ELEC-TC-24V-01
TEMPERATURE CONTROLLER

www.vikingmachinery.co.nz

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0.0 Safety Statement

All machinery, especially CNC or automated machinery, has inherent dangers and risks. It is the responsibility of the system designer to ensure that any systems built using any Viking Machinery Ltd. products are safe for use. Any technical information is provided as a reference only, and does not constitute a recommendation as to the fitness of use in any particular application.

Viking Machinery Ltd. strongly urges customers to seek expert advice when dealing with potentially dangerous electrical voltages and sources of mechanical energy. Information contained in this document does not constitute a substitute for expert advice.

This device is **not** intended to switch low voltage (known as “Mains voltage”). If you need to switch a high power load, use this device to switch a contactor or relay of appropriate rating.

Under no circumstances should this product ever be used in a safety critical application.

1.0 Product Specifications

- Supply Voltage – 24VDC
- Operating Power – <3 Watt
- Temperature Measurement Range – -50°C to 99°C
- Error - +/- 1°C
- Resolution – 0.1°C
- Sensor Style – NTC
- Maximum Switching Current – 5A
- Panel Cutout – 71mm x 29mm

2.0 Scope of Document

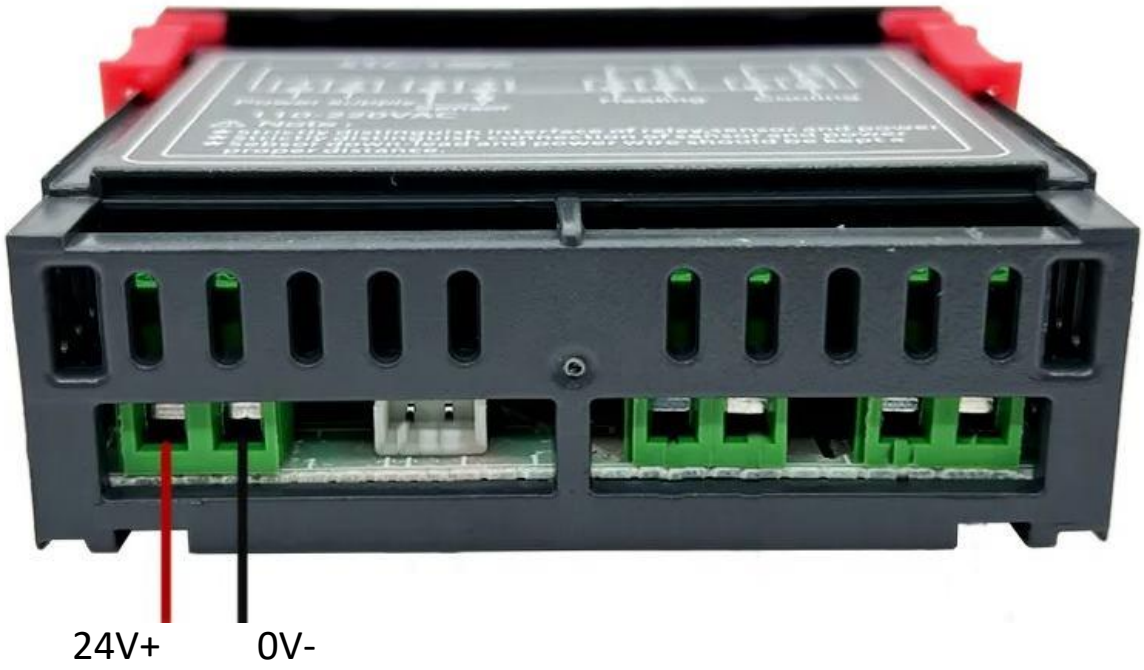
This document is designed to give an overview of the wiring options for the ELEC-TC-24V-01 temperature controller. The basic settings and functions for both heating and cooling operations are covered.

3.0 Power Connection

Your controller requires 24V DC power to operate. We recommend using a high quality power supply. We supply the Meanwell brand and these are available from our Trade Me store.

To access the power terminals, unclip the plastic terminal cover from the back of the controller.

Connect the 24V DC power to the terminals as shown.



