

Rinengl Controller for SWH

Model: CCS-1

Installation Guide & User Manual

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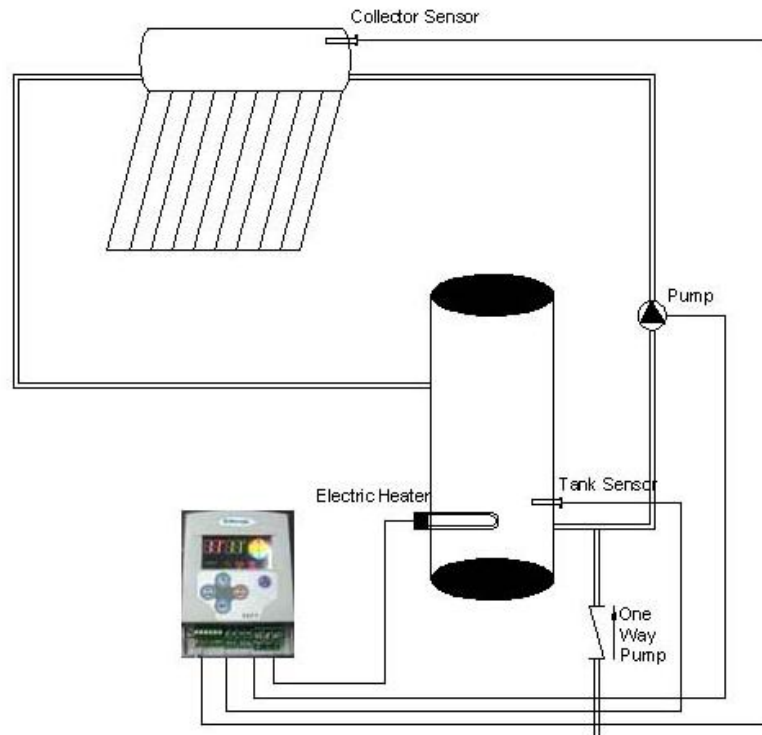
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1. Introduction

CCS-1 is a temperature differential controller for Solar Water Heating (SWH) system. It controls a SWH automatically, and protects the system from frost.

CCS-1 is a programmable controller, all the default data have been setup in the factory. Normally, it is not needed to adjust the data, except for advanced or specific applications.

2. SWH System Diagram



3. Features

- Fully automatic temperature differential controller
- Fully automatic anti-frost circulation
- Fully automatic electrical heating
- Constant temperature display of collector and tank
- Advanced data setting
- Manual circulation, heating, timer heating

4. Specifications

- 4.1 Power supply: 110V, AC, 50Hz
- 4.2 Power consumption: 3W
- 4.3 Control accuracy: $\pm 2^{\circ}\text{C}$
- 4.4 Maximum power of the circulation pump: 300W

4.5 Maximum power of electrical heating: 2KW

5. Requirement on Circumstance

5.1 Sea level: no more than 3500m

5.2 Relative humidity: $\leq 95\%$

5.3 Ambient temperature: -5°C to 55°C

5.4 No corrosion gas

6. Installation Guide

Read this instruction manual carefully.

Only suitably qualified personnel should carry out this installation.

6.1 Sensor Installation

Make absolutely sure that the sensors are pushed completely into the optional sensor pockets.

Sensors must be well insulated in order to prevent them from being influenced by the ambient temperature.

Sensors should not be exposed to moisture.

6.2 Wire Connecting

Warning: Do not connect to power first! Only at last!

K	R	Y	L			CT	CT	CW	CW	NE	PO	GD
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There are three holes at the bottom of the controller: left, right, and back side. Wires may come into the box through these holes.

Connection:

K, R to collector sensor

Y, L to tank sensor

CT, CT to pressure pump

CW, CW to circulation pump

NE: POWER negative

PO: POWER positive

GD: POWER ground

Make sure the connections are correct, then plug in power, and test it.

After test, you can mount the controller to a wall.

6.3 Controller Mounting

The controller has a mounting panel on the back side.

Please take the panel off the controller, fasten the panel onto the wall by screws. There are three screws in the package of the controller.

