

# INDUSTRIAL CHILLER TECHNICAL MANUAL



Thank you for choosing and purchasing our products.  
Please read carefully the technical manual before application.  
Please make safekeeping of the technical  
manual for further reference.

**MAIN PRODUCTS**

- Chiller (air cooled)
- Chiller (water cooled)

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**SAFETY PRECAUTIONS FOR ATTENTION**


To avoid any dangers caused to operators themselves or others, or any losses on assets, instructions are made on safety precautions to be observed as follows.


The sorts of safety precautions to be followed can be distinguished by

 Operation strictly prohibited


 Operation must be implemented

The below explains what will happen if someone fails to heed particular precaution statement


 **Danger**  
Hidden dangerous is indicated, personal injuries or casualties can be caused for the nonobservances.

 **Caution**  
Hidden dangerous is indicated, low-grade personal injuries or casualties can be caused for the nonobservances.



 **Danger!**

	Do not operate the device where water, corrosive or inflammable gas can be found or near inflammable substances	Fire accident can be caused.
	Do not place any inflammable substances on the device	
	Do not damage the power lines of the device; or attach overstress or pressure from both sides	Wire damage or electric shock can be caused.
	Do not operate device with the power lines dipped in oil or water	
	Do not operate the device under vibrations or strong impacts.	Fire accident, injury or electric shock can be caused.
	Do not disassemble the electric elements in the electric cabinet.	
	Do not touch the high-temperature or rotating parts of the device	
	Do not operate the device or make wiring connection with hands wet.	


 **Danger!**

	Wiring connection must be operated by professional electrician.	Wiring connection by personnel without professional competence can cause electric shock.
	Safety validation must be made after the device is moved or natural disaster happens	Fire accident, electric shock and injury can be caused with validation ignored.
	The equipment shall be operated in conditions with fewer dusts and away from water and oil.	Fire accident or damage can be caused when operating the device in improper places.
	Emergency stop electric circuit shall be set external the device during installation to ensure that the device can be stopped and the power supply can be cut off on emergent circumstances.	Electric shock can be caused when operating without cutting off the power supply.
	Do not contact any part of the body with the metal parts of the connecting terminals when opening the electric cabinet.	Accident such as electric shock and injury can be caused.

 **Caution!**

	Never apply transformers with power capacity less than the power of the device.	Accident such as fire accident, electric shock and injury can be caused with the instructions ignored.
	Appropriate arrangements shall be made when making operations such as installation etc. According to the net weight of the device.	
	Spontaneous disassembly and alteration of the device is strictly prohibited.	Accident such as fire accident, electric shock and injury can be caused with the instructions ignored.
	Make sure that the environmental condition where the device is being operated is controlled within the application temperature and humidity.	
	The designated installation methods shall be followed strictly.	
	When making combination application of the device with other devices, the application must be made according to the relevant instructions on the combination.	Accident such as electric shock, injury, damage and fire accident can be caused with the instructions ignored.

 **Caution!**

	When making operations of conveying and setting etc, pay attention to the stability of the device to avoid accidents caused by dropping or slipping	Injury or failure can be caused with the instructions ignored.
	Do not drag the wires and the rotation parts of the device when making the conveying.	
	Restarting can probably happen when the power supply is resumed after the power failure, therefore settings of the device shall be properly made to avoid accidents of the restarting and ensure the personal safety.	Accident of injury can be caused with the instructions ignored.
	Make sure that the device is operated stably.	
	Keep the device away from strong impacts; avoid connecting and disconnecting the power supply too frequently.	Accident of electric shock, injury, damage and fire accident can be caused with the instructions ignored.

**1. FOREWORD**

1.1 User Precautions

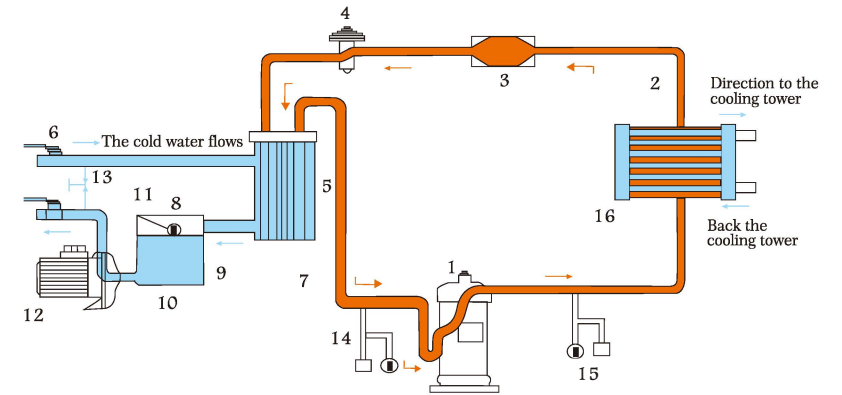
1. Please read the technical manual carefully before the installation and application of the device.
2. The performances, operations and maintenances of the device will be detailed in the following characters.
3. The documentations must be provided to the managerial personnel and the onsite operation and maintenance personnel.
4. The device has been made various testing before making the delivery to ensure that the device is complied with exfactory standards. Proper application, careful maintenance of the device is the greatest guarantees to ensure the reliability, stability and effective operation of the device.
5. The documentation is permanent file for the device, please make proper keeping of the documents.

