

ENGINEERING TOMORROW



# HOME Intelligent radiator thermostat

#### **Installation Guide**

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## 1. Installation

**1.1** Identify your eco thermostat eco comes in several versions to meet the demands of different markets. To identify, see the code number on the box label.

Code no.	Version characteristics	Quick guide languages
014G0080	(DK) eco supplied with a separate RA-, RAV, RAVL and K adapter, to be fitted on a Danfoss RA, RAV and RAVL valve or competitor valves with M30x1,5 thread. Default MODERATE and FORECAST ON in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT
014G0081	(DE) eco supplied with a separate RA, RAV, RAVL and K adapter, to be fitted on a Danfoss RA, RAV and RAVL valve or competitor valves with M30x1,5 thread. Default QUICK and FORECAST OFF in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT
014G0082	(FR) eco supplied with a separate RA, COMAP and K adapter, to be fitted on a Danfoss RA valve,COMAP valves with M28x1,5 thread or competitor valves with M30x1,5 thread. Default QUICK and FORECAST OFF in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT
014G0083	(PL, UK, NL, BE, HR, HU, RO, SK, CZ, SI, NO) eco supplied with a separate RA, RTD and K adapter, to be fitted on a Danfoss RA, and RTD valve or competitor valves with M30x1,5 thread. Default QUICK and FORECAST OFF in software setting	PL, UK, NL, NO, CZ, HR, HU, RO, SK, SI, FR, SE
014G0084	(AT) eco supplied with a separate RA, RTD, Hertz and K adapter, to be fitted on a Danfoss RA valve, RTD valves, Hertz valves with M28x1,5 thread or competitor valves with M30x1,5 thread. Default QUICK and FORECAST OFF in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT
014G0085	(FI, LT, EE, LV, IS) eco supplied with a separate RA-and K adapter, to be fitted on a Danfoss RA valve or competitor valves with M30x1,5 thread. Default MODERATE and FORECAST OFF in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT
014G0086	(SE) eco supplied with a separate RA-, MMA, and K adapter, to be fitted on a Danfoss RA valve, an MMA valve with M28x1,5 thread or competitor valves with M30x1,5 thread. Default MODERATE and FORECAST OFF in software setting	PL, UK, NL, NO, CZ, HR, HU, RO, SK, SI, FR, SE
014G0087	(ES, PT) eco supplied with a separate RA, Orkli, and K adapter, to be fitted on a Danfoss RA valve, an Orkli valve with M28x1 thread or competitor valves with M30x1,5 thread. Default QUICK and FORECAST OFF in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT
014G0088	(IT) eco supplied with a separate RA-, Herz and K adapter, to be fitted on a Danfoss RA valve, an Herz valve with M28x1,5 thread or competitor valves with M30x1,5 thread. Default QUICK and FORECAST OFF in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT
014G0089	(CH) eco supplied with a separate RA-, RAV, RAVL and K adapter, to be fitted on a Danfoss RA, RAV and RAVL valve or competitor valves with M30x 1,5 thread. Default QUICK and FORECAST OFF in software setting	DK, UK, FI, LT, EE, LV, IS, DE, FR, ES, PT, IT

**1.2** In the package (eco are supplied with the adapters as above.) Each pack contains:

			2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
eco sen	sor Quick Guid	de Allen key, 2 i	mm Adapter Guide	e

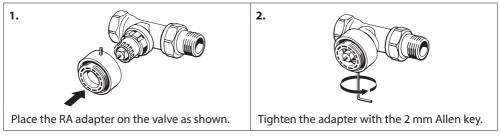
### **1.3 Overview of valve adapters**

Adapters for a wide range of different valve types are available as accessories.

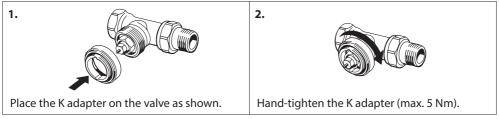
Adapter type	Code no.	Adapter	Valve
For Danfoss RA valves	014G0251		
For M30 x 1.5 (K) valves	014G0252		
For Danfoss RAV valves	014G0250		
For Danfoss RAVL valves	01400230		
For Danfoss RTD valves	014G0253		
For M28 valves:			
- MMA	014G0255		Ala
- Herz	014G0256		
- Orkli	014G0257	622)	
- COMAP	014G0258		

