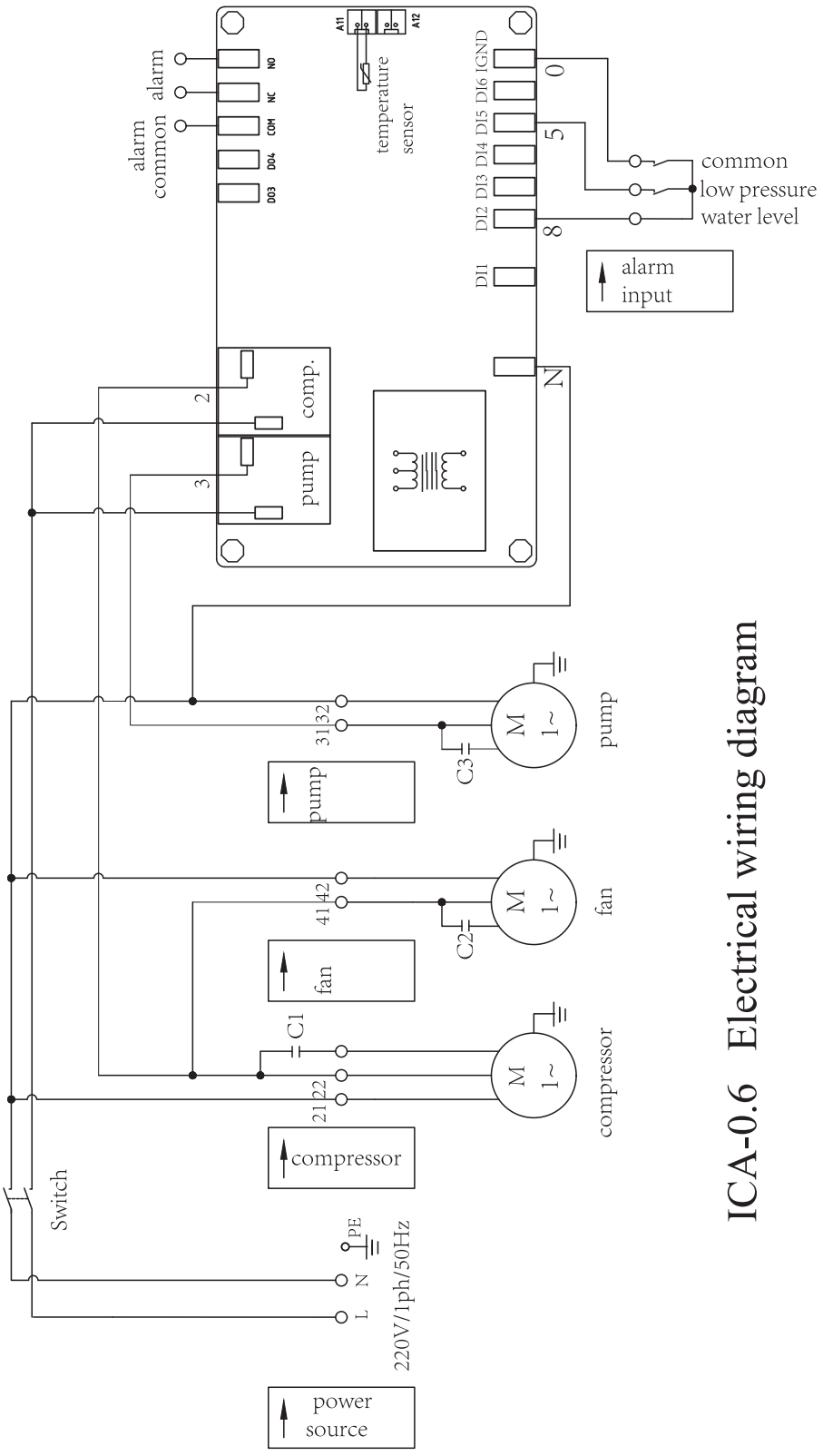
When there is fault, the PV area alternately displays the temperature and fault code "Exx". If there are multiple faults, press < Up > or < Down > to check.

The fault codes and descriptions are as follows:

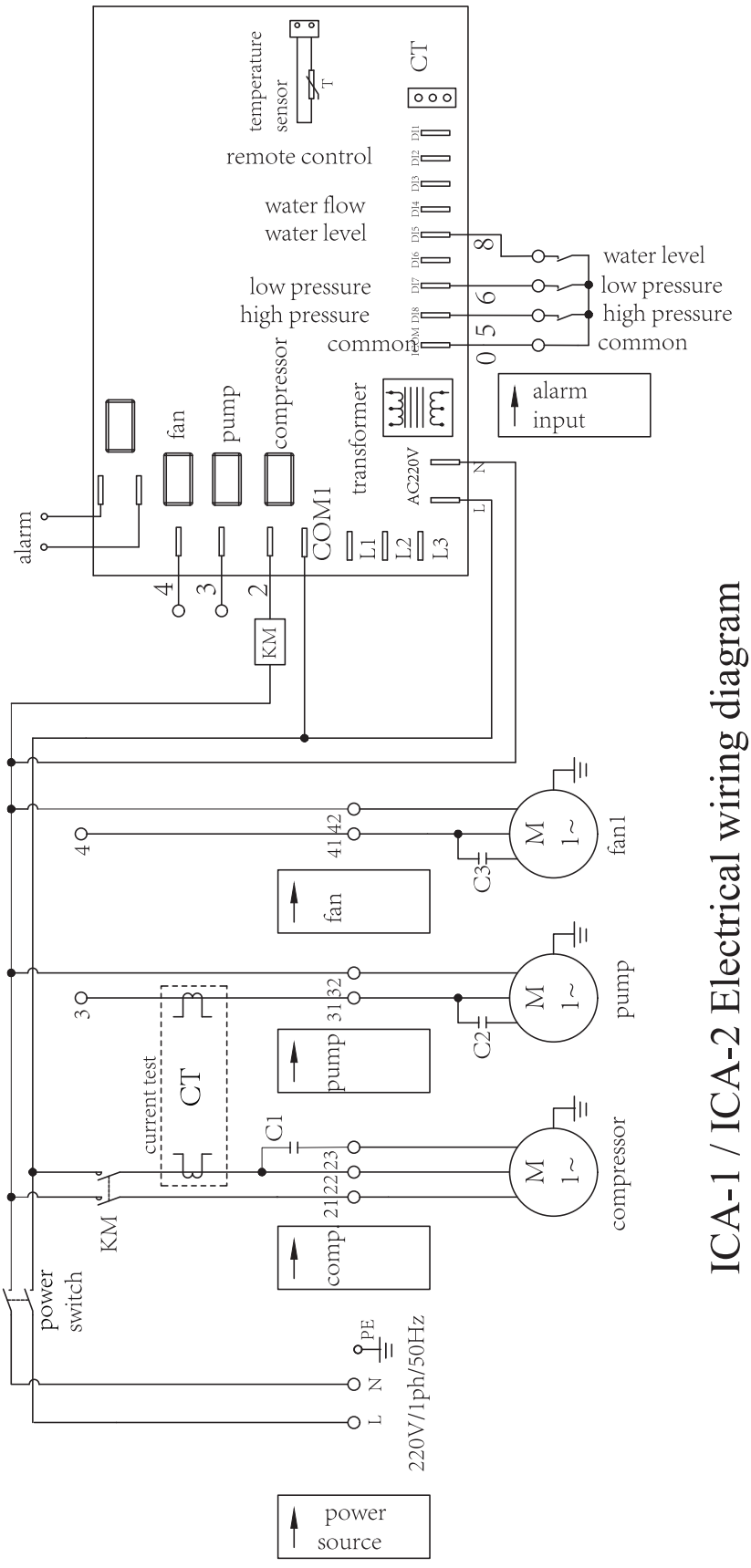
Fault code	Fault name	Detection condition	Action
E01	Temperature sensor failure	Detect when power on	Stop compressor; Utomatically reset
E02	Temperature high	Detect after pump start	
E03	Pressure failure	Detect after the compressor starts 15s	Stop compressor; Manual reset
E04	Phase failure	Detect when power on	Stop unit; Manual reset
E05	Flow alarm	Detect after pump start for 15s	Stop compressor, pump working; Automatically reset
E06	Liquid level alarm	Detect when power on	Stop compressor, pump working; Automatically reset
E07	Compressor overload	Detect after compressor start	Stop the compressor; Manually reset
E08	Temperature too low	Detect after pump start	Stop compressor; Manually reset

[Remarks]: For faults that require manual reset, press < Set > after the fault is eliminated.

