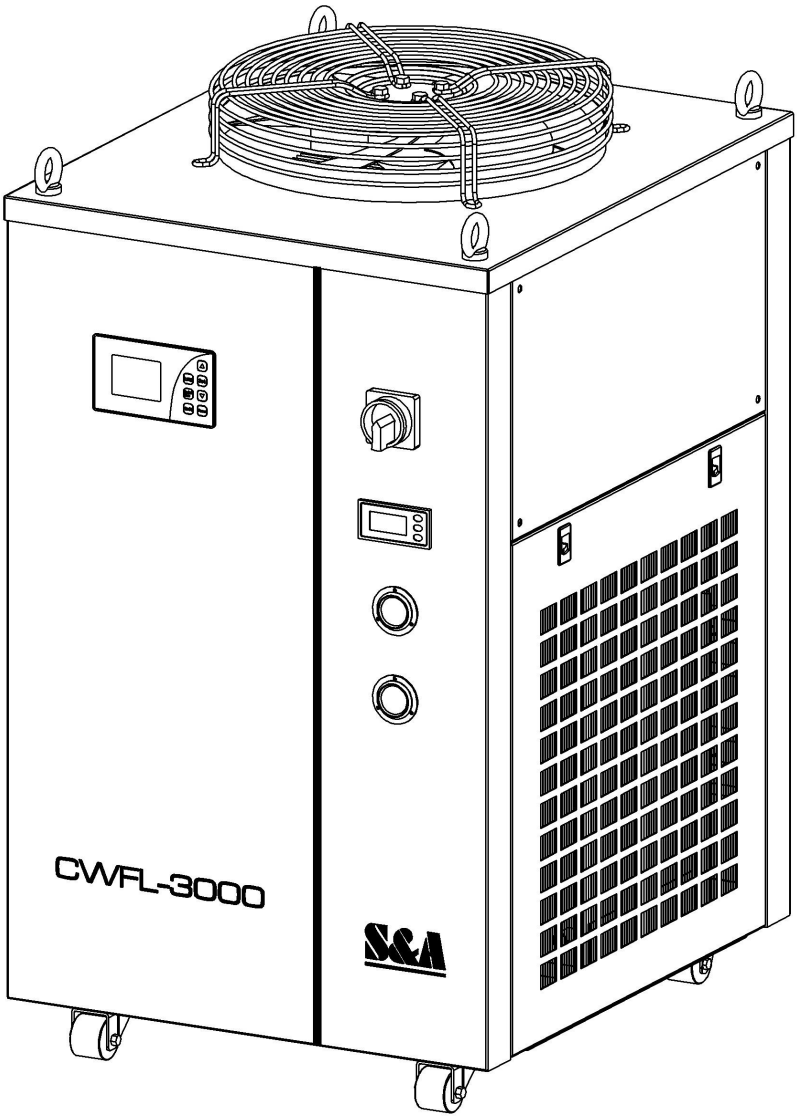
CWFL-3000
DUAL TEMPERATURE AND DUAL PUMP INDUSTRIAL CHILLER

USER MANUAL



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Thank you for using the machine from GUANGZHOU TEYU ELECTROMECHANICAL CO., LTD. Please read the installation instructions carefully before installing and operating and keep it properly.

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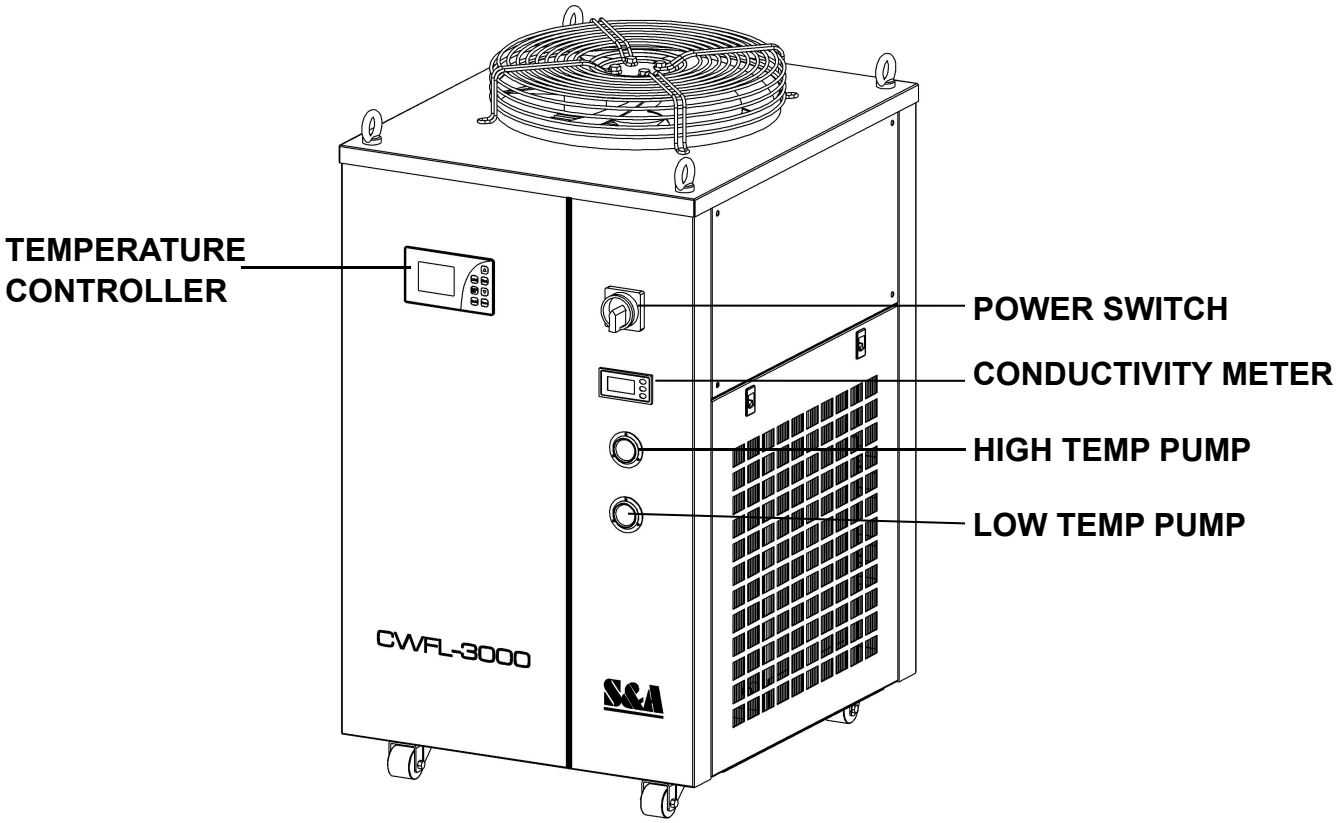
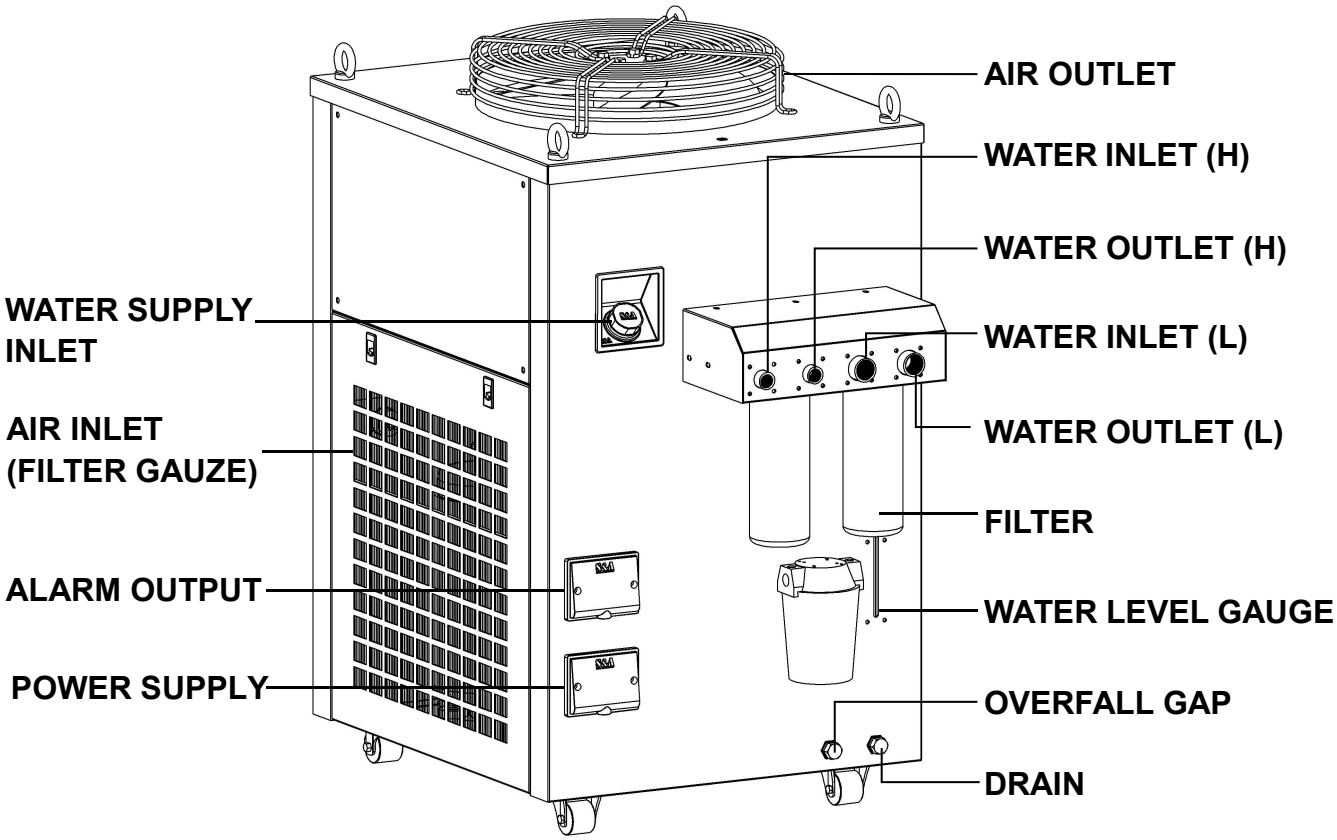
<1> Cautions