1.2 Application environments

1. The device is required to be applied in the indoor environments of clean and neat, ensure that there's ample light and ventilations.
2. The environmental temperatures for the operation of the device shall be controlled within the range of 5°C to 45°C, the surrounding temperature where operation is made for more than 24 hours shall be no more than 40°C.
3. The air humidity shall be controlled within the range of 20% to 95%, certain space shall be left surrounding the device.
4. Irrelevant personnel are not allowed to enter the working area when the device is under operation.
5. Make proper use of the device. do not operate the device beyond the application ranges.

## 2.STRUCTURAL DRAWINGS AND NAMES

Chiller-water 3-50

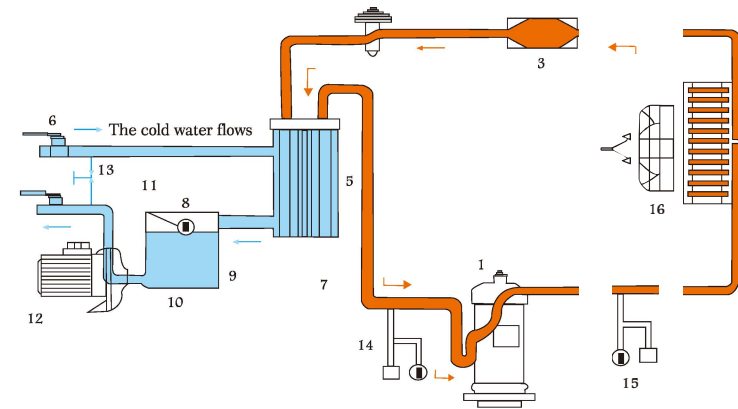


- 1.Compressor
- 2.Cooled condenser
- 3.Drier filter
- 4.Expansion valve
- 5.Evaporator
- 6.Globe valve
- 7.Antifreezing switch
- 8.Float switch
- 9.Temperature sensor
- 10.Water tank
- 11.Pressure gange
- 12.Pump
- 13.Pressure relieve valve
- 14.Low pressure controller
- 15.High pressure controller
- 16.Pressure release valve

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Chiller-air 5-50A



- \_\_\_\_\_ 1.Compressor
- \_\_\_\_\_ 2.Cooled condenser
- \_\_\_\_\_ 3.Drier filter
- \_\_\_\_\_ 4.Expansion valve
- \_\_\_\_\_ 5.Evaporator
- \_\_\_\_\_ 6.Globe valve
- \_\_\_\_\_ 7.Antifreezing switch
- \_\_\_\_\_ 8.Float switch
- \_\_\_\_\_ 9.Temperature sensor
- \_\_\_\_\_ 10.Water tank
- \_\_\_\_\_ 11.Pressure gange
- \_\_\_\_\_ 12.Pump
- \_\_\_\_\_ 13.Pressure relieve valve
- \_\_\_\_\_ 14.Low pressure controller
- \_\_\_\_\_ 15.High pressure controller
- \_\_\_\_\_ 16.Fan

