Danfoss TP5001 Range Electronic Programmable Room Thermostat Installation Guide

Contents

Danfoss TP5001 Range Electronic Programmable Room Thermostat

Installation Instructions

Please Note:
This product should only be installed by a qualifi ed electrician or competent heating installer and should be in accordance with the current edition of the IEEE wiring regulations.

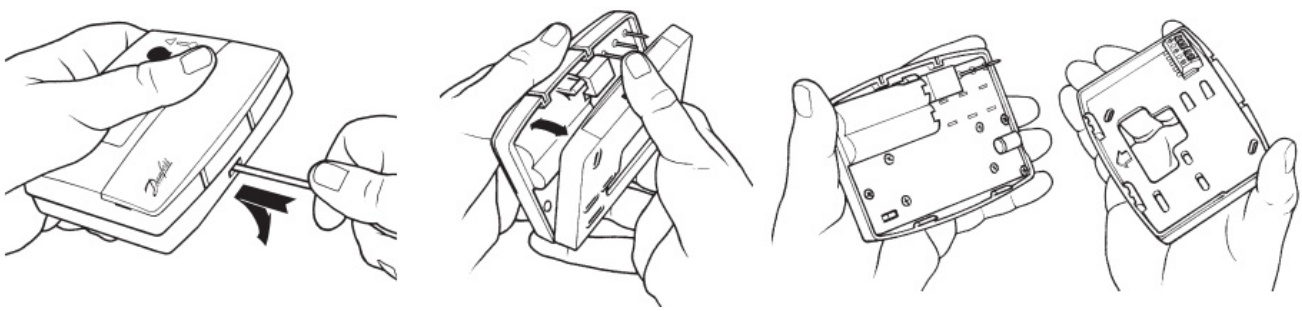
Product Specifi cation

Thermostat features	TP5001 (A)	TP5001-RF	TP5001M (A)
Power supply	2 x AA/MN1500/LR alkaline cells		230V, ±15%, 50Hz
Memory back-up	Retained for life of product		
Temperature Range Sensing	5-30°C		
Factory-set calendar clock	Automatic summer/winter time change		
Switching action of output relay	3(1)A, 10-230V	N/A	3(1)A, 10-230V, Type 1B
Transmission frequency (RF model s)	N/A	433.92MHz	N/A
Transmission range (RF models)	N/A	30m max.	N/A
Remote sensor inputs (A models o nly)	Can be set by installer for remote temperature sensor, limit sensor, window contact or telephone-activated switch contacts		
Dimensions (mm)	110 wide, 88 high, 28 deep		
Design standard	EN60730-2-9 (EN300220 for RF)		
Rated impulse voltage	2.5kV		
Ball hardness test	75°C		
Control the pollution situation	Degree 2		
Temperature accuracy	±1°C		
Time accuracy	±1 min. per month		

Important note RF products: Ensure that there are no large metal objects, such as boiler cases or other large appliances, in line of sight between the transmitter and receiver as these will prevent communication between thermostat and receiver.

