



*SUNRISE CHILLING PRODUCT SERIES*

LASER CHILLE RS

— PH-LW15-BLP/17A



**USER MANUAL**

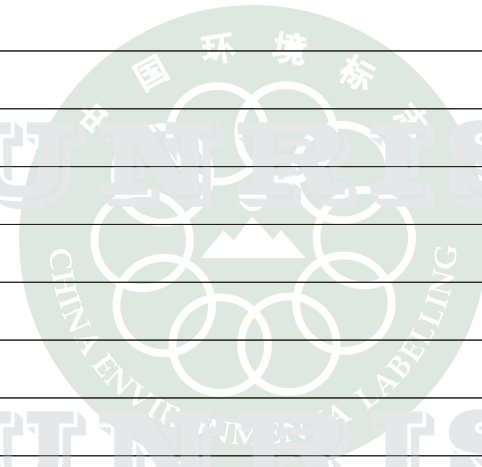
Notes

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## Notes

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## 1 - General information

### 1.1 To user



Thank you for choosing SUNRISE laser chiller.

Please read the manual thoroughly before operating the machine.

Please keep your manual, receipt, QC pass and warranty card for further use.

Don't spoil any label on the machine so that you can enjoy our service.

Please contact your local dealer or our service center if you need any further help.

This manual is only apply in our standard model, only reference for customized model

### 1.2 Unpacking

Your chiller is packed in special carton package; please reserve the carton and other packing stuff before you can make sure chiller is running properly. If the chiller doesn't work, the chiller could be replaced for a new one within 7 days after you receive the chiller. If you have found any damage in the delivery, please contact logistic company and your local dealer for submitting damage claim.



This sign marked all Safety related chapter in this manual, the sign marked on the machine is reminding for safety operation.



This sign means high voltage danger.

Please read all the instructions on safety notice and operation carefully.

## Unit conversion table

### 1. Cooling capacity:

$$1W=3.44BTU/h$$

$$1W=0.86Kcal/h$$

60HZ 50HZ refrigeration cooling capacity is about equal to 1.2 times.

### 2. Temperature (°F °C K)

$$t(^{\circ}C)=5/9 \times [T(^{\circ}F)-32]$$

$$T(^{\circ}F)=9/5[t(^{\circ}C)+32] \quad t(K)=273+T(^{\circ}C)$$

### 3. Pressure unit conversion table series

Pressure unit	Pa	kgf/cm <sup>2</sup>	Bar	mmHg	atm	psi
1Pa	1	$1.01972 \times 10^{-5}$	$1 \times 10^{-5}$	$7.50062 \times 10^{-3}$	$9.86923 \times 10^{-6}$	$1.45039 \times 10^{-4}$
1kgf/cm <sup>2</sup>	$9.80665 \times 10^4$	1	0.980665	735.559	0.967841	14.2235
1Bar	$1 \times 10^5$	1.01972	1	750.062	0.986923	14.5039
1mmHg	133.322	$1.35951 \times 10^{-3}$	$1.33322 \times 10^{-3}$	1	$1.31579 \times 10^{-3}$	0.01934
1atm	$1.01325 \times 10^5$	1.03323	1.01325	760	1	14.6961
1psi	6894.7	0.07031	0.06895	51.7063	0.06805	1