#### 1.4 Installing the right adapter

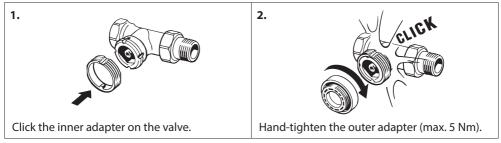
#### **Adapter for RA valves**



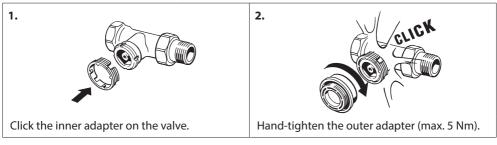
#### Adapter for M30 x 1.5 (K) valves



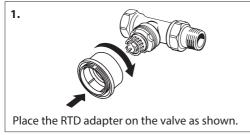
#### Adapter for RAV valves (accessory)



#### Adapter for RAVL valves (accessory)



#### Adapter for RTD valves (accessory)





#### Adapters for M28 valves (accessories)

Please follow the instructions supplied with the valve adapter for the specific M28 valve.

#### 1.5 Inserting the batteries

Remove the battery cover and insert two AA batteries. Make sure the batteries are correctly oriented.

Rechargeable batteries **must not** be used.

When replacing batteries the programme settings will be preserved, but after two minutes the settings for time and date are reset.

The low battery symbol 🖾 is displayed approx. one month before the batteries run out.

After approx. two weeks the symbol will flash 14 times from 19:00 to 21:00 hrs.

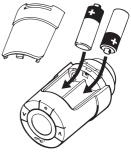
Before the batteries run out eco will leave the valve in Frost Protection position to protect the heating system from damage.

## 1.6 Using the buttons

eco has two arrow buttons 🖗 which allow you to navigate the display and the menus and to set the temperature.

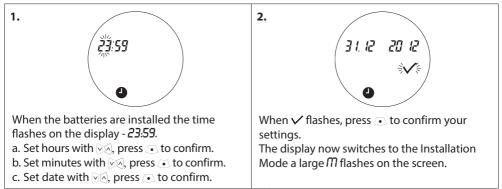
The middle button 💿 is used to select and confirm.

If the display is off, press either button to activate the display.

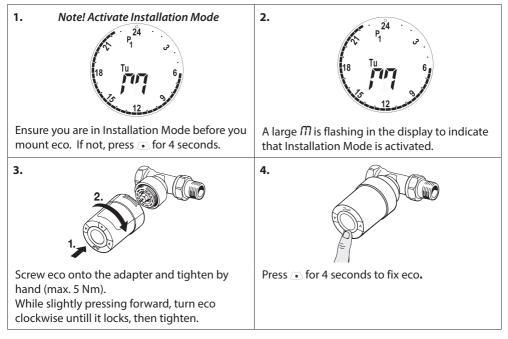




#### 1.7 Setting time and date for the first time



#### 1.8 Installing eco



#### 1.9 Automatic adjustments

When eco is installed it will automatically begin to adjust itself to your heating system. During this process you might experience that the thermostat reacts slowly or turns the heat up and down by itself. This is normal and a necessary part of the adjustment process.

#### 1. Adjusting to the valve

During the first night of operation eco will shut off the radiator heat and then open again to detect the exact opening point of the valve. This will allow eco to control the heat as efficiently as possible. If necessary, the procedure is repeated once a night for up to a week.

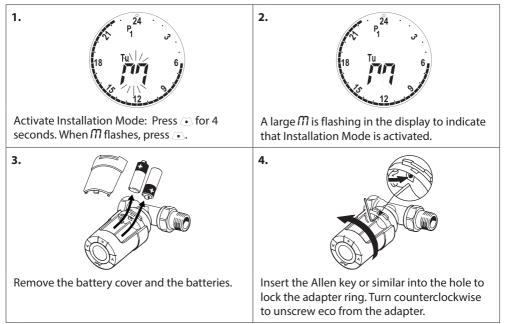
#### 2. Intelligent Control (Forecast)

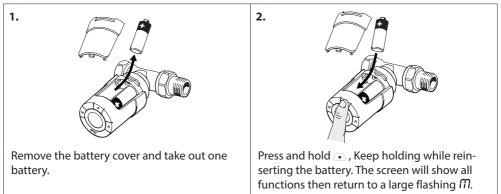
If you activate Intelligent Control eco learns during the first week of operation when it is necessary to start heating the room in order to reach the correct temperature at the correct time.

The intelligent control will continuously adjust the heating time compared to seasonal temperature changes. To activate Intelligent Control see chapter 5.5.