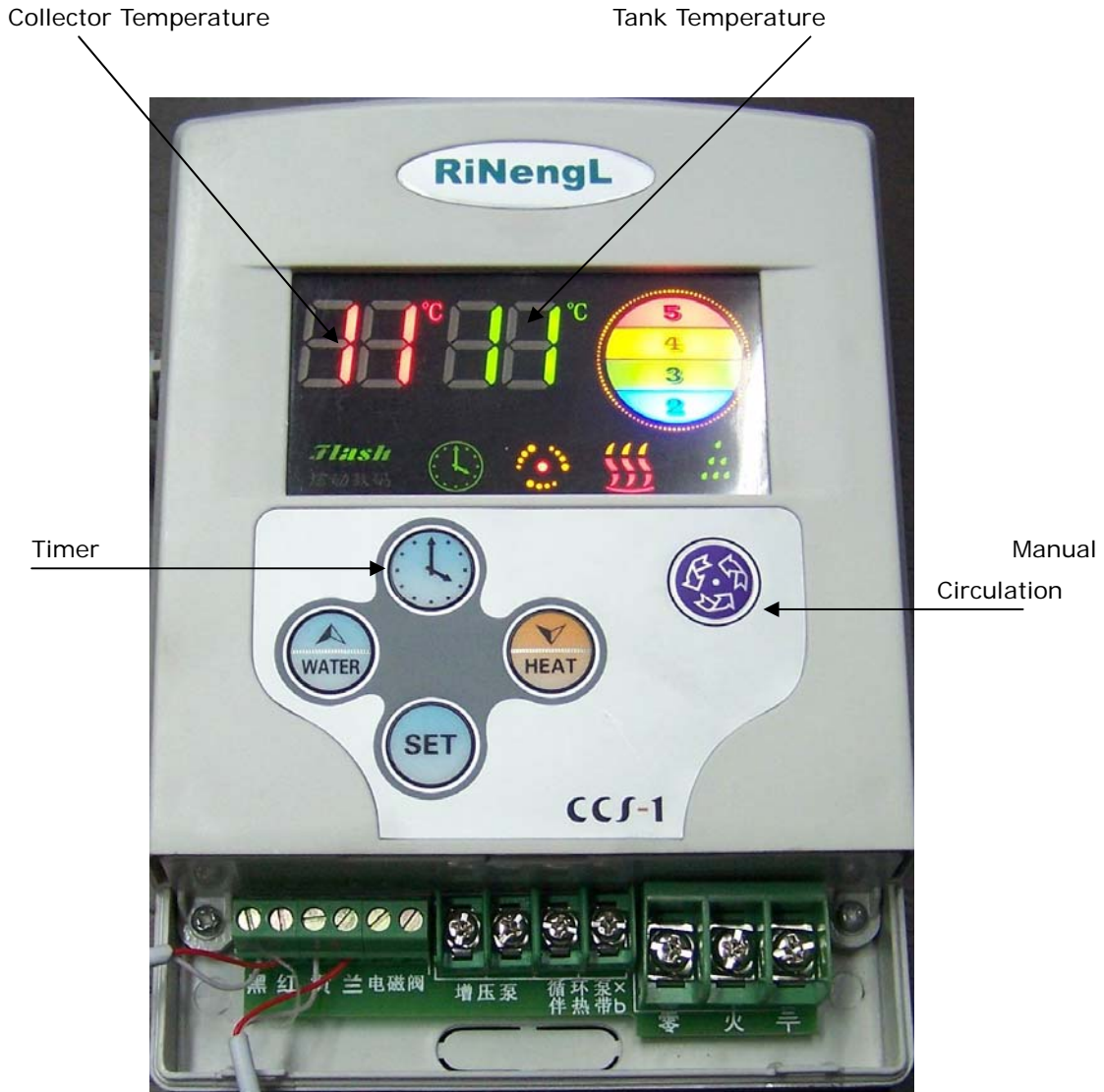
Put the controller onto the panel.

Caution: Keep the controller AWAY from shower!

7. User Manual

7.1 Display Explanations

Please see the picture below.



7.2 Auto Circulation

T1=Collector Temperature

T2=Tank Temperature

T3=Differential Starting Temperature, default 10°C

T4=Differential Stopping Temperature, default 5°C

When $T1-T2 \geq T3$, the Circulation begins.

When $T1-T2 \leq T4$, the Circulation stops.

7.3 Manual Circulation

Press . The circulation pump starts. After 60 seconds, it stops

automatically.

7.4 Auto Electrical Heating



T5=Lower Limit of Tank Temperature, default 0°C

T6=Upper Limit of Tank Temperature, default 45°C

When $T2 \leq T5$, the electrical heater starts automatically.

When $T2 \geq T6$, the electrical heater stops automatically.

7.5 Manual Electrical Heating

Press  , the electrical heater starts. Press  again, the electrical heater stops.

7.6 Timer Electrical Heating

In 24 hours, the electrical heating starts to work two times. The factory default time is: 16:00, 24:00

When it starts, it first detects the tank temperature, T2.

When $T2 < T6$, the electrical heating starts;

When $T2 = T6$, the electrical heating stops.


When $T2 > T6$, electrical heating will not start.

7.7 Auto Anti-Freezing Circulation

When $T1 \leq 4^\circ\text{C}$, the circulation starts.

When $T1 \geq 4^\circ\text{C}$, the circulation stops.

7.8 Manual circulation for hot water outlet loop


Press  , the circulation pump for hot water outlet loop starts. 60 seconds later, it stops.

8. Advanced Setting


8.1 Factory Settings

- T5, default 0°C, adjustable range: 0°C to 44°C
- T6, default 45°C, adjustable range: 45°C to 80°C
- T3, default 10°C, adjustable range: 10°C to 40°C
- T4, default 5°C, adjustable range: 4°C to 7°C

8.2 Advanced setting

1. Press  for 7 seconds, then the controller is at the setting mode, the two red numbers will be glittering.
2. The glittering two red numbers means T5, Lower Limit of Tank


Temperature. Press  or  to your desired number,

then press  . The T5 is determined, and the right two green numbers will be glittering, it means T6. Doing the same way as


above, T6 will be determined also.

3. Again, the left two numbers are T3, Differential Starting Temperature. The right two numbers are T4, Differential Stopping Temperature. Doing the same as above, T3 and T4 will be adjusted as you want.
4. Then, Clock setting. Left two numbers are hours, right two numbers are minutes.
5. Timer setting:




- Press  for 7 seconds, then the controller is at Timer setting mode.
- The first time appears: left two numbers are hours, right two numbers are minutes.
- Then, the second time: same as above.



- Finally press  again, to get out of Timer setting mode.
- Note: if the hours number are 24, the timer will be invalid.

6. Reset: to return to factory default settings, just press and hold



, while press . After you heard the voice "Di", the reset is done.

9. Troubleshooting, please contact your local dealer

10. Warranty: 12 month.

11. Pack list:

1. Controller..... 1pc
2. Sensors with 20m cable..... 2 pcs
3. Isolating Switch 10A..... 1pc
4. Mounting Panel..... 1pc
5. User Manual..... 1pc