1. **Please ensure that the power supply and electrical outlet are in good contact and the earth wire must be firmly grounded!**
2. **Please make sure there is stable and normal voltage for the working chiller!**
   As the refrigeration compressor is more sensitive to the power supply and voltage, so the operating voltage of our standard product is ±10％ of the rated voltage. If you do need a wider operating voltage range, customization is available for us.
3. **Unmatched power frequency can cause the chiller damage!**
   Please choose model of 50Hz or 60Hz according to actual circumstance.
4. **To protect the pump, it's strictly forbidden to run the chiller without water in the storage water tank!**
   The new machine is packed after draining whole water in the tank, so please make sure the tank has water inside before machine starting, otherwise it's easily to have the pump damaged. When the water level is below the green (NORMAL) range of the water level gauge, the cooling capacity of our chiller will go down slightly. Hence please ensure the water level is within the green (NORMAL) range. To drain through circulating pump is strictly prohibited!
5. **Please be sure that the air inlet and air outlet are in good ventilation!**
   There must be at least 50cm from obstructions to the air outlet which is in the back of the cooler, and should leave at least 30cm between obstructions and the side air inlet.
6. **The filter gauze must be regularly cleaned!**
   It's essential to remove and wash the dust gauze regularly, otherwise chiller malfunction can be caused by serious blockage.
7. **Please pay attention to the effect of the condensate water!**
   With greater ambient humidity, when the water temperature is lower than the ambient temperature, the condensate water will generate on the surface of water circular pipes and the cooled components. If above circumstance appears, it is recommended to set a higher water temperature or keep pipes and cooled parts warm.
8. **This product is an industrial equipment.For professional use only.**

<2> Contour and parts introduction





<3> Installation

It is very simple to install this industrial cooling machine. The installation for the first time of the new machine can be carried out by following steps:

1. **Open the package to check if the machine is intact and all the necessary accessories are completed.**
2. **Open the water supply lid to feed cooling water.**
   Observing the water level gauge to feed water slowly, be careful not to have the water overflowed!
3. **According to system conditions, please connect the water inlet and outlet pipe properly.**
4. **Plug in power, turn on the power switch. (Do not start up without water in the water tank!)**

(1) Power switch turned on, the circulation pump of the chiller starts working. The first time of operating may cause more bubbles in the pipe leading to a flow alarming occasionally, but running for a few minutes later, it will go back to normal.

(2) If the chiller starts for the first time, you must immediately check whether the water pipe leaks.

(3) Power switched on, if the water temperature is under the set value, it is normal that fans and other components of the machine do not work. The temperature controller will automatically control the working conditions of the compressor, magnetic valve, fans and other parts based on the set controlling parameters.

(4) As it takes a longer time to start over the compressor and other components, according to different conditions, the time is range from seconds to minutes, so do not turn on and off frequently.

5. **Check the water level in the water tank.**
   The first starting up of a new chiller will empty the air in the water pipe, causing a slight water level decline, but in order to keep the water level in the green area, it is allowed to add adequate water again. Please observe and record the current water level, and inspect it again after the chiller running for a period of time, if the water level drops obviously, please re-inspect the water pipeline leakage.
6. **Adjust parameters of temperature controller.**
   CWFL-3000 series use an new intelligent controller. It works in defaulted constant temperature control mode for the low temperature end with water temperature set at 25℃ which can be adjusted as needed. The high temperature end works in intelligent control mode and it will self-adjust controlling parameters according to the ambient temperature changes.
   Normally users do not need to adjust the parameters. If it is necessary, please refer to page 6 , "Unit introduction and parameters adjustment."

<4> Unit introduction and parameters adjustment

(1) The unit use wire LCD temperature controller to realize more precise temperature control and stronger capacity of resisting disturbance. It supports MODBUS-485 communication with transmission distance up to 1.2km;

(2) It has water line anti-icing function. Under standby condition, it functions when the room temperature is below 5℃;

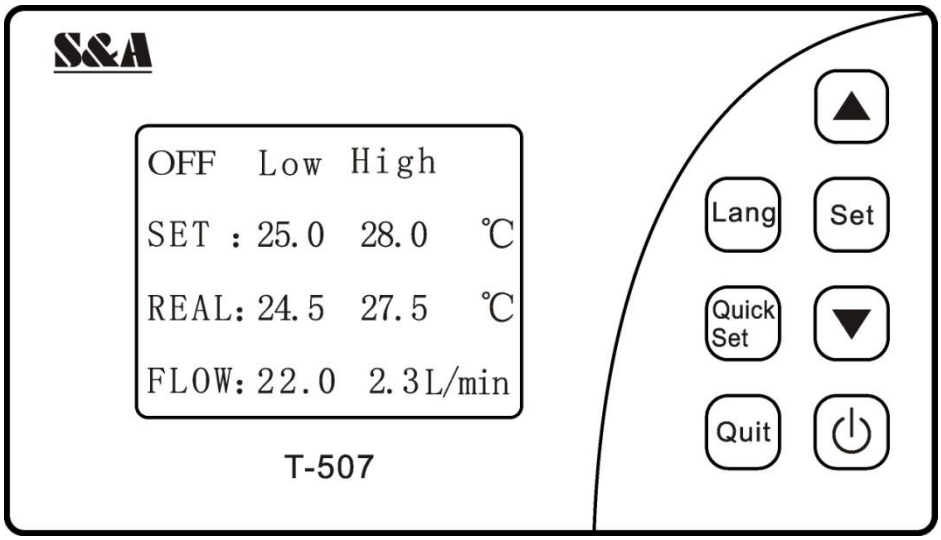
(3) It has water tank heating function;

(4) It has water line actual flow monitoring function;

(5) It has actual conductivity monitoring function.

1. Temperature control panel introduction and parameters adjustment

(1) The control panel has LCD screen with 7 system operation buttons which are Language Switching-button (Lang), UP-button (▲), Down-button (▼), Power-button ⏻ Set-button (Set), Quick Set-button (Quick Set) and Quit-button (Quit). Turn off the chiller by pressing the Power-button for 3 sec while other operations can be completed by short press.



(2) User parameters quick-adjusting: under normal operation condition, press Quick Set-button to set the user menu. When it displays the set item, press Quick Set to enter into parameter adjustment interface. Press ▲ or ▼ to to switch the parameter items. If the parameters need to be modified, press Quick Set-button to enter into parameter values and press ▲ or ▼ to adjust it. Save the values and return to parameter quick setting interface by pressing Quit-button when the adjustment is completed. If there is no more action within 15 sec, it will automatically exit modifying status with modified parameters saved.

(3) User menu: under normal operation condition, press Set-button for 5 sec to

show user input password interface. Input "168" by pressing ▲ or ▼, then press Set-button to enter into User menu to set the parameters. If the password is incorrect, it will quit the setting interface and turn to normal operation interface. The default password 168 must be kept well. The user menu can not be accessed if the password is forgotten and no backup password is available.

Under user menu, in parameter items interface, press ▲ or ▼ to switch the items. If the parameters need to be modified, press Set-button to enter into parameter values and press ▲ or ▼ to adjust it. Save the values and return to parameter interface by pressing Set-button and press Quit-button to quit the user menu. If there is no more action within 15 sec, it will automatically exit modifying status with modified parameters saved.

(4) Check the history failure records: under normal operation condition, press Set- button and ▲ for 5 sec to access password input interface. Input password "123" and confirm by pressing Set-button, it will be in failure view status if the password is correct, if not, it will quit. When the system is under failure records viewing, it will show the first failure record and code. Press ▲ or ▼ can look over the failure records and press Quit-button to quit the failure viewing status.

(5) Restore factory settings: under normal operation condition, press and hold Set-button and Power-button for 10 sec to have the password input interface popped up then input password "615" to enter into administrator setting parameters restoration function, and it will display "RECOVERY SUCCESS" and turn to operation condition after 2 sec. If the password is incorrect, it will quit the password input interface and turn to operation condition.

(6) Unit operation condition query: the screen will display the operation conditions of the compressor, water pump and the indoor exhaust temperature parameters, etc. by pressing Quick Set-button and ▲ at the same time and release them. Press ▲ or ▼ for page turning and it will automatically exit after displaying for 5 sec.

(7) Clock adjustment: under normal operation condition, press Quick Set-button for 5 sec to access clock adjustment interface with time/year flashing. Press ▲ or ▼ to adjust year and confirm by pressing Quick Set-button; with time flashing, press ▲ or ▼ to adjust hour and confirm by pressing Quick Set-button; with minute flashing, press ▲ or ▼ to adjust minute and save the clock setting by pressing Quick Set- button.

