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Digital Thermostat

This board uses a PIC microcontroller to read the temperature from a type K thermocouple, display the temperature and control a 10A relay based on the user-entered setpoint. When the temperature drops below the setpoint, the relay activates. The LCD displays the temperature and the setpoint and is back-lit for low light conditions.

The temperature range is 32 – 200 degrees F (display of temperature in degrees C is available on request). This board can be powered from 7.5 to 24V DC.

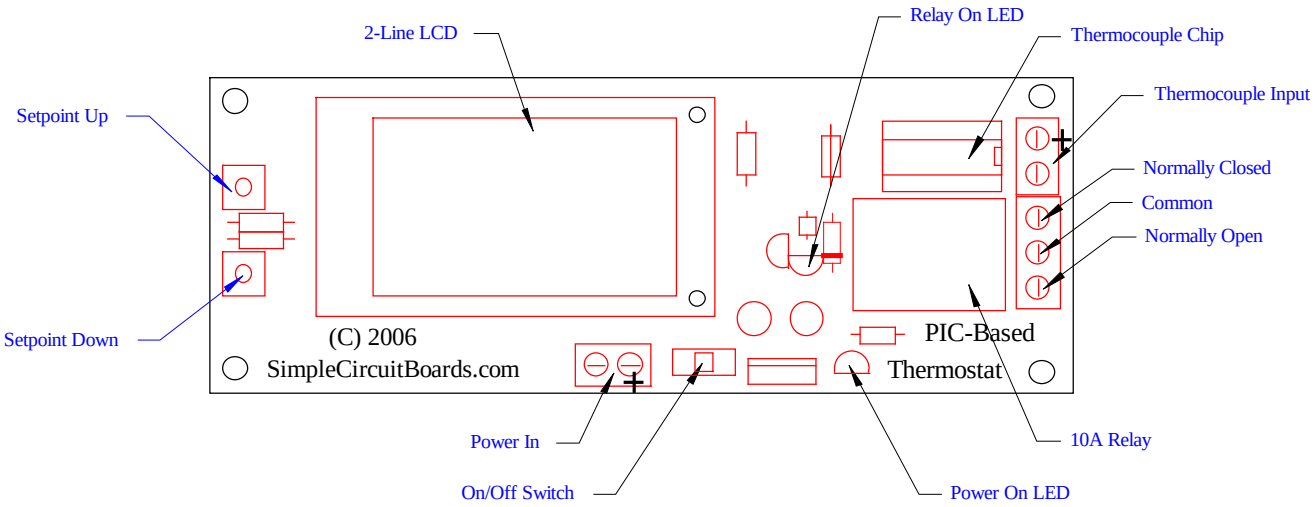
Thermocouples are not included. Type J TC capability available upon request.

Details:
As mentioned above, this board allows the user to control temperature to a setpoint value. The setpoint is entered via 2 pushbuttons located next to the LCD. The setpoint is saved in memory so that it will be recalled when powered up. The LCD will display the current temperature on the top line and the setpoint on the bottom line. The LCD is back-lit for viewing in low light. The resolution of the temperature display is 1 degree. The board has a 2 degree hysteresis to prevent the relay from chattering. For example, if the setpoint is set at 86 degrees, the relay will activate at 84 degrees and deactivate at 88 degrees. If you require tighter temperature control, let me know – I can change it to meet your requirements. There is a red LED that lights when the relay is activated. The relay has Normally Open (NO) and Normally Closed (NC) contacts and is rated for 10 amps. The board requires DC voltage in the range of 7.5V to 24V. There is a slide switch for power on/off which is indicated by a red LED. The temperature range is 32 – 200 degrees F (display of temperature in degrees C is available on request). The board requires a type K thermocouple (the board is also available for type J upon request).

Miscellaneous Information:

- For all thermocouples, the red wire connects to the negative terminal

Board Layout:



Specifications:

- Input Power: 7.5 – 24 VDC
- Resolution: 1 °F
- Temperature Range: 32 to 200 °F
- Thermocouple Type: Type K
- Board Dimensions: 1.85 x 5.0 inches

Disclaimer:

These boards are designed for educational use only. In no circumstances should these circuit boards be used in critical situations where failure could mean injury or property damage.

Please check out the other circuit board designs that I offer at www.SimpleCircuitBoards.com. Here are just a few examples:

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- TTL-Driven Latching Relay Board
- Voltage Amplifier Board
- Water Level Monitors
- Water Level Control Boards
- Motor Control Boards
- Programmable Relays
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