## 3.PRODUCT SPECIFICATIONS

HLF Series Air cooled industrial chiller							
Ltem	Mode	HLF-0.6A	HLF-01A	HLF-02A	HLF-03A	HLF-05A	HLF-06A
Nominal cooling capacity	W	1520	2900	5480	8000	13950	16900
	Btu/h	5168	9860	18632	27200	47430	57460
	Kcal/h	1307	2494	4712	6880	11900	14530
Total input power	KW	0.745	1.345	2.213	3.24	5.60	6.60
Power supply voltage		220V 60HZ(3HP 460V/60HZ)					
Refrigerant	Type	R22 ( R134a/R407C/R401A/R404A)					
	Control mode	Capillary					
Compr essor	Type	Hermetic rotary					
	Power(KW)	0.605	0.885	1.7	2.68	4.54	5.35
Condenser	Type	High efficient finned copper tube+low noise outer rotor fan					
	Cooling Air volume(m³/h)	750	1000	2000	3000	6000	6000
Evaporator	Type	Water tank with coil (Shell and Tube)					
	Chilled fluid flow(L/min)	15	33	33	33	48	56
	Tank volume(L)	11	22	24	40	60	70
	Inlet/outlet pipe caliber	1-1/2"	2	2	3	3	3
Water pump	Power ( w )	85	370	370	370	450	600
	Pump head(m)	7-10	24-30	24-30	24-30	24-30	24-30
Safty protection		Compressor overheating ,over current,high and low pressure,over temperature flow switch , phase sequence,phase-minssing,exhaust overheating,anti-freezing.					
Dimension	L (mm)	470	500	550	930	1130	1130
	W (mm)	380	480	510	550	600	600
	H (mm)	600	900	980	1050	1180	1180
Weight	Kg	37	63	80	130	170	170
Note:1.nominal cooling capacity calculated according to:Inlet/outlet chilled fluid temperature:12°C/7°C , Inlet/outlet cooling air temperature:30°C/35°C.2.Working condition:The temperature range ofchilled fluid is from 5°C to35°C.Temperature difference between inlet and outlet chilled fluid is from 3°C to 8°C.It is better to run the chiller while the ambient temperature at or below 35°C. We reservethe right to modify the above information without further notice.							

HLF Series Air cooled industrial chiller										
Ltem	Mode	HLF-08A	HLF-10A	HLF-12A	HLF-15A	HLF-20A	HLF-25A	HLF-30A	HLF-40A	HLF-50A
Nominal cooling capacity	Kcal/h	19000	28010	34800	35948	45554	52615	68336	91108	105230
	50HZ/60HZ	22800	33721	41760	43129	55255	63743	82887	110510	127486
	KW	19	28.01	34.8	41.8	52.97	61.18	79.46	105.94	122.36
Total input power	50HZ/60HZ	22.8	33.72	41.76	50.15	64.25	74.12	96.38	128.5	148.24
	KW	9.76	11.06	13.04	15	19.56	21.96	29.54	39.9	45.02
Power supply voltage		3HP 230V 60HZ(200V/220V/460V 50HZ/60HZ)								
Refrigerant	Type	R22 ( R134a/R407C/R401A/R404A)								
	Control mode	Capillary/ Expansion valve								
Compr essor	Type	Hermet scroll type (Piston)								
	Power(KW)	4.54*2	4.54*2	5.43*2	12.4	7.9*2	9.1*2	7.9*3	7.9*4	12.4*4
Condenser	Type	High efficient finned copper tube+low noise outer rotor fan								
	Cooling Air volume(m³/h)	8000	12000	15000	20000	25000	30000	40000	50000	60000
Evaporator	Type	Water tank with coil (Shell and Tube)								
	Chilled fluid flow (m³/h)	4	4.47	5.3	7.2	9.1	10.52	13.65	18.22	21.04
		4.8	5.37	6.31	8.63	11.04	12.75	16.6	22.1	25.5
	Tank volume(L)	150	200	200	280	280	280	350	650	650
Inlet/outlet pipe caliber	1-1/2"	1-1/2"	2	2	2	2-1/2"	2-1/2"	3	3	
Water pump	Power ( kw )	1.5	1.5	1.5	1.5	2.2	2.2	4	5.5	5.5
	Pump head(m)	30	30	30	40	40	40	40	40	40
Safty protection		Compressor overheating ,over current,high and low pressure,over temperature flow switch , phase sequence,phase-minssing,exhaust overheating,anti-freezing.								
Dimension	L (mm)	1300	1500	1500	1500	2000	2300	2300	2900	2200
	W (mm)	650	800	800	800	920	920	920	1000	1800
	H (mm)	1476	1500	1580	1580	1800	1900	1900	1900	1817
Weight	Kg	275	380	380	550	835	880	920	1250	1650
Note:1.nominal cooling capacity calculated according to:Inlet/outlet chilled fluid temperature:12°C/7°C , Inlet/outlet cooling air temperature:30°C/35°C.2.Working condition:The temperature range ofchilled fluid is from 5°C to35°C.Temperature difference between inlet and outlet chilled fluid is from 3°C to 8°C.It is better to run the chiller while the ambient temperature at or below 35°C. We reservethe right to modify the above information without further notice.										



## 4. FUNCTION DESCRIPTION

### 4.1 Operational principles

This machine has the timing control by the computer board, pulling out the vacuum through the inflow air pump from the vacuum hopper, causing raw material into the vacuum hopper through the conveying rubber tube, after the computer board hypothesis time arrives, the air pump stops working. After the materials in the vacuum hopper are using up, the machine will restart to attract the materials.

