

# MICROPROCESSOR CONTROLLED

HEATING & COOLING TEMPERATURE CONTROLLER



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**THANK YOU**  
FOR CHOOSING OUR PRODUCT!

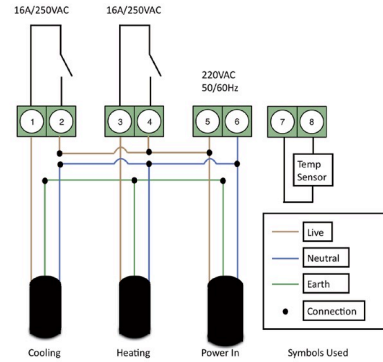
PLEASE READ THIS INSTRUCTION GUIDE CAREFULLY BEFORE USE.

## Product Information:

This controller is mainly used for precise temperature regulation in aquariums and will control both heating and cooling devices such as heaters and chillers/cooling fans.

*This device is a control module only and will require wiring.*

## Typical Wiring Diagram:



## Technical Parameters:

### KEY FEATURES:

- Temperature measuring range -50°C ~ 99°C
- Temperature differential range 0.1°C ~ 10.0°C
- Compressor delay range 1 ~ 10 mins.
- Temperature calibration range -10°C ~ 10°C
- Display Resolution: 0.1°C
- Accuracy: ± 1°C
- Power supply: 220VAC±15%, 50/60HZ
- Temp Sensor: 1 x 2 metre NTC sensor
- 16A Heating Control (resistive load, such as heater) max 1840W
- 16A Cooling Control (inductive load, such as a chiller) max 500W
- Operating Temperature Range: 0°C ~ 60°C
- Operating Humidity range: 20% ~ 85%
- Power consumption: ≤3W
- Power off memory function: Settings retained when power lost

## Display Description:



Three digit LED + minus digit + status indicator (cool, heat) + set indicator  
Key description: "S" key: set key; "▲" key: up key; "▼" key: down key; "⏻" key: power on/off key

## Indicator status Description:

Indicator	Function	Note
Cool indicator	On: Cooling switched on; Off: cooling switched off; Flashing: compressor delay	The Cool & Heat indicators can NOT be "on" simultaneously
Heat indicator	On: heating switched on; Off: heating	
Set indicator	On: parameter setting	

## Key Functions:

### 1. Check parameter setting:

Under normal working conditions, press and release the "▲" key once, the screen will display the temperature setting value; press and release the "▼" key once, the screen will display the difference setting value. The display will return to the temperature display after 2s.

### 2. Set parameters:

Under normal working conditions, press "S" for 3s to enter parameter setting function, at this time the "Set" indicator will light and the screen displays the first menu function "F1". Press the "▲" or "▼" key to move between setting functions. Press the "S" key and the screen then displays the parameter value for the current function. The parameter value can be adjusted by pressing the "▲" or "▼" key. Pressing and holding the "▲" or "▼" key will adjust the parameter's value rapidly. After the desired value is set, press and hold the "S" key for 3s to save the modified parameter value and return to the temperature display. If there is no key operation for 10s, the system won't save the modified parameter value and the screen returns to the temperature display.

The screen displays "Er" if an error occurs during parameter setting.

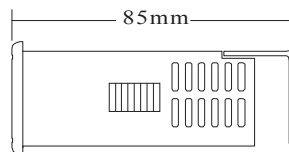
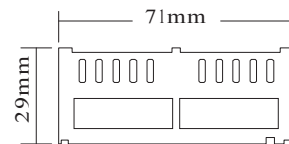
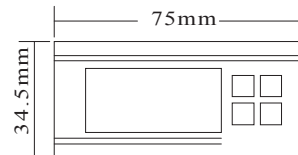
## Operating Instructions:

Under normal working conditions, pressing and holding the "⏻" key for 3s will turn off the controller. When the controller is switched off, pressing and holding the "⏻" key for 3s will turn the controller on.

Under normal working conditions, the screen displays the current measured temperature value. The controller will automatically switch between heating and cooling to maintain the set temperature within the difference limits.

The controller will turn on the cooling relay (cool indicator lit) when the measured temperature value ≥ temperature set value + difference value. If the "cool" indicator flashes, it means the cooling function is in the compressor delay protection mode. After the compressor delay time has elapsed, the cooling relay will be switched on. When the measured temperature value ≤ the temperature set value, the cooling relay is switched off and the "cool" indicator is off. The controller will turn on the heating relay (heat indicator lit) when the measured temperature value ≤ temperature set value - difference value. When the measured temperature ≥ temperature set value, the "heat" indicator lamp is off and the heat relay is switched off.