### 4. Length

$$1inch=25.4mm \quad 1mm=0.0394inch$$

### 5. Weight

$$1Lb=454g \quad 1Kg=2.203Lb$$

### 6. Volume

$$1oz=28.41cc \quad 1L=35.20oz$$

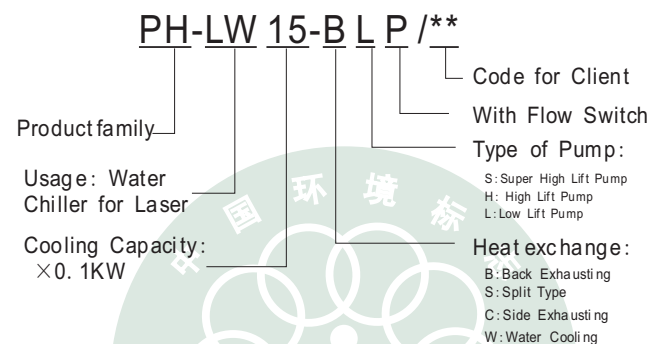
## 2 - General Information

### 2.1 Content

Laser chiller operators manual

### 2.2 Product introduction

#### 2.2.1 Type Code Explanation



NOTE: In case of no the above code, means the function is not provided.

#### 2.2.2 Applications

Our chillers are equipped with digital display electronic temp. Controller, one key operation for varies settings and malfunction prompt function, other steps will be realized by memories automatically.

In order to optimize and improve cooling efficiency and performance, adjustable cooling system is also available for our chiller, which outstandingly prolonged the life time of the compressor and enhanced temp. Control Stability.

#### 2.2.3 Product Characteristics

1. Compact design, convenient for installation and operation;
2. All refrigeration components are international brand, which can offer good and stable cooling effects. Automatically cooling and heating alternating, the display accuracy can reach  $\pm 0.1^{\circ}C$ , and temperature stability is  $\pm 0.3^{\circ}C \sim \pm 0.5^{\circ}C$ .
3. Use famous brand electric fan, which offers big air volume, low noise and long life.
4. The materials for the water cycling system are industry plastic, stainless pump, PVC connectors, which are rust resistant.
5. Equipped with flow switch which can output protect signal.
6. Equipped with high and low temperature alarm signals output, it can be normal open or normal close signal as options.
7. Use digital temperature controller which is designed by sunrise and produced by famous oem manufacturer. One button operation, the machine runs by memory automatically.

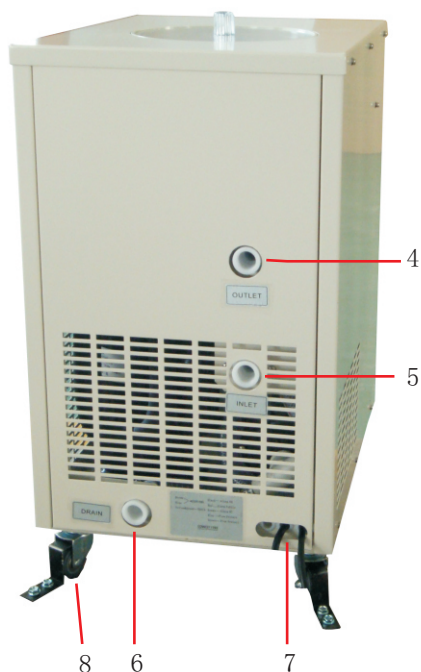


## Front/Top

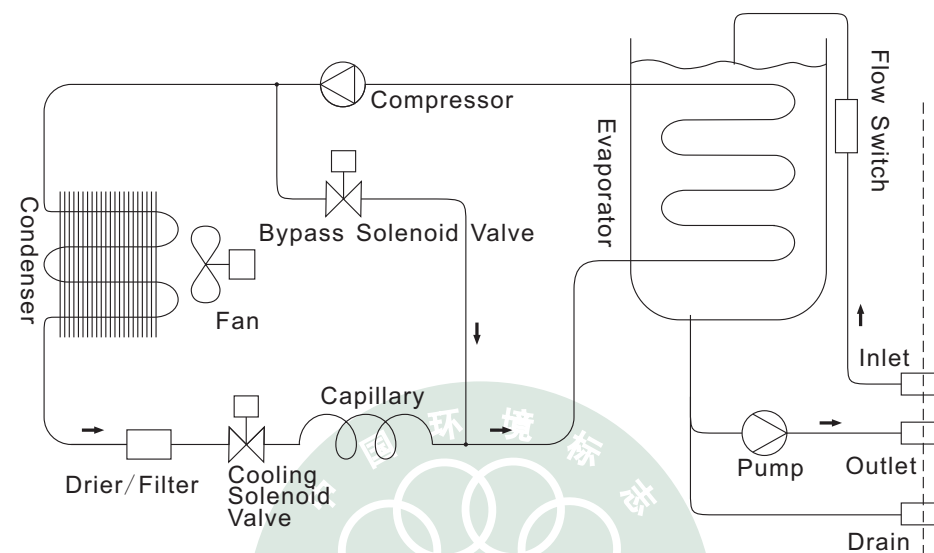
- 1. Water tank Cover
- 2. Temp. Controller panel
- 3. Lock catch

