



D3  
53mm  
DIN rail mount



P44  
48mmx48mm  
panel mount



P49  
48mmx96mm  
panel mount

## TEMPERATURE CONTROLLER Type J,K,R,S,N,T & E THERMOCOUPLES with 24h TIMER

D3-TTCT1  
P44-TTCT1  
P49-TTCT1

Operating instructions and Guarantee Certificate  
[www.iconelectronics.co.za](http://www.iconelectronics.co.za)

### **Description:**

This device incorporates a digital temperature controller and a 24 hour timer with two “on” times and two “off” times. The two functions operate independently and control separate relays.

The temperature controller interfaces directly with Type J,K,R,S,N,T & E thermocouples and offers adjustable hysteresis, offset, maximum and minimum set point limits. The relay may be configured for heating or cooling applications. In case of a power failure the clock’s time is saved to non volatile memory. When the power is re-applied, the clock continues from where it left off. The menu can be reduced and the parameters locked with an access code to protect programmed values. (see menu configuration).

### **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.

The timer relay is energised whenever the clock’s time falls between “ON 1” time and “OFF 1” time, or “ON 2” time and “OFF 2” time.

### **Adjustable parameters:**

- Pre-set temperature “°C” (default value: 25.0)

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

- Time Adjustment “CLOCK” (default value: 00:00)

Use this setting to adjust the time of day. (24hr format)

- First ON time “On 1” (default value: 00:00)

Adjust when the timer relay must energise. The relay will remain energised until the clock’s time has reached the value programmed into the “OF 1” setting.

- First OFF time “OF 1” (default value: 00:00)

Adjust when the timer relay must de-energise.

· Second ON time “On 2” (default value: 00:00)

Adjust when the timer relay must energise. The relay will remain energised until the clock’s time has reached the value programmed into the “OF 2” setting.

· Second OFF time “OF 2” (default value: 00:00)

Adjust when the timer relay must de-energise.

· Hysteresis “HySt” (default value: 1, range 1-100.0 °C)

Once the pre-set temperature has been reached, it must change by this amount before the relay is re-energised.

· Offset “OFSt” (default value: 0, range –100 to +100 °C)

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

· Maximum “Hi” user setting

This is the maximum value obtainable via setting number 1 (“°C”).

· Minimum “LO” user setting

This is the minimum value obtainable via setting number 1 (“°C”).

· Element type “TYPE” (default: Heating)

The device may be configured for :

· Heating “HEAT”

The temperature relay will be energised when the temperature is BELOW their individual pre-set temperatures.

· Cooling “COOL”

The temperature relay will be energised when the temperature is ABOVE their individual pre-set temperatures

· 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”.

· Ambient temperature “°C A” (not adjustable)

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

· Reset “RES”

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

**DUAL DISPLAY programming Example:**

Set setpoint 1 to 30.0°C:

Press “ $\cup$ ” to display “°C .1”

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.

**Notes:**

- If the temperature being read is outside the device's temperature range, the message "t Lo" or "t Hi" is displayed.
- If the probe is faulty, or not connected, "P.Err" is displayed.
- If the input voltage is below the minimum operating voltage, the relay may not energize. Even though the device's display is on.
- After a power failure, the clock will be behind by the duration of the powerfailure plus a maximum of one hour.

**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:  $\pm 0.3\%$  of full scale

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

Resolution: 1 °C

**Menu operation (single display device):**

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 device):**

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

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

"⏏" will display the next menu item.

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

**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" ("▼" 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)