(8) Language switching: the system default language is Chinese. For switching to English, press Lang-button and the system will change the Chinese interface to English interface as default language.

(9) Forced refrigeration: under normal operation condition, press ▲ or ▼ at the same time for 5 sec to activate forced refrigeration function. Press Power-button can stop the machine and cancel forced refrigeration function.

2. Detailed parameter setting is as below table

Order	Code	Set item	Range	Factory setting	Remark	illustration	Register address
1	F1	Set temp.	F10～F9 / -20～40	25	Intelligent mode / Constant temp mode	setup menu of low temp system	0x0401
2	F2	Temp. difference values	-15～5	-2			0x0402
3	F3	Cooling hysteresis	0.1～3.0	0.8	0.1 resolution ratio		0x0403
4	F4	Way of control	0～1	0	0 Constant, 1 Intelligent		0x0404
5	F5	Set temp.	F7～F6 / -20～40	30	Intelligent mode / Constant temp mode	setup menu of high temp system	0x0405
6	F6	Temp. difference values	-15～5	-2			0x0406
7	F7	Cooling hysteresis	0.1～3.0	1	0.1 resolution ratio		0x0407
8	F8	Way of control	0～1	1	0 Constant, 1 Intelligent		0x0408
9	F9	The highest set temp.	（F10+1）～40	35	Constant temp. mode	Common in high&low Temp systems	0x0409
10	F10	The lowest set temp.	1～（F9-1）	20	Min. 1, Constant temp. mode invalid		0x040a
11	F11	Ultra-high room temp.alarm	40～50	45			0x040b
12	F12	Ultra-high water temp. alarm	1～20	10			0x040c
13	F13	Ultra-low water temp. alarm	1～20	15			0x040d
14	F14	Temp. alarm delay	0～30	5	Minute		0x040e
15	F15	Sensor failure alarm delay	0～180	10	Second		0x040f
16	F16	Water flow detection delay of machine startup	0～180	5	Second		0x0410
17	F17	Flow alarm delay	0～180	2	Second		0x0411
18	F18	Heating hysteresis	0～10	0.8	0.1 resolution ratio		0x0412
19	F19	Water pump stop delay	0～180	5	Second		0x0413
20	F20	Startup delay	0～180	30	Second		0x0414
21	F21	Compressor activate protection	0～180	90	Second		0x0415
22	F22	Turn on setting of phase sequence protection	On off	/	Single-phase OFF / three-phase ON		0x0416
23	F23	Turn on setting of external input function (startup and standby)	On off	off			0x0417
24	F24	NO and NC setting of external input function	NO / NC	NC	NO-normally opened / NC-normally closed		0x0418
25	F25	External input activation delay	0～180	0	Second		0x0419

26	F26	External input standby activation delay	0～180	0	Second		0x041a
27	F27	Conductivity alarm activation setting	On off	/	With conductivity ON / Without conductivity OFF		0x041b
28	F28	Ultra-high conductivity alarm setting value	0.5～100	10	μs/cm		0x041c
29	F29	Relay NO/NC setting under lower limit of conductivity	NO/NC	NC	NO-normally opened NC-normally closed		0x041d
30	F30	Relay output setting under lower limit of conductivity	0.5～100	2.5	μs/cm		0x041e
31	F31	Ultra-low conductivity alarm setting value	0.5～100	2	μs/cm		0x041f
32	F32	Self-starting after being electrified	On off	off			0x044d
33	F33	Key lock of Chiller On/Off	0-1	1	0：lock， 1：unlock		0x0450

NOTE:

(1) In parameter setting status, the system runs under original parameters;

(2) Under Constant Temperature control mode (“ F4” and “F8” set at 0), water temperature is controlled by “F1” and “F5”;

(3) Under Intelligent Control mode (“ F4” and “F8” set at 1), water temperature is self-adjusting according to ambient temperature. The temperature difference is controlled by “F2” and “F6”.

(4) The low temp section and high temp section of the chiller can be set different control modes.

3. Failure warning processing mode

When alarm occurs, the failure alarm code will be displayed on the upper right corner of the LCD screen. In alarming state, the alarm sound could be suspended by pressing any button, but the alarm display remains until the alarm condition is eliminated.

4. Failure code table

Failure code	Description	Alarm phenomenon	Alarm action	Elimination method
E00	Communication failure alarm	E00 shown with alarm sound	None	Automatic clearing after mainboard and operation panel are connected well
E01	Low temp. system flow alarm	E01 shown with alarm sound	The compressor, condenser fans and heater of the high/low temp. system shut down	Automatic clearing

E02	High temp. system flow alarm	E02 shown with alarm sound	Heater of the high temp. system shut down	Automatic clearing
E03	Ultra-high room temp.alarm	E03 shown with alarm sound	Each refrigeration part runs under usual procedures	Automatic clearing
E04	Low temp. system ultra-low water temp alarm	E04 shown with alarm sound	The compressor, condenser fans and heater of the high/low temp. system shut down	Automatic clearing
E05	Low temp. system ultra-high water temp alarm	E05 shown with alarm sound	Each refrigeration part runs under usual procedures	Automatic clearing
E06	High temp. system ultra-low water temp alarm	E06 shown with alarm sound	Each refrigeration part runs under usual procedures	Automatic clearing
E07	High temp. system ultra-high water temp alarm	E07 shown with alarm sound	Heater of the high temp. system shut down	Automatic clearing
E08	Wrong phase and lacking phase alarm	E08 shown with alarm sound	The water pump, compressor, condenser fans and heater of the high/low temp. system shut down	Manual clearing
E09	Compressor overload alarm	E09 shown with alarm sound	The compressor, condenser fans and heater of the high/low temp. system shut down	Manual clearing
E10	Low temp. water pump overload alarm	E10 shown with alarm sound	The water pump, compressor, condenser fans and heater of the high/low temp. system shut down	Manual clearing
E11	High temp. water pump overload alarm	E11 shown with alarm sound	The water pump and high temp. system heater shut down	Manual clearing
E12	Refrigeration system high pressure alarm	E12 shown with alarm sound	The compressor and condenser fans shut down	Manual clearing
E13	Refrigeration system low pressure alarm	E13 shown with alarm sound	The compressor and condenser fans shut down	Automatic clearing
E14	Room temp. sensor failure alarm	E14 shown with alarm sound	Switched to constant temp. mode and each refrigeration part runs under usual procedures	Automatic clearing
E15	Low temp. system water temp. sensor failure alarm	E15 shown with alarm sound	The water pump, compressor, condenser fans and heater of the high/low temp. system shut down	Automatic clearing
E16	High temp. system water temp. sensor failure alarm	E16 shown with alarm sound	High temp. system water pump and heater shut down	Automatic clearing
E17	Ultra-high conductivity alarm	E17 shown with alarm sound	Each refrigeration part runs under usual procedures	Automatic clearing
E18	Ultra-low conductivity alarm	E18 shown with alarm sound	Each refrigeration part runs under usual procedures	Automatic clearing

E19	Ultra-low water level alarm	E19 shown with alarm sound	The unit runs normally under set values; the water pump, compressor, condenser fans and heater of the high/low temp. system shut down	Automatic clearing
E20	Exhaust temp. sensor failure alarm	E20 shown with alarm sound	Each refrigeration part runs under usual procedures	Automatic clearing
E21	Ultra-high exhaust temp. alarm	E21 shown with alarm sound	Each refrigeration part runs under usual procedures	Automatic clearing

<5> Conductivity meter（Optional）

(1) This machine is equipped with conductivity meter to monitor deionized water, detection range from 0.1-20μS.

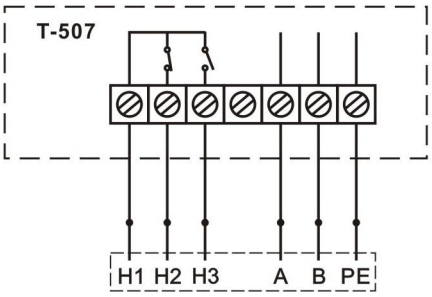
(2) Alarm signal output for deionized water of over standard conductivity values (optional).

(3) Alarm indicating for deionized water of over standard conductivity values (optional).

<6> Alarm and communication output

For ensuring the equipment will not be damaged when abnormal condition occurs in the chiller, it has alarm protection function.

1. Alarm and MODBUS RS-485 communication output wiring diagram.



H1, H2 and H3 are alarm signal output terminal; A ,B and PE are MODBUS RS-485 communication output terminal.

2. Working condition table of alarm signal

Unit condition	Built-in buzzer of temp. controller	OUT H1、H2	OUT H1、H3	ILUS
Working normally	No Sound	Disconnection	Breakover	
E00、E01、E08、E09、E10、E12、E13、E15	Sounds	Breakover	Disconnection	
E02、E03、E11、E14、E16、E17、E18、E20、E21	Sounds	Disconnection	Breakover	
E04、E05、E06、E07	Sounds	Breakover	Disconnection	Optional
E19	Sounds	Breakover	Disconnection	Activate after output terminal delaying

Note: The flow alarm is connected to the normally open relay and normally closed relay contacts, requiring operating current less than 5A, working voltage less than 300V.

