TP7001 Range

Electronic 7 Day
Programmable Room Thermostat

Installation Guide

Danfoss Heating

For a large print version of these instructions please call Marketing on 0845 121 7400.

energy saving
recommended
Certification Mark

This product complies with the following EC Directives:
Electro-Magnetic Compatibility Directive.
(EMC) (2004/108/EC)
Low Voltage Directive.
(LVD) (2006/95/EC)

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Installation Instructions

TP7001 Range

Electronic Programmable Room Thermostat

GB

22.4°C
20°
854
TUE

Index

1.0 Installation Guide 4
2.0 System Overview 4
3.0 Installation 5
- 3.1 Removing the wallplate 5
- 3.2 Installation considerations 5
- 3.3 Affixing the backplate 5
- 3.4 Wiring 6
- 3.5 Batteries 6
- 3.6 Tamperproof operation 7
- 3.7 Mounting the unit 7
- 3.8 Unit startup 7

4.0 Installer Advanced Programming Options 7
- 4.1 Service Interval Timer 7
- 4.2 Entering Installer Advanced Programming 8

5.0 Reset Procedure 17
- 5.1 Partial Reset 17
- 5.2 User Reset 17
- 5.3 Installer Reset 17

1.0 Installation Guide

GB

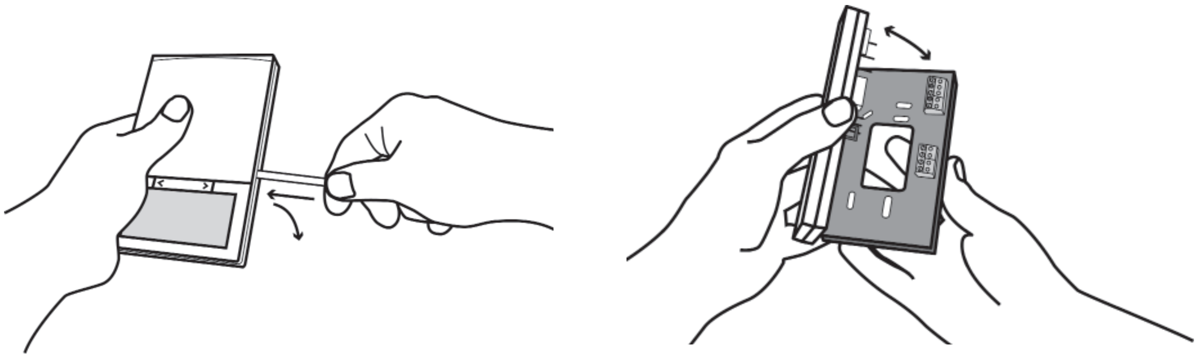
Please Note:
This product should only be installed by a qualified electrician or competent heating installer and should be in accordance with the current edition of the IEEE wiring regulations.

2.0 System Overview

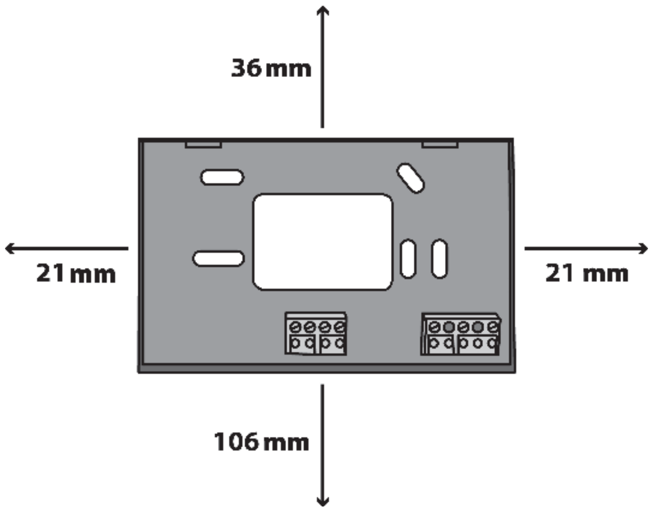
Thermostat Features	**TP7001**	**TP7001M**
Power supply	2 x AA/MN1500/LR6 alkaline batteries	230V ± 15% 50Hz
Memory backup	Retained for the life of the product	
Factory set calendar clock	Automatic summer/winter time change	
Switching action of output relay	1 x SPDT, Type 1B	
Switch rating of relay contact	3(1) A, 10-230 Volts	
Remote sensor inputs	Up to three remote sensors, which can be set by the installer for remote temperature sensor, limit sensor, outdoor sensor, window contact or telephone activated switch contacts	
Rated Impulse Voltage	2.5 kV	
Dimensions (mm)	140 wide x 91 high x 28 deep	
Ball Pressure Test	75°C	
Temperature Range	5-30°C	
Design Standard	EN 60730-2-7	
Control Pollution Situation	Degree 2	
Time accuracy	± 1 minute per month	
Temperature accuracy	±1°C	