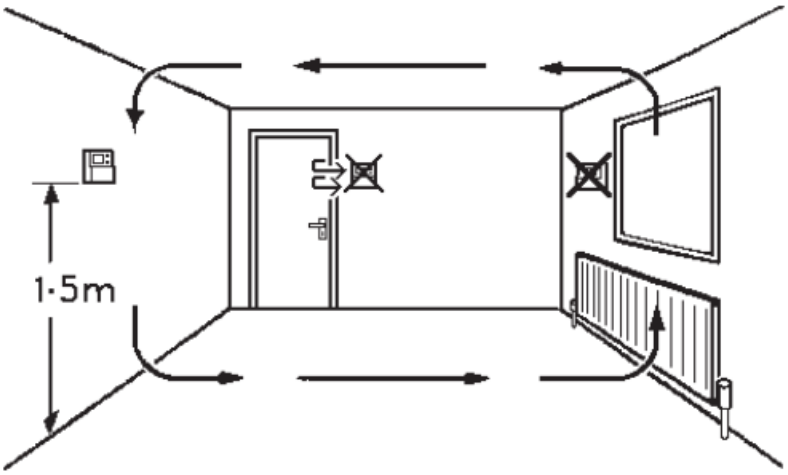
Installation

- First, remove the wallplate from the back of the unit



- From the top left hand corner of the wallplate, there must be clearances of at least 15mm to the right, 15mm to the left, 30mm above and 100mm below in order to mount the plug-in module.
- Thermostat and Remote Room Sensor:
  Fix at a height of approximately 1.5m from the fl oor, away from draughts or heat sources such as radiators,

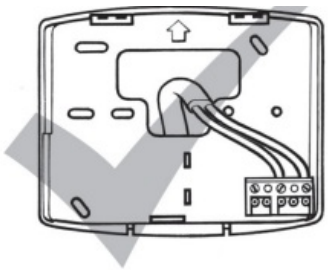
open fi res or direct sunlight.

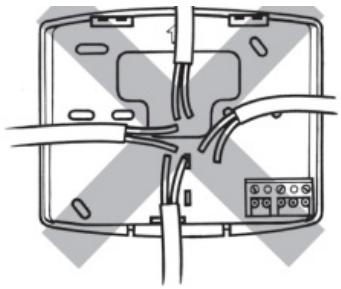


- Prior to mounting the unit the 2 DIL switches on the rear of the unit have to be moved to the required position. The factory presets are shown below.

Sw. No.	OFF		ON
1	Keyboard disabled		Keyboard enabled
2	Reset disabled		Reset enabled

Cable Access



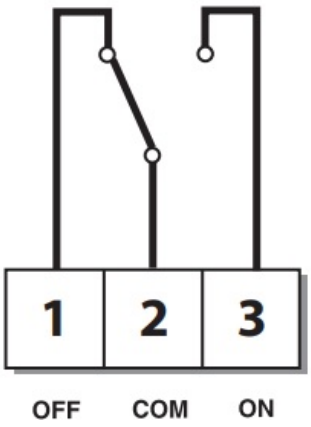


Wiring - TP5001

M 230V Models

Remote Sensor
(A version only)

Output Connections, all hard wired models



Battery Installation

When installing the batteries in the TP5001 and TP5001 RF please ensure that the correct polarity is observed as per the markings on the inside of the battery compartment.
Important: After installing the batteries, press and release the RESET button to start the unit. The display may appear blank until this is done. Once the button is released the display will appear. All date, time, programming and override settings are maintained for the life of the product.

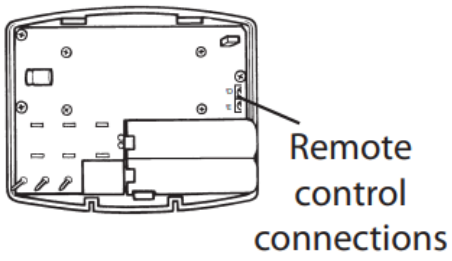
Some existing thermostats will have a Neutral and/or Earth wire connected. These are not required by the TP5001 (battery models) and must NOT be connected to any TP5001 terminals. Instead they should be made electrically safe and coiled in the recess at the back of the TP5001.

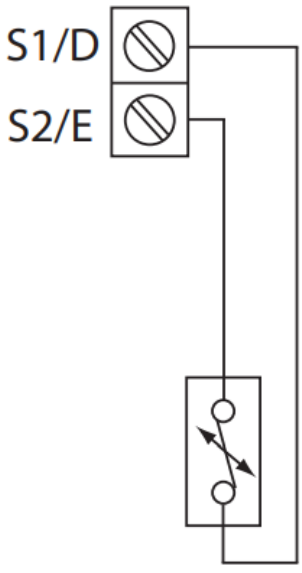
Models with remote sensor inputs
TP5001A and TP5001MA incorporate an input which can be used to connect one of the following:

1. remote room temperature sensor (sold as accessory).
2. limit sensor, for example, floor temperature sensor (sold as an accessory).
3. window contacts, card reader contacts or teleswitch contacts. See Installer Advanced Programming Options for set-up instructions.