<7> MODBUS RS-485 communication function

This system adapts salve mode of MODBUS-RTU communication,9600 baud rate, no parity checking,8 data bit,1 stop bit and support MODBUS-RTU 03 (Read Holding Registers) and 06 (Read Holding Registers) commands. Communication formats are as below:

1. Command format 03

Host send command

Function code	1 bytes	0x03
Initial address	2 bytes	From 0x0400 to 0x044a, From 0x0100 to 0x0108, From 0x0800 to 0x0803
Register number	2 bytes	From 1 to 10

Slave response

Function code	1 bytes	0x03
Number of bytes	1 bytes	2*N（ "N" is the number of registers ）
Register value	N*2 bytes	

Error

Error code	1 bytes	0x83
Exception code	1 bytes	01 or 02 or 03 or 04

For example: if the host's sending address is 1, requests 108-110 command of slave read register and send 01 03 00 6B 00 03 XX YY,thereinto,01 as slave address, 03 as function code, 00 6B as initial address, 00 03 as register number and XX YY as the result of CRC verification.
Slave response: 01 03 06 02 2B 00 00 00 64 XX YY, thereinto, 01 as slave address, 03 as function code, 06 as number of bytes, 02 2B 00 00 00 64 corresponding to the values in 108-110 of register respectively and XX YY as verification code.
If the slave receives wrong data, return to data 01 83 01 XX YY, thereinto, 01 as slave address. 83 as error code, 01 as exception code and XX YY as check sum.

2. Command format 06

Host send command

Function code	1 bytes	0x06
Register address	2 bytes	From 0x0400 to 0x044a
Register value	2 bytes	From 0x000 to 0xffff

Slave response

Function code	1 bytes	0x86
Register address	2 bytes	From 0x0400 to 0x044a
Register value	2 bytes	From 0x000 to 0xffff

Error

Error code	1 bytes	0x86
Exception code	1 bytes	01 or 02 or 03 or 04

For example: if the host's sending address is 1, requests command of writing data 00 03 to register 2. Host send: 01 06 00 02 00 03 XX YY, thereinto, 01 as slave address, 06 as function code, 00 02 as register address, 00 03 as written data and XX YY as verification code.

Slave response: 01 06 00 02 00 03 XX YY, thereinto, 01 as slave address, 06 as function code, 00 02 as register address, 00 03 as written data and XX YY as CRC verification code.

If there is data error or communication exception, send 01 86 02 XX YY.

3. Read only parameter（sensor, current）

Read-only						
Register address	**Description**	**Range**	**Default**	**Unit**	**Data resolution**	**Symbol**
0x0100	Room temp. sensor temperature	-25 ~ 100		℃	0.1/bit	yes
0x0101	Water temp. sensor temperature(Low temp)	-25 ~ 100		℃	0.1/bit	yes
0x0102	Water temp. sensor temperature(High temp)	-25 ~ 100		℃	0.1/bit	yes
0x0103	Compressor exhaust temperature	-25 ~ 140		℃	0.1/bit	yes
0x0104	Flow of the first waterway	0.1-200		L/Min	0.1/bit	yes
0x0105	Flow of the second waterway	0.1-200		L/Min	0.1/bit	yes
0x0105	Conductivity	0.1-500		μs/cm	0.1/bit	yes
0x0106	Compressor current（Three-phase average）	0-50		A	0.1/bit	yes
0x0107	Low temp. water pump current	0-50		A	0.1/bit	yes
0x0108	High temp. water pump current	0-50		A	0.1/bit	yes

4. Read only parameter（state）

Read-only					
Register address	**Description**	**Bit definition**			
0x0800	Relay output status	MSByte	Bit7(MSb)	Retain	
			Bit6	Retain	
			Bit5	Retain	
			Bit4	Retain	
			Bit3	Retain	
			Bit2	Alarm output relay	0：Off 1：On
			Bit1	Conductivity lower limit relay	0：Off 1：On
			Bit0(LSb)	High temp. heating rod	0：Off 1：On
		LSByte	Bit7(MSb)	High temp. water pump relay	0：Off 1：On
			Bit6	High temp. refrigeration relay	0：Off 1：On
			Bit5	Compressor crankcase heating	0：Off 1：On
			Bit4	Low temp. heating rod	0：Off 1：On
			Bit3	Low temp. refrigerant solenoid valve	0：Off 1：On
			Bit2	Condensing fan	0：Off 1：On
			Bit1	Compressor relay	0：Off 1：On
			Bit0(LSb)	Low temp. water pump	0：Off 1：On
0x0801	Digital input switch status	MSByte	Bit7(MSb)	Retain	
			Bit6	Retain	
			Bit5	Retain	
			Bit4	Retain	
			Bit3	Retain	
			Bit2	Retain	
			Bit1	Retain	
			Bit0(LSb)	Retain	
		LSByte	Bit7(MSb)	Retain	
			Bit6	Retain	
			Bit5	External input	0：No input 1：Input
			Bit4	Refrigerant low pressure	0：No input 1：Input
			Bit3	Refrigerant high pressure	0：No input 1：Input
			Bit2	Spare 2	0：No input 1：Input
			Bit1	Spare 1	0：No input 1：Input
			Bit0(LSb)	Water level	0：No input 1：Input

0x0802	Alarm status（high 16-bit）	MSByte	Bit7(MSb)	Retain	
			Bit6	Retain	
			Bit5	Retain	
			Bit4	Retain	
			Bit3	Retain	
			Bit2	Retain	
			Bit1	Retain	
			Bit0(LSb)	Retain	
		LSByte	Bit7(MSb)	Write administrator parameter error	0：Correct 1：Error
			Bit6	Write user parameter error	0：Correct 1：Error
			Bit5	Ultra-high exhaust temp. alarm	0：No alarm 1：Alarm
			Bit4	Exhaust temp. sensor failure alarm	0：No alarm 1：Alarm
			Bit3	Ultra-low water temp alarm	0：No alarm 1：Alarm
			Bit2	Ultra-low conductivity alarm	0：No alarm 1：Alarm
			Bit1	Ultra-high conductivity alarm	0：No alarm 1：Alarm
			Bit0(LSb)	High temp. system water temp. sensor failure alarm	0：No alarm 1：Alarm
0x0803	Alarm status（low 16-bit）	MSByte	Bit7(MSb)	Low temp. system water temp. sensor failure	0：No alarm 1：Alarm
			Bit6	Room temp. sensor failure	0：No alarm 1：Alarm
			Bit5	Refrigeration system low pressure	0：No alarm 1：Alarm
			Bit4	Refrigeration system High pressure	0：No alarm 1：Alarm
			Bit3	High temp. water pump overload	0：No alarm 1：Alarm
			Bit2	Low temp. water pump overload	0：No alarm 1：Alarm
			Bit1	Compressor overload	0：No alarm 1：Alarm
			Bit0(LSb)	Wrong phase and lacking phase	0：No alarm 1：Alarm
		LSByte	Bit7(MSb)	High temp. system ultra-high water temp	0：No alarm 1：Alarm

5. Read/Write Registers(Use only when the external input function is turned off)

Register address	Description	Range	Default	Unit	Remark	Symbol
0x0804	Chiller On/Off	0-1	--		0：On，1：Off	No

<8> Specifications

CWFL- 3000

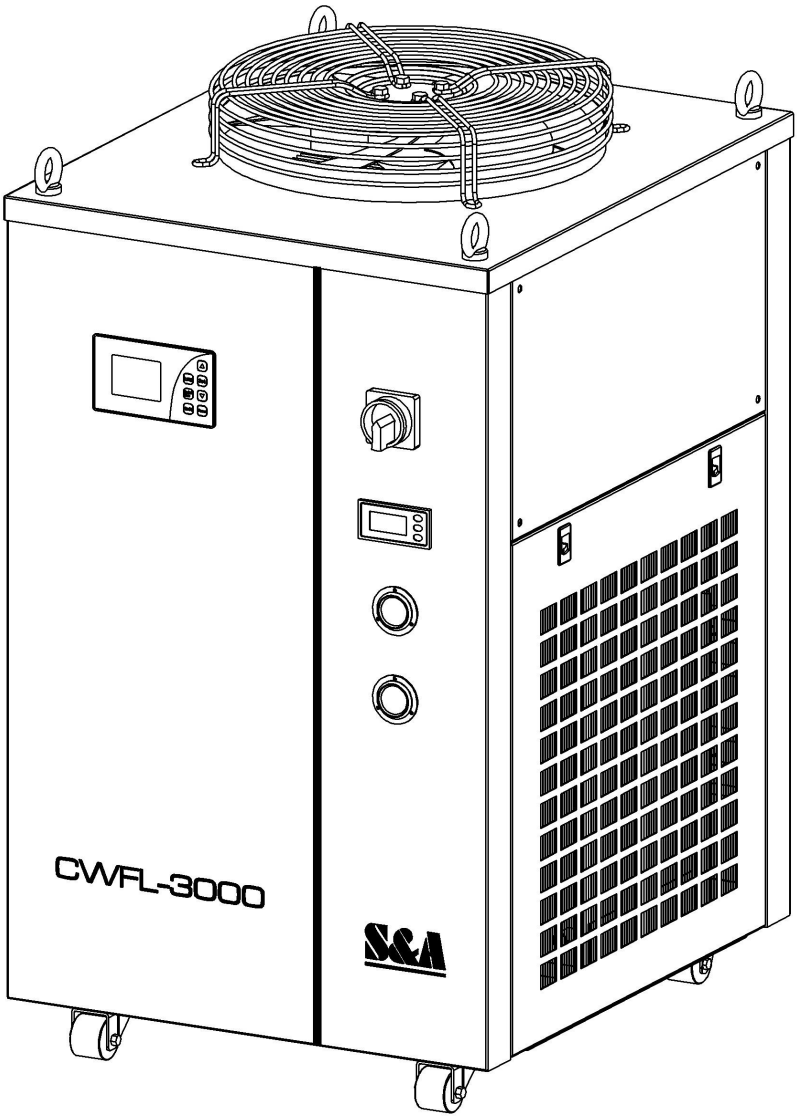
Model	CWFL-3000BT	CWFL-3000ET
Voltage	AC 1P 220	AC 3P 380 V
Frequency	60 Hz	50 Hz
Current	6.8~30 A	3~12.3 A
Compressor power	2.70 KW	2.65 KW
	3.67 HP	3.61 HP
Nominal cooling capacity	1706 Btu/h+26136 Btu/h	1706 Btu/h+25726 Btu/h
	0.5 KW+7.66 KW	0.5 KW+7.54 KW
	430 Kcal/h+6586 Kcal/h	430 Kcal/h+6483 Kcal/h
Refrigerant	R-22 / R-410a	
Refrigerant charge	2100 g	2450 g
Precision	±1℃	
Reducer	Capillary	
Protection	Overcurrent protection for compressor, flow alarm, over temperature alarm	
Pump power	0.55W+0.75 KW	0.37 KW+0.75 KW
Tank capacity	6 L+34 L	
Inlet and outlet	Rp1/2”+Rp1”	
Max. lift	41 M+55 M	43 M+53 M
★ Max. flow	50 L/min+83 L/min	40 L/min+70 L/min
N.W	180 Kgs	
G.W	230 Kgs	
Dimension	102X65X117 cm (L X W X H)	
Package dimension	111X85X140 cm (L X W X H)	