## Product Size:



Sensor Wire Length: 2m(including the probe).

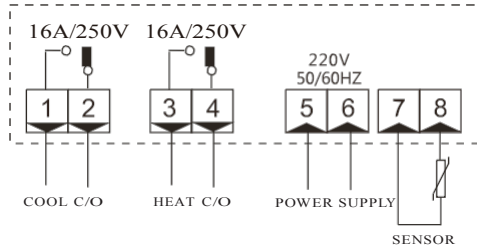
Example: Set the desired temperature to 25°C +/- 0.3°C.

- Target temperature is set to 25°C as above (F1)
- Cooling differential is set to 0.3°C as above (F2)
- Heating differential is set to 0.3°C as above (F2)

As the temperature in the aquarium rises, when it gets above 25.3°C, the cooling relay will be energized and the attached fan/chiller will switch on (after compressor delay). The cooling relay will remain energized until the aquarium temperature reaches 25°C.

As the temperature in the aquarium falls, when it gets below 24.7°C, the heating relay will be energized and the attached heater will switch on. The heating relay will remain energized until the aquarium temperature reaches 25°C.

### Wiring Diagram:



Connect the controller according to the above diagram, the voltage must within 220VAC±10%.

- 16A Heating Control (resistive load, such as heater) max 1840W
- 16A Cooling Control (inductive load, such as a chiller) max 500W

### Parameter Menu:

Code	Function	Set range	Default
F1	Temperature set value	-50°C ~ 99.9°C	10°C
F2	Difference set value	0.1°C ~ 10°C	0.5°C
F3	Compressor delay time	1~10 minutes	3 minutes
F4	Temperature calibration value	-10°C ~ 10°C	0°C

### Error Description:

**Sensor error:** The controller activates the sensor error alarm mode when the sensor is open circuit or short circuit. The heating and cooling relays are switched off and an audible alarm sounds and "EE" is displayed. Pressing any key will cancel the alarm sound. The controller will return to normal operation when the error is cleared.

**Temperature error:** When the measured temperature exceeds the temperature measuring range, the controller activates the temperature error alarm mode. The heating and cooling relays are switched off and an audible alarm sounds and "HH" is displayed. Pressing any key will cancel the alarm sound. The controller will return to normal operation when the temperature returns to the normal measuring range.

### Product Size:

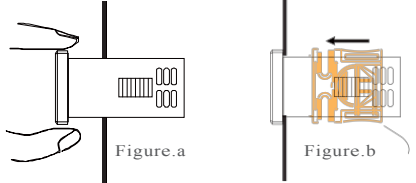
#### Assembly:

**Warning:** The controller should be connected only by competent persons according to this user manual and avoid installing in the below environments:

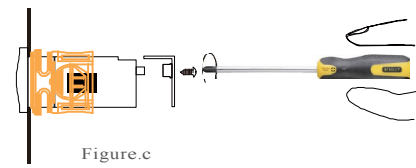
- Relative humidity >90%, or condensation present
- Temperature <-10°C or >60°C
- Environments that contain flammables/explosives
- Strong vibration or shock
- Exposed to continuous water mist
- Exposed to the dust
- Exposure to corrosive and polluting gas
- Wireless electromagnetic interference or strong magnetic fields (near to transmitting antenna or switch board room)

Please install the controller according to the following steps:

- Cut out a hole at the installing position: 71×29mm
- Detach the slide fasteners, and place the controller into the hole. (1st step, Figure.a);
- Install the fasteners. (2nd step, Figure.b);

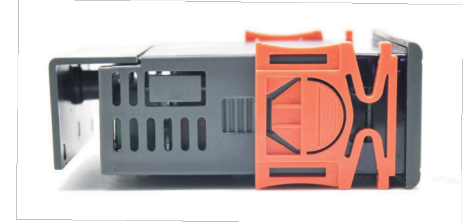


After connecting the wires, install the terminal guard (3rd step, Figure.c)



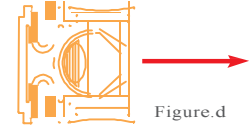
### Accessory:

- Sensor wire × 1pc
- Slide fastener × 2pcs
- User manual × 1



#### How to disassemble the controller from the hole?

Firstly disassemble the terminal guard, then press the clip (Figure.d) sliding backwards to disassemble the controller.



#### Notice:

1. The power supply should conform to the voltage indicated in the instruction.
2. To avoid interference, the sensor lead and power leads should be kept apart as much as possible.
3. Warranty does not cover damages caused by over voltage or over load or incorrect wiring.
4. Warranty period is 12 months from purchase.



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