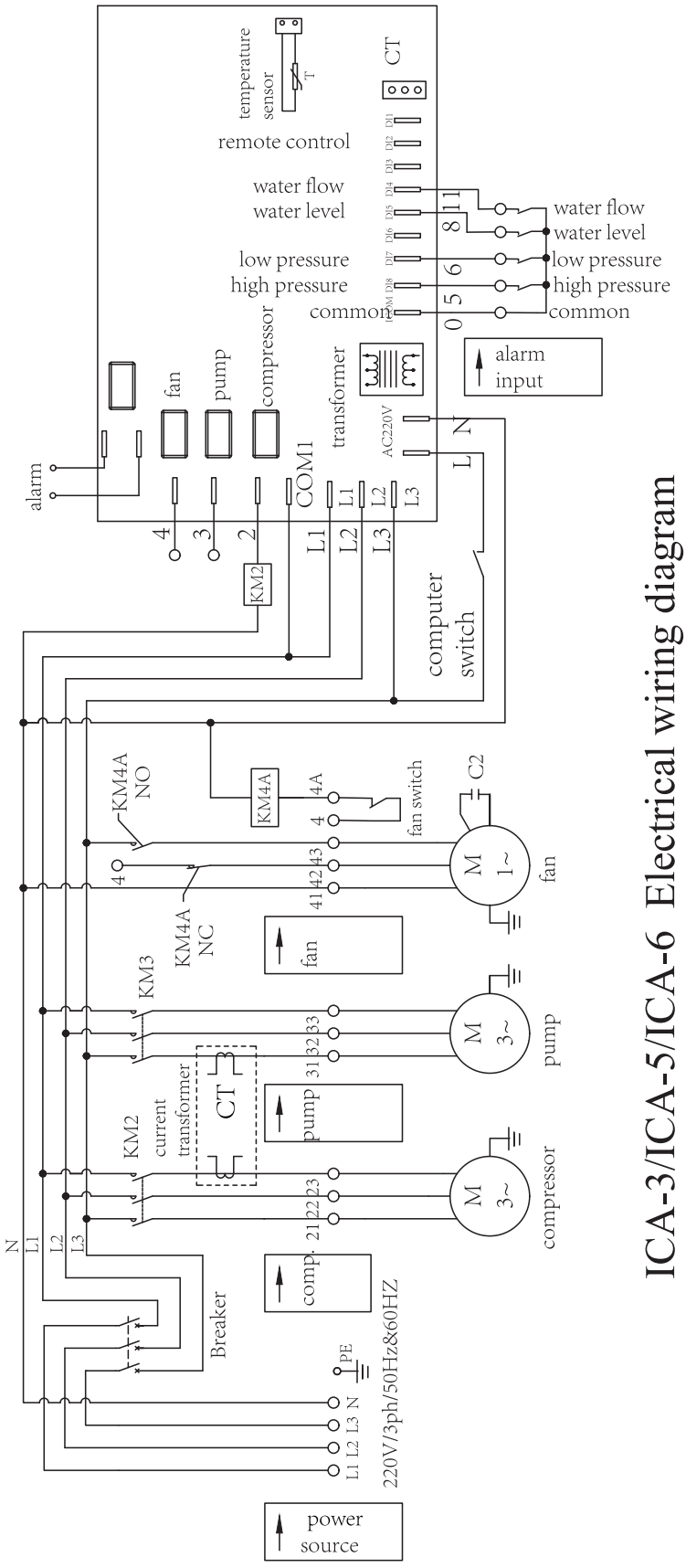
11.Electrical Schematic Diagram



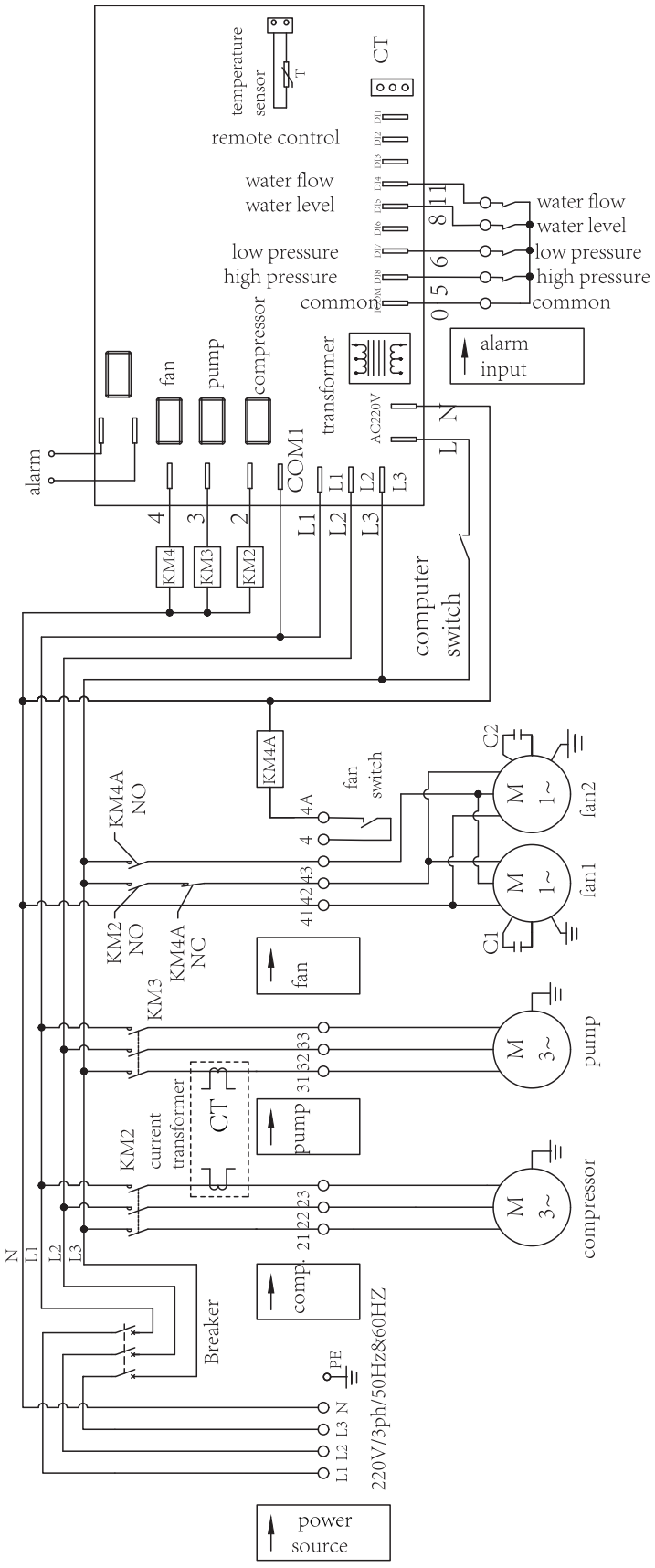
ICA-0.6 Electrical wiring diagram



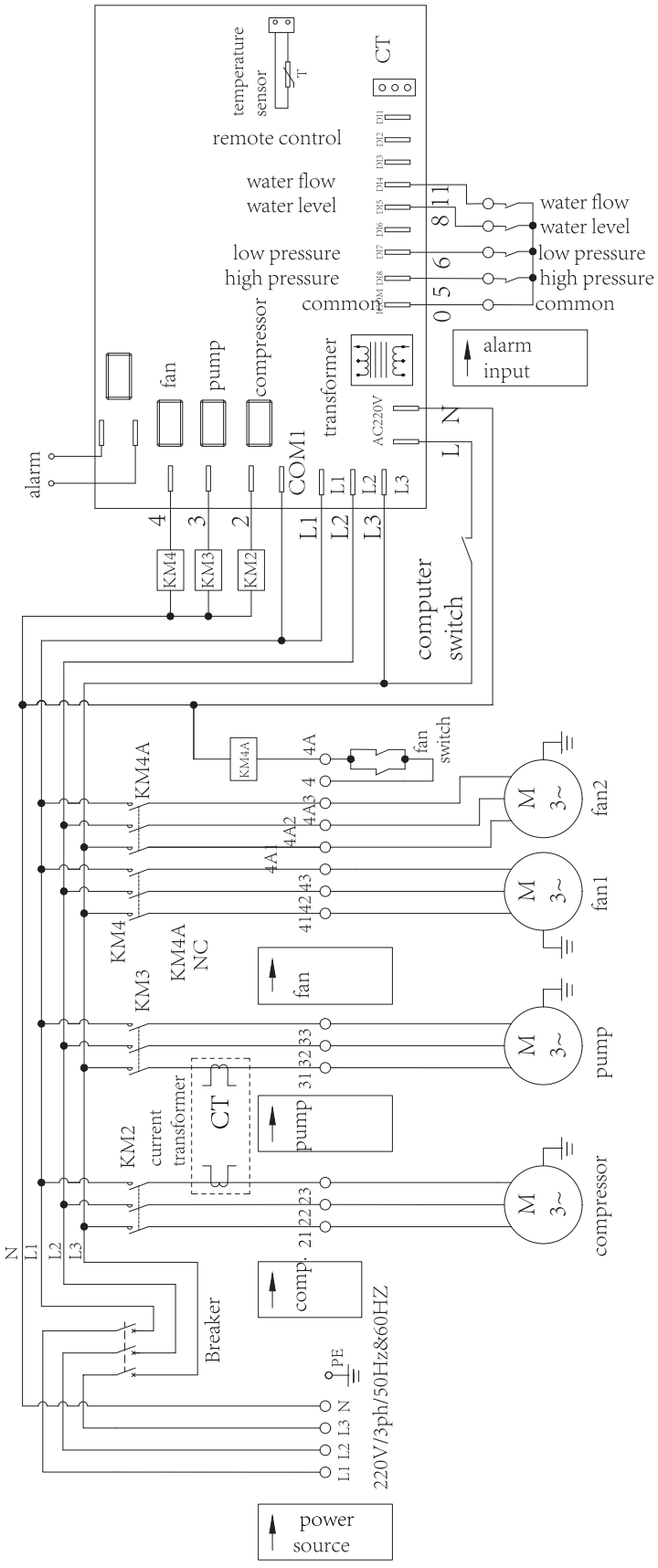
ICA-1 / ICA-2 Electrical wiring diagram

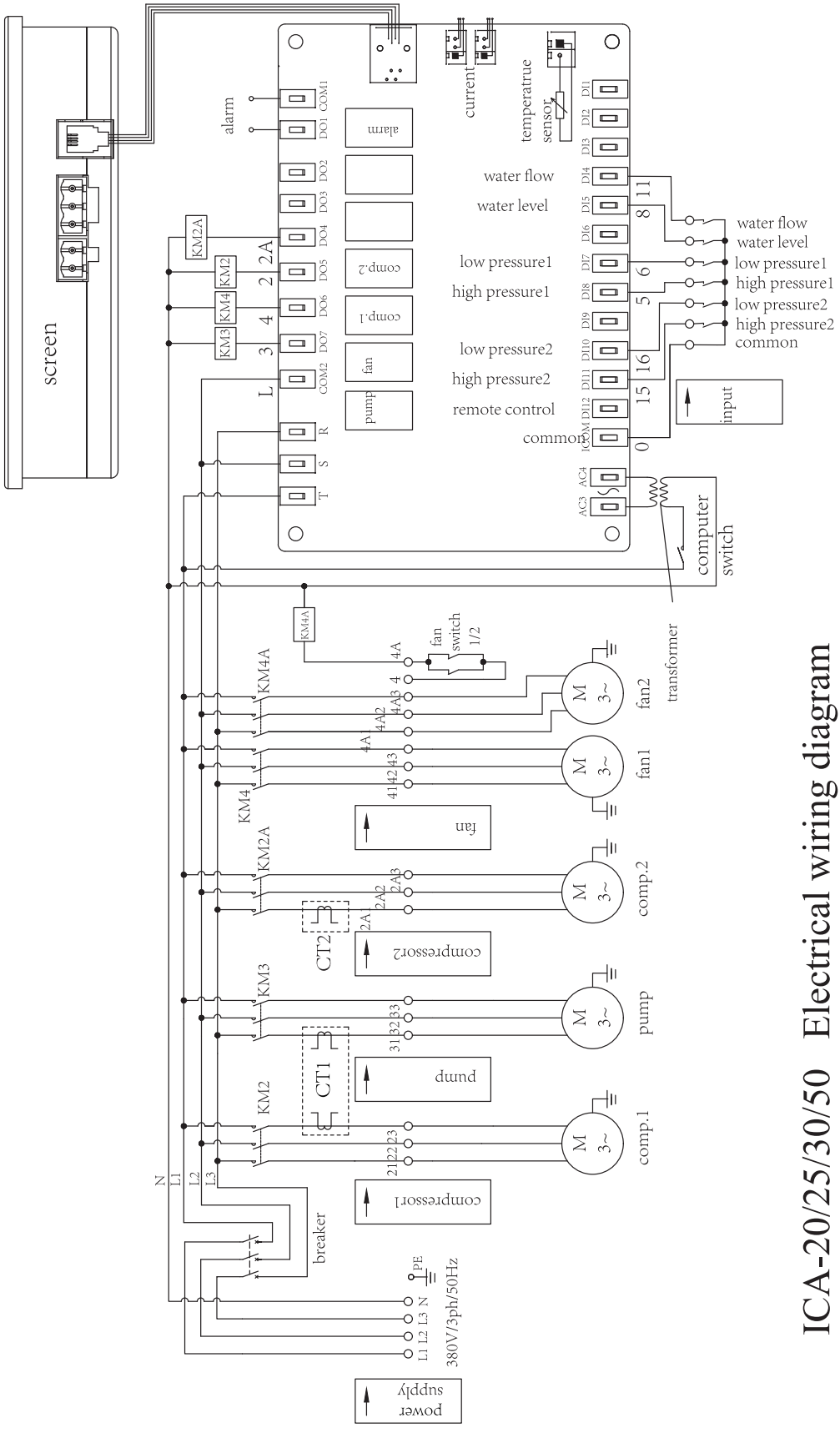


ICA-3/ICA-5/ICA-6 Electrical wiring diagram

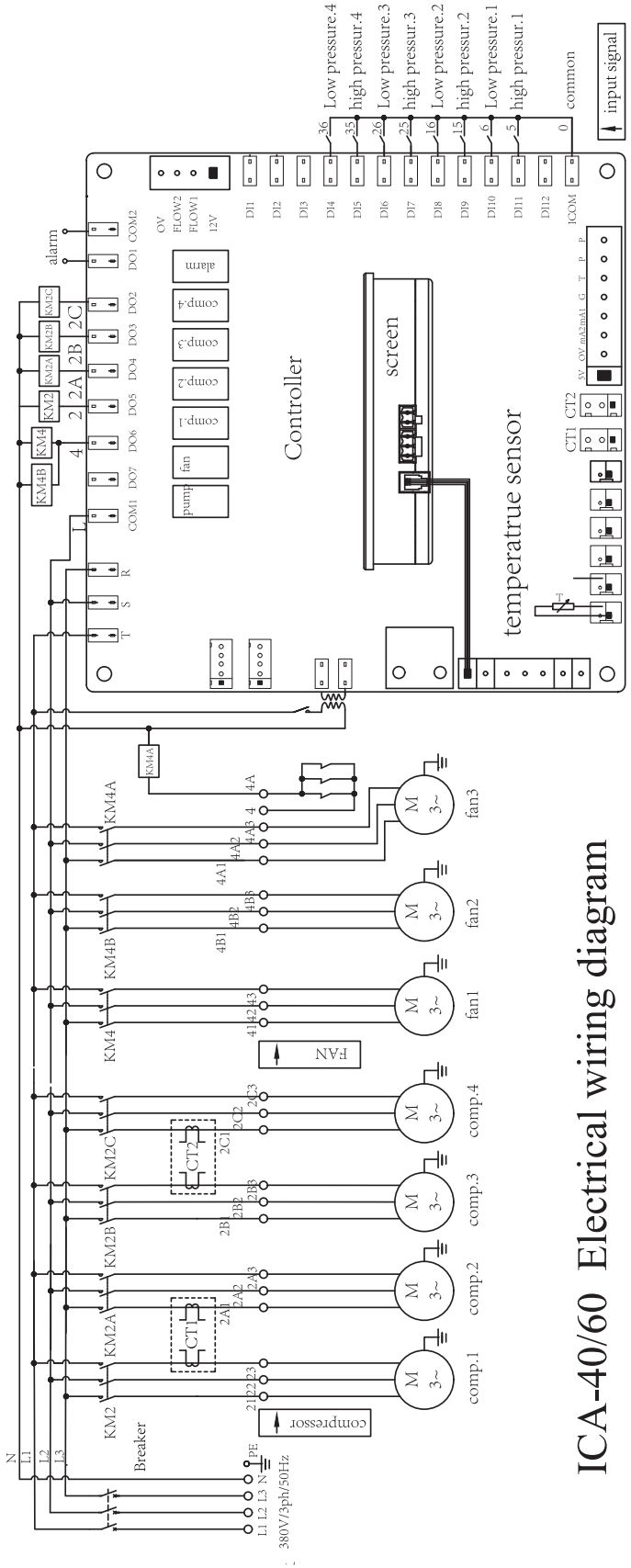


ICA-8 / ICA-10 Electrical wiring diagram

