

## Installation Guide

# Danfoss ETemp Next Plus

Electronic Intelligent Timer  
Thermostat



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## 1 Introduction

The Danfoss ECtemp Next Plus is an electronic programmable timer thermostat used for controlling electrical floor heating elements. The thermostat is designed for fixed installation only and can be used for both direct heating of the entire room and for comfort heating of the floor.

**More information on this product can also be found at: [electricheating.danfoss.com](http://electricheating.danfoss.com)**

### 1.1 Technical Specifications

Operation voltage	85-250V~, 50/60 Hz
Standby power consumption	0,4 W
Relay: Resistive load Inductive load	Max. 16 A / 3680 W @ 230 V cos $\varphi$ = 0.3 Max. 1 A
Floor sensor	Floor Sensor NTC 10 k $\Omega$ at 25°C Room Sensor NTC 10 k $\Omega$ at 25°C
Sensing values: (Default NTC 15 K) 0°C 20°C 50°C	42 k $\Omega$ 18 k $\Omega$ 6 k $\Omega$
Control	Hysteresis $\pm 1.0^\circ \text{C}$

Ambient temperature	-10°C to +60°C
Frost protection temperature	5°C to +9°C (default 5°C)
Temperature range	Room temperature: 5-35°C. Floor temperature: Max. 35°C is default.
Sensor failure monitoring	The thermostat has a built-in monitoring circuit, which will switch off the heating if the sensor is disconnected or short-circuited
Cable specification max.	1x4 mm <sup>2</sup> or 2x2,5 mm <sup>2</sup>
Ball pressure test temperature	75°C
Pollution degree	2 (domestic use)
Controller type	1C
Software class	A
Storage temperature	-20°C to +65°C
IP class	30
Protection class	Class II - 
Dimensions	86 x 86 x 16/40.5 mm (in-wall depth: 24.5 mm)
Weight	103 g

Electrical safety and Electro-Magnetic Compatibility for this product is covered by the compliance with the EN/IEC

Standard "Automatic electrical controls for household and similar use":

- EN/IEC 60730-1 (general)
- EN/IEC 60730-2-9 (thermostat)

### 1.2 Safety Instructions

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Make sure the mains supply to the thermostat is turned off before installation.

**Important:** When the thermostat is used to control a floor heating element in connection with a wooden floor or similar material, always use a floor sensor and never set the maximum floor temperature to more than 35°C.

#### **Please also note the following:**

- The installation of the thermostat must be done by an authorized and qualified installer according to local regulations.
- The thermostat must be connected to a power supply via an all-pole disconnection switch.
- Always connect the thermostat to continuous power supply.
- Do not expose the thermostat to moisture, water, dust, and excessive heat.

## 2 Mounting Instructions

Please observe the following placement guidelines:



Place the thermostat at a suitable height on the wall (typically 80-170cm.).



The thermostat should not be placed in wet rooms. Place it in an adjacent room and use floor sensor only. Always place the thermostat according to local regulation on IP classes and use floor sensor only.



Do not place the thermostat on the inner side of an exterior wall.



Always install the thermostat at least 50 cm. from windows and doors.



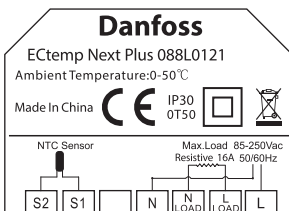
Do not place the thermostat in a way that it will be exposed to direct sunlight.



**Note:** A floor sensor enables a more accurate temperature control and is recommended in all floor heating applications and **mandatory** under wooden floors to reduce the risk of over-heating the floor.

- Place the floor sensor in a conduit in an appropriate place where it is not exposed to sunlight or draft from door openings.
- Equally distant and  $>2\text{cm}$  from two heating cables.
- The conduit should be flush with the floor surface - countersink the conduit if necessary.
- Route the conduit to the connection box.
- The bending radius of the conduit must be min 50mm.

Connect the thermostat according to the connection diagram.



The screen of the heating cable must be connected to the earth conductor of the power supply cable by using a separate connector.