## Back

- 4. Water outlet
- 5. Water inlet
- 6. Drain
- 7. Signal wire hole
- 8. Wheel



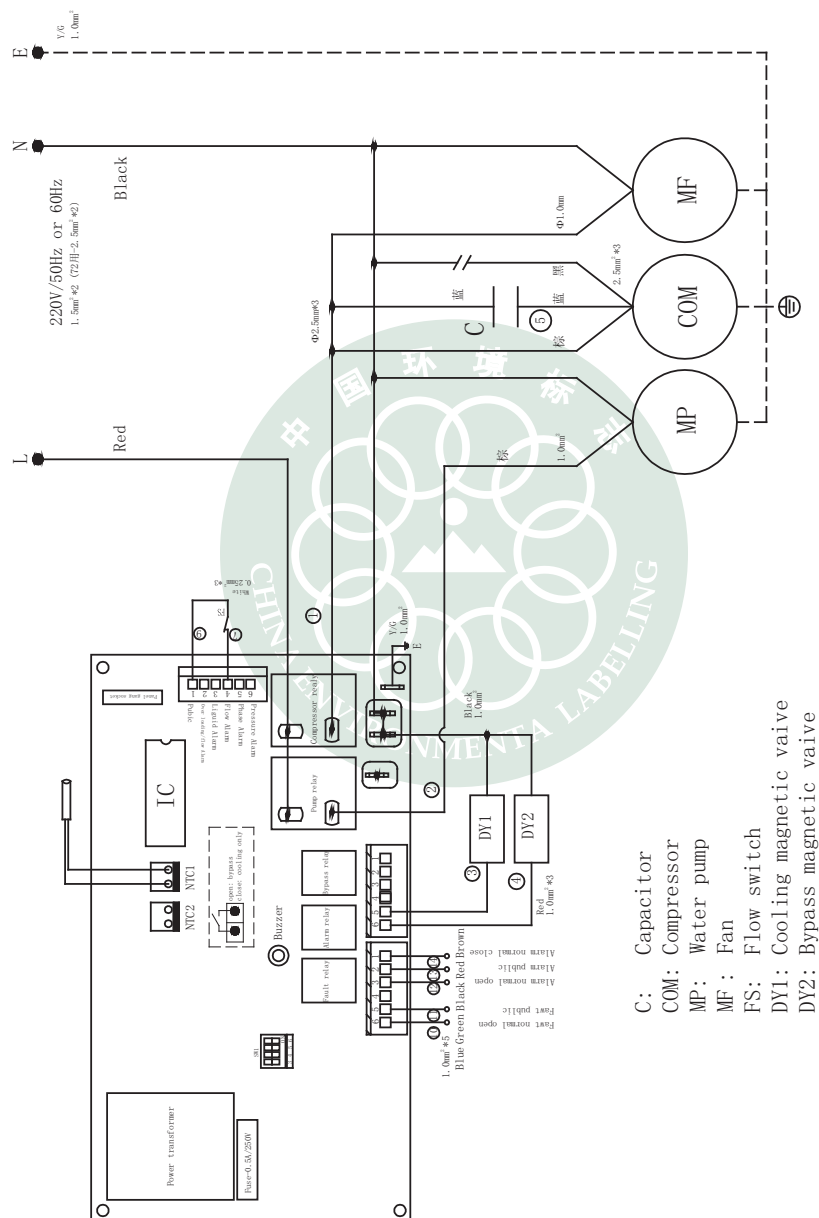
## 7.2 Cooling system



Cooling System Sketch

## 7 - Maintenance and technical support

### 7.1 Circuit Diagram



### PH-LW15-BLP/17A Circuit Diagram

### 2.3 Technical Specifications

Model		PH-LW15-BLP/17A
cooling capacity	W	1500
	Btu/h	5120
	Kcal/h	1290
Power supply		1PH-220V/50Hz or 60HZ
refrigerant		R134a
compressor power HP		1/2
Rated Air Discharge m <sup>3</sup> /h		820
Fan Power W		36
Water tank L		3.5
Inlet/Outlet		Inner Thread DN15(1/2")
Drain		Inner Thread DN15(1/2")
pump	Power of pump W	91
	Lift Range m	10~4
	Rated Flow L/min	8~30
Rated Working Current A		3.8
Flow work point L/min		2
operation range	Ambient Temp	≤35℃
	Chilled Water Temp	5℃~25℃
Net weight Kg		41
L×W×H (mm)		330×450×600

NOTE: Water temp. stability is  $\pm 0.5^{\circ}\text{C}$ , the max. ambient is  $40^{\circ}\text{C}$ :  
 Watet temp.setting range from  $5$  to  $25^{\circ}\text{C}$ . The filer is made of  
 polypropylene and the filtration hole is  $5\mu\text{m}$  in diameter.  
 Nominal working condition: Abore technical parameter is based on  
 ambient temp.  $30^{\circ}\text{C}$ , outprt water temp.  $25^{\circ}\text{C}$ . All the specifications  
 are srbjected to revise without further Notice.



## 2.4 Dimensions



Note: No filter

Dimensions Model	W (mm)	L (mm)	H (mm)
PH-LW15-BLP/17A	330	450	600

## 6 - Trouble shooting



Warning: For qualified staff only, danger voltage exists after power on!

### 6.1 System not working (No cooling or pump not working)

Whether the power wire is connected to the socket

Whether the power is ready