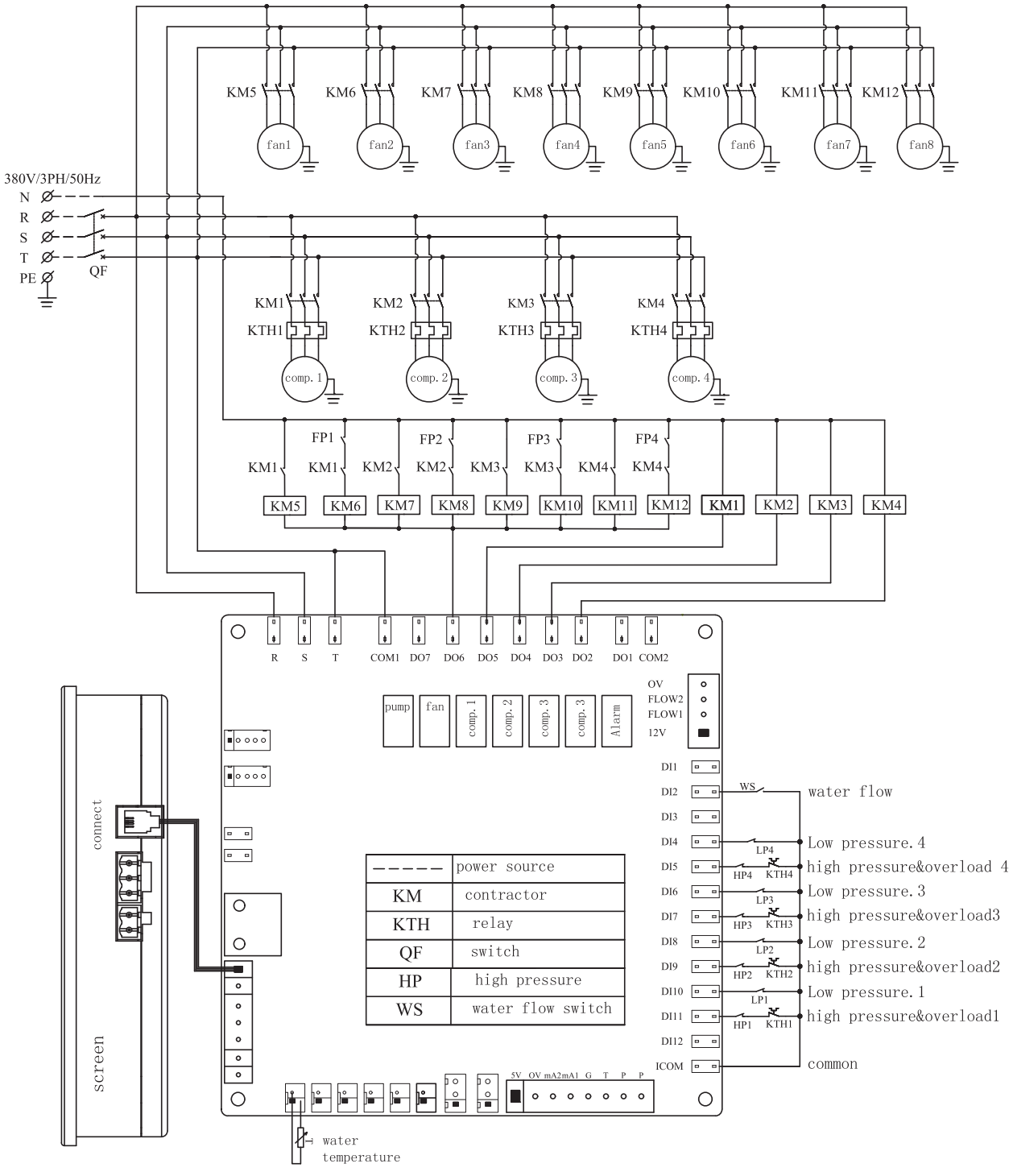

ICA-12/15 Electrical wiring diagram
temperature sensor
T
CT
remote control
water flow
water level
low pressure
high pressure
common
water flow
water level
low pressure
high pressure
common
alarm input
fan
pump
compressor
transformer
AC220V
COM1
alarm
computer switch
KM4
KM3
KM2
KM4A
fan switch
current transformer
Breaker
comp.
fan
pump
fan1
fan2
compressor
220V/3ph/50Hz&60HZ
power source