★ The max. flow is obtained by testing the pump individually on test criteria GB/T 3216-2005.criteria GB/T 3216-2005.

<9> Simple troubleshooting

Failure	Failure Cause	Approach
Machine turned on but unelectrified	Power cord is not plugged in place	Check and ensure the power interface and the power plug is plugged in place and in good contact
	Fuse burnt-out	Open the electric box cover, check the protective tube, replace with spare one if necessary and check whether the power supply voltage is stable; Check and ensure the power interface and the power plug are in good contact
Flow Alarm (controller displays E01 or E02) use a water pipe directly connect to the water outlet and inlet but still without water flowing	Water level in the storage water tank is too low	Check the water level gauge display, add water until the level shown in the green area; And check whether water circulation pipe leaks
Flow alarm occurs while running with other equipment (controller displays E01 or E02), but there is water flowing and no alarm when use a water pipe directly connected to the chiller water outlet and inlet.	Water circulation pipes are blocked or a pipe bending deformation.	Check water circulation pipe
Ultra-high temperature alarm(controller displays E05 or E07)	Blocked dust gauze, bad thermolysis	Unpick and wash the dust gauze regularly
	Poor ventilation for air outlet and inlet	To ensure a smooth ventilation for air outlet and inlet
	Voltage is extremely low or astable	To improve the power supply circuit or use a voltage regulator
	Improper parameter settings on thermostat	To reset controlling parameters or restore factory settings
	Switch the power frequently	To ensure there is sufficient time for refrigeration (more than 5 minutes)
	Excessive heat load	Reduce the heat load or use other model with larger cooling capacity
Alarm for ultra-high room temperature(controller displays E03)	The working ambient temperature is too high for the chiller	To improve the ventilation to guarantee that the machine is running under 40℃.
Serious problem of condensate water	Water temperature is much lower than ambient temperature, high humidity	Increase water temperature or to preserve heat for pipeline
Water drains slowly from outfall during water changing	Injection port is not open	Open the injection port

CWFL-3000
双温双泵系列工业冷水机
使用安装说明书



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感谢您购买广州特域机电有限公司的产品，请在使用前仔细阅读使用安装说明书，并妥善保管。

本使用安装说明书并非质量保证书，对印刷错误的更正，所述信息谬误的勘误，以及产品的改进，均由广州特域机电有限公司随时做出解释，恕不预先通知，修正内容将编入再版使用安装说明书中。

一、使用注意事项

1、请确保电源插座接触良好并且地线可靠接地！

2、请确保冷水机的工作电压稳定、正常！

由于制冷压缩机对电源电压比较敏感，我公司标准产品的正常工作电压为额定电压±10％。如果确实需要更宽的工作电压范围，可以另行定制。

3、电源频率不匹配会导致机器损坏！

请根据实际情况，使用 50Hz 或 60Hz 的机型。

4、为保护循环水泵，严禁无水运行！

新机装箱前都排空了储水水箱，请确保水箱注水后再开机，否则水泵极易损坏。当水箱水位在水位计绿色（NORMAL）范围以下时，冷却机制冷量会轻微下降，请保证水箱水位在水位计的绿色（NORMAL）范围内。严禁使用循环泵排水！

