CDT2-24 Room Thermostat with Delay Start

Operating Instructions

Contents

CAUTION!

Before commencing any work on the electrical connections, you must first disconnect the thermostat from the mains. None of the 24V connections must be live until the installation has been completed and the housing is closed. Only qualified electricians or authorised service staff are permitted to open the thermostat.

There are parts that may carry mains voltage behind the cover. The thermostat must not be left unsupervised when open. (Prevent non specialists and especially children from gaining access to it.)

Important: Keep this document

Prior to setting the thermostat, it is neccessary to complete all required settings described in this section.

1. Factory default settings

Contacts:	Volt Free
Temperature indicator:	°C
Switching differential:	0.4°C
In built frost protection:	5°C
High and Low temp. limitation:	Off
Blue backlight activated :	for 10 secs after any button is pressed
Keypad lock:	Off

2. Specifications & wiring

Power supply:	24Vac 50Hz
Power consumption:	8 VA
Temp. control range:	5 ... 35°C
Ambient temperature:	0 ... 50°C
Contact rating:	7A 24Vac
Dimensions:	84 x 84 x 30mm
Temperature sensor:	NTC 10K Ohm @ 25°C
Switching differential:	Adjustable from 0.2/0.4/0.6/0.8/1.0˚C
Frost protection:	Only operational in stand by mode

3. Mounting

The mounting height should be 1.5 meters above the floor level.

The thermostat should be wall mounted in the room where the heating is to be controlled.

The place of installation should be chosen so that the sensor can measure the room temperature as accurately as possible.

Choose the mounting location to prevent direct exposure to sunlight or other heating / cooling sources when mounted.

The unit can be fitted to:

1. Recessed conduit boxes
2. Surface mounting boxes
3. Directly on walls.

4. Installation

Slacken the fastening screw on the bottom of the thermostat with a philips head screwdriver.

The thermostat is hinged and can be opened 180 degrees.

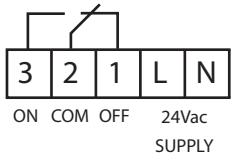
Mount the unit as described in section 3.

Wire the thermostat according to the wiring diagram.

Close the thermostat and tighten the fastening screw.

5. Wiring diagram

INTERNAL WIRING DIAGRAM CDT2-24



If 24Vac output is required, terminals L & 2 must be electrically linked.

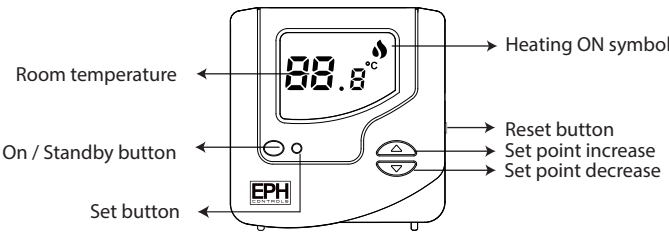
6. Frost protection

5°C

Frost protection is built into this thermostat, it is pre fixed at 5°C and is not adjustable.

It will only be activated when the thermostat is in the stand by mode and the room temperature reaches 5°C.

7. Button / Symbol description



8. Resetting the thermostat

It is necessary to reset the thermostat prior to initial use.

Press and hold the Set button for 5 seconds.

dEL will appear on the screen.

Press the RESET button on the side of the thermostat.

9. Keypad lock and unlock

OFF

To lock the keypad, press and hold the and buttons for 5 seconds.

will appear on the screen. The keypad is now locked.

To unlock the keypad, press and hold the and buttons for 5 seconds.

will disappear from the screen. The keypad is now unlocked.

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10. High and Low temperature limitation

OFF

An upper and lower temperature limit may be chosen.
Press and hold the and Set buttons for 10 seconds.
"Limit OFF" will appear on the screen.
Press the button to select "Limit ON" mode.
Press the Set button to confirm you wish to adjust the high limit temperature.
Press the and buttons to select the high limit temperature.
Press the Set button to select the low limit temperature mode.
Press the and buttons to select the low limit temperature.
Press the Set button and the thermostat is ready for operation.
"Limit" will appear on the screen.

To deactivate High and Low temperature limitation.
Press and hold the and Set buttons for 10 seconds.
"Limit ON" will appear on the screen.
Press the button to deactivate this function.
"Limit OFF" will appear on the screen.
Press the Set button and the thermostat is ready for operation.

11. Adjusting the switching differential (Normal)

Press the Set button once, Diff set will appear on the screen.
The factory default switching differential of 0.4°C will appear on the screen.
Press the and buttons to select the desired differential from 0.2 - 1˚C.
Press the Set button to return to normal operation.

12. Adjusting the setpoint temperature

Press the or buttons to adjust the temperature setpoint.

13. Changing the thermostat mode

P_1 - Normal On/Off mode
P_2 - Delay Start mode (DS)
P_3 - Time Proportional Integral Mode (TPI)

Press the **'Reset'** button at the side of the thermostat.
P_1 will appear on the screen.
Use the or buttons to change between P_1 to P_2 and P_3.
Select P_1 for normal operation.
Select P_2 for delay start.
Select P_3 for TPI – If P3 is selected you can press the Set button to choose the amount of cycles and then press the Set button to choose the proportional bandwidth.
Press the **'standby'** button to confirm.