### 4.2 Product features

There are high effect to save energy and low noise and multifunctional for industrial chiller. The machine are widely used in many trades including plastic and rubber, electroplate, chemical industry, ultrasonic, etc. Especially, it shows high ascendant capability in plastic and rubber industry. It is important assistant equipment in plastic and rubber industry. It can exactly control the temperature of process mould, increase output, expedite finalizing the design, reduce shrink, buildup exterior luster and transparence. In the mean time, it appear important effect in pledging quality of output and reducing manufacture cost.

## 5. INSTALLATION INSTRUCTION

### 5.1 Preparation before installation

1. Other devices, stacking of materials and maintenance space must be taken into consideration before determining the installation position of the device. At least a distant of 1m is required to be kept surrounding the device.

2. The arrangements of power supply must be made before the installation, the load power of the power source wires shall be over the total power of the device.

3. Please check whether the machine appearance has been damaged during the transportation. If there is the obvious damage of the appearance, please don't hesitate to contact with the factory or seller.

### 5.2 Installation methods

1. Keep the device level and flat and ensure the ventilation of the surroundings.

2. During making the installation, do not change the tube diameter of the cooling water outlet in case that alarming is made on high pressure caused by poor heat dissipation.

3. Filter valves must be made on the return circuits of refrigerated water and cooling water when the water source is too directly or the surroundings near the water tower is too poor. Periodical cleaning shall be made.

4. If the refrigeration water system is designed as closing pipelines, exhaust valve shall be installed at the highest position of the system and drain valve at the lowest position of the system to facilitate the cleanings and drainages of the system.

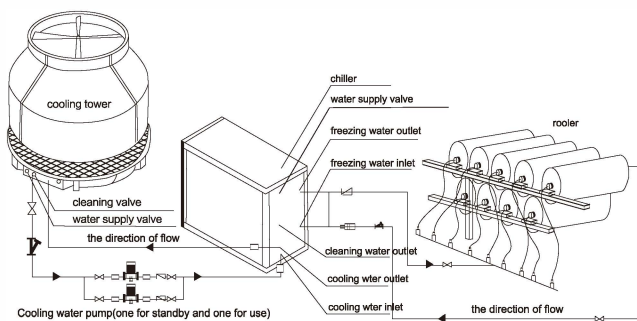
5. Proper cooling tower with ample size shall be determined according to the refrigeration capacity of the device. The reference method is that each 1HP compressor shall be allocated with a cooling tower of 1.5 ton.

6. After the coolant hoses and pipelines have passed the leakage testing, coat them with heat preservation layer to avoid heat dissipation and pipeline dripping.

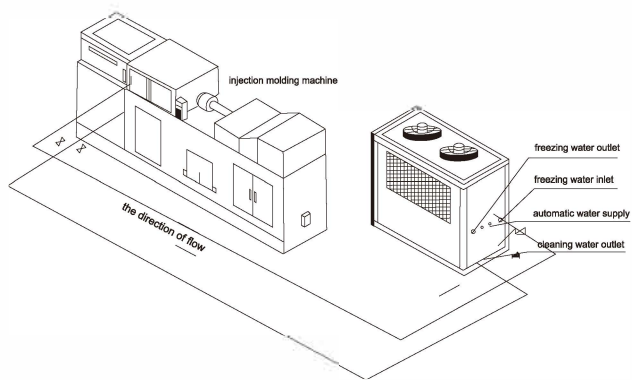
7. The water pump, water tower and water supply pump of the circulating water system can be connected into the control circuits of the chillers to facilitated operations and protect the chiller.