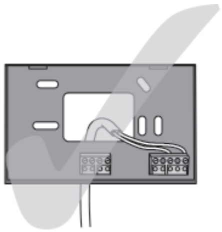
3.0 Installation

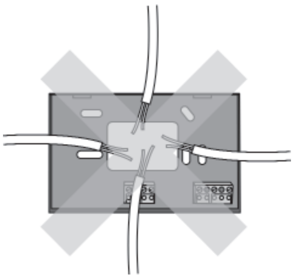
3.1 First remove the wallplate from the back of the unit.



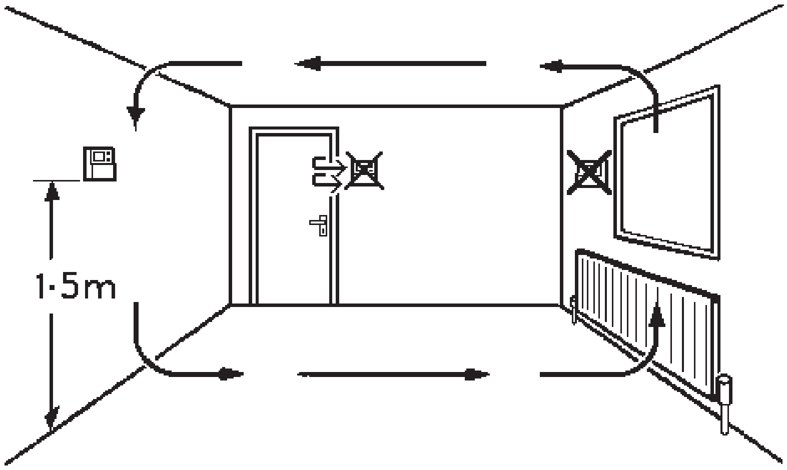
3.2 From the top left hand corner of the wallplate, there must be clearances of at least 21mm to the right, 21mm to the left, 36mm above and 106mm below in order to mount the plug-in module.





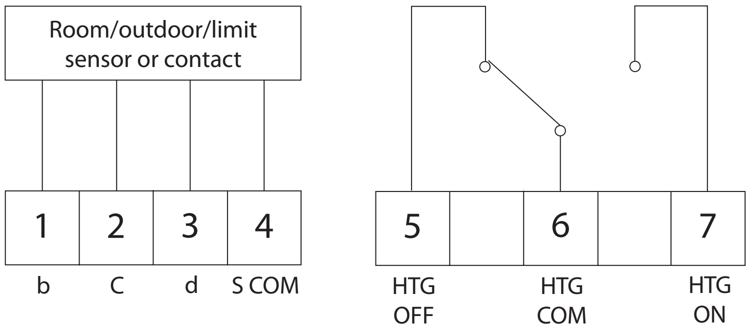


3.3 Fix the TP70001/TP7001M and its optional remote room sensor at a height of approximately 1.5m from the floor, away from draughts or heat sources such as radiators, open fires or direct sunlight.