5、请确保冷水机入风、出风通道顺畅！

冷水机上面的出风口距离障碍物要留有 **50cm** 以上的距离，侧面的入风口离障碍物要求距离在 **30cm** 以上。

6、入风口的滤网必须定期清洗！

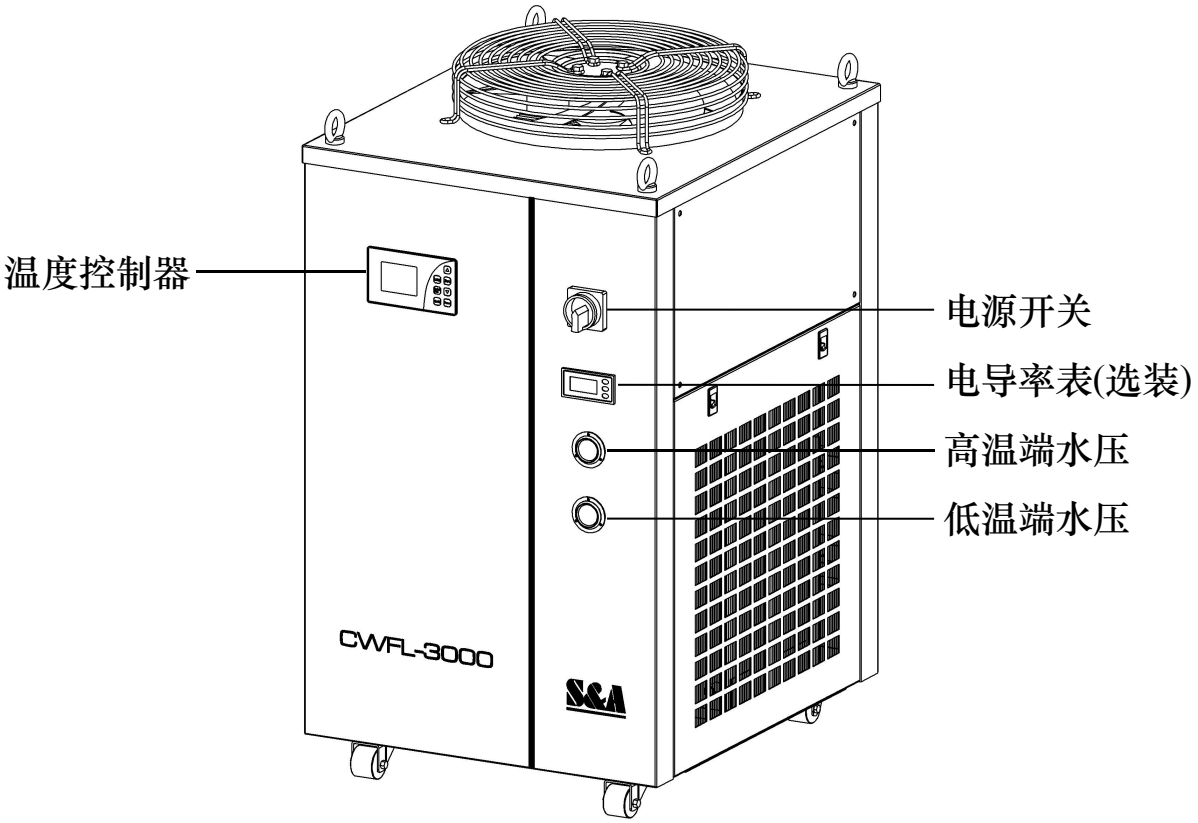
必须定期拆洗防尘网, 防尘网严重堵塞会引起冷水机故障。

7、请注意冷凝水的影响！

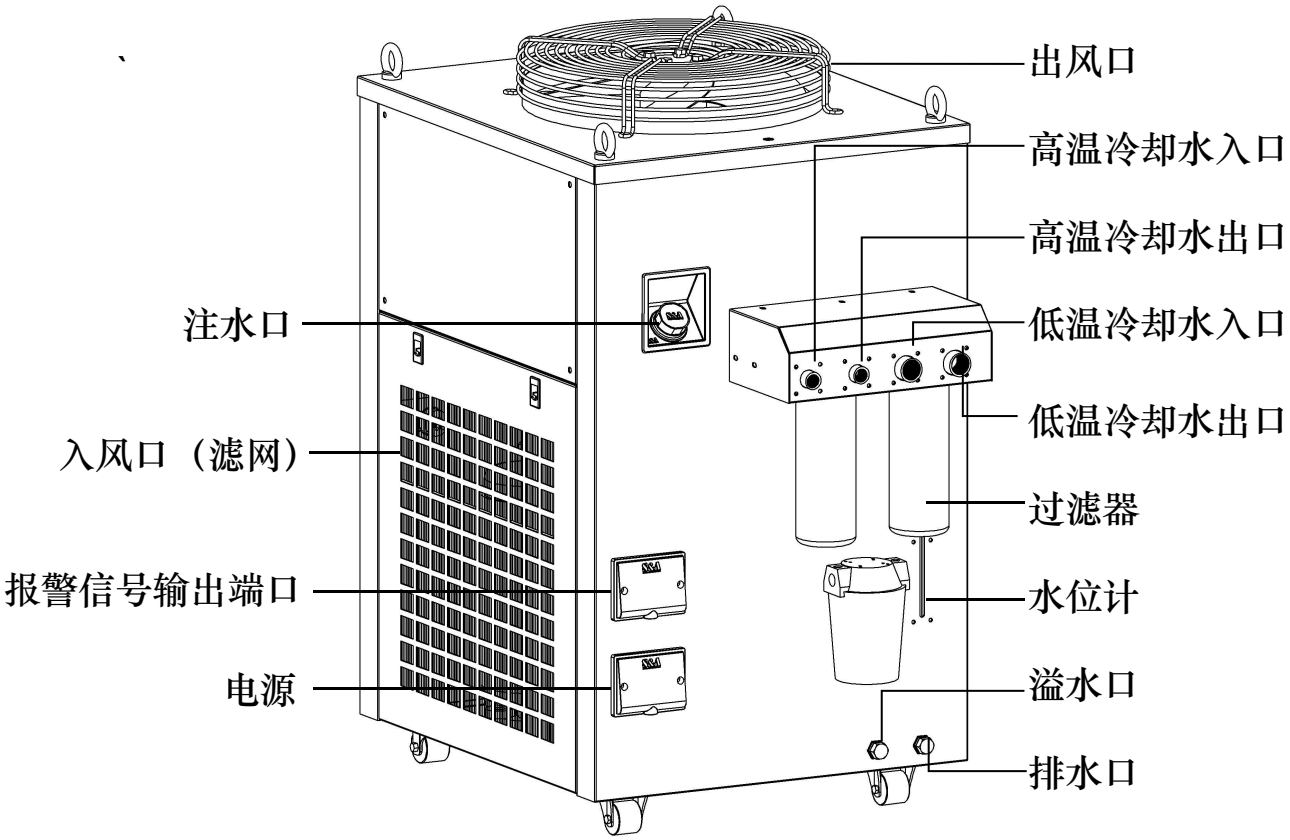
当水温低于环境温度，并且环境湿度较大时，循环水管与被冷却器件表面会产生冷凝水。当出现以上情况时，建议调高水温或对水管与被冷却器件进行保温。

8、本产品为工业设备，请勿让非专业人士操作。

二、 外形及部件名称


温度控制器
电源开关
电导率表(选装)
高温端水压
低温端水压
CWFL-3000
S&A

、


出风口
高温冷却水入口
高温冷却水出口
注水口
低温冷却水入口
低温冷却水出口
入风口（滤网）
过滤器
报警信号输出端口
水位计
电源
溢水口
排水口

三、安装说明

冷水机安装使用非常简单，新机首次使用可按以下步骤进行：

1、打开包装，检查机器是否完好，附件是否齐备。

2、拧开机器注水口，加入冷却水。

加水时应同时观察水位计的水位慢慢加水，注意不要让水溢出！

3、根据设备情况接好出水管、入水管。

4、插上电源线，打开电源开关。（严禁无水开机！）

（1）打开电源开关后，冷水机循环泵就开始工作了。新机第一次开机时管路中会有较多的气泡导致机器偶尔流量报警，运行数分钟后就会恢复正常。

（2）第一次开机后，必须马上检查水管管路有无漏水。

（3）打开电源后，如果水温低于设定温度，机器的风扇等器件不工作是正常现象。温控器会根据设定的控制参数自动控制压缩机、电磁阀、风扇等器件的工作状态。

（4）由于压缩机等器件有一个较长的启动过程，根据不同的工况从几十秒到数分钟不等，所以不要频繁开关机。

5、检查水箱水位。

新机开机后排空了水管中的空气，水箱水位会略有下降，为了保持水位在绿色区域，可以再次适量加水。观察并记下当前的水位情况，等冷水机运行一段时间后再次观察水位计，如果水位下降明显，就要再次检查水管管路的渗漏情况。

6、调整温控器参数。

CWFL-3000 双温双泵系列冷水机使用的智能温控器低温端出厂设置为恒温控制模式，水温设定为 25℃，用户可以根据需要调整。高温端为智能控制模式，它会根据室温的变化自动调整控制参数。

一般情况下，不需要调整控制参数，如确实必要的，可参考第 24 页《机组介绍与参数调整》。

四、机组介绍与参数调整

(1) 机组采用线控式液晶显示温度控制器，能实现更精准的温度控制，具有更好的抗干扰能力。支持 **MODBUS-485** 通讯，最远传输距离可达 **1200** 米。

(2) 具有防水路结冰功能。待机状态下，当气温低于 **5** 度时，此功能启动。

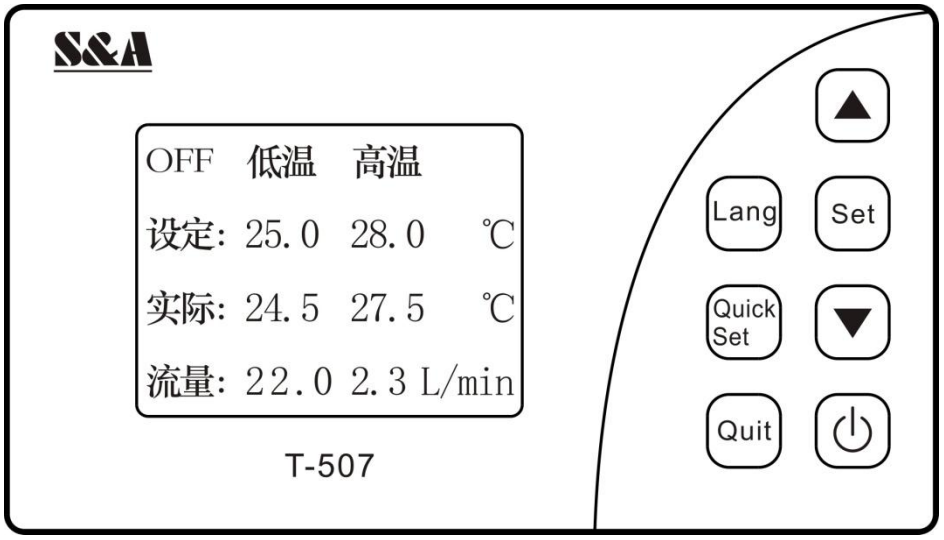
(3) 具有水箱加热功能。

(4) 具有实时水路流量监控功能。

(5) 具有实时电导率监控功能。

1、温控器面板操作及参数设置

（1）使用液晶屏显示，七个按键用于系统操作，分别为语言切换键（Lang）、上键（▲）、下键（▼）、电源键（⏻）、设置键（Set）、快速设置键（Quick Set）、退出键（Quit）。关机需要长按电源键三秒，其他操作都是短按按键即可。显示界面如下：



（2）用户参数快速设置：在正常运行状态下，按下“quick set”键可以进行用户菜单设置，在显示设定项目时，按“quick set”键，可进入参数调整界面，按上、下键可以进行参数项的切换，如需对参数进行修改，按“quick set”键进入参数值，按上、下键进行具体参数值调整，调整完毕后，再按“quick set”键保存参数值并返回参数界面，按“quit”键可退出参数快速设置界面，同时保存所有参数。无按键操作 15 秒后，系统自动退出设置界面，同时保存修改好的参数。

（3）用户设置菜单：正常运行状态下，长按“set”键 5 秒以上，显示用户输入密码界面，使用上、下键输入“168”，按“set”键后可进入用户设置菜单进行参数设置，如密码错误，则退出设置界面，转到正常运行界面。厂家默认用户密码为 168，厂家密码请妥善保管，如忘记密码，则不能进入，无备用密码。

在用户设置菜单下，在显示参数项界面，使用上、下键，可以进行参数项的切换，如需对参数进行修改，按“set”键进入参数值，按上、下键进行参数值调整，再按“set”键保存参数值并返回参数界面，按“quit”键，退出用户设置界面，无按键操作 15 秒后，系统自动退出设置界面，同时保存修改好的参数。

（4）查看历史故障记录：在正常运行状态下，按住“set”键+上键 5 秒以上，进入密码输入界面，输入密码“123”，按“set” 键确定，如密码正确进入故障查看状态，如密码错误，则退出。系统进入故障记录查看，系统显示第 1 个故障记录及代码，按上、上键可翻看故障记录，按“quit”键可以退出故障查看状态。

（5）恢复出厂参数设置：在正常运行状态下，长按“set”键+“⏻”电源键 10 秒以上，弹出密码输入界面，按“▲”键输入密码“615”，再按“Set”键，如密码正确，则进入管理员设置参数恢复功能，恢复成功后，界面显示“参数恢复成功”，2 秒后转入运行状态；如密码错误，则退出密码输入界面，转入正常运行状态。