## 5.3 DIAGRAM OF INSTALLATION

### Installation Schematic of chiller (water-cooled)

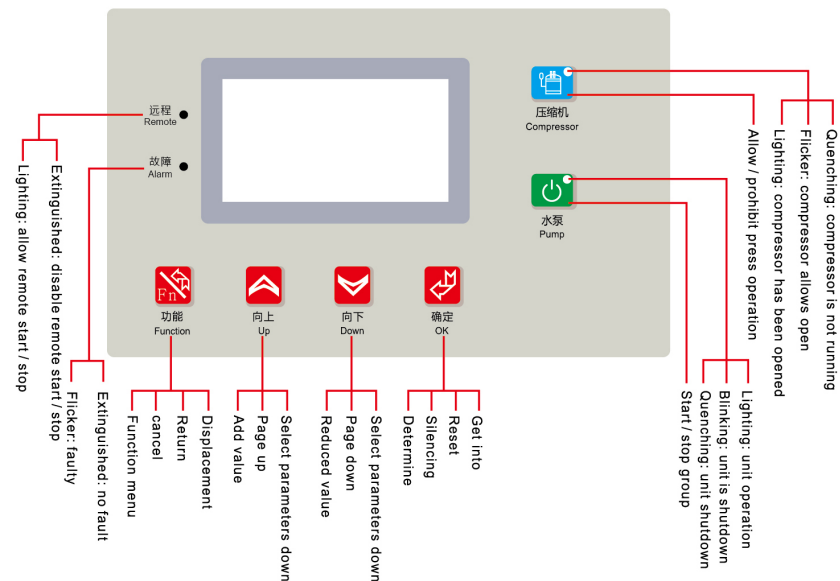


### Installation Schematic of chiller (air-cooled)



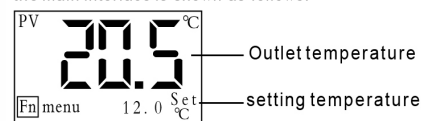
## 6. OPERATION INSTRUCTION

### 1. Display panel



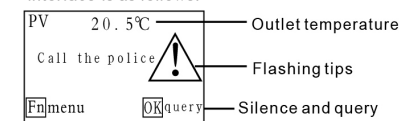
### 2. Main interface

After the countdown will enter the main interface, the main interface is shown as follows:



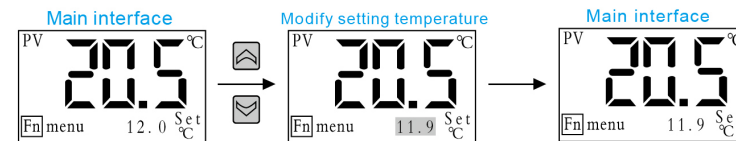
### 3. Alarm interface

When the machine fails, the alarm prompt interface is as follows:



### 4. Quick setting temperature

If the user parameter [lock temperature] is set to "no", the main interface can directly modify the set temperature, the operation is as follows:



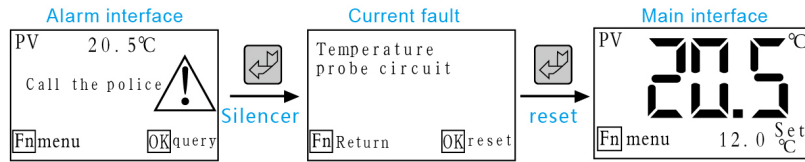
Note: you can also modify the settings in the user parameters.

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## 5. Query / reset fault

When the fault occurs, the alarm interface will automatically pop up:

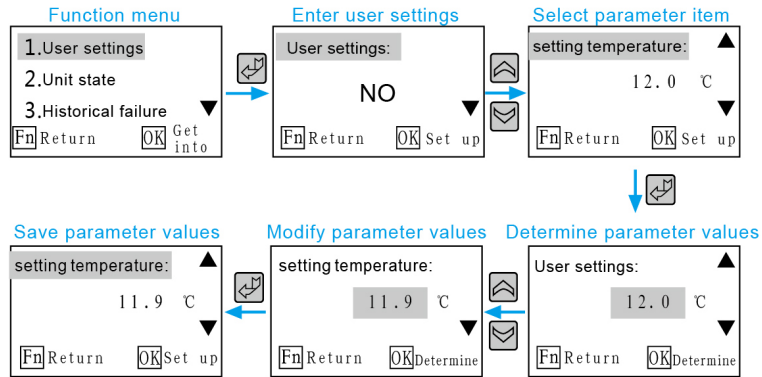


## 6. Fast handover display in English and Chinese

In the main interface, press + 3 seconds to switch the display language.

## 7. Parameter operation

Modify the value of the parameters to the user to modify the operating temperature set as an example. ( [lock temperature] select "no" )

