



D3
53mm
DIN rail mount



D4
72mm
DIN rail mount



P44
48mmx48mm
panel mount



P49
48mmx96mm
panel mount

TEMPERATURE CONTROLLER Pt100 with 24 hour TIMER

-50°C to 440°C

D3-HTCT1
D4-HTCT1
P44-HTCT1
P49-HTCT1

Operating instructions and Guarantee Certificate
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 3-wire PT100 temperature probe. (0.1 °C resolution).

The relay may be configured for heating, cooling, heating alarm or cooling alarm functionality.

The parameter settings may be locked and code protected to avoid changes from being made by unauthorized personnel.

The menu may be reduced to allow changes to only the most commonly adjusted parameters. This reduces the risk that one of the mode advanced parameters are accidentally changed.

The adjustable range of the temperature set points may be limited to avoid temperatures from being entered that may cause damage to the overall system.

Operation:

The temperature relay changes state when the probe temperature reaches the pre-set temperature. Once the temperature has changed (in the opposite direction) by the pre-set hysteresis amount, the relay resumes its original state.

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

Note: This device does not keep track of time during power failures. The current time is memorized once per hour. This results in a loss of time of up to one hour PLUS the duration of the power failure.

Relay Operation modes:

Heating mode:

The relay is energised while the temperature rises to the set point value. When the set-point is reached, the relay de-energises until the temperature drops below the set-point by the hysteresis amount of degrees.

Heating alarm mode:

Similar to heating mode except that the relay is de-energised until the set point is reached. Once energised, the temperature must drop below the set-point by the hysteresis amount before it will de-energise. The latch facility may be used to keep the relay energised until the latch is removed (even if the temperature has dropped sufficiently)

Cooling mode:

The relay is energised while the temperature drops to the set point value. When the set-point is reached, the relay de-energises until the temperature rises above the set-point by the hysteresis amount of degrees.

Cooling alarm mode:

Similar to cooling mode except that the relay is de-energised until the set point is reached. Once energised, the temperature must rise above the set-point by the hysteresis amount before it will de-energise. The latch facility may be used to keep the relay energised until the latch is removed (even if the temperature has increased sufficiently)

Adjustable parameters:

- Pre-set temperature for relay 1 (R1) “°C”(default value: 25.0)
When the probe temperature reaches this value, relay 1 changes state.
- 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.
- Timer Override time “Ovrr” (default value: 00:00)
Set this parameter to override the clock settings. The timer relay is energised for the period of time entered into this parameter.
- Hysteresis for relay “HYSt” (default value: 1.0, range 1-100.0 °C)
Once the pre-set temperature is reached, it must change (in the opposite direction) by this amount before the relay resumes it’s original state.
- Relay 1 mode (function) “Fn.r1”(default: Heating)
The device may be configured for :
 - Heating “HEAt”
The relay is energised while the probe temperature is BELOW the pre-set temperature. Temp must DROP to re-energize relay.
 - Cooling “COOL”
The relay is energised while the probe temperature is ABOVE the pre-set temperature. Temp must RISE to re-energize relay.
 - Heating Alarm “H. AL”
The relay is de - energised while the probe temperature is BELOW the pre-set temperature.
 - Cooling Alarm “C. AL”
The relay is de - energised while the probe temperature is ABOVE the pre-set temperature.
- Maximum value for set-point “Hi” user setting (default value: 440.0)
This is the maximum value obtainable via the set-point parameters (“°C.r1” / “°C.r2”).
- Minimum value for set-point “LO” user setting (default value: -50.0)
This is the minimum value obtainable via the set-point parameters (“°C.1” / “°C.2”).
- Offset “OFSt” (default value: 0, range –10.0 to +10.0 °C)
This value is added (or subtracted if negative) to the current temperature.
- Reset “rESt”
Press “▲” and “▼” or “+” and “-” buttons simultaneously to reset the device to the factory defaults.

DUAL DISPLAY DEVICE Programming example:

Set setpoint 1 to 30.0°C:

Press “ \cup ” to display “°C .r1”

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

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

DUAL DISPLAY DEVICE Programming example:

Set the setpoint to 30.0°C:

Press “MENU” to display “°C.r1”.

Press “SELECT” to view the current value.

Use the “+” and “-” buttons to change the value to 30.0.

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.
- Make all adjustments and reset device before connecting relay.
- Probe lead resistance could affect the accuracy as much as 0.3 °C / ohm
- 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.

Specifications:

Temperature range:	-50.0 °C to + 440.0 °C
Resolution:	0.1°C
Accuracy:	±0.5 °C (@ 25 °C ambient)
Input voltage:	±15% of rated input
Probe:	PT100 (38.5 ohm/ 100 °C)
Time:	±0.05%

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)