Whether the power switch on the panel is on

### 6.2 Pump not working properly

Check water level, whether the pump is pumping water or not.

Check whether the motor of the pump is working

Check whether the recirculation system is blocked

### 6.3 Pump insufficient pumping

Please check whether the voltage is too low

Please check whether the diameter of the pipe is too small

Please check whether the fluid viscosity is too high

Please check the connection tube carefully

### 6.4 insufficient cooling or No cooling

Please check whether the voltage is too high or too low

Please check whether the air discharge side has been blocked

Please check ambient temp., high ambient temp. will make the compressor halt for a short time.



## Solution for no error codes display

### I. Insufficiency cooling:

- ① Please check whether the condenser radiator and air filter is dirty
- ② Whether the temp. of the installation site is too high and ventilation condition is bad
- ③ Slightly refrigerant leakage(E3 error has been reported yet)
- ④ Whether the chiller has exceeded its designed lifetime, replace a new compressor might be a solution

### II. Unstable temperature:

If the chiller is keeping chilling or the water temperature is keep rising, please check the voltage of power supply (Normal voltage range: 197~242V), since over-low voltage will make the cooling magnetic valve and bypass magnetic valve fail to alternate.

### III. No water flow or low water flow:

Please check below:

Whether there's air inside the water pump, check whether the filter under the water tank is blocked, whether the pump capacitor is working and the pump relay is closed.