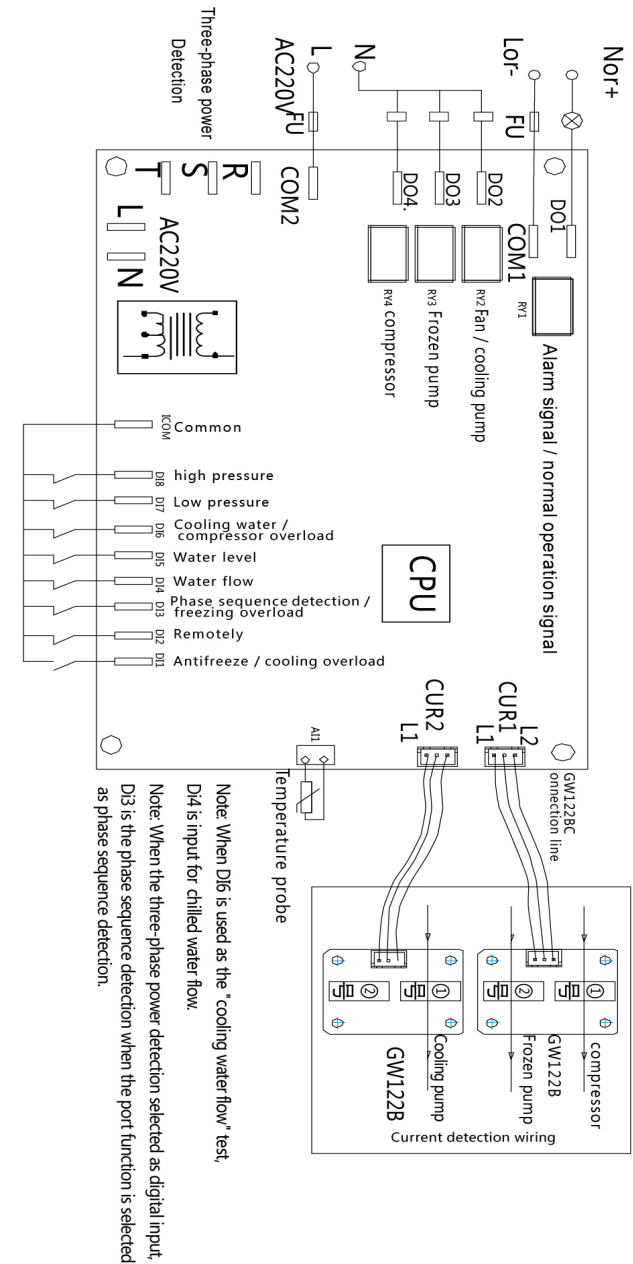


## 8. User parameter table

The parameters in the user parameters are shown in the following table:

Serial numbet	Parameter name	Factory value	Setting range	Remarks
1	Locking temperature	no	Yes ~ no	Is: can not be locked in the main interface to modify the set temperature. No: you can modify the settings in the main interface temperature.
2	setting temperature	12.0°C	-38.0~99.9°C	Setting range is affected by the manufacturer's parameters [set temperature upper] ,Limit [set temperature lower] .
3	Adjust contrast	32	20~44	Adjust LCD contrast.
4	Start-up mode	local	Local; local + remote; remote	Local: only local start stop unit. Local + Remote: local and remote can control the start s top unit. Remote: only remote start stop unit.
5	Turn off time	0	0~225Minute	0:No backlight;
6	Multi language	Chinese	Chinese ~English	Select display language

## Electrical connection diagram



## 1. General fault treatment method

### General processing method for displaying fault code

Fault code	Failure cause	processing method
E01	Sensor fault	Check the temperature head resistance resistance of 20 or so with about 5 thousand,Contact with the probe value will change, such as the resistance is too small or no resistance to poor probe.
E02/E08	Ultra high / low temperature alarm	Check whether the set value is too high or too low, or because it does not cause refrigeration.
E03	Compressor pressure alarm	1 check the compressor back pressure switch on the two lines are in good contact, if the short circuit can eliminate the E03 and the temperature can drop, the pressure switch is bad. 2 check whether the leakage of refrigerant system, with a multimeter measuring pressure switch, if it is disconnected, likely leakage of refrigerant, carefully check the pipe joint portion has no oil leakage, generally, can also use soap bubble pressure leak.
E04	Phase alarm	3P the following models do not have this ability, as long as the above models can be replaced between FireWire and FireWire can be eliminated.
E05	Flow fault	1.Check whether the water system air is not clean, you can pull out the water outlet, so that part of the natural outflow, and then install the boot. 2.The bottom of the filter screen is blocked, cleaning can be. 3.Pump suction mouth is flat phenomenon. 4.The pump itself does not turn or coil winding or poor capacitance. 5.Water pump circulation, flow switch is not the flow switch is broken
E06	Water alarm	3P the following models generally do not have this feature, the above check the water level is not to the limit or water level switch bad.
E07	Overheating, overload fault	3P the following models generally do not have this feature 1.Check the setting current is too small or compressor, fan, pump over rated current; 2.The condenser is cleaned, the condenser fan is running, these conditions will cause the compressor current is too large and overload.

## 2.General processing method for failure code display

Poor cooling effect	1.Check that the condenser is dirty or the filter is not cleaned. 2.The location of the machine is too high temperature caused by poor heat dissipation. 3.The system may have some refrigerant leakage. (this time there will be no E3 alarm) 4.More than the normal service life of the machine, replace the compressor can restore the original effect.
Temperature instability	(far more than the set temperature), or has been heating up or cooling, check whether the power supply voltage (low voltage 197~242V normal balance between), because of low power solenoid valve and bypass solenoid valve can not be normal conversion.
No water flow or water flow is small	Check whether the pump air is clean, the bottom of the tank screen is blocked, the pump capacitor is bad, to control the water pump is closed.

