

DIN-S-CF

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Please check the controller label to know if it should be powered up with a 110V or 220V (EU) or 12VDC. (12VDC controller does not need ground wire)

① Dimensions:

Product size: 75L x 34.5W x 85D (mm)

Mounting size: 71L x 29W (mm)

② wiring diagram:

Terminals 1 & 2: Heating/Anti-freeze output:

Contact relay switch (normally open).

Terminals 1 & 3: Differential Pump output:

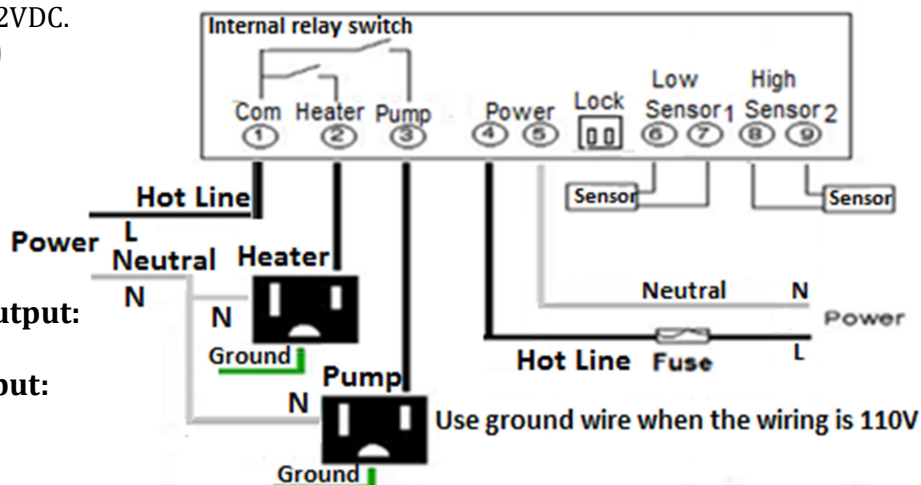
Contact relay switch (normally open).

Terminals 4 & 5: Power supply connection

Lock switch: Locking Parameter Settings

Terminals 6 & 7: Temperature sensor1 (lower Temperature T1- storage tank or swimming pool)

Terminals 8 & 9: Temperature sensor2 (Higher Temperature T2- solar collector)



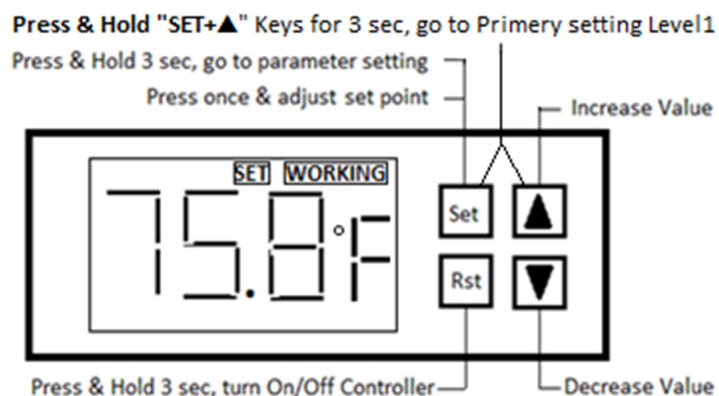
③ Technical information:

- Temperature range: -50°C~110°C (-58°F ~ 230°F)
- Temperature measurement error: $\pm 0.5^\circ\text{C}$
- Control accuracy: 1°C
- Maximum power consumption: 2W
- Resolution: 0.1°C

- Operating temperature: $0^\circ\text{C} \sim 50^\circ\text{C}$
- Contact Relay (Outputs 1,2-Heating and 1,3 Pump):
(10A/110V or 12V), 5A/220V
- Sensor Type: 2 sensors NTC 10K
(9.5ft wire and can be extended up to 200 meters)

④ Primary Parameter Settings (Level 1):

Press and hold SET key and ▲ key at the same time for more than 3 seconds and controller will go to "Primary Parameter Setting" menu. By pressing ▲ or ▼ keys you can select the required parameter from the menu. When the needed parameter is found, press SET key again and then by pressing ▲ or ▼ keys, you can change the parameter value. When the Parameter is set, you can exit "parameter setting mode" by pressing RST key. Please consider every time you go to primary parameter setting (Level 1), the Parameter setting (Level 2) goes back to factory default settings. So, it is recommended to set up Level 1 Parameters before Level 2.



Symbol

Details

Setting range Factory settings

CF	Fahrenheit/Celsius	F / C	C
ST	Temperature measuring with or without decimal point (1 or 0.1)	10 / 01	10

⑤ Operating Instructions:

LED Status (light display):

- When red "WORKING" light is ON, it shows the output (heating or pump) is working.
- If "SET" light is ON, it shows that the controller is on setting mode.