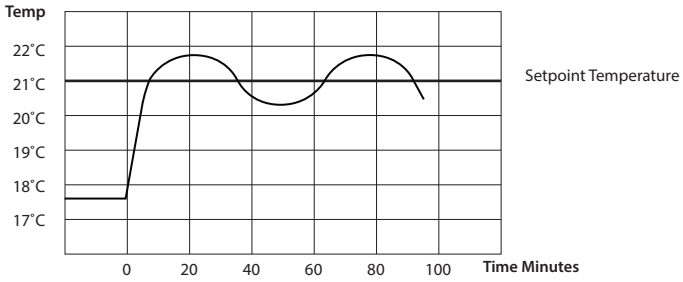
See section 16 for more information on TPI.

14. Normal control mode (On/Off)

When the temperature falls below the setpoint temperature, the flame symbol will appear and the thermostat will switch on.

When the temperature rises above the setpoint temperature, the flame symbol will disappear and the thermostat will switch off.

Graph (14.1): On / Off Control

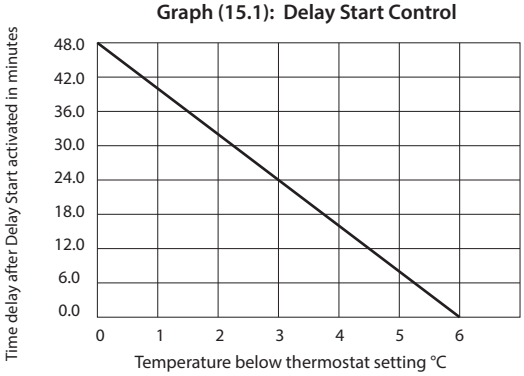


15. Delay start control mode

Delay start is an energy saving mode.

When the delay start function is active the flame symbol will continuously flash on the screen. When in this mode the activation of the thermostat is delayed by a variable time depending on the current temperature, setpoint temperature and also the fall in temperature from when the delay start has activated. See graph (15.1) Delay Start Control.

Graph (15.1): Delay Start Control



The flame symbol will continue to flash until the thermostat activates.

When activated the thermostat will allow the heating system time to reach the setpoint and delay start will remain inactive until it reaches this setpoint.

Delay start can be reactivated by:

Lowering the setpoint below the current temperature, pressing the **'standby'** button to set the temperature, then raising the setpoint above the zone temperature within 6˚C of the setpoint.

The heating will be delayed as per the line on the graph.

If the difference between the actual temperature and the setpoint is 1°C the thermostat will delay starting for circa 40 minutes.

If the difference between the actual temperature and the setpoint is 3°C the thermostat will delay starting for circa 24 minutes.

If the difference is 6°C or more, the heating will be switched on immediately.

The time delay will change if the temperature drops from the original calculation.

To deactivate Delay Start, see section 13.

16. Time Proportional Integral Mode (TPI)

When the thermostat is in TPI mode and the temperature is rising in the zone and falls into the Proportional Bandwidth section, TPI will start to affect the thermostats operation. The thermostat will turn on and off as it gains heat so that it doesn't overshoot the setpoint by too much. It will also turn on if the temperature is falling so it doesn't undershoot the setpoint which will leave the user with a more comfortable level of heat.

There are 2 settings that will affect the thermostats operation:

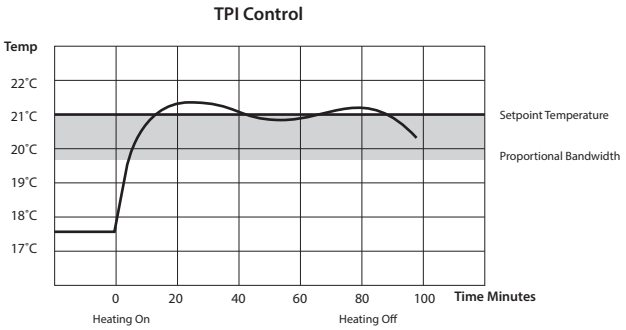
1. The Number of Heating Cycles Per Hour
2. The Proportional Bandwidth

CyC - Number of Heating Cycles per Hour: 6 Cycles

This value will decide how often the thermostat will cycle the heating on and off when trying to achieve the setpoint temperature. You can select 2/3/6 or 12.

Pb - Proportional Bandwidth: 2˚C

This value refers to the temperature below the setpoint at which the thermostat will start to operate in TPI Control. You can set this temperature from 1.5˚C to 3.0˚C in 0.1˚C increments.



Example – Program 1 on the thermostat is 21°C for 06:30am and the room temperature is 18°C. The thermostat will start the heating at 06:30am and the heat will start to increase then but will switch itself off before it reaches temperature and allow the room temperature to increase naturally – this cycle may begin again if the thermostat isn't reaching temperature.