GUANGZHOU TEYU ELECTROMECHANICAL CO.,LTD.

RM-300
INDUSTRIAL CHILLER

USER MANUAL

Contents

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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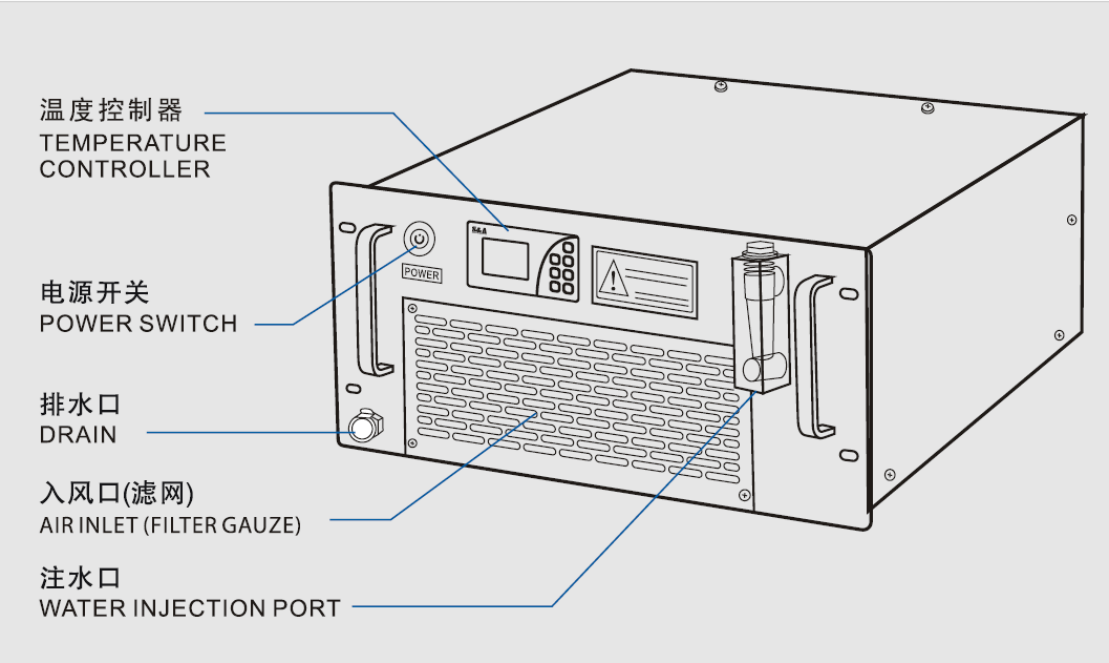
<1> Cautions

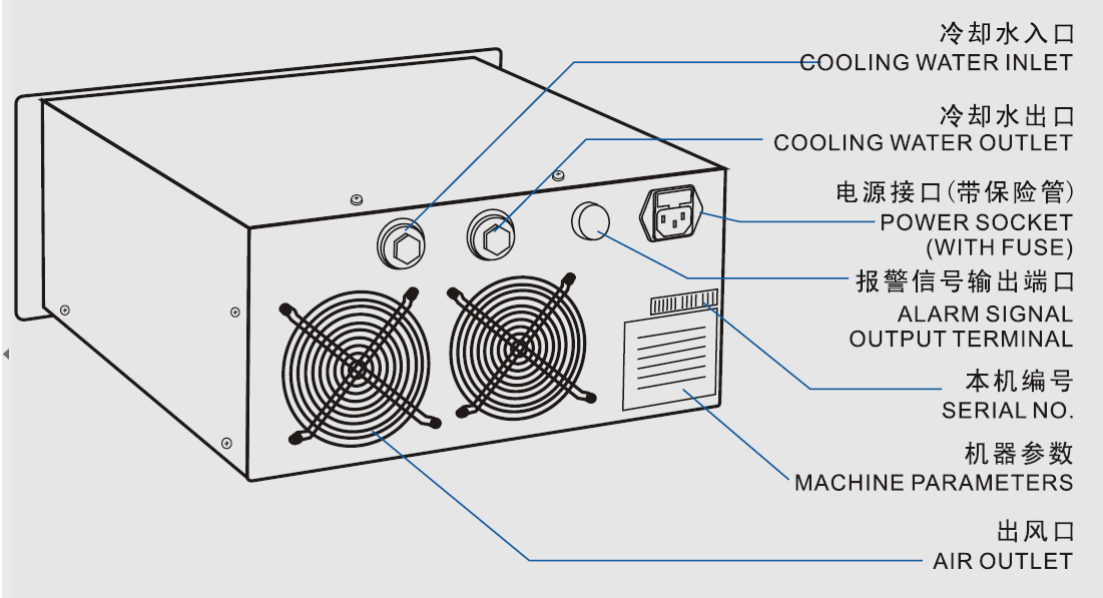
1. **Please ensure that the power supply and electrical outlet are in good contact and the earth wire must be firmly grounded!**
   Although the average operating current of the chiller is small, but the instantaneous operating current could be up to 6 ~ 10amps sometimes (The instantaneous operating current of models of AC110V power supply are possible to be up to 10 ~ 15amps).
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 of 200 ~ 250V (110V model is of 100 ~130V). 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. Please ensure the water level is within the suitable range（Min~Max）. 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 30cm from obstructions to the air outlet which is in the back of the cooler, and should leave at least 8cm between obstructions and the front air inlet.
6. **The filter screen must be regularly cleaned!**
   It's essential to unpick and wash the dust gauze, or the serious blockage will cause breakdown to the chiller.
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> Parts introduction