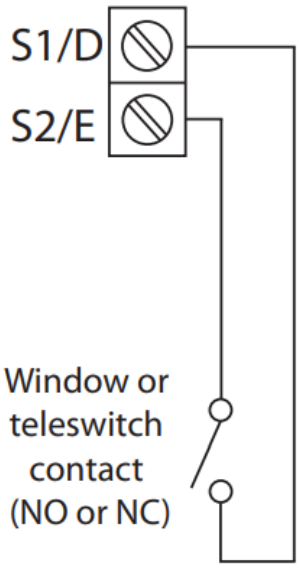
Models with remote sensor inputs

Terminal block for remote control/sensing is located on the circuit board above the battery compartment.

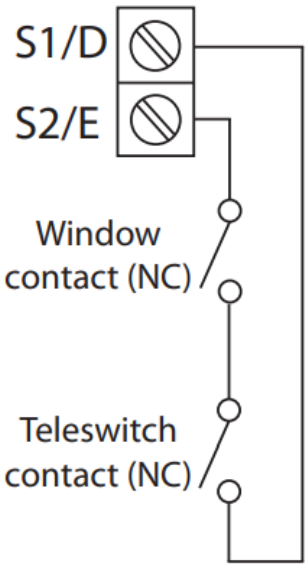




Configured for remote room sensor or limit sensor

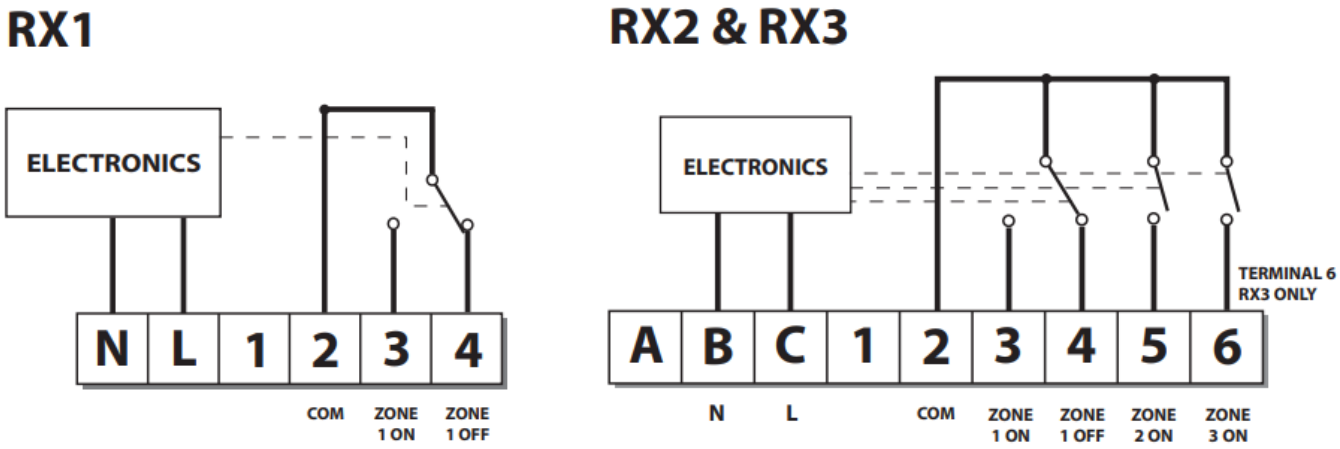


Configured for window contact or other contact such as teleswitch



Configured for window contact and other contact such as teleswitch

RX Receiver Wiring (RF models only)