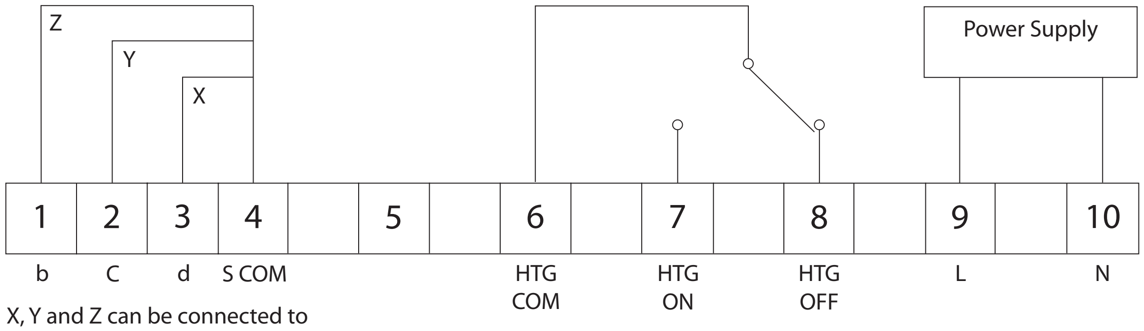


3.4 For wiring connections please refer to the diagrams below:

Battery Version


Room/outdoor/limit sensor or contact
1
2
3
4
5
6
7
b
C
d
S COM
HTG OFF
HTG COM
HTG ON

Mains Powered Version


Z
Y
X
Power Supply
1
2
3
4
5
6
7
8
9
10
b
C
d
S COM
HTG COM
HTG ON
HTG OFF
L
N

X, Y and Z can be connected to Room/Outdoor/Limit Sensor or contact

The TP7001 and TP7001M can incorporate three inputs/sensor types by using input b, C and d.

The sensor types are as follows:

1) Remote room temperature sensor (sold as an accessory).

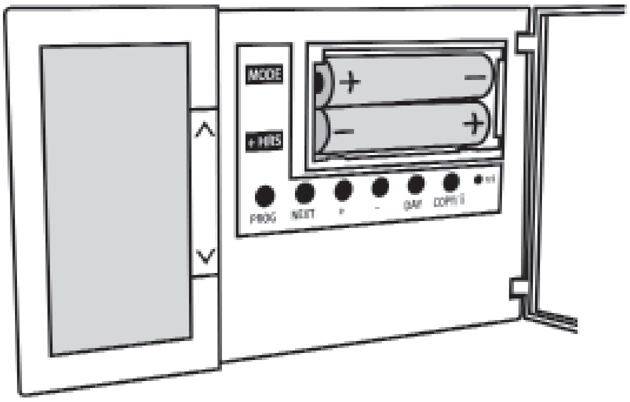
2) Limit sensor, for example, floor temperature sensor (sold as an accessory). ***Note***: F10 in display - The underfloor temperature has exceeded the threshold temperature.

3) Outdoor sensor (sold as an accessory).

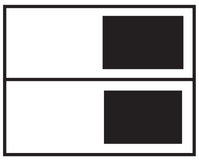
4) Window contacts, card reader contacts or teleswitch contacts.

Note: See Installer Advanced Programming Options for set-up instructions.

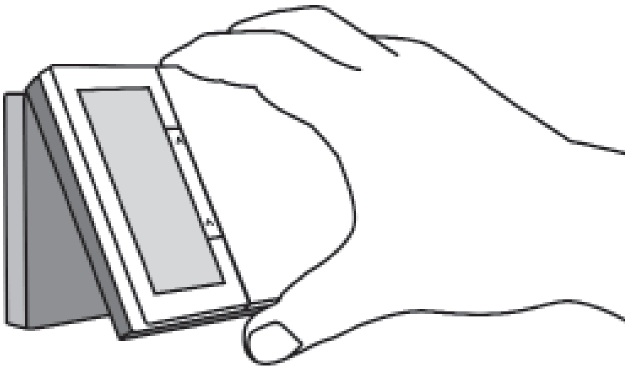
3.5 For the TP7001 battery version, insert the batteries – making sure that they are correctly oriented.


MODE
+HRS
PROG
NEXT
+
–
DAY

3.6 The unit can be made tamperproof if required by setting the DIL switches which will disable the keyboard, and/or the reset functions. The DIL switches are located on the back of the unit.

SW. No	**OFF**		**ON**
SW.1	**Keyboard Disabled**		**Keyboard Enabled**
SW.2	**Reset Disabled**		**Reset Enabled**

3.7 Mount the unit on the wallplate



Note: Always switch the mains off first and never fit/remove the thermostat to/from a live wallplate.

3.8 With the unit powered up, it is recommended to press and release the **RESET** button to start up the TP7001 unit.

4.0 Installer Advanced Programming Options

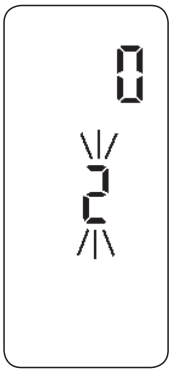
The TP7001 incorporates a number of advanced features which can be set by the user. These are accessed via the User Advanced Programming Mode, please refer to **User Advanced Programming** in the User Instructions for details.