冷却水入口
COOLING WATER INLET
冷却水出口
COOLING WATER OUTLET
电源接口(带保险管)
POWER SOCKET
(WITH FUSE)
报警信号输出端口
ALARM SIGNAL
OUTPUT TERMINAL
本机编号
SERIAL NO.
机器参数
MACHINE PARAMETERS
出风口
AIR OUTLET

<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 injection port to feed cooling water. (Do not let the water spill over!)**
   Observing the water level gauge and adding water slowly, be careful not to have the water overflowed! For the cooling of carbon steel equipment, the water should be added an appropriate amount of cooling water additive (anti-corrosion water aqua). Working in cold north area, it's better to use noncorrosive antifreeze fluid.
3. **According to system conditions, please connect the water inlet and outlet pipe well.**
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) After the first boot, you must immediately check whether the water pipe leaks.

(3) Power switched on, if the water temperature is below 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 off the power and again on frequently.

5. **Check the water level in the water tank.**
   The first startup of the new chiller empties the air in the water pipe, leading a slight water level decline, but in order to keep the water level in the green area, it's 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.**
   RM-300 series use an intelligent thermostat. Normally users do not need to adjust it. If it is really necessary, please refer to page 6, "Operating status and parameters adjustment."

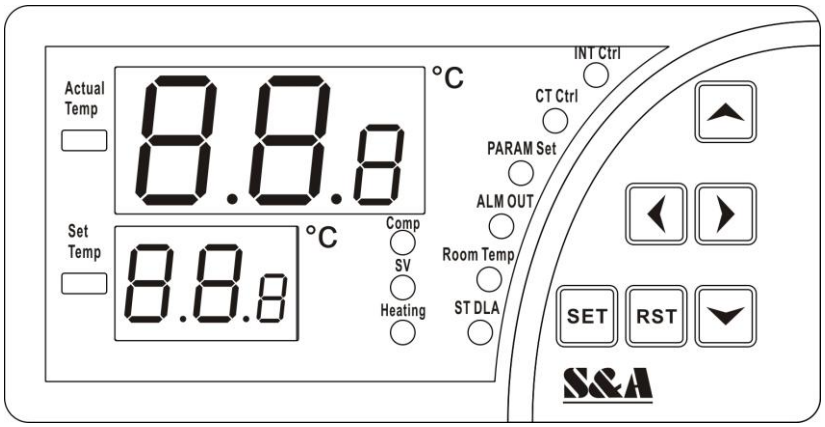
<4> Operation status and parameters adjustment

The new T-506 intelligent temperature controller does not need to adjust the controlling parameters under normal circumstance. It will self-adjust controlling parameters according to room temperature for meeting equipment cooling requirements.

The new T-506H intelligent temperature controller is selected constant temperature control mode as factory setting with water temperature at 25℃. User can adjust it as needed.

T-506 and T-506H controllers are of same functions and structure except default setting.

1. Temperature control panel introduction



(1). Indicators of temperature controller working status:

COMP	**ON, compressor working**
SV	**ON, solenoid valve working**
Heating	**ON, heating rod working**
INT Ctrl	**ON, controller working in intelligent control mode**
CT Ctrl	**ON, controller working in constant temperature control mode**
PARAM Set	**ON, controller working in parameters setting mode**
ALM OUT	**ON, alarm output status**
Room Temp	**ON, displaying room temperature**
ST DLA	**ON, starting up delay status**

(2). Press  **key to show the room temperature, 6 seconds later default display restored. (Meanwhile, Room Temp light is on, displaying room temperature.)**

(3).  keys are for modifying parameters values and  keys are for switching parameter items.