## 5 - Maintenances

Required periodic maintenance

### 5.1 Condenser, vent hole, air filter

Condenser, vent hole, air filter should keep clean and periodically inspect in order to optimize the performance of cooling

### 5.2 Pure water filter

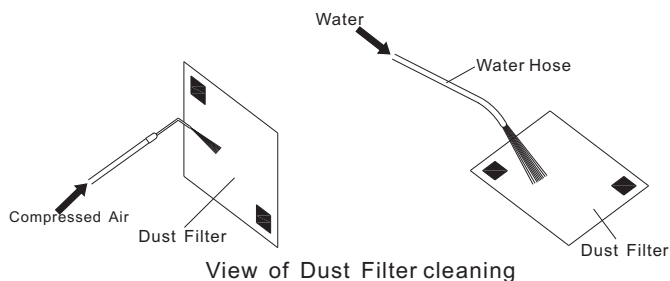
Please rinse and replace the filter periodically.

### 5.3 Liquid level

Please check the water level periodically, the water level should be above the coil, water supplement is necessary if the water level is lower than the coil; please replace the water frequently based on the actual water condition. If the water flow is not normal, please press the red button on the water filter to discharge the air inside the water circuit. Please check whether the back water circuit is leakage and the water level is lower, when there're bubbles in the soft tube and back water inlet.

### 5.4 Clean the air filter periodically

The air filter could be removed easily from both sides, use gentle detergent to remove the dust, clean the filter with clean water, and fix the filter back after it's dry.



## 3 - Installation and start up

### 3.1 Safety Notes

① Please ask our dealer or professional staff to install the chiller. The person who installs the chiller must be certified by government recognized licenser, if the chiller was not installed properly, water leakage, fire, and wound, electric shock may occur.

② Take proper measures to prevent suffocation caused by refrigerant leakage. If the machine is installed indoor, ventilation well could avoid of suffocation hazard caused by gas leakage.

③ Make sure the machine is properly grounded. Electric shock may occur if the machine is installed without grounded.

④ Don't stretch anything into the equipment. The high speed fan will be damaged by foreign material.

⑤ In case of abnormal running appear, cut off the power, contact our local dealer for instructions. Fire hazard, electric shock etc. might occur if keep running the machine under abnormal conditions.

⑥ Don't operate the machine with wet hands. Electric shock may occur.

⑦ Don't repair the chiller by yourself. In safety sake, please ask our dealer or a professional staff to repair it.

⑧ Don't install the chiller in a flammable and explosive place

⑨ Neutral liquid and liquid whose gravity and heat transmission are similar with water are required, in order to protect the water pump, water with solid particles are not allowed.

⑩ When replace the liquid please note the pump can't be run without water.

⑪ In cold areas, proper anti-freezing measures should be done.



Warning: please cut off the power before installation!!

### 3.2 Site requirements:

Ambient temperature and relative humidity (RH)

Our chiller suitable for install indoors, ambient temp. from 5°C to 35°C, RH less than 80% (No condensation).

### Location

The chiller should be installed on solid horizontal surface, the closer to the laser equipment, the better cooling performance will achieve; keep the chiller off the heating source at least 4inch (1.4meters), such as heating tube and boiler.

Please install the chiller at place where drainage system is available in order to keep the installation place clean in case of any leakage occurs, please don't install the chiller in erosive gas, humidity, dusty places or indoors with high temp..

Our chiller is equipped with wheel, which makes it easier for installation and operation; the front wheel could be locked to secure the unit. Avoid voltage drops by using properly grounded power outlets wired with 14 gauges or larger diameter wire. If possible, be close to the power distribution panel. Using an extension cord may cause low line voltage problems, the voltage loss should be with 10% from the extension cord if this is inevitable.

The heating discharged by the fan is 1.4 times than the rated cooling capacity, so the air-draft and air discharge side shouldn't be too close to wall. The air discharge side should reserve at least 0.8m, the installation site should ventilate well, the air-draft and air discharge volume of the site should be a bit large than the chiller, or use air-condition with larger cooling capacity than the heat discharge of the chiller to cool the installation site.