The TP7001 incorporates an additional number of advanced features which can be set by the installer to improve the operating efficiency 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 accessed if there is a demand for the enhanced functions.

4.1 Service Interval Timer

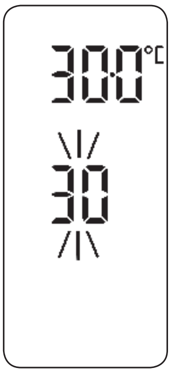
Instructions on how to access this feature are available from our customer support desk. Please note these are only issued to boni-fide heating installers.

4.2 Entering Installer Advanced Programming



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

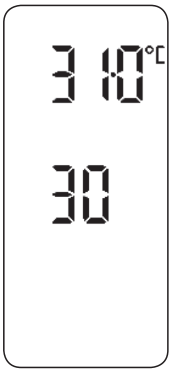
a) Press and hold **V** and **PROG** for 3 seconds to enter User Advanced Programming, the display will change to look like the image opposite.

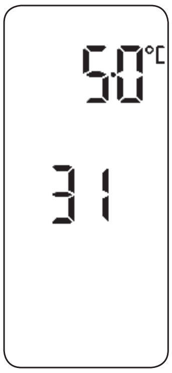


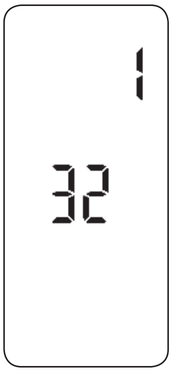
b) Press and hold **V**, **Λ** and **PROG** for 5 seconds to enter Installer Advanced Programming, the display will change to look like the image opposite.

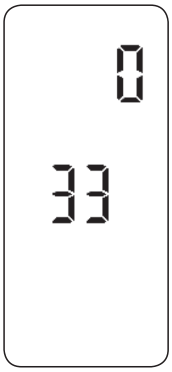
c) Use the **+** and **-** keys to scroll backwards and forwards between options then the **V** and **Λ** keys to change the option settings. The flashing digits in the centre of the display indicate the number of the selected option. The large characters in the top or bottom of the display indicate the option value selected.

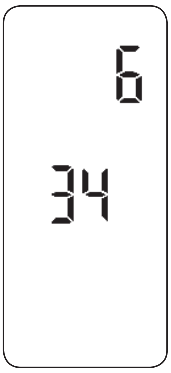
d) To return to **RUN**, press and hold **PROG** until the display returns to previous **RUN** mode.

Option 30 - Set Temperature Upper Limit	
This allows the upper limit of the thermostat setting range to be limited. Press **+** until Option 30 is displayed, use **V** or **Λ** to select required setting.	
Can be set to any value between 40.0°C and 5°C in 0.5°C steps	
Factory setting = 30°C	

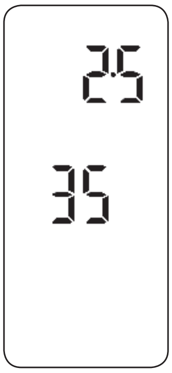
Option 31 - Set Temperature Lower Limit	
This allows the lower limit of the thermostat setting range to be limited. Press **+** until Option 31 is displayed, use **V** or **Λ** to select required setting.	
Can be set to any value between 5.0ºC and 40.0ºC in 0.5ºC steps	
Factory setting = 5ºC	

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** or **Λ** to select required setting.	
0 = Disabled	
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** or **Λ** to select required setting.	
0 = Disabled (Factory 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** or **Λ** to select required setting.	
0 = On/Off	
3 = 3 cycles/hour	
6 = 6 cycles/hour (Factory setting)	
9 = 9 cycles/hour	
12 = 12 cycles/hour	

Option 35 - Set Integration Time (Option 34 set to 3, 6, 9 or 12)



This adjusts the integration time of the PI algorithm to increase control accuracy. It is only active if Option 34 has been set to Chrono 3, 6, 9 or 12. It should only be adjusted after seeking advice from the manufacturer. Press **+** until Option 35 is displayed, use **V** or **Λ** to select required setting.