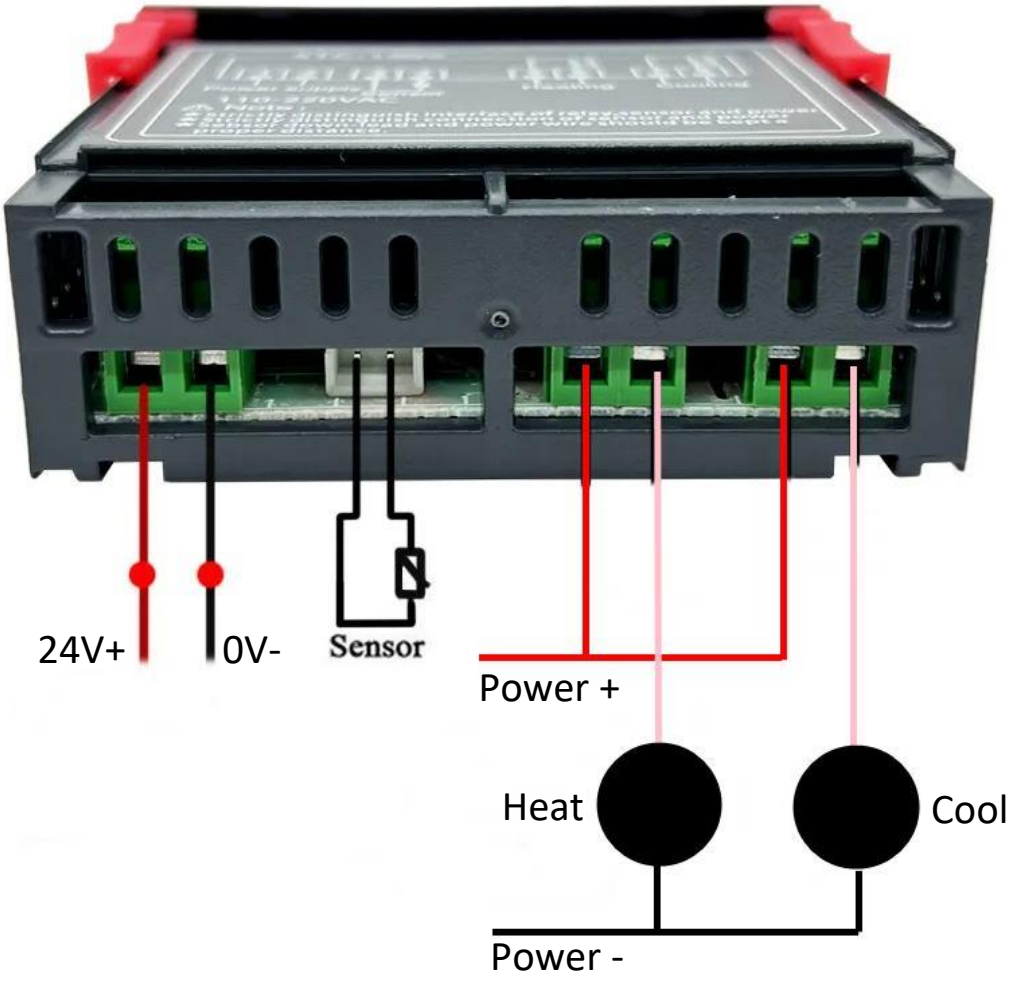
4.0 Wiring to the Sensor

The unit you have purchased comes with a pre-wired NTC temperature sensor. Simply plug this into the white socket on the back of the module.

5.0 Wiring the Outputs

This module has two, Normally Open (NO) relay terminals. One for heating control, the other for cooling control.

There are several ways that you may wish to wire these, but below is a simple example showing a connection for both a heater and a cooling fan.



6.0 Control Logic

The controller has four settings. These allow the controller to turn on a heater when too cold or a cooler when too hot, and for you to set the required temperature band for operation, plus the compressor delay (if needed).

Function descriptions are;

F1 – Temperature set value. Range -50°C to 99.9°C. This is the target temperature for the controller.

F2 – Deviation set value. Range 0.3°C to 10.0°C. This is the allowable deviation from the set point before the cooling or heating outputs activate.

F3 – Compressor delay time. Range 0min to 10min. This is how long the controller waits to operate the cooling. This is usually used to stop a cooling compressor from cycling too often.

F4 – Temperature calibration value. Range -10°C to 10°C. Used to calibrate the temperature reading of the unit.

When the measured temperature falls below the temperature set value by the deviation set value, the heating output will activate, and run until the measured temperature matches the temperature set value.