### 3.3 Power connection

Make sure the power wire rightly connected and current, frequency should be match with the requirements marked on the label which was pasted on the back of the chiller.

### 3.4 Connection accessories

#### Process pipeline

There are 2 inner thread interfaces for water pipe connection and water inlet and outlet adapter is designed for connecting the accessories and working pipeline.

In order to keep the working site clean and safe, please choose the right flexible tube and accessories based on the liquid temperature and required temp.

System function view  
cooling only (bypass)

4. 2. 6 startup option, press up and down button to choose "yes" or "no"

Startup mode  
Whether automatically  
startup when power on X

4. 3 Load factory default setting

Factory default setting  
Please confirm to load factory  
default setting?  
Yes: keep pressing set button for 5sec  
No: press power button to exit

4. 4 Software version

Version information  
DLY-619-V1.0-XX

5 Alarm prompt, the LCD screen flashes when alarming, on & off every 1 sec

Phase reversal alarm  
Change any two of three  
live wires after power cut  
off, please trouble shoot  
and restart the system.

#### Liquid level alarm!

Low liquid level or liquid level switch  
malfunction, fill more water or replace  
liquid level switch; press return/power  
button to release alarm.

#### High temp. alarm!

Water temp. exceeds the max.  
setting value, fill cooling water or  
stop the system. press return/power  
button to release alarm.

#### Overload alarm!

Wire error or heavy load, please  
let professional troubleshoot!  
press return/power button to  
release alarm.

#### Pressure alarm!

Refrigerating system leakage,  
track down the leakage point and  
recharge refrigerant. press return  
/power button to release alarm.

#### Low temp. alarm!

Water temp. lower than min setting  
value. Fill normal temp. water or  
stop system! Press return/power  
button to release alarm.

#### Water flow alarm!

Low water flow or flow switch, water  
pump breakdown please check  
water circuit or replace component!  
Press return/power button to release  
alarm.

System standby  
water tank temp: xx°C  
setting temp: xx°C  
Temp differential: xx°C

(default value: 20°C)  
(default value: 0.1°C)

4. Press set button to enter function option, chosen option flashes, press set button to enter next level setting.

#### Function operation

Temp differential Admin setting  
Default setting System version

- 4.1 xx flashes, press up and down button to adjust value, 0.1°C for each press, press set button to switch.

Temp. Differential setting  
setting temp: xx°C  
temp differential: xx°C

(default value: 20°C)  
(default value: 0.1°C)

- 4.2 Function select menu to enter admin setting interface

Admin parameters setting  
Alarm delay  
high & low temp. Alarm  
Temp. Compensation  
compressor switch delay  
Function view Startup model

- 4.2.1 xx flashes, press up & down button, 1min for each press

High & low temp alarm setting  
Delay xx min.

(default: 1min)

- 4.2.2 High & low temp. Alarm flashes, press set button to switch

High & low temp. Alarm setting  
High temp. alarm: xx°C  
Low temp. alarm: xx°C

(default value: 40°C)  
(default value: 5°C)

- 4.2.3 Temp. Compensation interface

Temp. Inaccuracy compensation  
Compensation temp: xx°C

(default value: 0°C)

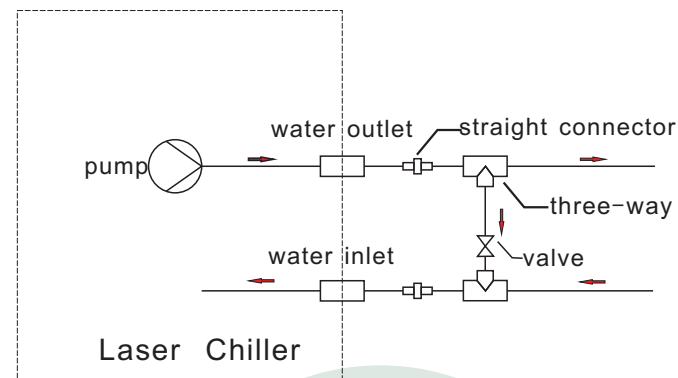
- 4.2.4 Compressor delay switch, xx flashes up & down button, 1min for each press

Compressor switch delay setting  
Delay xx min.

