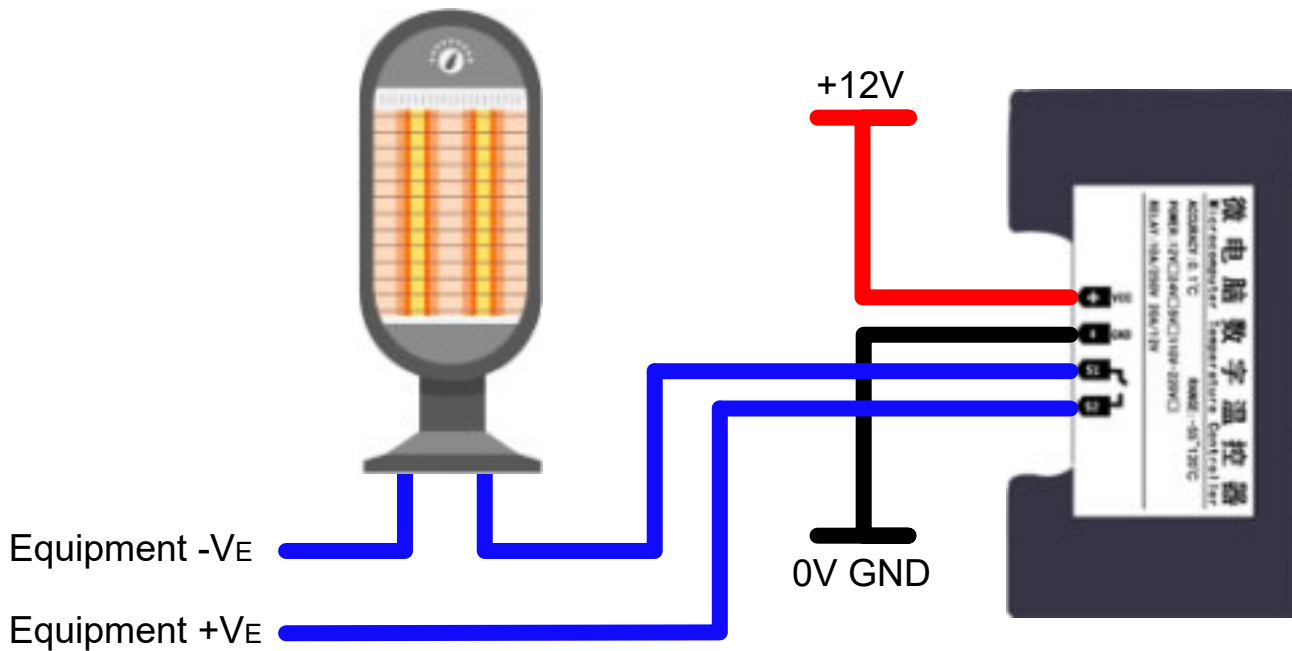


Connections



Connect the +12V and 0V from a regulated DC power supply as shown above

The connections S1 & S2 connect to the equipment as shown. The maximum load current is 10 amps at 250V AC or 20 amps at 12V DC.

Operation

The module works by setting a control temperature. This temperature setting can turn the output on when the ambient temperature is higher than the control temperature setting. In this instance the connected appliance could be a cooling fan to cool the surrounding air. Alternatively the output could be programmed to turn on when the ambient temperature is lower than the preset control temp, in this instance the output could be used to switch a heater on.



In the following programming instructions, **A** refers to button A (*Up Arrow*), **B** refers to button B (*SET*) and **C** refers to button C (*Down Arrow*).

Programming

Setting the Threshold Temperature

The Threshold Temperature is the temperature that the output will turn on in either Heating or Cooling modes.

To set the Threshold Temperature, press and release **B**. The Threshold Temperature (blue display) will begin flashing. Press either **A** or **C** to increase or decrease the temperature. Pressing and holding either **A** or **C** will cause the setting to change faster. Press **B** to store the value. The module will revert back to normal if a key has not been pressed for about 3 seconds and store the new value. When adjusting the Threshold Temperature, the output will turn on or off if the Threshold Temperature has been passed.