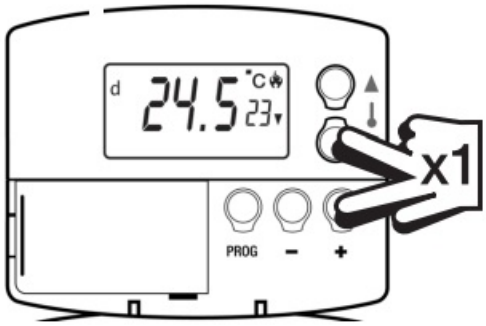
1. For mains voltage operated systems link terminal 2 to the mains live supply.
2. Power supply to unit must not be switched by the timeswitch.

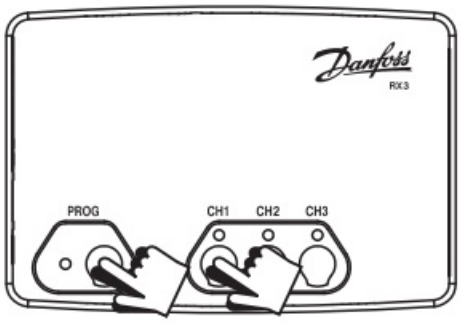
I M P O R T A N T

To ensure that the factory programmes are set and the micro-computer is operating correctly, it is essential that you press and hold the RESET button before you begin any commissioning or programming.

Commissioning (RF models only)

If the thermostat and the receiver have been supplied together in a combined pack, the units have been paired in the factory and no commissioning is required (RX1 only).
To tune the RX receiver to the frequency of the thermostat signal, follow steps 1-5 below.





- **Step 1 TP5001-RF**

  Reset the unit by pressing the recessed reset button.
- **Step 2**

  Press and hold V and + buttons for 3 seconds (TP5001-RF now transmits unique signal continuously for 3

minutes).

- **Step 3 RX1**
  Press and hold buttons PROG and CH1 for 3 seconds until green light flashes once.
- **Step 4 RX2 (if applicable)**
  Stat 1 – perform steps 1-3 and 5.
  Stat 2 – perform steps 1-2 and then press PROG and CH2 on RX2.
  RX3 (if applicable)
  Stat 1 – perform steps 1-3 and 5.
  Stat 2 – perform steps 1-2 and then press PROG and CH2 on RX3 then step 5.
  Stat 3 – perform steps 1-2 and then press PROG and CH3 on RX3.
- **Step 5 TP5001-RF**
  Press V or Λ to select temperature – the unit will revert back to operating mode.

Installer advanced programming options

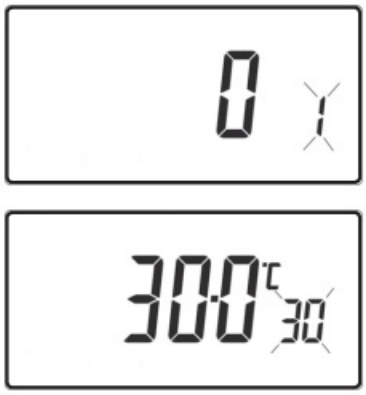
TP5001 incorporates a number of advanced features which can be set by the user. These are accessed via a User Advanced Programming Mode, please refer to User Advanced Programming in the user instructions for details.

Installer advanced programming options

TP5001 incorporates an additional number of advanced features which can be set by the installer to improve the operating effi ciency of the system and where required, to change the user functionality of the product. These are accessed via an Installer Advanced Programming Mode. These settings are optional and need only be made if there is a demand for the enhanced functions.

Entering Installer Advanced Programming mode

To access the Installer Advanced Programming Mode follow the steps below:



- Press and hold V and PROG for 3 seconds to enter User Advanced Programming, the display will change to fi gure opposite.
- Press and hold V, Λ and PROG for 5 seconds to enter Installer Advanced Programming, the display will change to fi gure opposite.
- Use + and – keys to scroll backwards and forwards between options then V and Λ keys to change the option settings. The fl ashing digit on the right hand of the display indicates the number of the selected option. The large characters display the option value selected.
- To return to RUN, press and hold PROG until colon in the display blinks.