## 3. Daily maintenance

Cold water machine during normal operation, avoid because of dirt or other impurities affect the cooling effect, therefore, in order to prolong the life of the machine, the refrigeration effect to achieve a better state, should do regular maintenance and maintenance work, ensure that the chiller operation quality, improve production efficiency

Specific operations are as follows:

- 1,Regularly check the chiller voltage, whether the flow is stable, the compressor running sound is normal.
- 2,Check whether the chiller cooling system is normal, whether the condenser affects the ventilation.
- 3,Cold water machine should be used for six months when the system cleaning , cleaning once a year, the main cleaning part includes: evaporator and condenser to ensure that the cooling effect is better.
- 4,When the captain of the cold water is not in use, the water pump, the compressor and the power supply of the cooling tower should be switched off in time.

## 6.2 Operation cautions

- 1.The transportation and installation of the machine must be completed by the professional peoples who know the technical parameters of the machine very well.
- 2.After finishing the machine's installation but before use,the machine must be cleaned and inspected to see if there is any tools and sundries forgotten in the machine.
- 3.After installation, it needs to check the machine's parts, electric elements and electric wires to see if they have loosened or broken off during the transportation. If they have, please fasten them again,then the machine can be put into operation.
- 4.When installation, the machine must be placed vertically and be placed on the flat ground.
- 5.Please make sure that the earth wire connects the ground correctly in order to avoid the electric shock accident.
- 6.The use of three-phase five-line system, according to the head of the line marking the correct connection, L1,L2.L3 next phase, N to zero line, PE earthing grounding resistance requirements of less than 0.1 ohm.
- 7.The main power supply should be rated at 10 percent,the frequency should be rated frequency of less than 2 percent, if the power fluctuations may not exceed the scope of this boot, if the damage caused by forced reboot, the Company will not within the scope of the warranty.
- 8.Before starting the device, inspect whether there's something abnormal on the device, whether the power supply is correct connect and the voltage is complied with requirements.
- 9.If warning is made on the reserved phase, please shift the positions of the connection wires L1 and L2 of the power supply.

- 10.The operators shall be made essential trainings before operation including: Possible dangers when operating the device; The working principle of the machine and the correct application methods; The regulation of the device parameters and the possible results; Safety apparatuses of the device and safety knowledge.Stop any unsafe activities that can damage the device.
- 11.The managerial personnel have the obligation to inform to the operators knowledge relevant to safety, operations and performances; and possible dangers during operation and how to make safety protection on operators themselves and the device.
- 12.The device is provided with the function of overload. When overload is detected, both the pump and the compressor will be stopped. Please inspect the causes for the overload. The overload detector can be resumed to work normally by resetting it after remove the failures.
13. Inspect to make sure that the cooling water valve and the cooling water tower are kept open to ensure that there's enough cooling water to run into the device.
14. Make sure that the ball valves for refrigeration water inlet/outlet are opened. Make sure that the water tank of the cooler and the condenser are full of water; operation without water is strictly prohibited.
- 15.The parameter of the Temp. Controller has been set before delivery. Please don't amend the parameter optionally by non-specialist users.

6.3 Operation methods

Startup

1.Please connect the suited water pipe to the device to ensure that the circulating water is running to the device. And ensure that the water temperature is below 30℃, the pressure is within 3-6Bar and the flow rate reach the device requirement.

2.Open the Pump switch in the control box of the device, when the AC contactor of the Pump connected, the Pump starts to work.

3.Open the control switch of the compressor to connect the temperature controller. When the actual temperature is detected higher than the set temperature, the AC contactor of the compressor will be connected and refrigeration is made by the device. The compressors will be started up separately. Operation of the temperature controller.

1.The setting of the application temperature shall be: press the set” button on the temperature controller. The figures indicated in the display screen flashes. Press the “▲”or“▲” button to increase or reduce the set temperature. The temperature can be set as low as 3℃. Determine the proper value according to the needed. Wait for 3 seconds and the temperature controller will confirm the input automatically.

2.The setting of the temperature difference shall be: Press the“hys” on the temperature controller. The figures indicated in the display screen flashes. Press the “▲”or“▲”button to increase or reduce the temperature difference. The compressor can be started only the difference of the actual temperature and the set temperature are the some of the value of “hys”.

