Icon Electronics

P49-TTC2-T
Thermocouple Temperature controller 2 setpoints
4-20mA re-transmit
Type J,K,R,S,N,T&E, (ver 8.7)
Operating instructions
and
Guarantee Certificate

Description:

This device interfaces directly with Type J/K/R/S/N/T/E thermocouples. It offers 2 relay outputs with individual set points and hysteresis settings, adjustable offset and upper and lower limits for the temperature set points. The relays may be configured for heating, cooling or climate control applications. The re-transmit offset and span parameters are fully programmable, allowing the user to re-transmit any portion of the temperature range. By default the output 4-20mA corresponds to temperatures from 0-950°C (Type J) and 0-1350°C (Type K) .The parameters may be locked and code protected to avoid changes from being made by unauthorized personnel.

Operation:

The temperature measured is re-transmit as a 4-20mA signal according to the "rt.OS" and "rt.SP" parameters.

Heating mode:

Temperature must rise to set point value before relay de-energizes, then it must drop by the hysteresis amount before being re-energized.

Cooling mode:

Temperature must drop to set point value before relay de-energizes, then it must rise by the hysteresis amount before being re-energized.

Climate control mode:

Both relays are controlled via 1 set point & hysteresis parameter. Relay 1 works in heating mode, and relay 2 in cooling mode.

Menu operation:

Press the "MENU" button repeatedly until the desired setting is reached, press "SELECT" to display the current value.

Use "+" and "-" buttons to change the value. "ENTER" will return the device to the menu. The "BACK" button will exit the menu.

Adjustable parameters:

1. Pre-set temperature for relay 1 (R1) "°C .1" (default value: 25)

   When the probe temperature reaches this value, relay 1 is de-energized.

2. Pre-set temperature for relay 2 (R2) "°C .2" (default value: 25)

   When the probe temperature reaches this value, relay 2 is de-energized.

3. Hysteresis for relay 1 "HYS.1" (default value: 2, range 1-200 °C)

   Once the pre-set temperature for relay 1 is reached (and the relay has de-energized), the temperature must change (in the opposite direction) by this amount before the relay is re-energized.

4. Hysteresis for relay 2 "HYS.2" (default value: 2, range 1-200 °C)

   Once the pre-set temperature for relay 2 is reached (and the relay has de-energized), the temperature must change (in the opposite direction) by this amount before the relay is re-energized.

5. Offset "OFSt" (default value: 0, range -100 to +100 °C)

   This value is added (or subtracted if negative) to the current temperature.

6-7. Maximum "Hi" and minimum "LO" user setting

   (Default: probe type J: 950, -30; probe type K: 1350, -30)

   These are the upper and lower limits obtainable via the set point

   ("°C 1" & "°C 2" parameters).

8. Relay function "Func" (default: Heating)

   Type of elements connected to the relays:

   "HEAt"   both relays are used with heating elements.

   "COOL"   both relays are used with cooling elements.

   "C.Cnt"   relay 1 = heating element, relay 2 = cooling

9. Probe type "Prob" (default value: type J)

   Set this value to correspond to the type of sensor being used

   Type J : "tYP.J", Type K: "tYP.H", Type R: "tYP.r",

   Type S: "tYP.S",Type N: "tYP.n", Type T: "tYP.t",

   Type E: "tYP.E".

10. Ambient temperature "°C A" (not adjustable)

   Selecting this setting displays the ambient temperature of the device. (Cold junction)

11. Re-transmit Offset "rt.OS" (default value: 0)

   When the temperature displayed reaches this value, 4mA is transmitted.

12. Re-transmit Span "rt.SP" (default value: type J: 950,type K: 1350)

When the temperature displayed reaches this value plus the offset value (rt.OS), 20mA is transmitted. The span is the difference between the temperature at which 20mA is transmitted, and the temperature at which 4mA is transmitted.

13. Reset "RESt"

By selecting this setting, the device is reset to the factory defaults.

Menu options:

Exit the menu before making the following adjustments.

Lock / unlock parameters: (default: unlocked)

Press "BACK", **then** "ENTER" and hold the 2 buttons until the desired option is displayed. The display cycles between "Loc" (no changes allowed) & "u.Loc" (parameters may be adjusted)

Full / reduced menu (default: Full)

Press "SELECT", **then** "ENTER" and hold the 2 buttons until the desired option is displayed. The display cycles between "rEdu" (limited menu) & "Full" (all parameters are accessible)

Access Code: (default: no code)

Once the above options have been set as required, Press "BACK" and "SELECT" simultaneously until "CODE" is displayed. Now use the "+" & "-" to enter a code. (0-9999)

Once a code is entered, access to the options above is not permitted. To clear the code, re-enter the same code again. If the code is forgotten. Press and hold "+" & "-" until "CODE" is displayed while re-applying power to the device.

Example: Set the temperature set point for relay 1 to 30 °C:

Press "MENU" to display "°C 1". Press "SELECT" to view the current value. Use the "+" and "-" buttons to change the value to 30. Press "ENTER" to return to the menu. Press "BACK" to exit the menu.

Climate control Example:

If the temperature is set to 25 °C, and the hysteresis is set to 2, and the temperature being read is rising from 10 °C, the heating relay (R1) will be energized until the temperature reaches 25°C. At this point, R1 will de-energize. If the temperature keeps rising, the cooling relay (R2) will energize when the temperature reaches 27°C (25° + 2° hysteresis). If the temperature then drops to 25 °C, the cooling relay will de-energize, and the heating relay will energize when the temperature drops to 23 °C (25° - 2°hysteresis).

Notes:

- If the temperature being read is outside the device's temperature range (for the probe used) , the message "t Lo" or "t Hi" is displayed.
- A probe Error (open circuit) will cause the relay to de-energize
  and "P.Err" is displayed
- Make all adjustments and reset device before connecting to the relay.

Specifications:

Temperature range:	Type J: -40 to 920°C	Type K: -50 to 1320 °C
	Type R: -50 to 1760°C	Type S: -50 to 1760 °C
	Type N: -80 to 1300°C	Type T: -50 to 400°C
	Type E: -30 to 680°C	
	Type K: -30 to 1350°C	
Accuracy:	± 0.3% of full scale	
Input voltage:	±15% of rated input	
Probe:	Type J/K/R/S/N/T/E thermocouple	
Led indication:	Relay status	

12 Month guarantee:

Our product is guaranteed for a 12 (twelve) month period from date of purchase. This guarantee is valid for defects arising from failure during specified conditions. This guarantee does not cover damage due to abuse, tampering or improper installation. Our company does not accept liability for any consequential damage or loss arising from product malfunction. Should this product prove to be defective, kindly return for inspection or repair.

For further information, please visit us at

www.icon-electronics.com

Relay specifications:

Contact rating:	10A 250 VAC 2500VA (Resistive)
Mechanical life:	30 million operations
Electrical life:	250 000 operations (at maximum load)

P49-TTC0/1/2 Temperature controller (Thermocouple) www.iconelectronics.co.za