Option 30 – Set upper limit of temperature range	
This allows the upper limit of the thermostat setting range to be electronically limited. Press **+** until Option 30 is displayed, use **V** and **Λ** to select the required setting.  	
Setting	40 – 5°C (Factory setting is 30°C)

Option 31 – Set a lower limit of the temperature range	
This allows the lower limit of the thermostat setting range to be electronically limited. Press **+** until Option 31 is displayed, use **V** and **Λ** to select the required setting.  	
Setting	5 – 40°C (Factory setting is 5°C)

Option 32 – Enable Off at lower limit	
This enables an **OFF** function to be selected if a set point below the lower limit is selected. Press **+** until  Option 32 is displayed, use **V** and **Λ** to select required setting.	
Setting 0	Disabled
Setting 1	Enabled (factory setting)

Option 33 – Enable On at upper limit	
This enables an **ON** function to be selected if a set point above the upper limit is selected. Press **+** until Option 33 is displayed, use **V** and **Λ** to select required  setting.	
Setting 0	Disabled (factory setting)
Setting 1	Enabled

Option 34 – Select On/Off or chrono-proportional	
This allows the thermostat to be set to run in On/Off mode or for a chrono-  proportional cycle rate to be selected. Press **+** until Option 34 is displayed, use **V** and **Λ** to select required settin g.	
0	On/Off
3	3 cycles per hour
6	6 cycles per hour (factory setting)
9	9 cycles per hour
12	12 cycles per hour

Option 35 – Set integration time (Option 34 set to 3, 6, 9 or 12) (seek advice prior to adjusting)	
This adjusts the integration time of the PI algorithm to increase control accuracy. It should only be adjusted after seeking advice from the manufacturer. Press **+** until Option 35 is displayed,  use **V** and **Λ** to select required setting.	
2.5	Integration time set to 2.5% (factory setting)
5	Integration time set to 5%
10	Integration time set to 10%

Option 36 – Set temperature override rule	
This establishes the degree of temperature override available to the user. Press **+** until Option 36 is  Displayed, use **V** and **Λ** to select the required setting.	
Setting 0	No limit (factory setting)
Setting 1	Limited to ±2°C
Setting 2	No override allowed

Option 37 – Set time duration of override rule (Option 36 set to 1 or 2)	
This establishes the duration of a temperature override available to the user. Press **+** until Option 37 is displayed, use **V** and **Λ** to select the required setting.  	
Setting 0	Next event (factory setting)
Setting 1	1 hour
Setting 2	2 hours
Setting 3	3 hours
Setting 4	4 hours

Option 38 – Relay state on low battery detect (battery products only)	
This establishes the position that the relay is driven to when the unit shuts down due to low battery state. Press **+** until Option 38 is displayed, use **V** and  **Λ** to select the required setting.	
Setting 0	Relay is parked with output **OFF** (factory setting)
Setting 1	Relay is parked with output **ON**

Option 40 – Number of Events per Day	
This sets the thermostat to operate with either 2, 4 or 6 switching events per day or to run it in stat mode. Press **+** until option 40 is displayed, use **Λ** or **V** to select the  required setting.	
1	Stat mode
2	Two switching events per day
4	Four switching events per day
6	Six switching events per day (Factory setting)

Option 41 – Operating Mode (5/2 day or 24-hour)	
This sets the thermostat to operate using either 5/2 day or 24 hour mode. Press **+** until option 41 is displayed, u se **Λ** or **V** to select the required setting.  	
5-2	5/2 day (Factory setting)
24	24 hour