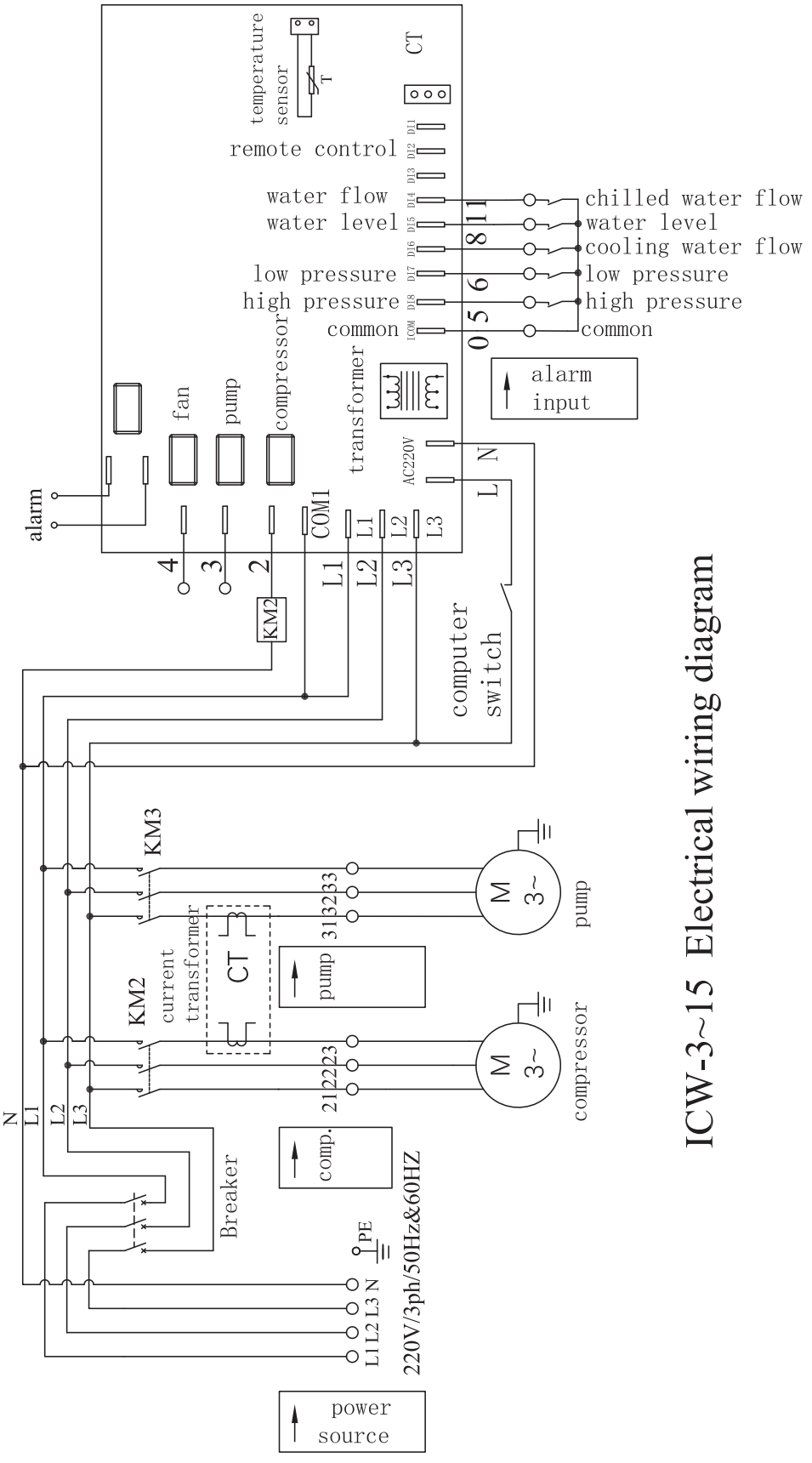


ICA-20/25/30/50 Electrical wiring diagram

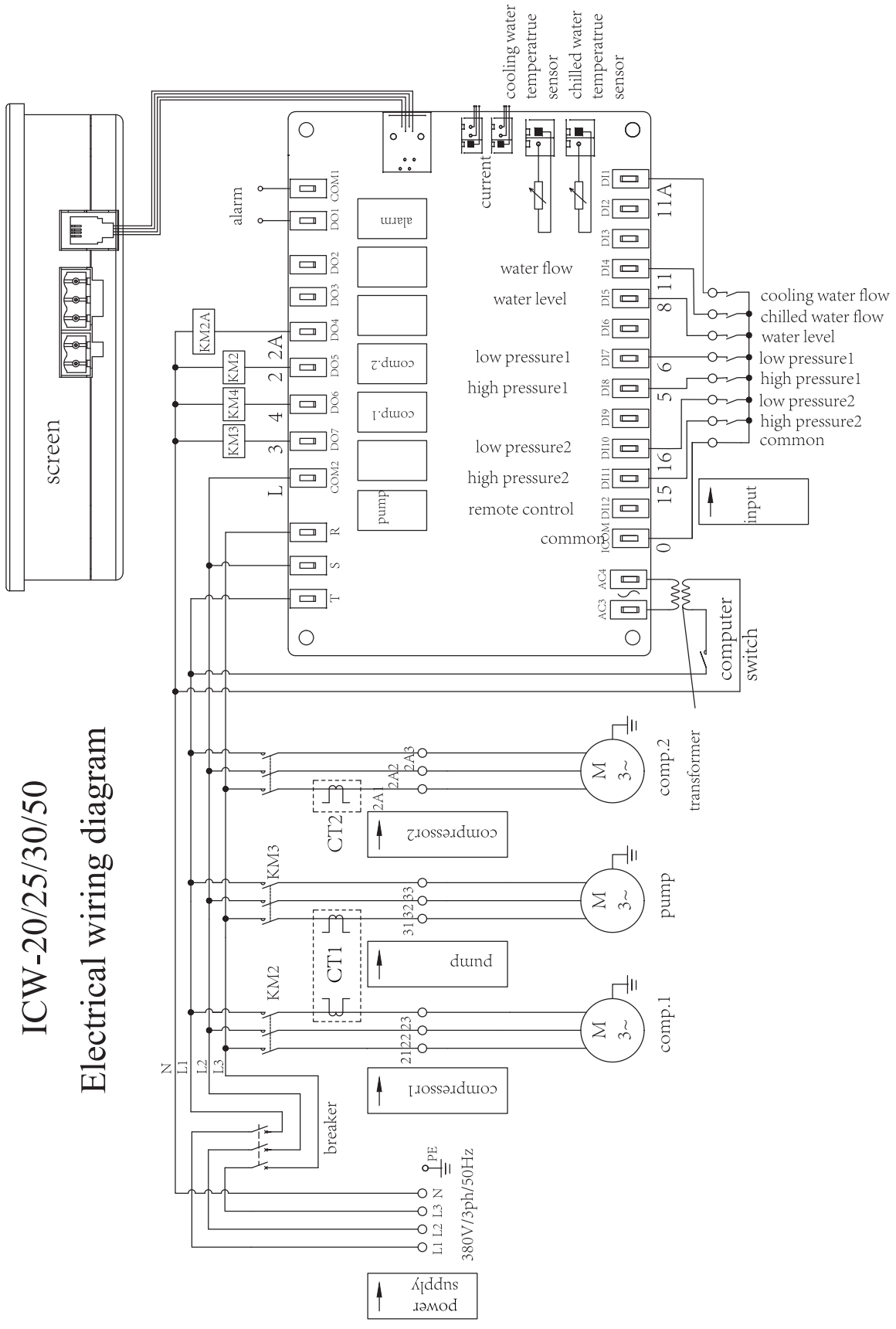

ICA-40/60 Electrical wiring diagram
Controller
screen
temperatrue sensor
Low pressure.4
high pressur.4
Low pressure.3
high pressur.3
Low pressure.2
high pressur.2
Low pressure.1
high pressur.1
common
input signal
alarm
comp.4
comp.3
comp.2
comp.1
fan
pump
compressor
FAN
fan3
fan2
fan1
comp.4
comp.3
comp.2
comp.1
Breaker
380V/3ph/50Hz