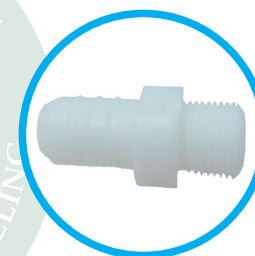
(default: 1min)

- 4.2.5 Function view

## Connecting of water bypass and accessories for water circulation.



## Water inlet & outlet installation diagram:



PTFE seal tape

PVC connection

1. First wrap 3-4 circles as shown above;



2. Strain the seal tape and twist around the connection 7-8 circles;



3. Stretch the seal tape to its normal width, then wrap the connection for 3-4 circles, tighten up the seal tape before installation; screw the connection gently in order to avoid PVC connection break.

### 3.5 Water supplement

Please add clean liquid in the water tank, the water level should above the coil, then cover the water tank.

### 3.6 Closed loop system or bypass setting

Please connect the chiller with peripheral equipment, the liquid flow direction is determined by the way of connecting; liquid was pumped into chiller from inlet and pumped out from water outlet.

### 3.7 Start up

Cooling fluid

Choose proper cooling fluid

Notice: Cooling fluid which is safe, healthy, environment-friendly and compliance with our chiller is necessary, fluid which is erosive and inflammable is not allowed.



Warning: erosive and inflammable liquid is not allowed!!!



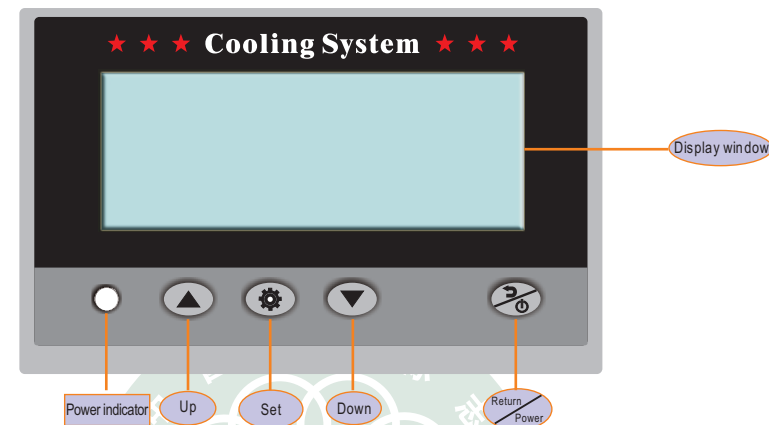
Warning: Anti-freezing liquid is necessary for operation under 8°C



Warning: Power off button can only turn the machine into standby

## 4 - Operation

### 4.1 Temp. Controller instruction



### Function summary

- ▲ Up button (press to increase setting value, keep pressing to continuous increase )
- ⚙ Enter system menu or switch setting option
- ▼ Down button (press to decrease setting value, keep pressing to continuous decrease )
- ↺ Power switch / save & return
  - ①. In all setting interface, the temp. controller will save current parameters and exit setting interface for 10sec without operation;
  - ②. If you want to change the setting when alarm is showing, press on/off button to shut down the output.
  - ③. Press Return/Power ↺ button to save and exit in any setting interface.
  - ④. Power off: Press Return/Power ↺ button for 3sec at any operation interface to halt system.

1. System on when power connects, initial interface show for 1.5sec.

Thank you for using  
Sunrise water chiller,  
system is starting up,  
please waiting

2. Standby

System standby  
water tank temp: xx°C  
setting temp: xx°C  
press power button to  
start system

3. System running