Option 70 – Keyboard disable rules	
This establishes the degree of functionality of the keyboard available to the user. It is only active if DIL switch 1 i s set to “Disabled”. Press **+** until Option 70 is displayed, use **V** and **Λ** to select required setting.  	
Setting 0	Normal lock: Programming functions locked (factory setting)
Setting 1	Full lock: All keys are disabled

Option 71 – Random start rules (24V/230 Volt models only)	
This enables a random start on power-up following a power cut to reduce load on the electrical network. Rando m delay is in the range of 2 – 90 seconds. Press  **+** until Option 71 is displayed, use **V** and **Λ** to select required setting.	
Setting 0	Disabled (factory setting)
Setting 1	Enabled

Option 72 – Owner site reference number	
This enables multi-site owners to store a site reference number in the thermostat. Press **+** until Option 72 is displayed, use **V** and **Λ** to select the required setting.  	
Setting	Any value between 00 and 99 can be set
	Factory setting is 00

Option 73 – Owner thermostat reference number	
This enables site owners to store a thermostat reference number in the thermostat. Press **+** until Option 73 is displayed, use **V** and **Λ** to select the required setting.  	
Setting	Any value between 000 and 999 can be set Factory setting is 000
Factory setting is 000	

Option 74 – Date format for calendar clock	
This allows date format to be chosen. Press **+** until Option 74 is displayed, use **V** and **Λ** to select required setting.  	
Setting 0	European rules (dd/mm/yy), (Factory setting)
Setting 1	North American rules (mm/dd/yy)

Option 81 – Thermstat calibration bias	
This allows the thermostat calibration to be biased by up to ±1.5°K. Press **+** until Option 81 is displayed, use **V** and **Λ** to select the required setting.  	
Setting	Any value between ±1.5 (Factory setting is 0°C)

Option 90 – Define remote sensor type, “A” models only	
This allows type of remote sensor input type to be defined. Press + until Option 90 is displayed, use **V** and **Λ** to select the required setting.  	
Setting 0	No remote sensor fitted (Factory setting)
Setting 1	Remote room or duct sensor fitted, internal sensor disabled
Setting 2	Remote limit sensor fitted, refer to option 93 to define set-point
Setting 3	Configured as digital input for window, card reader or teleswitch, refer to option 94 to define o/c or s/c.

Option 93 – Set limit sensor set-point, “A” models only, (option 90 set to 2)	
This allows the thermostat limit sensor to be set; a typical application is floor heating. Press + until Option 93 is displayed, use **V** and **Λ** to select the required setting. If the temperature sensed by the limit sensor exceeds the l imit setting, the output will be  turned off until the temperature has dropped by 2°C. “F10” will flash in the display.	
Setting	Any value between 20 – 50°C (Factory setting is 27°C)

Option 94 – Configure digital input switch type, “A” models only, (option 90 set to 3)	
This allows the switch type of digital input to be configured. Press + until Option 94 is displayed, use **V** and **Λ** to select the required setting.  	
Setting 0	Contacts NC, open circuit contact to force the unit into thermostat mode, short circuit contacts to return to normal operation
Setting 1	Contacts NO, short circuit contacts to force the unit into thermostat mode, open circuit contact s to return to normal operation (Factory setting)

CONTACT

www.danfoss.com/BusinessAreas/Heating

This product complies with the following EC Directives:
Electro-Magnetic Compatibility Directive.
(EMC) (2004/108/EC)
Low Voltage Directive.

(LVD) (2006/95/EC)

Part No 40804v02s3-00 09/08

Documents / Resources

	**Danfoss TP5001 Range Electronic Programmable Room Thermostat** [pdf] Installation Guide TP5001, TP5001-RF, TP5001M, TP5001 Range Electronic Programmable Room Thermostat, TP5001, Range Electronic Programmable Room Thermostat, Electronic Programmable Room Thermostat, Programmable Room Thermostat, Room Thermostat

References

- **User Manual**