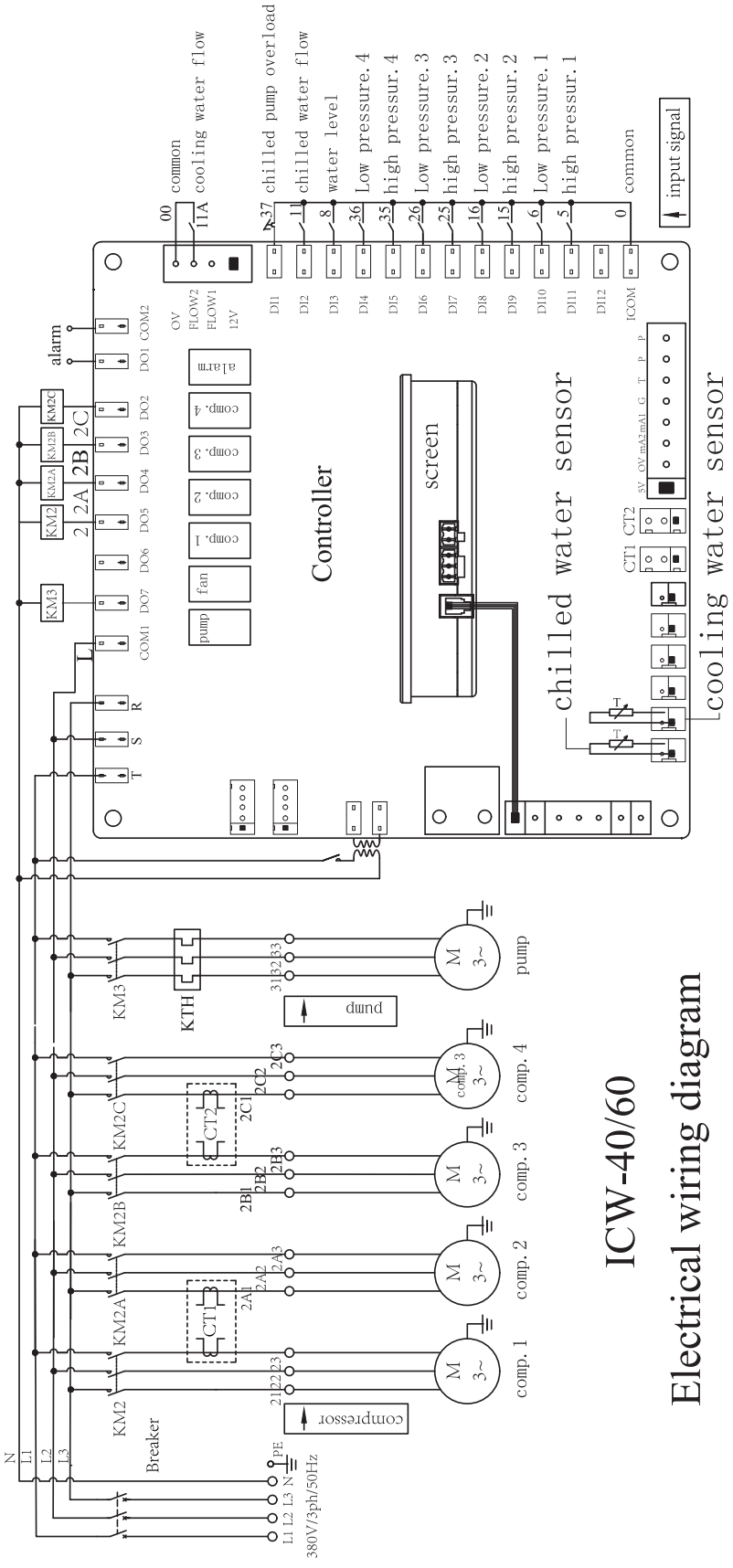
ICS-100A Electrical wiring diagram





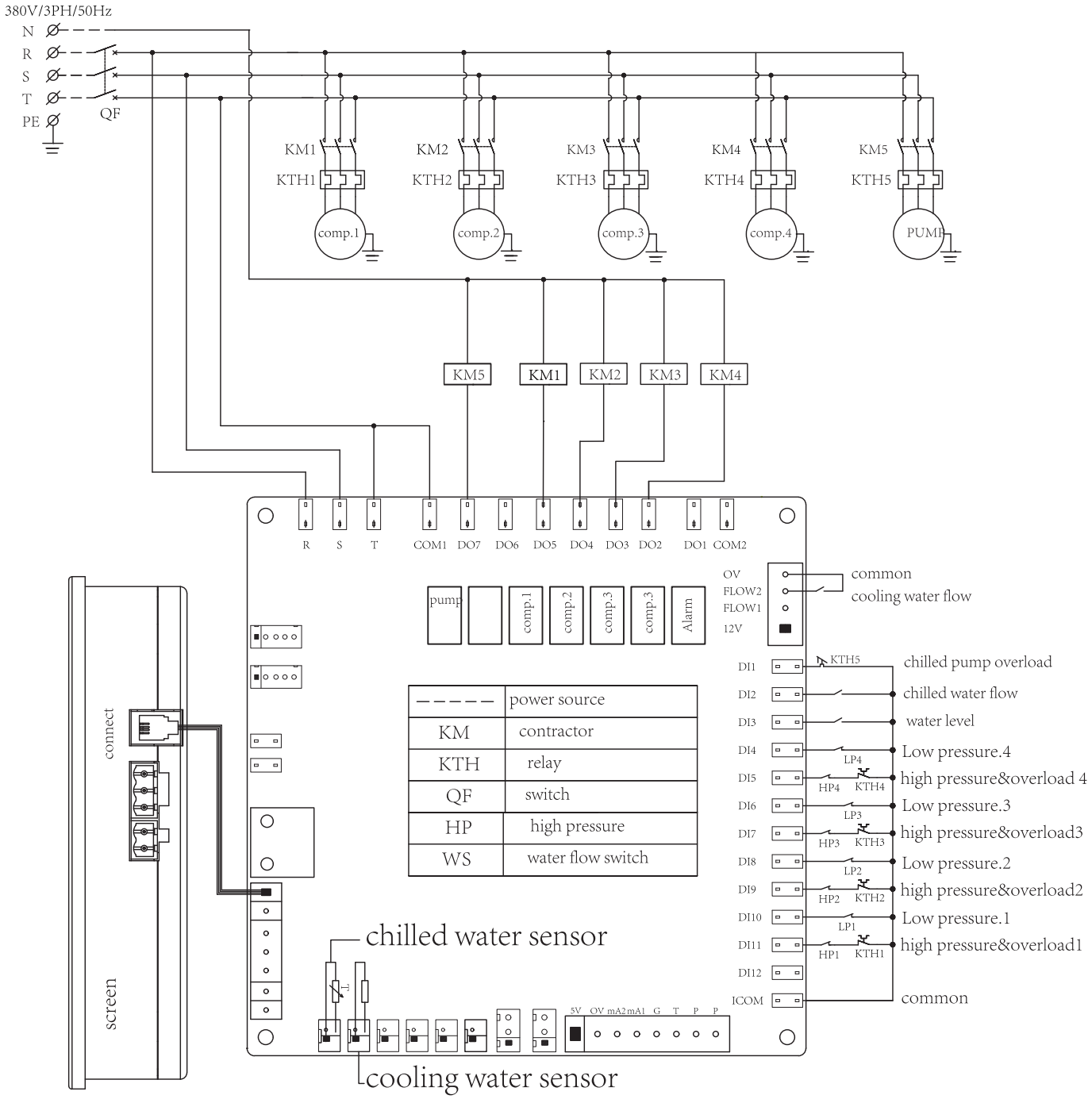
ICW-3~15 Electrical wiring diagram


ICW-20/25/30/50
Electrical wiring diagram
screen
alarm
current
cooling water temperatrue sensor
chilled water temperatrue sensor
water flow
water level
low pressure1
high pressure1
low pressure2
high pressure2
remote control
common
cooling water flow
chilled water flow
water level
low pressure1
high pressure1
low pressure2
high pressure2
common
input
computer switch
transformer
comp.2
pump
comp.1
compressor2
compressor1
pump
CT2
CT1
KM2
KM3
breaker
power supply
380V/3ph/50Hz
L1 L2 L3 N
PE


ICW-40/60
Electrical wiring diagram
Controller
screen
chilled water sensor
cooling water sensor
input signal
common
cooling water flow
chilled pump overload
chilled water flow
water level
Low pressure. 4
high pressur. 4
Low pressure. 3
high pressur. 3
Low pressure. 2
high pressur. 2
Low pressure. 1
high pressur. 1
alarm
pump
fan
comp. 1
comp. 2
comp. 3
comp. 4
KM2
KM2A
KM2B
KM2C
KM3
KTH
CT1
CT2
Breaker
compressor
pump
comp. 1
comp. 2
comp. 3
comp. 4
380V/3ph/50Hz

ICS-100W

Electrical wiring diagram



12.Unit maintenance

1. Before first startup and the first startup each year, check compressor motor . If the insulation value is below 5MΩ, the compressor must be inspected and not run.

2. Check the compressor for oil leakage or other abnormal when the unit is running..

3.During the shutdown, check the oil heater. But the compressor oil heater should be preheated for at least 24 hours before the next start-up.

4. Pay attention to the voltage stability of the power supply

5. Pay attention to any abnormal sound or vibration during unit operation.

6. Regularly check whether the wire connectors of electrical devices inside the control box are loose and whether the insulation of the power cables is damaged

7. Regularly check the water quality.

8. Regularly check cooling tower and water tank ,ensure there is no impurities and foreign objects.

9. The water filter should be cleaned once a month. Check the pipe corrosion or blockages.

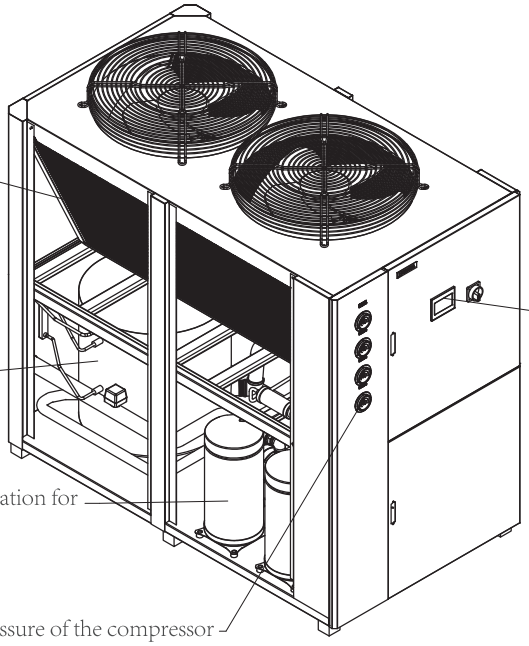