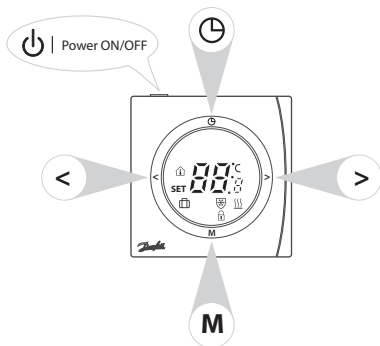
**Note:** Always install the floor sensor in a conduit in the floor.

### 3 Symbols

The following symbols appears in the display:

Symbols	Function description
	Room temperature
	Floor temperature
	Temperature indication
 <b>SET</b>	Set temperature
	Floor heating, Active
	Frost protection, Active

Symbols	Function description
	Away mode
	Child safety lock
	Power ON/OFF
	Timer and program operation
<b>M</b>	Mode change/check floor temp./child safety lock/parameters setting
<b>&lt; &gt;</b>	Up/down selectors





## 4 Settings

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### 4.1 Power ON/OFF

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Switch thermostat ON/OFF by pressing button on top of thermostat.

### 4.2 Initial Settings

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Initial settings must be specified when the unit is activated for the first time:


Press **M** button for 6 seconds to enter the parameter setting mode.

The upper digits indicate the parameter number.

Press **M** for parameter selection.

Press < or > to set the parameter range.

Complete all adjustments.

Press  to exit ECtemp Next Plus settings, which is available for this purpose.

To exit ECtemp Next settings automatic wait approx. 30 seconds.

The digits indicate the set value as follows:

No.	Parameter settings	Settings range	Default
P01	Working mode	01: Manual 02: Advanced Programmable Timer	02
P02	Temperature control mode	01: Room and floor temp; 02: Only floor temp.; 03: Only room temp.*	01
P03	Maximum floor temperature	20-30°C (only for 01 in P02)**	35°C
P04	Frost protection	01: Enable; 02: Disable	01
P05	Frost protection setpoint	5-9°C	5°C
P06	Timer display option	01: 24h; 02 12h	01
P07	Room temp. display option at shutdown	01: No display current temp.; 02: Display current temp.	01

\* It will be possible to use only a room sensor. However, this option is not recommendable due to an increased risk of overheating the floor. **See 4.9 Change to Room control only**

\*\* P03 appears on relevant temperature control mode. **See 4.10 Extending Maximum floor temperature limitations to 45°C**

## 4.3 Advanced Programmable Timer


The Advanced Programmable Timer mode enables the setting of a timer-controlled program for automatic comfort

temperature, and an energy-saving lower setback temperature if standard room comfort temperature is not required.



The function consists of 2 programs:

**P1** with 4 events in 5 days  
(Mon. Tue. Wed. Thu. Fri.)

**P2** with 4 events in 2 days (Sat. Sun.).

**P1:** Press  and hold to display Mo. Tu. We. Th. Fr.

**P1, Event 1:**



1. Use < or > to select the start time.
2. Press  to accept the setting.
3. Use < or > to select the temperature.
4. Press  to accept the setting.

**P1, Event 2-4:**

Repeat the Event 1 procedure for programming Event 2-4.

**P2:** Sa. Su. are now shown in the display.

**P2, Event 1:**

1. Use < or > to select the start time.
2. Press  to accept the setting.
3. Use < or > to select the temperature.
4. Press  to accept the setting.

**P2, Event 2-4:**

Repeat the Event 1 procedure for programming Event 2-4.

The thermostat will continue the 4-event program based on the present time and day.

To set and change the room temperature temporarily:

1. Press < or > at any time to change the desired temperature value. **SET** is shown in the display.

- When releasing the < or >, the display returns to showing the actual temperature. This temperature change is only temporary and will be maintained only until the next programmed setting!

A default program provides timer control if the customer does not create own programs:

Days	Event 1		Event 2		Event 3		Event 4	
	Start time	Temp.	Start time	Temp.	Start time	Temp.	Start time	Temp.
Mon - Fri.	6:30	20°C (27°C)*	8:30	15°C (25°C)*	16:30	20°C (27°C)*	22:30	25°C (25°C)*
Sat - Sun.	7:30	20°C (27°C)*	9:30	20°C (27°C)*	16:30	21°C (28°C)*	22:30	25°C (25°C)*

*\*Only floor temperature control mode.*

## 4.4 Temperature Setting

Changing of desired temperature - press < or >.  
**SET** is showed in the display.