Turning controller ON/OFF:

To turn the controller ON press RST key once. To turn the controller OFF press and hold RST key for 3 seconds.

Define the set point:

If you need to use a heater or freeze protection circulation pump you can use the heater output(works with sensor1). To define the set point temperature, press the SET key once & by pressing ▲ or ▼ keys you can adjust the set point value. You can exit the setting mode by pressing SET key or by waiting 5 seconds.

For example if you set it at 35°F, the heating output works if the temperature drops to lower than 35 °F.

Parameter Setting (level 2):

Press and hold SET key for 3 seconds to enter “parameter setting menu”. By pressing ▲ or ▼ keys you can select the required parameter from the menu. When the needed parameter is found, press SET key again and then by pressing ▲ or ▼ keys, you can change the parameter value. When the parameter is set, you can exit the “parameter setting mode” by pressing RST key or waiting 5 Sec.

◆Hysteresis or Temperature Band for Sensor1 (“d” parameter):

To prevent frequent ON/OFF action of the heater output (you can use the output as freeze protection circulation pump output too), a temperature band (called hysteresis) is created between ON and OFF operations. So, the controller uses a range (a maximum and minimum) for operation. For example when hysteresis “d” is set on 3 and heater set point is 55°C, the heating output works when temperature goes lower than 52°C and will be off when temperature exceeds 58°C. You can adjust “d” parameter to any number from 1 to 25.

◆Higher and lower differential temperature functions (“Hd” and “Ld” parameters):

Sensor1 is Low temperature sensor (T1) and sensor2 is High temperature sensor (T2) and (T2-T1) is differential temperature of 2 sensors. “Hd” and “Ld” are called higher and lower differential temperature numbers that we can change these numbers in parameter setting. So by adjusting Hd (higher range of $T2-T1=Hd$) and Ld (lower range of $T2-T1=Ld$) you will define the acting range of your pump in your solar system.

Find “Hd” or “Ld” in the parameter setting by pressing “▲” or “▼” keys. Press “SET” key when you find “Hd” or “Ld” and then by pressing “▲” or “▼” adjust the value of these parameters.

For example when “Hd” is set on 10 and “Ld” is set on 5, the pump output switch will be ON when T2-T1 is higher than 10 degrees and will be Off when T2-T1 drops to 5 degrees. You can define “Ld” parameter any number more than zero and less than “Hd” and “Hd” parameter can be any number more than “Ld” and less than the max temperature range.

◆ Temperature sensor calibration (“CA1” and “CA2” parameters):

You can calibrate the temperature reading (for sensor1 or sensor2) with these functions. The value can be positive, negative or 0 (from -9 to 9).

◆ Display Mode setting (“dp” parameter):

Controller display can be set to show either the temperature of sensor1 or sensor2 or sensor1 and 2.

Press and hold “SET” key for more than 3 seconds to enter the “parameter setting menu”. Find “dp” parameter by pressing “▲” or “▼” keys. Press “SET” key when you find “dp” and then by pressing “▲” or “▼” adjust this parameter. “dp” can be set on 0,1 or 2 to display sensor1, sensor2 or sensor1 and 2 alternately.

◆ Parameters setting and definitions:

Symbol	Details	Setting range	Factory settings
d	Hysteresis Set Value(temperature band for Low sensor 1)	0.1 to 25	1.0
Ld	Lower differential temperature setting (T2-T1)	0.1 ~ Hd	5 °C
Hd	Higher differential temperature setting (T2-T1)	Ld ~ 110°C/230°F	10°C
CA1	Temperature Calibration for sensor1	-9.0 To +9.0	0
CA2	Temperature Calibration for sensor2	-9.0 To +9.0	0
dp	Display Mode show 0,1,2	0:sensor1 1:sensor2 2:sensors1,2	

⑥ Error messages and troubleshooting:

- 1) When controller displays “E1 or E2 “it shows that the sensor1 or sensor2 is disconnected. The heating output relay will be closed (the heater will be off for safety).
- 2) When controller displays LLL it shows that the measured temperature is lower than -58°F (-50°C)
- 3) When the controller displays HHH it shows that the measured temperature by sensor is higher than 230°F (110°C)

⑦ Caution:

- ◆ The maximum current load of the heating or cooling source must not exceed the output relay contact capacity. It will damage the unit and may cause fire.
- ◆ Check the wiring diagram before wiring the unit. Wrong wiring will damage the controller and may cause fire.
- ◆ Applying extra force on the screws of controller terminals will break the base. Please tighten the screws gently.
- ◆ For your safety, turn the power supply off when you are wiring the controller.

DIN-S-CF-New Installation and Wiring Guide

For current product information, availability, and compatible options, use the verified ThermoMart links below. The preceding pages remain the original wiring guide content.

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