10. When the unit in a long time shutdown，please drain all the water in the unit.

11. In winter, please adjust the cooling water valve to keep condensing temperature above 30 ℃ for stable operation. Reset the valve when the weather warms up.

12. Check condenser and the evaporator. Determine cleaning schedule based on inspection. Clean tubes if scaling is severe. Scaling often causes high condensing pressure and low cooling capacity.

13. Do not mix refrigeration oils from different brands. Always confirm the oil specification before adding. If replacing the oil, thoroughly remove all old oil from the compressor and system, and replace the filter drier. After adding new oil and restarting the unit, replace the oil again to fully remove residual oil.

14. Untreated or improperly treated water may cause erosion and corrosion. It should be processed by professionals.



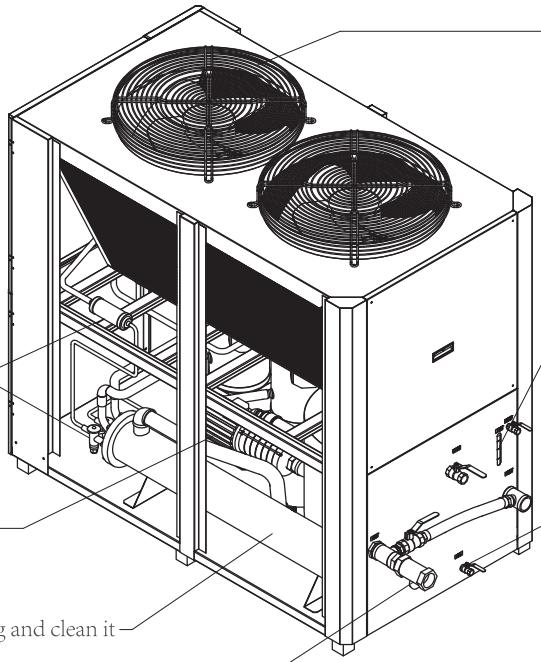
aClean condenser
Period: every 3 months

Check water tank for scaling
Period: monthly

Check whether the compressor operation for abnormal noise and overheating
Period: weekly

Check the controller
Check the current of the compressor, water pump, and fan.
Period: daily

Check the discharge and suction pressure of the compressor
Discharge pressure range: 1.0-2.0 Mpa, ambient temperature 0-40 ℃(R407C,R404A,R507C)
Discharge pressure range: 1.8-3.5 Mpa, ambient temperature 10-40 ℃(R410A,R32)
Suction pressure range: 0.2-0.65 Mpa, water temperature 7-30 ℃(R407C,R404A,R507C)
Suction pressure range: 0.4-1.1 Mpa, water temperature 7-30 ℃(R410A,R32)
Period: daily



Check the fan's operation and noise
Period: daily

Check whether drying filter and expansion valve for blockage
Period: semi-annually

Check whether the water pump has abnormal noise
Period: monthly

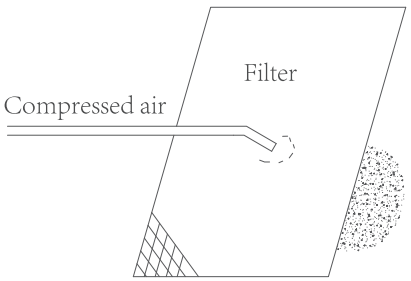
Check if the evaporator is scaling and clean it
Period: annually

Clean the filter Period: monthly

Check the water level
Period: daily

Check whether drainage has been done when the ambient temperature is below 0℃ or during long-term shutdown.
Period: daily

a) Regularly clean the filter to ensure smooth air intake.