Adjustment is changed in steps of 0.5°C

When releasing < or > again the display returns to normal mode and shows actual temperature.

It will be possible to set the maximum floor temperature up to 45°C.

It would also be possible to use only one temperature sensor. However, this option is not recommendable as this cause an increased risk of overheating of the floor.


Extending maximum floor temperature and Setting into room only mode – See point 4.9 and 4.10.

**IMPORTANT:** When the thermostat is used to control a floor heating element in connection with a wooden floor or similar material, always use a floor sensor and never set the maximum floor temperature to more than 35 °C.


Thermal resistance [m <sup>2</sup> K/W]	Examples of Flooring	Details	Approximate setting for 25°C floor temperature
0.05	8 mm HDF based laminate	>800 kg/m <sup>3</sup>	28°C
0.10	14 mm beech parquet	650 - 800 kg/m <sup>3</sup>	31°C
0.13	22 mm solid oak plank	>800 kg/m <sup>3</sup>	32°C
< 0.17	Max. carpet thickness suitable for floor heating	acc. to EN 1307	34°C
0.18	22 mm solid for planks	450 - 650 kg/m <sup>3</sup>	35°C


## **4.5 Timer Setting**

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To adjust time and week day - press 

Use < or > to adjust hours,

Press  again to shift to minutes and use < or > for adjusting<sup>3</sup>

Press  again to shift to weekdays and use < or > for selecting right day

Finish timer setting by pressing any other button or wait for automatic exit after 6 sec. without operation

## **4.6 Safety Lock**

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Press **M** and > simultaneous to enable Safety lock.

To release safety lock press **M** and > simultaneous again.

## **4.7 Away Mode**

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Press **M** to get into Away mode

 is showed in the display

Changing the desired temperature in Away mode

Press < or >.

**SET** is showed in the display

Adjustment in steps of 0.5°C

Press **M** to exit Away mode again

### 4.8 Present Floor Temperature

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Press **M** and hold – Press < within 6 sec also

↓ start to flash and current floor temperature is being displayed.

Press any other button to exit or wait for automatic exit after 6 sec. without operation

### 4.9 Change to Room control only

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#### Switch Power OFF

Press **M** and Timer buttons simultaneously for approx. 10 seconds

Select Function P08: Only Room temperature control

Select Setting 01: Enable

#### Switch Power ON

Press **M** button for approx. 6 seconds

Select Parameter Setting P02: Temperature Control mode

Select Setting Range 03: Room Only mode

### 4.10 Extending Maximum floor temperature limitation to 45°C

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#### Power OFF

Press **M** and Timer buttons simultaneously for 10 seconds into those parameters setting.

Select Function P07 (Table in 4.11): Setting range extension for P06, P07 and P08

Select Setting 02: Maximum 45°C

Adjust Maximum Floor temperature according to need up to 45°C

## Power ON

Press M button for 6 seconds

Select P03 (Table in 4.2): raise floor temperature limitation higher than 35°C by using the >

### 4.11 Table for 4.9 Change to Room control only and 4.10 Extending Maximum Floor temperature limitations to 45°C

No.	Function	Setting	Factory default
			Danfoss ECtemp™ Next Plus
P01	Room Sensor Calibration	Offset:-10°C to +10°C	0°C
P02	Floor Sensor Calibration	Offset:-10°C to +10°C	0°C
P03	Maximum Room Temp. Limitation	5-35°C(Active in Temperature Control Mode 01)	35°C
P04	Minimum Room Temp. Limitation	5-35°C(Active in Temperature Control Mode 01)	5°C
P05	Maximum Room Temp. Limitation	5-35°C(Active in Temperature Control Mode 02)	35°C



P06	Minimum Room Temp. Limitation	5-35°C(Active in Temperature Control Mode 02)	5°C
P07	Setting range extension for P06, P07, P08	01: Max. 35°C, 02: Max. 45°C	01
P08	Only room temperature control	01: Enable, 02: Disable	02

## 5 Error Codes

E1	Room sensor failure
E2	Floor sensor failure
EE	EEPROM failure
Lo	Temperature lower than 0°C
Hi	Temperature higher than 5°C

All relay output will be turned off in all cases.

## 6 Warranty



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## **7 Disposal Instruction**

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