(4). RST key: confirm

(5). SET key: setting function

2. Restore to factory settings

Before machine startup, press and hold  keys until the controller displays rE, 6 seconds later after releasing the keys, the controller works in normal order. All parameters values settings of the controller have been restored to factory settings.

3. Alarm function

(1) Alarm Display:

When alarm occurs, the error code and the temperature will be alternately displayed.

E1	E2	E3	E4	E5	E6
Ultrahigh room temperature	Ultrahigh water temperature	Ultralow water temperature	Room temperature sensor failure	Water temperature sensor failure	Water flow alarm

(2) To suspend the alarm:

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. Temperature controller parameters list

Order	Code	Item	Range	T-506 Temperature controller Factory Setting	T-506H Temperature controller Factory Setting	Note
1	F0	Temperature setting	F9~F8/ -20~+40	25	25	Constant temperature control effecting
2	F1	Temperature Difference values	-15~+5	-2	-2	Intelligent control effecting
3	F2	Cooling hysteresis	0.1~3.0	0.8	0.3	
4	F3	Way of control	0~1	1	0	1: intelligent 0: constant temperature
5	F4	Alarm for ultrahigh water temperature	1~20	10	10	
6	F5	Alarm for ultralow water temperature	1~20	15	15	
7	F6	Alarm for ultrahigh room temperature	40~50	45	45	
8	F7	Password	00~99	8	8	
9	F8	The allowed highest water temperature	（F9+1）~40	30	30	

10	F9	The allowed lowest water temperature	1 ~ （F8-1）	20	20	

5. General settings adjustment

Press SET key to enter into the user-defined state. Meanwhile, PARAM SET is on, controller in parameters setup status.

(1) Under intelligent mode, the control panel displays the temperature difference value between water and air (default value is -2).

(2) Under constant temperature mode， the control panel displays the set temperature value (default value is 25).

At this moment, press  keys to change settings. After modifying the value, press RST key to save and exit, then new parameters take effect, or press SET key to exit without saving parameters. If there is no more action within 20 seconds, it will automatically exit modifying status without saving parameters.

6. Advanced settings adjustment

(1) Press and hold the  key while press SET key for 5 seconds until 00 displayed in upper window and PAS in lower window. Then press  keys to select the password (default setting is 8), and then press the SET key, if the password is correct, F0 displays, entering into setup status, D1 flashing to indicate that the controller is under parameters setup status. If the password is incorrect, it returns to temperature display.

(2) Enter setup state, press  keys to switch parameter items circularly, then press  keys to modify the parameter values. Press enter key RST at any time to exit parameters setup with saving modified parameters and return to temperature display, then chiller runs under the new parameters. If no key is pressed within 20 seconds, the controller will automatically exit parameters setup without saving the modified parameters (under parameters setup status, system running in original parameters). Under parameters setup status, SET key does not work.

Note:

1. During parameters setting condition, system runs under original parameters.
2. Under constant temperature control mode, the water temperature is controlled by

parameter F0;

3. Under intelligent control mode, the water temperature will be automatically adjusted according to temperature changes. The temperature difference is commanded by F1.

7. Advanced parameters adjustment case:

Order	Code	Item	Value in case 1	Value in case 2	Value in case 3	T-506 Temperature controller Factory Setting	T-506H Temperature controller Factory Setting
1	F0	Temperature setting		28	25	25	25
2	F1	Temperature Difference values	-3			-2	-2
3	F2	Cooling hysteresis	0.5	2.0	1.0	0.8	0.3
4	F3	Way of control	1	0	0	1	0
5	F4	Alarm for over high water temperature	10	5	4	10	10
6	F5	Alarm for over low water temperature	10	10	14	15	15
7	F6	Alarm for over high Room temperature	45	45	45	45	45
8	F7	Password	8	8	8	8	8
9	F8	The allowed highest water temperature	31	30	30	30	30
10	F9	The allowed lowest water temperature	25	5	5	20	20

(1) Case 1: cooling water temperature is controlled by intelligent mode. Requiring water temperature to be between 25℃ to 31℃. Ambient temperature keeping constant, when the set water temperature is 3℃ lower than the ambient, the fluctuation will not exceed ±0.5℃. There will be an alert when water temperature is 10℃ lower or higher than target. (e.g. when ambient temperature is 30.0℃, cooling water temperature is between 27.5℃ to 26.5℃, if ambient temperature is up to 30.5℃, water temperature will be between 28.0℃ to 27.0℃.)