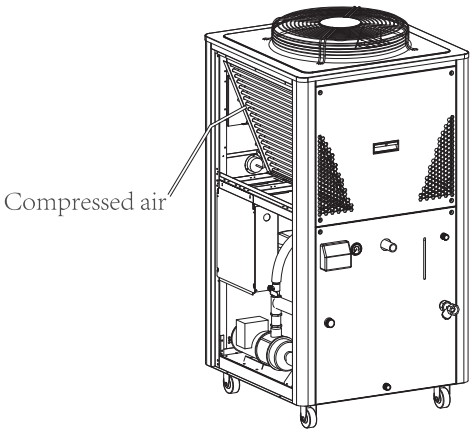
b) Clean the air-cooled condenser.

Regularly clean the air-cooled finned condenser to ensure good heat dissipation.

Use compressed air or soft brush to remove dust and debris from the fins and copper tubes. Avoiding bending the fins, as this will affect heat dissipation.

Attention !

Clean once every six months in low-dust environments, once a month in dusty environments, and more frequently as needed in harsher conditions.



c) Clean the water-cooled shell-and-tube condenser.

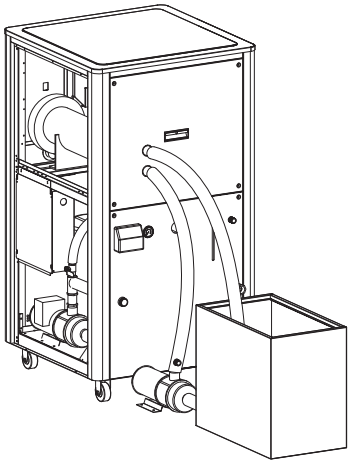
After long-term use,must clean the scale of water-cold condenser for good heat dissipation.

The steps are as follows:

1) Temporarily disconnect the cooling water pipes and reconnect the pipelines as shown below.

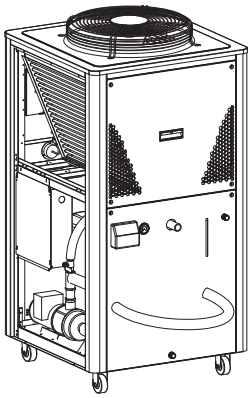
2) Mix the descaling agent with water. Adjust the PH between 6.5-7.5. Pour the solution into the open water tank and start the circulation pump for cleaning.

3) After running for the specified time, drain the solution into another container. Add clean water to the tank and run the pump for 10 minutes. Repeat this process 3 times .After cleaning, reconnect the cooling water pipes then resume chiller operation.



d) Clean the shell and tube evaporator.

After the unit runs for a certain period of time, various impurities and scale will accumulate on the outside of the evaporation heat exchange tube, which will affect its heat transfer effect. The evaporator should be cleaned regularly to keep the machine working performance.



Cleaning steps

1) Remove the original chilled water inlet and outlet pipes and connect the chilled water inlet and outlet pipes as shown in the figure above.

2) Mix the descaling agent with water in a certain proportion (the specific proportion is according to the specific requirements of the descaling agent manufacturer), and test the PH value.

3) Control the PH value between 6.5-7.5, finally pour the mixed solution into the water tank, and start the circulation pump for cleaning.

4) After running for the specified time, pour the solution into other containers, add clean water to the water tank and start the water pump to run for 10 minutes.

After repeating this for 3 times, the cleaning is completed, and the cooling water pipeline can be reconnected to continue to use the chiller.

Attention! When the ambient temperature is lower than 0 ℃ and the machine is shut down for a long time, it is recommended to drain the water in the water tank and pipeline, otherwise the unit may freeze and cause serious losses.

e) Clean the filter

After the initial test or use for a period of time, a certain amount of dirt will accumulate in the filter of the chiller, which will affect the water flow of the unit.

Thereby affecting the refrigeration performance of the unit. The filter needs to be cleaned, and it is recommended to clean it once a month.

The filter type of model ICA-0. 6 ICA-2 is a filter barrel, and other units are Y-shaped filters.

When cleaning the filter screen of the filter barrel, remove the barrel body and remove the filter screen, and rinse it with clean water

When cleaning the Y-shaped filter, remove the plug with a wrench or pipe wrench, remove the filter screen and rinse it with clean water.



filter cartridge



filter screen



Y-type filter



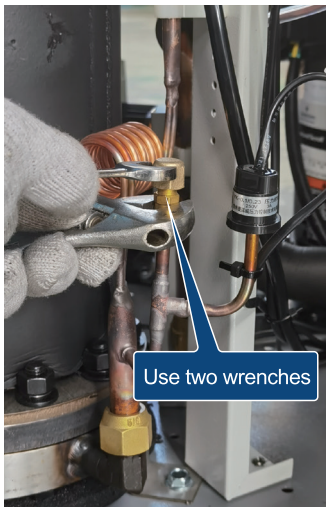
filter screen

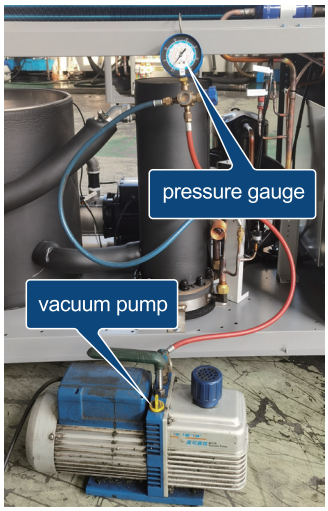
f) Refrigerant Charge

Please follow the steps below to fill the refrigerant:

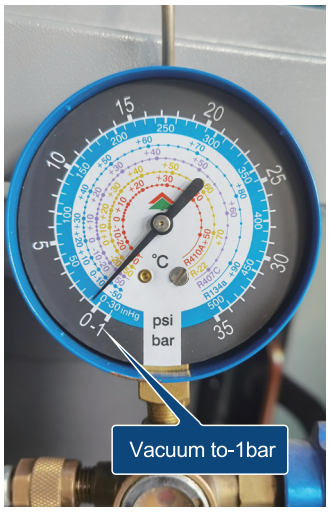
1) Unscrew the filling valve. To avoid damage to the copper pipe, please use two wrenches to unscrew the filling valve.
Connect the two pipes of the pressure gauge to the filling valve and the vacuum pump. Then turn on the vacuum pump. The time is about 1-2 hours until the pressure gauge pointer is -1bar.



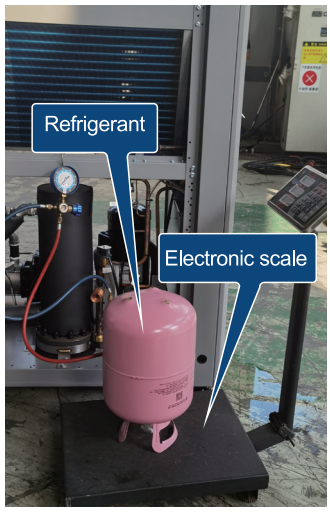




2)After the vacuuming is completed, close the valve of the pressure gauge, move the pipe from the vacuum pump to the refrigerant tank valve.
Open the valve of the refrigerant tank and turn it upside down on the electronic scale. Please loosen the joint of the pressure gauge for 3 seconds to discharge the air in the pipe.
3) Reset the electronic scale to zero, open the pressure gauge valve, and charge the corresponding type and weight of refrigerant as shown on the nameplate.







4) After the refrigerant is charged, remove the pipe from the filling valve, then use two wrenches to tighten the filling valve.

