



D3
53mm
DIN rail mount



P44
48mmx48mm
panel mount



P49
48mmx96mm
panel mount

TEMPERATURE CONTROLLER THERMOCOUPLE

Type J, K, N, R, S, T, E

optional 4-20mA or 0-10V re-transmit (-T)

D3-TTC 0/1/2 (-T)

P44-TTC 0/1/2 (-T)

P49-TTC 0/1/2 (-T)

EXAMPLE: D3-TTC0-T = 0 RELAY with re-transmit

Operating instructions and Guarantee Certificate
www.iconelectronics.co.za

ReTransmit devices (-T)

The 4 -20mA re-transmitted signal is optically isolated from the input signal. By default the re-transmission parameters are set so that the output follows the full scale input.

Description:

This device interfaces directly with Type J/K/R/S/N/T/E thermocouple probes. The relays may be configured for heating, cooling or climate control applications. The parameters may be locked and code protected to avoid changes from being made by unauthorized personnel.

0 RELAY

This device offers a 1 °C display resolution with an adjustable offset.

1 RELAY

This device offers a 1 °C display resolution, adjustable offset, hysteresis and upper and lower limits for the pre-set temperature setting. It can be configured for heating and cooling applications.

2 RELAY

This device 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.

-T DEVICES ONLY (re-transmit)

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

OPERATION:

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

Adjustable parameters:

Please note: Depending on the model of the device purchased, some of the parameters listed below may not be available

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
R1 is energised when the temperature is BELOW the pre-set temperature, and R2 when the temperature is ABOVE the pre-set temperature. Only one temperature and one hysteresis setting is available in this mode.
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) -T DEVICES ONLY
When the temperature displayed reaches this value, 4mA is transmitted.
12. Re-transmit Span “rt.SP”(default value: type J: 950,type K: 1350) -T DEVICES ONLY
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 “RESr”
By selecting this setting, the device is reset to the factory defaults.

DUAL DISPLAY Programming example: Set setpoint to 30.0°C:

Press “ \cup ” to display “°C”

Use “ \blacktriangle ” and “ \blacktriangledown ” to change the value to “30.0”.

Press “ \cup ” for 3 seconds to exit the menu.

SINGLE DISPLAY programming 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.

2 RELAY DEVICES ONLY : 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

Accuracy: $\pm 0.3\%$ @ 25°C (% of full scale)

Re-transmit Accuracy : $\pm 0.3\%$ @ 25°C (% of full scale) -T DEVICES ONLY

Input voltage: $\pm 15\%$ of rated input

Probe: Type J/K/R/S/N/T/E

Resolution: 1 °C

Led indication: Relay status

re-transmit Notes:

- The output 4-20mA is dependant on the value being displayed, and is set up in a similar manner to the display. The offset parameter determines when 4mA is output, and the span is the amount required for the output to increase by an additional 12mA ie. 20mA is output when the value displayed = re-transmit OFFSET+SPAN
- To set the re-transmission signal to follow the input signal (the output 4-20mA follows the 4-20mA received), set the re-tx offset and span settings to the same value as the display offset and span settings.
- To set the re-transmission signal to invert the input signal (the output = 4mA when the input = 20mA), set the re-tx offset = (display offset+span) and re-tx span = (display span x -1).
- Whenever the input signal is above or below the "CAL.O" or "CAL.S" values by more than 3%. The display indicates "Er.Hi" or "ER.Lo".
- Certain settings are reset to default when the device is re-configured. Re-check all settings to ensure they are correct before commissioning. (use the advanced menu)

Menu operation (single display):

All adjustments are made via the three front mounted buttons.

Press the "MENU" button repeatedly until the desired setting is reached, press "SELECT" to display the current value of the selected parameter, or sub menu (if applicable).

The "+" and "-" buttons are used to change the value.

"ENTER" will return the device to the menu.

The "BACK" button will exit the menu.

Menu operation (dual display):

Press the menu "U" button repeatedly until the desired setting is reached.

The "▲" and "▼" buttons are used to change the value.

"U" will display the next menu item.

To exit the menu hold "U" button for 3 seconds.

Menu options:

Exit the menu before making the following adjustments.

Lock / unlock parameters:**(default: unlocked)**

Press "BACK" ("▼"), then "ENTER" ("U") 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" ("U") 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" ("▼" and "▲") simultaneously until "CODE" is displayed.

Now use the "+" & "-" ("▲" and "▼") to enter a code.

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 "+" & "-" ("▲" and "▼") until "CODE" is displayed while re-applying power to the device.

Please Note (for 1 and 2 relay devices ONLY):

- As a power saving feature, the display dims if settings are not being made.
- Even though the device seems to operate correctly, the relay(s) will not energise if the input voltage is below the operating voltage.

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.

Relay specifications:

Contact rating: 10A 250 VAC 2500VA

Mechanical life: 30 million operations

Electrical life: 250 000 operations (at maximum load)