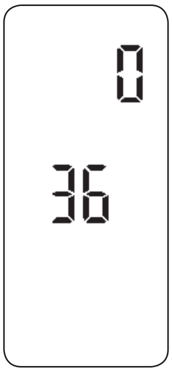
(NB Seek advice prior to adjusting)

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



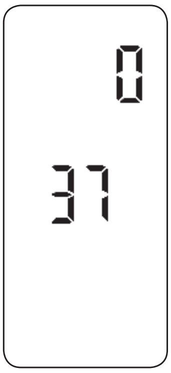
This establishes the degree of temperature override available to the user. Press **+** until Option 36 is displayed, use **V** or **Λ** to select required setting. This option is not possible if the thermostat is set to STAT in Option 40.

0 = No limit (Factory Setting)

1 = Limited to ±2°C (±3°F)

2 = No override allowed

Option 37 - Set Time Duration of Override Rule



This establishes the duration of a temperature override available to the user. Press **+** until Option 37 is displayed, use **V** or **Λ** to select required setting. This option is not possible if the thermostat is set to STAT in Option 40 or Override Limit is disabled.

0 = Next Event (Factory Setting)

1 = 1 Hour

2 = 2 Hours

3 = 3 Hours

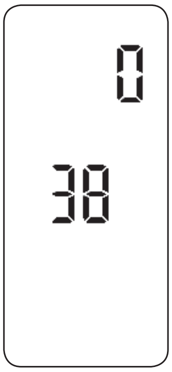
4 = 4 Hours

Option 38 - Relay State on Low Battery Detect (Battery powered versions 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** or **Λ** to select required setting. This option is only possible on battery versions.

0 = Output OFF (Factory setting)

1 = Output ON



Option 40 - Number of Events per Day

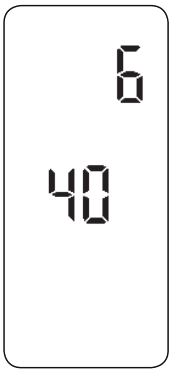
This sets the thermostat to operate with either 2, 4 or 6 switching events per day or to run in stat mode. Press **+** until Option 40 is displayed, use **V** or **Λ** to select required setting.

1 = Stat
(Manual operation - no programming function)

2 = 2 Events per day

4 = 4 Events per day

6 = 6 Events per day (Factory setting)



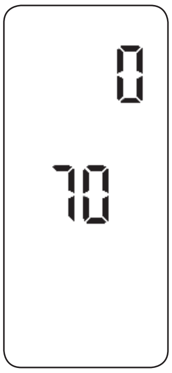
Option 41 - Operating Mode (7 Day, 5/2 Day or 24 Hour)

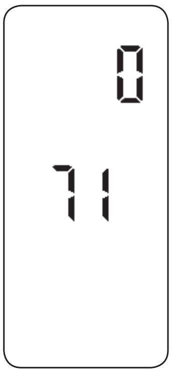
This sets the thermostat to operate using either 7 day, 5/2 day or 24 hour mode. Press **+** until Option 41 is displayed, use **V** or **Λ** to select required setting. This option is not possible if the thermostat is set to STAT in option 40.

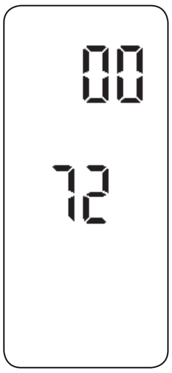
7 = 7 Day (Factory Setting)

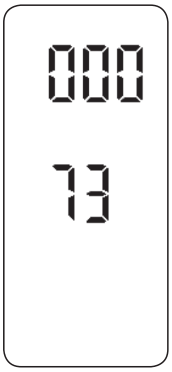
5-2 = 5+2 Day (or A-B if A days is set in option 1)

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 is set to 'disabled'. Press **+** until Option 70 is displayed, use **V** or **Λ** to select required setting.	
0 = Normal Lock - Programming Functions Locked (Factory Setting)	
1 = Full Lock - All keys are disabled	

Option 71 - Random Start Rules (24V/230V versions only)	
This enables a random start on power-up following a power cut to reduce load on the electrical network. Random delay is in the range of 2-90 seconds. Press **+** until Option 71 is displayed, use **V** or **Λ** to select required setting.	
0 = Disabled (Factory setting)	
1 = Enabled	

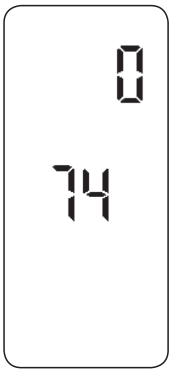
Option 72 - Owner Site Reference Number	
This enables multi-site owners to store a site reference number in the thermostat. Press **+** until Option 72 is displayed, use **V** or **Λ** to select required setting.	
00 (Factory setting)	
01 to 99, with scroll over	

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** or **Λ** to select required setting.	
000 (Factory setting)	
001 to 999, with scroll over	

Option 74 - Date Format for Calendar Clock

This allows date format to be chosen. Press **+** until Option 74 is displayed, use **V** or **Λ** to select required setting.