Repair and maintenance records

1. Chiller information

Model _____ Serial number _____ Date of manufacture _____

Voltage _____ V Frequency _____ Hz Power _____ kW

2. Installation inspection

☐ Check the connecting pipe is correct

☐ Check water pipes for leaks

☐ Check welded joints for leakage

Electrical installation

☐ Voltage check _____ V _____ Hz

☐ Current check: 1. Compressor 1 _____ A Compressor 2 _____ A 2. Water pump _____ A 3. Fan ____ / ____ A

☐ Power phase sequence detection

3. Daily inspection

☐ Check machine switch function

☐ Check whether the pressure gauges everywhere are normal

☐ Check if the compressor temperature is normal

☐ Check whether the cooling water pressure and temperature are normal

4. Weekly inspection

☐ Check the connectors of electrical components for looseness

☐ Check the chiller alarm function

☐ Check whether the temperature of the inlet and outlet of the cooling water of the chiller is normal

5. Monthly inspection

☐ Check circulation line for leakage

☐ Check if the pressure gauge is shaking

☐ Check the water pump for abnormal noise

☐ Check the water quality in the water tank

6. Quarterly inspection

☐ Check whether the condenser is dirty and clean it

7. Semi-annual inspection

☐ Check, clean and dry filters, thermal expansion valves

☐ Complete machine usage condition inspection

8. Annual inspection

☐ Check whether the contactor and thermal relay are normal

9. Annual inspection

☐ Clean evaporator and water tank

13.Clean evaporator and water tank

If the user finds a problem with the unit during use, please contact a professional maintenance personnel. When dealing with the problem, the maintenance personnel can refer to the following table to troubleshoot the problem.

Phenomena	Reason	Countermeasure
The machine doesn't run	Power outage or power switch cut off	Power up
	Water temperature is too low	Adjust Water Temperature Setpoint
	Poor water flow switch	Inspect, repair or replace the water flow switch
	Electrical control switch failure	Restart after maintenance or replacement
	Poor power wiring	Rewiring
	Controller damage	Repair or replace the controller with a new one
	Water pump overload	After eliminating the cause of overload, cut off the power supply and restart the machine
	Three-phase power supply is out-of-phase, out-of-phase, over-under-voltage	After eliminating the cause of phase loss, restart the computer
	Poor control circuit contact	Rewire Poor Contact
	High and low voltage switch	Action to find out the cause of fault and restore it
There is an abnormal sound when the machine is running	Poor fixation of machine	locking fixing screw Locking
	There is a foreign object in the water pipe	Clean water lines and water filters
	Water pump shaft or bearing damage	Renew
	Control box AC contactor abnormal noise	Overhaul AC contactor or replace it with a new one
	There is abnormal sound in the compressor	Stop the machine and notify the company for processing
	The refrigeration circuit collides with the machine body	Pull the tubing away from the body or isolate it with rubber and plastic material in the middle
There is an abnormal sound when the machine is running	Equipment load is greater than unit capacity	Modifying larger capacity units or installing additional units
	Air accumulation in the water pipeline (the low pressure meter of the unit swings uncertainly)	Exhaust air
	Insufficient refrigerant	Add necessary amount of refrigerant after checking and repairing leaks
	Poor heat dissipation of condenser	Improve heat dissipation
	Poor insulation of ice water pipeline	Improved insulation
	Scale accumulation in ice water container	The ice water system is filled with descaling agent to remove scaling
	Blocked filter or expansion valve	Remove blockages or replace them with new ones
	Expansion valve temperature sensing package refrigerant leakage	Expansion valve replacement
	The pressure drop of the chilled water pipe system is too large and the water flow is too small	Check whether the water filter is blocked and whether all relevant valves are opened. If necessary, replace the water pump with larger lift or install a water pump
Odor generation	Massive refrigerant leakage	Add necessary amount of refrigerant after checking and repairing leaks
	Motor coil burned	Replace after identifying the cause
	Overheating of wires or control switches	Identify the cause of overheating

High voltage switch action	Poor heat dissipation of chiller (floor height is too low or there are obstacles)	Improve heat dissipation conditions
	Excessive refrigerant filling	Refrigerant extraction
	There is air or non-condensable gas mixed in the system	Re-evacuate and add new refrigerant
	Poor cooling tower heat dissipation (water-cooled units only)	Find out the cause and fix it
	Damaged cooling water pump (water-cooled units only)	Maintenance cooling water pump
	The air-cooled condenser is dirty and blocked, and the heat exchange tube of the water-cooled condenser is scaled	Cleaning heat exchange tubes of water-cooled condenser and air-cooled condenser
	High voltage switch defect	Check Replacement
	Insufficient cooling water flow (water-cooled units only)	Increase cooling water flow
	Clogged cooling water filter (water-cooled units only)	Clean the cooling water filter
	After eliminating the cause of high-voltage switch action, restart the machine	
Low voltage switch action	Insufficient refrigerant, leakage	Supplementary refrigerant
	Drying filter blockage	Renew
	Low freezing load	Adjustment
	Insufficient chilled water	Adjustment
	Chilled water filter blocked	Washing
	Expansion valve blocked or insufficiently opened	Eliminate blockage or replace
	low voltage switch defect	Check Replacement
	Refrigerant leakage in temperature sensing pack of expansion valve	Expansion valve replacement
	Air accumulation in the waterway (the low pressure gauge of the unit swings uncertainly)	Open the waterway exhaust valve to exhaust the air
	The ambient temperature is too low, the viscosity of the lubricating oil is too high	Before operation, the oil heater should be electrified for at least 4 hours, and the minimum oil temperature should be above 23 ℃
	Capillary obstruction	Change
Compressor overheating	Poor bearing of compressor	Compressor Updates
	High pressure side pressure is too high	Improve the heat dissipation conditions of the unit
	The temperature of the refrigerant air on the low pressure side is too high	Adjust the pressure on the low pressure side and the opening degree of the expansion valve
	Motor overheating	Improve the heat dissipation conditions of the unit
Compressor overload	Voltage too high or too low or voltage imbalance	Check the power distribution of the machine itself
	Poor contact of compressor contactor	Check Replacement
	Defective compressor motor	After checking the cause of the defect, repair or replace it. If it is burned, refrigerant circulation loop must be cleaned
	Phase loss detection wiring of three-phase power supply	Eliminate the cause of phase absence
	Three-phase power supply is missing phase	Identify the wiring and eliminate the cause of phase loss
	Suction pressure is too high, exhaust pressure is too high	Eliminate the causes of abnormal suction and exhaust pressure
	Overload protector set point too low	When it is determined that the setting value is too low, reset the current setting value
	The temperature in the distribution box is too high	Keep it below 40 ℃, check the cause of overheating and eliminate it
	Insufficient compressor refrigerator oil	Replenish refrigeration oil
	After identifying the cause of compressor overload, press the compressor overload protector RESET to restart the machine	

14. After-sales service and warranty

1. After-sales service

After-sales service should be carried out by the seller or manufacturer. Improper operation may lead to water leakage, electric shock and fire.

2. Warranty period

Under normal use, if there is a problem with the product and it is confirmed that it is the cause of our company, our company will repair or provide parts for free. Please return the defective parts to our company.

The warranty period is as follows

1) The warranty period is 12 months from the factory date.

2) The warranty period of replaced parts is 3 months from the date of repair.

3. Please provide the following details when reporting for repair

Unit model / factory number / detailed description of fault / your contact details.

4. Warranty coverage

The warranty scope is limited to our company's products or parts, products or parts other than our company are not covered by the warranty.

5. Matters not covered by warranty

The following contents are not covered by the warranty

1) Failures not caused by modification or maintenance by our company.

2) Natural disasters such as earthquakes, typhoons, and floods, as well as failures caused by accidents and fires.

3) Failures caused by exceeding the usage conditions specified in this manual during use.

4) Failure caused by failure to perform operation and maintenance inspections in accordance with the requirements specified in the instruction manual.

5) Failures caused by external factors.

6) Failure caused by unqualified water quality or mixing of foreign matter.

6. Exceed the warranty period

When the product exceeds the warranty period, please contact the seller or manufacturer.

If it can be repaired, our company will provide paid maintenance services.

Table of contents

1. Cooling capacity unit

1kW = 860 kcal/h

1kcal/h (kcal) = 1.163 W

1Btu/h = 0.293 W

1HP = 735 W = 0.735 kW

1 Japan cold ton = 3.861 kW

1 US cold ton = 3.517 kW

The latent heat of liquefaction of 1kg ice is 80 kcal

The latent heat of vaporization of 1kg water is 539 kcal

2. Heat unit

1kcal (kilocalories) = 1000cal

1cal (calories) = 4.18 J (joules)

1Btu = 1054J (Joules)

1Btu = 252cal (Cards)

3. Pressure unit

1 kg/cm² (kilogram force) = 0.98 bar (bar)

1 bar = 100000 pa

1MPa (MPa) = 10bar

1bar = 14.5 PSI

1 atm = 101325 pa

4. Length unit

1 inch = 25.4 mm

1 foot = 30.5 cm

1 mile = 1.609 km

1 nautical mile = 1.852 km

1 yard = 3 feet

1 rod=16.5 feet

5. Weight unit

1kg = 1000g

1 oz = 28.3 g

1 pound = 0.453 kg

1 quart = 12.7 kg

6. Temperature

Fahrenheit = 32 + Celsius × 1.8

Celsius = (Fahrenheit-32) ÷ 1.8

Celsius = K temperature-273.15