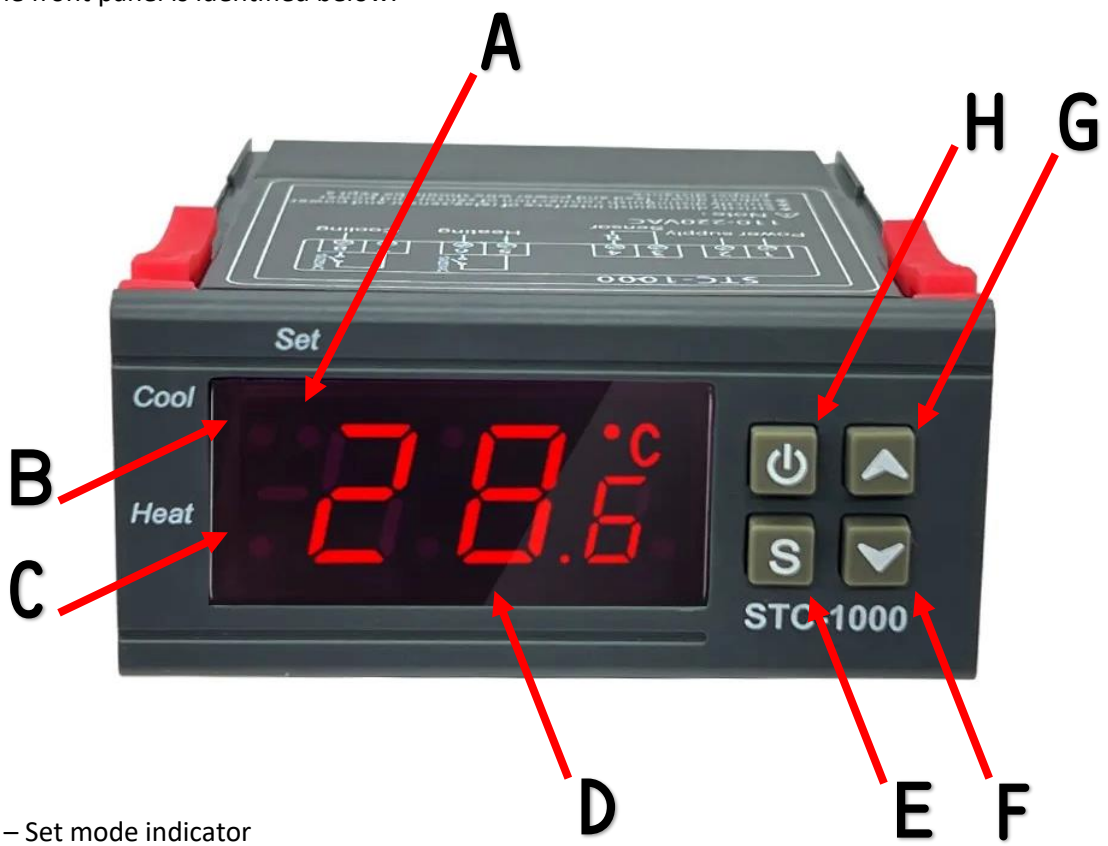
When the measured temperature is greater than the temperature set value plus the deviation set value, the controller will delay for the Compressor delay time, and then activate the cooling output. It will run the cooling output until the temperature set value is reached.

If required, the measured temperature can be calibrated up or down by up to 10°C to align with the actual temperature.

7.0 Adjusting the Settings

Programming the controller is achieved via the push buttons on the front of the module. This is relatively simple, but please note that the timing of the button presses can be fiddly the first time you do it. Get your quick fingers ready!

The front panel is identified below:



A – Set mode indicator
B – Cooling mode indicator
C – Heating mode indicator
D – Measured temperature
E – Setting button
F – Setting down button
G – Setting up button
H – Power button

NOTE: At any point in run mode, you can press the up button to see the current temperature set value, or the down arrow to see the current deviation set value.

To set the variables, follow this process;

1 – Power on the device
2 – Press and hold the S button until the Set Mode Indicator comes on and then release
3 – F1 will display. Use the up & down buttons to find the setting you want to change
4 – Short click the S button to enter the function, release, and click again and HOLD the S button in
5 – Use the up & down buttons to change the value
6 – When you are happy with the value, quickly take your finger off the S button and then quickly press and release the power button

If you do not wish to save your adjustments, simply take your fingers off all the buttons and the unit will exit the setting mode and return to run mode without saving the changes.

NOTE: The timing is fiddly. If you are too slow, it will time out and return to the run mode.

7.0 Reference Links

Viking Machinery - Home Page

www.vikingmachinery.co.nz

Viking Machinery - TradeMe Store

https://www.trademe.co.nz/Members/Listings.aspx?member=4906214

Viking Machinery - Email

sales@vikingmachinery.co.nz

Viking Machinery - Social Media

https://www.instagram.com/vikingmachinery/

https://www.cgtrader.com/viking-nz

https://www.youtube.com/@vikingmachinery

https://www.thingiverse.com/VikingNZ/about

https://grabcad.com/james.hussey-3

Viking Machinery - Git Hub

https://github.com/Viking-Machinery