（6）机组运行状态查询：同时按“quick set”键+上键并松手，界面显示压缩机、水泵等运行状态和室温排气温度等参数，按上下键翻页。显示 5 秒后自动退出。

（7）时钟调整：在正常运行状态下，长按“quick set”键 5 秒以上，进入时钟调整界面，时间年闪烁，用上下键调整年，按“quick set”键确认年，小时闪烁，用上下键调整小时，按“quick set”确认，分钟闪烁，用上下键调整分钟，再按“quick set”键保存时钟设置。

（8）语言切换：在出厂前系统默认中文界面显示运行状态，如需切换到英文界面显示，短按“Lang”键，系统从中文界面切换到英文界面，下次系统上电默认英文界面，如需切换显示，再次短按“Lang”键，系统从英文界面切换到中文界面。

（9） 强制制冷：在正常运行状态下，同时按上键+下键 5 秒以上启动强制制冷功能，按电源键可停机并取消强制制冷功能。

2、具体参数设置如下表

次序	代码	设定项目	范围	出厂设定	备注	说明	寄存器地址
1	F1	设定温度	F10～F9/-20～40	25	智能模式 / 恒温模式	低温系统设置菜单	0x0401
2	F2	温差数值	-15～5	-2			0x0402
3	F3	制冷回差	0.1～3.0	0.8	分辨率 0.1 度		0x0403
4	F4	控制方式	0～1	0	0 恒温、1 智能		0x0404
5	F5	设定温度	F10～F9/-20～40	30	智能模式/恒温模式	高温系统设置菜单	0x0405
6	F6	温差数值	-15～5	-2			0x0406
7	F7	制冷回差	0.1～3.0	1	分辨率 0.1 度		0x0407
8	F8	控制方式	0～1	1	0 恒温、1 智能		0x0408
9	F9	最高设定温度	（F10+1）～40	35	恒温模式无效	高低温系统共用	0x0409
10	F10	最低设定温度	1～（F9-1）	20	最小 1、恒温模式无效		0x040a
11	F11	室温超高报警	40～50	45			0x040b
12	F12	水温超高报警	1～20	10			0x040c
13	F13	水温超低报警	1～20	15			0x040d
14	F14	温度报警延时	0～30	5	分钟		0x040e
15	F15	传感器故障报警延时	0～180	10	秒		0x040f
16	F16	开机水流量延时检测	0～180	5	秒		0x0410
17	F17	流量报警延时	0～180	2	秒		0x0411
18	F18	加热回差	0～10	0.8	分辨率 0.1 度		0x0412
19	F19	水泵关闭延时	0～180	5	秒		0x0413
20	F20	开机延时	0～180	30	秒		0x0414
21	F21	压缩机启动保护	0～180	90	秒		0x0415
22	F22	相序保护开启设定	On 开启　off 关闭	/	三相 On / 单相 off		0x0416
23	F23	外部输入功能开启设置（启动及待机）	On 开启　off 关闭	off			0x0417
24	F24	外部输入功能常开常闭设置	NO/NC	NC	NO 常开 NC 常闭		0x0418
25	F25	外部输入启动延时	0～180	0	秒		0x0419
26	F26	外部输入待机延时	0～180	0	秒		0x041a
27	F27	电导率报警开启设置	On 开启　off 关闭	/	有电导率 On/ 无电导率 off		0x041b
28	F28	电导率超高报警设定值	0.5～100	10	μs/cm		0x041c
29	F29	电导率下限继电器常开常闭设置	NO/NC	NC	NO 常开 NC 常闭		0x041d
30	F30	电导率下限继电器输出值设置	0.5～100	2.5	μs/cm		0x041e
31	F31	电导率超低报警设定值	0.5～100	2	μs/cm		0x041f
32	F32	上电自启动	On 开启　off 关闭	off 关闭			0x044d
33	F33	开关机按键锁	0-1	1	0：锁定，1：不锁定		0x0450

注意：

（1）在参数设定状态时，系统按原参数运行；

（2）恒温控制模式时（即“F4”或“F8”设为 0），水温对应由“F1” “F5”参数控制；

（3）智能控制模式时（即“F4”或“F8”设为 1），水温会根据气温变化自动调整。其温差对应由“F2” “F6”参数控制。

（4）冷水机的低温端与高温端可设置不同控制模式。

3、故障报警处理方式

报警时，液晶显示屏的右上角会显示报警故障代码。在温控器报警状态下，按任意键均可停止报警蜂鸣器声响，但报警显示要等到报警条件消除后才停止。

4、故障代码表

故障代码	意义	报警现象	报警动作	消除方式
E00	通讯故障报警	显示 E00　有报警声	无	主板和操作面板联接正常后自动消除
E01	低温系统流量报警	显示 E01　有报警声	关闭压缩机、冷凝风机、高低温系统发热棒	自动消除
E02	高温系统流量报警	显示 E02　有报警声	关闭高温系统发热棒	自动消除
E03	室温超高报警	显示 E03　有报警声	各制冷部件按正常逻辑运行	自动消除
E04	低温系统水温超低报警	显示 E04　有报警声	关闭压缩机、冷凝风机、高低温系统发热棒	自动消除
E05	低温系统水温超高报警	显示 E05　有报警声	各制冷部件按正常逻辑运行	自动消除
E06	高温系统水温超低报警	显示 E06　有报警声	各制冷部件按正常逻辑运行	自动消除
E07	高温系统水温超高报警	显示 E07　有报警声	关闭高温系统发热棒	自动消除
E08	错相缺相报警	显示 E08　有报警声	关闭水泵、压缩机、冷凝风机、高低温系统发热棒	手动消除
E09	压缩机过载报警	显示 E09　有报警声	关闭压缩机、冷凝风机、高低温系统发热棒	手动消除
E10	低温水泵过载报警	显示 E10　有报警声	关闭水泵、压缩机、冷凝风机、高低温系统发热棒	手动消除
E11	高温水泵过载报警	显示 E11　有报警声	关闭水泵、高温系统发热棒	手动消除
E12	制冷系统高压报警	显示 E12　有报警声	关闭压缩机和冷凝风机	手动消除
E13	制冷系统低压报警	显示 E13　有报警声	关闭压缩机和冷凝风机	自动消除
E14	室温传感器故障报警	显示 E14　有报警声	转为恒温模式后各制冷部件按正常逻辑运行	自动消除
E15	低温系统水温传感器故障报警	显示 E15　有报警声	关闭水泵、压缩机、冷凝风机、高低温发热棒	自动消除

E16	高温系统水温传感器故障报警	显示 E16　有报警声	关闭高温系统水泵和发热棒	自动消除
E17	电导率超高报警	显示 E17　有报警声	各制冷部件按正常逻辑运行	自动消除
E18	电导率超低报警	显示 E18　有报警声	各制冷部件按正常逻辑运行	自动消除
E19	水位超低报警	显示 E19　有报警声	机组正常运行设定值后关闭水泵、压缩机、冷凝风机、高低温发热棒	自动消除
E20	排气温度传感器故障报警	显示 E20　有报警声	各制冷部件按正常逻辑运行	自动消除
E21	排气温度超高报警	显示 E21　有报警声	各制冷部件按正常逻辑运行	自动消除

五、电导率表（选装）

（1）机组装有电导率表，可监测去离子水的电导率，监测范围在 **0.1-20** 微西门子。

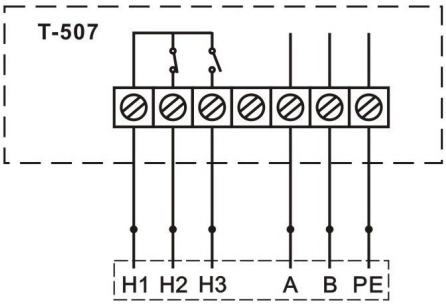
（2）去离子水电导率超标报警信号输出（可选）。

（3）去离子水电导率超标报警提示（可选）。

六、报警与通讯输出

为了保证在冷水机出现异常情况时不影响设备的安全，冷水机设有报警保护功能。

1、报警及 MODBUS RS-485 通讯输出接线示意图



H1、H2、H3为报警信号输出端，
A、B、PE为MODBUS RS-485通讯输出端。

2、报警信号工作状态表

机组状态	温度控制器内置报警器	输出端口 H1、H2	输出端口 H1、H3	说明
正常工作	不响	断路	导通	
E00、E01、E08、E09、E10、E12、E13、E15	响	导通	断路	
E02、E03、E11、E14、E16、E17、E18、E20、E21	响	断路	导通	
E04、E05、E06、E07	响	导通	断路	可选
E19	响	导通	断路	输出端口延时后动作

注：报警信号端口连接机内继电器一组常开、常闭触点。要求工作电流小于 **5A**，工作电压小于 **300V**。报警原因参看故障代码表。

七、MODBUS RS-485 通讯功能

本系统采用 MODBUS-RTU 通讯从机模式，波特率 9600，无奇偶校验，8 位数据位，1 位停止位，支持 MODBUS-RTU 命令 03（读保持寄存器），06（写单个寄存器）通讯格式如下

1、03 命令格式

主机发送命令

功能码	1 个字节	0x03
起始地址	2 个字节	0x0400 至 0x044a,0x0100 至 0x0108,0x0800 至 0x0803
寄存器数量	2 个字节	1 到 10