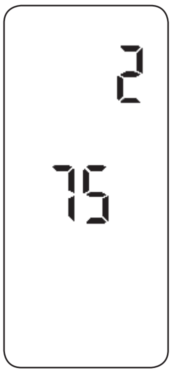
0 = European (dd/mm/yy) (Factory setting)
1 = American (mm/dd/yy)



Option 75 – LCD Switch Off

This option allows the measured temperature part of the display to be disabled or all of the display to be switched off when not in use.
Press **+** until Option 75 is displayed, use **V** or **Λ** to select required setting.

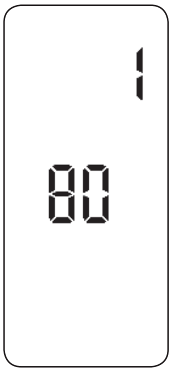
0 = Display off after 5 minutes
1 = Measured Temperature display disabled
2 = LCD always active (Factory setting)



Option 80 - Enable / Disable + Hours Function

Enables or disables the +Hours button. Press **+** until Option 80 is displayed, use **V** or **Λ** to select required setting.

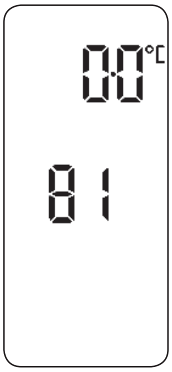
0 = Disabled
1 = Enabled (Factory setting)

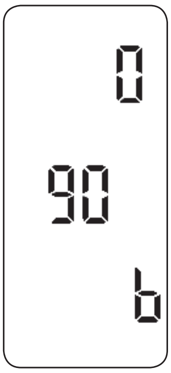


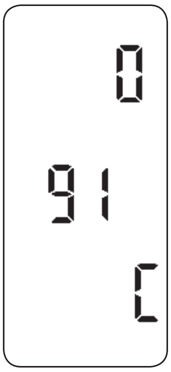
Option 81 - Thermometer Calibration Bias

This allows the thermostat calibration to be biased by up to ±1.5°C. Press **+** until Option 81 is displayed, use **V** or **Λ** to select required setting.

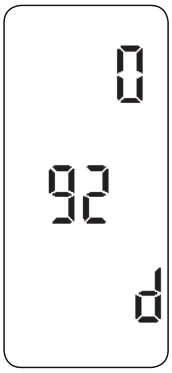
Any value between -1.5°C and 1.5°C in 0.5°C steps
Factory setting is 0.0°C



Option 90 - Define Remote Sensor Type (Remote sensor 1 - Backplate connection b)	
This allows type of remote sensor input type to be defined. Press **+** until Option 90 is displayed, use **V** or **Λ** to select required setting.	
0 = No Sensor (Factory setting)	
1 = Remote room or Duct sensor, internal sensor disabled	
2 = Remote limit (floor) sensor, define setpoint in option 93	
3 = Digital input for window, card reader, or teleswitch, define functionality in option 94	
4 = Outdoor temperature sensor (information only - no control via sensor reading)	

Option 91 - Define Remote Sensor Type (Remote sensor 2 - Backplate connection C)	
This allows type of remote sensor input type to be defined. Press **+** until Option 91 is displayed, use **V** or **Λ** to select required setting.	
0 = No Sensor (Factory setting)	
1 = Remote room or Duct sensor, internal sensor disabled	
2 = Remote limit (floor) sensor, define setpoint in option 93	
3 = Digital input for window, card reader, or teleswitch, define functionality in option 94	
4 = Outdoor temperature sensor (information only - no control via sensor reading)	

Option 92 - Define Remote Sensor Type (Remote sensor 3 - Backplate connection d)



This allows type of remote sensor input type to be defined. Press **+** until Option 92 is displayed, use **V** or **Λ** to select required setting.