(2) Case 2: cooling water temperature is controlled by constant mode. Requiring water temperature is constant in 28℃, and the fluctuate does not exceed ±2℃. The alarm of over high water temperature will be on when water temperature is 5℃ higher than normal, and the alarm of over low water temperature will be on when water temperature is 10℃ lower than normal.

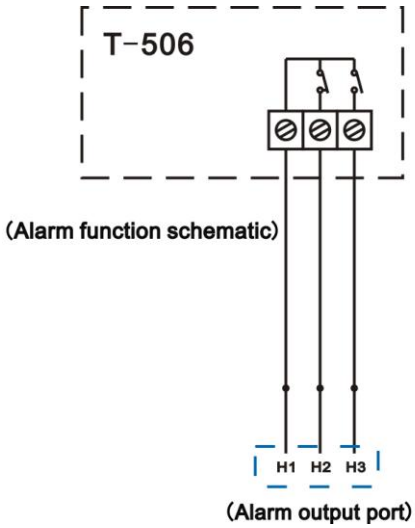
(3) Case 3: cooling water temperature is controlled by constant mode. Requiring water temperature is constant in 25℃, and the fluctuate does not exceed ±1℃.

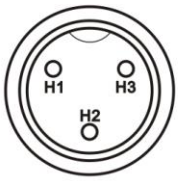
The over high water temperature will be on then water temperature is higher than 30℃, and the alarm of over low water temperature will be on when water temperature is lower than 10℃. (No matter what is the ambient temperature, the cooling water temperature is constant in 24.0℃ to 26.0℃)

<5> Alarm and output terminal

In order to guarantee the equipment will not be effected while abnormal situation happens on the chiller, RM-300 series chillers possess alarm protection function.

1. Alarm output terminals and wiring diagram.





2. Alarm causes and working status table.

Display / Condition	Alarm code	Buzzer	OUT H1、H2	OUT H1、H3
Circulating pump works properly			DISCONNECTION	BREAKOVER
Blocked cooling water circulation loop	E6	Sounds	BREAKOVER	DISCONNECTION
Alarm of water shortage	E6	Sounds	BREAKOVER	DISCONNECTION
Faulted circulating pump	E6	Sounds	BREAKOVER	DISCONNECTION
Ultrahigh room temp	E1	Sounds	BREAKOVER	DISCONNECTION
Ultrahigh water temp	E2	Sounds	BREAKOVER	DISCONNECTION
Ultralow water temp	E3	Sounds	BREAKOVER	DISCONNECTION
Faulted room temp sensor（constant temp	E4	Sounds	BREAKOVER	DISCONNECTION

invalid）				
Faulted water temp sensor	**E5**	**Sounds**	**BREAKOVER**	**DISCONNECTION**
Chiller power failure			**BREAKOVER**	**DISCONNECTION**

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.

<6> Specifications

RM-300

Model	RM-300
Voltage	AC 1P 220V
Frequency	50 Hz
Current	0.9~3 A
Compressor power	0.21KW
	0.29HP
Nominal cooling capacity	1501 Btu/h
	0.44 KW
	378 Kcal/h
Refrigerant	R-134a
Refrigerant charge	260g
Precision	±0.3℃
Reducer	Capillary
Protection	Overcurrent protection for compressor, flow alarm, over temperature alarm
Pump power	0.05 KW
Tank capacity	3.5 L
Inlet and outlet	Rp1/2”
Max. lift	12 M

Max. flow	13 L/min
N.W	23 Kgs
G.W	26 Kgs
Dimension	49×48×22 cm (L×W×H)
Package dimension	66×55×34 cm (L×W×H)

<7> 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	Replace the fuse inside the power interface which in the back of machine
Flow Alarm (controller displays E6) 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 suitable area; And check whether water circulation pipe leaks.
Flow alarm occurs while running with other equipment (controller displays E6), 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
Ultrahigh water temperature alarm (controller displays E2)	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 minuets)
	Excessive heat load	Reduce the heat load or use other model with larger cooling capacity
Ultrahigh room temperature alarm (controller displays E1)	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