从机响应

功能码	1 个字节	0x03
字节数	1 个字节	2*N（N 为寄存器的数量）
寄存器值	N*2 个字节	

错误

差错码	1 个字节	0x83
异常码	1 个字节	01 或 02 或 03 或 04

如：主机发送地址为 1，请求从机读寄存器 108-110 的命令
主机发送：01 03 00 6B 00 03 XX YY。其中，01 为从机地址，03 为功能码，00 6B 为起始地址，00 03 为寄存器数量，XX YY 为 CRC 校验得到的结果。
从机响应：01 03 06 02 2B 00 00 00 64 XX YY 。其中，01 为从机地址，03 为功能码，06 为发送的数据字节数，02 2B 00 00 00 64 分别对应寄存器 108-110 中的数值，XX YY 是校验码。

如果从机接收到数据有误，则返回数据 01 83 01 XX YY。其中，01 为从机地址，83 为差错码，01 为异常码，XX YY 为校验码。

2、06 命令格式

主机发送命令

功能码	1 个字节	0x06
寄存器地址	2 个字节	0x0400 至 0x044a
寄存器值	2 个字节	0x0000 至 0xffff

从机响应

功能码	1 个字节	0x86
寄存器地址	2 个字节	0x0400 至 0x044a
寄存器值	2 个字节	0x0000 至 0xffff

错误

差错码	1 个字节	0x86
异常码	1 个字节	01 或 02 或 03 或 04

如：主机发送地址为 1，请求将数据 00 03 写入寄存器 2 的命令
主机发送：01 06 00 02 00 03 XX YY。其中，01 为从机地址，06 为功能码，00 02 为寄存器地址，00 03 为要写入的数据，XX YY 为 CRC 校验码。

从机响应：01 06 00 02 00 03 XX YY。其中，01 为从机地址，06 为功能码，00 02 为寄存器地址，00 03 为要写入的数据，XX YY 为 CRC 校验码。
如果数据错误或通讯异常，发送 01 86 02 XX YY。

3、只读参数（传感器、电流）

只读						
寄存器地址	描述	范围	默认	单位	数据分辨率	有/无符号
0x0100	室温传感器温度	-25 ~ 100		℃	0.1/bit	有
0x0101	水温传感器温度（低温）	-25 ~ 100		℃	0.1/bit	有
0x0102	水温传感器温度（高温）	-25 ~ 100		℃	0.1/bit	有
0x0103	压缩机排气温度	-25 ~ 140		℃	0.1/bit	有
0x0104	第一路水流量	0.1-200		L/Min	0.1/bit	有
0x0105	第二路水流量	0.1-200		L/Min	0.1/bit	有
0x0105	电导率	0.1-500		μs/cm	0.1/bit	有
0x0106	压缩机电流（三相平均）	0-50		A	0.1/bit	有
0x0107	低温水泵电流	0-50		A	0.1/bit	有
0x0108	高温水泵电流	0-50		A	0.1/bit	有

4、只读参数（状态）

只读					
寄存器地址	描述	位定义			
0x0800	继电器输出状态	MSByte	Bit7(MSb)	保留	
			Bit6	保留	
			Bit5	保留	
			Bit4	保留	
			Bit3	保留	
			Bit2	报警输出继电器	0：关闭 1：打开
			Bit1	电导率下限继电器	0：关闭 1：打开
			Bit0(LSb)	高温发热棒	0：关闭 1：打开
		LSByte	Bit7(MSb)	高温水泵继电器	0：关闭 1：打开
			Bit6	高温制冷继电器	0：关闭 1：打开
			Bit5	压缩机曲轴箱加热	0：关闭 1：打开
			Bit4	低温发热棒	0：关闭 1：打开
			Bit3	低温冷媒电磁阀	0：关闭 1：打开
			Bit2	冷凝风机	0：关闭 1：打开
			Bit1	压缩机继电器	0：关闭 1：打开
			Bit0(LSb)	低温水泵	0：关闭 1：打开
0x0801	数字量输入开关状态	MSByte	Bit7(MSb)	保留	
			Bit6	保留	
			Bit5	保留	
			Bit4	保留	
			Bit3	保留	
			Bit2	保留	
			Bit1	保留	

			Bit0(LSb)	保留	
		LSByte	Bit7(MSb)	保留	
			Bit6	保留	
			Bit5	外部输入	0：无输入　1：有输入
			Bit4	冷媒低压	0：无输入　1：有输入
			Bit3	冷媒高压	0：无输入　1：有输入
			Bit2	备用 2	0：无输入　1：有输入
			Bit1	备用 1	0：无输入　1：有输入
			Bit0(LSb)	水位	0：无输入　1：有输入
0x0802	报警状态（高 16 位）	MSByte	Bit7(MSb)	保留	
			Bit6	保留	
			Bit5	保留	
			Bit4	保留	
			Bit3	保留	
			Bit2	保留	
			Bit1	保留	
			Bit0(LSb)	保留	
		LSByte	Bit7(MSb)	写管理员参数错误	0：无错误　1：错误
			Bit6	写用户参数错误	0：无错误　1：错误
			Bit5	排气高温报警	0：无报警　1：报警
			Bit4	排气温度传感器故障	0：无报警　1：报警
			Bit3	水温超低报警	0：无报警　1：报警
			Bit2	电导率超低报警	0：无报警　1：报警
			Bit1	电导率超高报警	0：无报警　1：报警
			Bit0(LSb)	高温系统水温传感器故障	0：无报警　1：报警
0x0803	报警状态（低 16 位）	MSByte	Bit7(MSb)	低温系统水温传感器故障	0：无报警　1：报警
			Bit6	室温传感器故障	0：无报警　1：报警
			Bit5	制冷系统低压	0：无报警　1：报警
			Bit4	制冷系统高压	0：无报警　1：报警
			Bit3	高温水泵过载	0：无报警　1：报警
			Bit2	低温水泵过载	0：无报警　1：报警
			Bit1	压缩机过载	0：无报警　1：报警
			Bit0(LSb)	缺相错相	0：无报警　1：报警
		LSByte	Bit7(MSb)	高温系统水温超高	0：无报警　1：报警
			Bit6	高温系统水温超低	0：无报警　1：报警
			Bit5	低温系统水温超高	0：无报警　1：报警
			Bit4	低温系统水温超低	0：无报警　1：报警
			Bit3	室温超高	0：无报警　1：报警
			Bit2	高温系统流量故障	0：无报警　1：报警
			Bit1	低温系统流量故障	0：无报警　1：报警
			Bit0(LSb)	通讯故障	0：无报警　1：报警

5、可读写寄存器（在外部输入功能关闭的情况下才可使用）

寄存器地址	描述	范围	默认	单位	描述	有/无符号
0x0804	开关机	0-1	--		0：开机，1：关机	无

八、技术参数

CWFL-3000

型号	CWFL-3000BT	CWFL-3000ET
工作电压	AC 1P 220	AC 3P 380 V
工作频率	60 Hz	50 Hz
工作电流	6.8~30 A	3~12.3 A
压缩机功率	2.70 KW	2.65 KW
	3.67 HP	3.61 HP
名义制冷量	1706 Btu/h+26136 Btu/h	1706 Btu/h+25726 Btu/h
	0.5 KW+7.66 KW	0.5 KW+7.54 KW
	430 Kcal/h+6586 Kcal/h	430 Kcal/h+6483 Kcal/h
制冷剂	R-22 / R-410a	
充注量	2100 g	2450 g
温控精度	±1℃	
节流器	毛细管	
安全保护	压缩机过流保护，流量报警，超温报警	
水泵功率	0.55W+0.75 KW	0.37 KW+0.75 KW
水箱容量	6 L+34 L	
出入水口	Rp1/2”+Rp1”	
最大扬程	41 M+55 M	43 M+53 M
★ 最大流量	50 L/min+83 L/min	40 L/min+70 L/min
净重	180 Kgs	
毛重	230 Kgs	
机器尺寸	102X65X117 cm (L X W X H)	
包装尺寸	111X85X140 cm (L X W X H)	

★ 最大流量为水泵单独测试流量，试验标准 GB/T 3216-2005

九、简单故障处理

故障现象	故障原因	处理方法
开机不通电	电源线接触不好	检查电源接口，电源线插头是否接插到位，接触良好
	保险管熔断	打开机器内部的电箱盖，检查保险管，必要时换上备用保险管，并检查电源电压是否稳定，检查电源接口，电源线是否接触良好
流量报警（温控器面板显示 E01 或 E02）、用水管直接连接出水口、入水口没有水流	储水箱水位过低	检查水位计显示窗，加水到水位显示的绿色区域；并检查水循环管路有无漏水
连接设备使用时流量报警（温控器面板显示 E01 或 E02）、但用水管直接连接出水口、入水口时有水流，不报警	水循环管路有堵塞或水管折弯变形	检查水循环管路
水温超高报警 （温控器面板显示 E05 或 E07）	防尘网堵塞，散热不良	定期拆下防尘网清洗
	出风口或入风口通风不良	保证出风口、入风口通风顺畅
	电压严重偏低或者不稳定	改善供电线路或使用稳压器
	温控器参数设置不当	重新设定控制参数或恢复出厂设置
	冷却机频繁开关机	保证冷水机有足够的制冷时间（五分钟以上）
	热负荷超标	降低热负荷，或选用更大制冷量的机型
室温超高报警 （温控器面板显示 E03）	冷水机使用环境温度偏高	改善通风，保证冷水机运行环境在 40 度以下
冷凝水凝结现象严重	水温低于环境温度较多，湿度大	调高水温或给管路保温
换水时排水口排水缓慢	注水口没有打开	打开注水口