0 = No Sensor (Factory setting)

1 = Remote room or Duct sensor, internal sensor disabled

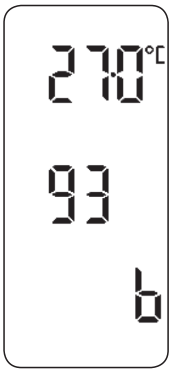
2 = Remote limit (floor) sensor, define setpoint in option 93

3 = Digital input for window, card reader, or teleswitch, define functionality in option 94

4 = Outdoor temperature sensor (information only - no control via sensor reading)

Note: Only one of each type of sensor may be fitted - the choices within options 90-92 will automatically be limited once remote sensor types are chosen.

Option 93 - Set Limit Sensor Set-Point (One of options 90-92 set to 2)



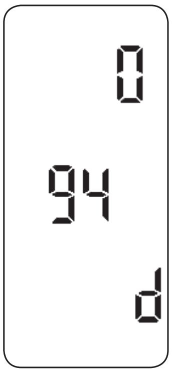
This allows the thermostat limit sensor to be set, typical application is floor heating. Press **+** until Option 93 is displayed, use **V** or **Λ** to select required setting. If the temperature sensed by the limit sensor exceeds the limit setting the output will be turned off until the temperature has dropped by 2°C. "F10" will flash in the display while the output is disabled.

This option is only possible if one remote sensor option is set to Remote Limit (Floor) Sensor (Setting 2)

Any value between 20.0ºC and 50.0ºC in 0.5.0ºC steps

Factory setting is 27ºC

The temperature set for the limit point sensor will be determined by the type of floor. The recommended limits are:
Tiles on chipboard and wooden floors 27°C
Carpet or vinyl on chipboard 35°C
Tiles on concrete floor 40°C
Concrete, screed, etc 45°C

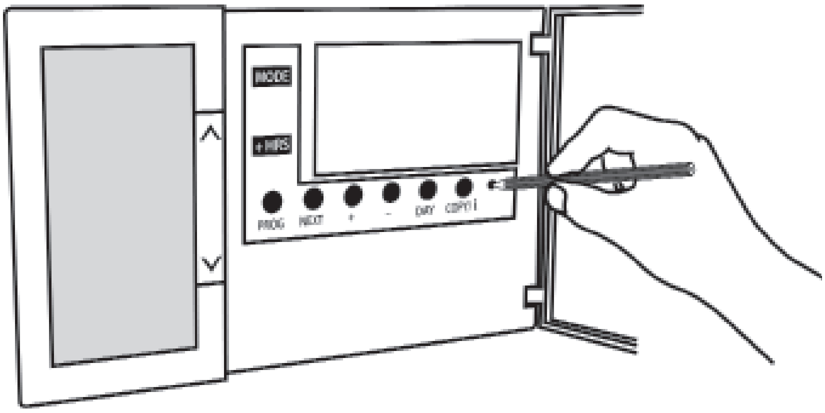
Option 94 - Configure Digital Input Switch Type (One of options 90-92 set to 3)	
This allows the switch type of the digital input to be configured. Press **+** until Option 94 is displayed, use **V** or **Λ** to select required setting. This option is only possible if one remote sensor option is set to Digital Input (Setting 3)	
0 = Contacts Normally Closed, open circuit contact to force unit into thermostat mode, short circuit contacts to return to normal operation.	
1 = Contacts Normally Open, short circuit contacts to force unit into thermostat mode, open circuit contacts to return to normal operation (Factory setting)	

5.0 How to Reset the Unit

5.1 Partial reset

Partial reset is used if the display freezes for any reason.

1. Press and release the **RESET** button.



This does not reset any programmes or the time or date. It will simply restore operation in the unlikely event the unit has become unresponsive.

5.2 User full reset

1. Hold down the **PROG** button
2. Press and release the **RESET** button

This resets event times and any User Advanced Programme settings, but does not reset time or date.

5.3 Installer full reset

1. Press and hold **V** and **PROG** for approx. 3 seconds to enter User Advanced Programming
2. Press and hold **V, Λ** and **PROG** for approx. 5 seconds to enter Installer Advanced Programming
3. Hold down the **PROG** button
4. Press and release the **RESET** button

This resets event times and all User and Installer Advanced Programming settings and returns them to factory settings, however, time, date and service due date are not reset.

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Part No. 37034v02   11/12