7.REPAIR AND MAINTENANCE

7.1 Common faults and solutions

Phenomenon	Cause	Elimination
No indication for the whole device	The breaker of the device is turned off or the fuse is burnt	Open the breaker or replace the fuse
Light for Phasereverse on	The phase sequence of the power supply is incorrect.	Shift the positions of any two of the connection wires of the power supply.
Light for Water pump overloaded on	The water pump is blocked, the power supply is incorrectly connected that regarding the null line as the Phase line, the pressure is abnormal, and the motor of the water pump is burnt.	Inspect the water pump and the power supply.
Light for Compressor overloaded on	The high pressure is over high, the motor is heated abnormity caused by the bad contact ion of the compress, or the electric coil of the compressor is broken.	Clean the cooling fin, inspect the cold media pipeline, inspect the power wire of the compressor and the electric coil of the compressor.
Light for High pressure excess on. (water chiller)	The circulating water is not open, the circulating water pipe is too small, the flow rate is in sufficient, the cooling tower is too small, the temperature of the circulating water is too high, the filter and the condenser are blocked.	Inspect the circulating water switch, inspect the flow of the circulating water, the temperature of the circulating water, or clean the condenser.

Phenomenon	Cause	Elimination
Light for High pressure excess on. (water chiller)	The circulating water is not open, the circulating water pipe is too small, the flow rate is insufficient, the cooling tower is too small, the temperature of the circulating water is too high, the filter and the condenser are blocked.	Inspect the circulating water switch, inspect the flow of the circulating water, the temperature of the circulating water, or clean the condenser.
Light for High pressure excess on. (air chiller)	The cooling fin is blocked by dusts and it leads to heat dissipation badness, or the environmental temperature is over high.	Clean the cooling fan, put the device in a ventilated place or keep away from the heat source.
Light for Low pressure shortage on.	The pipeline is leaking, the cold media is not sufficient, or the drying filter is blocked.	Figure out the leakage points, make welding again and recharge the cold media moderately, or replace the drying filter.
Light for Low water temperature on	Water temperature is below 0°C.	To ensure the device can work normally, please ensure the water temperature is above 10°C
The light for without water flow on	The device doesn't connect with the water pump, or the water pump is lack of water.	Inspect the source of the water pump and the water pump.
The light for Fan overloaded on	The heat release fan is blocked, the motor is damaged, or the power supply is breakdown.	Inspect the heat release fan and the power supply
Water leakage of the pump	The water seal is broken	Replace the water seal

7.2 Cautions for maintenance

1. When the device's work and the temperature is very high, please don't process servicing to avoid the danger of scald. If necessary, please shut down the electric heater until the machine is cooling, then can do it.
2. All the repairs and maintenances must be made with the main power supply off. Lock the disconnected switches if necessary.
3. All the repair and maintenance must be made by assigned qualified person. The repair and maintenance personnel must know clearly the performances and parameters of the machine.
4. Careful inspections shall be made after the repair or maintenance. The device can only be handed to the operators after all are confirmed to be in order. Records shall be kept.

7.3 Maintenances

1. Condenser shall be cleaned under the following circumstances: The chiller has been operated for over half years; the circulating water is in order while warnings are often made on high pressure, the refrigeration capacity is lowered or the high pressure indication is over 20Kg/cm<sup>2</sup> under operations.
2. Keep the cleanliness of the water tower and the air ventilation surrounding the water tower to avoid the irrelevant materials to enter the water tower to reduce the heat dissipation efficiency.
3. To reduce the dew accumulation of the molds, before stopping the injectioner, first turn off the refrigeration water and the chiller; stop the injectioner after the temperature of the mold is heated up so that the mold will not be damaged by corrosion.
4. The blades of the water pump of the chiller can be blocked by water fouling after the suspension for a long period. Please rotate the water pump before starting to ensure that the water pump is in order.
5. If the chiller will be suspended for a long time, especially in

winter, the residual water in the water tank and condenser shall be discharged to prevent the condenser from being frost broken or blocked.

6.Cleaning shall be made on the cooling fin and evaporator of the chiller when the Air cooled chiller has been operated for 3 to 6 months with methods as follows: Clean up the dusts and irrelevant materials in the cooling fin with compressed air; the cleaning methods of the evaporator can be referred to water cooled chiller.

7.Method of cleaning for water cooled chiller Cleaning shall be made on the condenser and evaporator of the chiller when the chiller has been operated for 3 to 6 months with methods as follows: The first cleaning shall be implemented with 25 minutes from feeding the soaking liquid to finishing the rinsing. As instructed in the figure, connect hose and hopper at the“cooling water outlet” of the chiller; feed the soaking liquid (with the main ingredient of hydrochloric acid) from the hopper; collect the soaking liquid coming from the “cooling water inlet” with rubber basin. Wait or 1-2 minutes after feeding in about two liters of soaking liquid, then pour the soaking liquid running into the rubber basin again into the hopper. Collect with another rubber basin. Repeat for 4 to 5 times and then feed clean water in the hopper to rinse the soaking liquid in the condenser and discharge the sewage.