Setting Cooling or Heating mode

The module has 2 modes of operation, it can be set to turn the output on when the temperature goes below the preset value (Heating Mode). Alternatively it can be set to turn the output on when the temperature rises above the threshold value (Cooling Mode)

To set the mode of operation, press **B** for approximately 2 seconds, the red display will show **P0**. The blue display will show either **H** or **C**. (Heating or Cooling mode), Press **A** to set the mode to Heating or **C** to set the mode to Cooling. The module will revert to normal after about 2 seconds and the new value will be stored.

Setting the Hysteresis (Output off lag)

The Hysteresis setting determines how far past the threshold temperature the ambient temperature goes before the output is switched off. I.e. If the unit is in Heating mode, the ambient temp is 20 degrees and the threshold temp has been set to 25 degrees then the output will be switched on. What would not be a good thing is for the output to switch off as soon as the ambient temperature reaches 25 degrees, if this were the case then as soon as the ambient temperature goes below 25 degrees, the heater would switch back on. This could result in the heater being turned on and off in quick succession. (The same would apply in cooling mode). To overcome this, the output switching can be set to lag the ambient temperature by the value in the Hysteresis setting. In the previous example, if the Hysteresis was given a value of 3 then the output would stay on until the ambient temperature reached 28 degrees. The

To set the Hysteresis value, press and hold **B** until the red display changes to **P0**. Press **B** again, the display will show **P1**. Use buttons **A** & **C** to set the required Hysteresis level. The operation will revert to normal after approximately 2 seconds without pushing a button and the new value will be stored.

Setting the Maximum Programmable Temperature

The Maximum Programmable Temperature setting limits the maximum temperature the threshold temperature can be set to.

To set the Maximum Programmable Temperature, press and hold **B** until the red display shows **P0**. Press **B** twice more, the red display shows **P2**. Press **A & C** to set the maximum allowed temp. The operation will revert to normal after approximately 2 seconds without pushing a button and the new value will be stored.

Setting the Minimum Programmable Temperature

The Minimum Programmable Temperature setting limits the minimum temperature the threshold temperature can be set to.

To set the Minimum Programmable Temperature, press and hold **B** until the red display shows **P0**. Press **B** 3 more times, the red display will now show **P3**. Press **A & C** to set the minimum allowed temp. The operation will revert to normal after approximately 2 seconds without pushing a button and the new value will be stored.

Setting the Temperature Compensation

Due to tolerances in electronic components the module may need to be adjusted to display the correct ambient temperature. To set this accurately a reliable thermometer should be used to measure the ambient temperature. Without touching the probe, place it close to the thermometer. As an example, if the thermometer reads 21.4 degrees and the module displays 22.8 degrees then the module will need to be adjusted by -1.4 degrees.

To adjust the Temperature Compensation, press and hold **B** until the red display shows **P0**. Press **B** again 4 times, the red display will now show **P4**. Press **A & C** to alter the value. The Compensation has a range of -7 to +7 degrees in steps of 0.1 degrees. The module operation will revert to normal after approximately 2 seconds without pushing a button and the ambient temperature will reflect the compensated adjustment.

Setting the Start Delay

The Start Delay is the period of time in minutes before the output turns on after the threshold temperature has been reached. E.g If the Start Delay is set to 2 and the control temp has just been reached, then the module will wait a further 2 minutes before switching the output on. This delay will also apply if the threshold temperature has been reached when the unit is first switched on.

To adjust the Start Delay, press and hold **B** until the red display shows **P0**. Press **B** again 5 times, the red display will now show **P5**. Press **A & C** to set the delay, the range is 0 to 10 minutes in increments of 1 minute.

On/Off Button

The module turns itself on when it is first powered up, the output will turn on (subject to the Start Delay) if the threshold temperature has been reached. To turn the unit off, press and hold the **On/Off Button** for approximately 1 second. The module and the output will turn off (assuming it was on). Press and hold the **On/Off Button** for about 1 second to turn the module back on. Note, if the threshold temp has been reached when the unit is turned back on, then assuming any Start Delay period has been exceeded the output will turn on immediately.

Factory Reset

To reset all the values stored to their original factory settings, with the module turned off, press and hold both **A & B** then power the module on. The settings will now be reset.