Using Saving Program requires that your heating system has enough heat for a short period during heat up. If your experience problems you should contact your installer.

#### 1.10 Removing eco





#### 1.11 Resetting eco to default settings

#### 1.12 Removing an adapter from eco

1.	2.
Remove the battery cover.	Insert a small Allen key or similar into the lock- ing hole to lock the adapter ring.
3.	4.
With the Allen key locking the adapter ring, turn the adapter in the shown direction.	Put back the battery cover. Mount eco on another valve adapter accord- ing to the instructions supplied with the adapter.

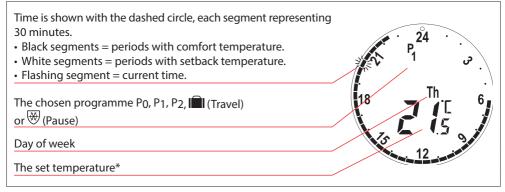
## 2. Technical specifications

Thermostat type	Programmable electronic radiator valve controller
Recommended use	Residential (pollution degree 2)
Actuator	Electromechanical
Display	Grey digital with backlight
Software classification	A
Control	PID
Power supply	2 x 1.5 V alkaline AA batteries (not included)
Power consumption	3 μW in standby 1.2 W when active
Battery life	Up to 2 years
Low battery signal	Battery icon will flash in display. If battery level is critical, the whole display will flash.
Ambient temperature range	0 to 40 °C
Transportation temperature range	-20 to 65 °C
Maximum water temperature	90 °C
Temperature setting range	4 to 28 °C
Measurement interval	Measures temperature every minute
Clock accuracy	+/- 10 min/year
Spindle movement	Linear, up to 4.5 mm, max. 2 mm on valve (1 mm/s)
Noise level	<30 dBA
Safety classification	Туре 1
Weight (incl. batteries)	177 g (with RA adapter)
IP class	20 (not to be used in hazardous installations or in places where it will be exposed to water)
Approvals, markings etc.	CE S Intertek

## 3. Display and menus

#### 3.1 Home Screen

When pressing  $\odot$  the Home Screen appears with basic information on programming and operation of eco:



\* eco is displaying the set temperature, not the measured room temperature.

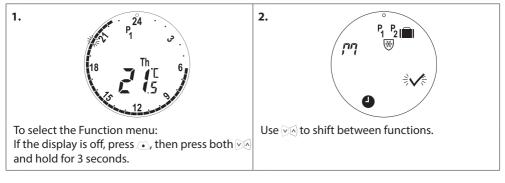
3.2 Pro	gramme menu	
1.	$P_{0} \neq P_{1} \leq P_{2}$	To select the Programme menu: If the display is off, press ④, then press ④ again to open the programme menu. Use ⊘⊗ to shift between the programmes, press ④ to confirm. The chosen programme is flashing.

#### Display symbols in the Programme menu

P <sub>0</sub>	Programme without automatic temperature reduction. This programme maintains the comfort temperature of 21 degrees constant all day and night.
P <sub>1</sub>	Saving programme which as default lowers the temperature to 17 °C at night (22:30 - 06:00 hrs). Time and temperature are configurable.
P <sub>2</sub>	Extended saving programme which as default lowers the temperature to 17 °C at night (22:30 - 06:00 hrs), and during the day on weekdays (08:00 - 16:00 hrs). Time and temperature are configurable.
*	Pause program. The thermostat will maintain a constant temperature of 4-10 °C in the room, ensuring frost protection.

Note! Symbols must be flashing to be activated.

#### 3.3 Function menu

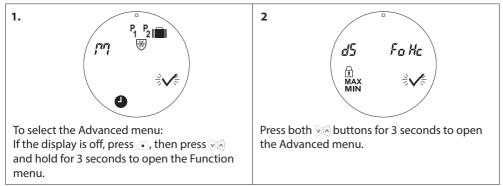


#### **Display symbols in the Function menu**

הין	Installation Mode must always be activated when installing or removing eco. The thermostat may be irreparably damaged if not in the correct position during installation.
	Travel programme which lowers the temperature when you are away. Date, time and temperature are configurable.
9	Set time and date - see chapter 5.1.
P <sub>1</sub>	Saving programme, adjust the default settings. Time and temperature are configuarable, weekdays and weekend days.
P <sub>2</sub>	Extended saving programme, adjust the default settings. Time and temperature are configuarable, weekdays and weekend days.
*	Pause programme. To set the default Pause temperature.

Note! Symbols must be flashing to be activated.

#### 3.4 Advanced menu

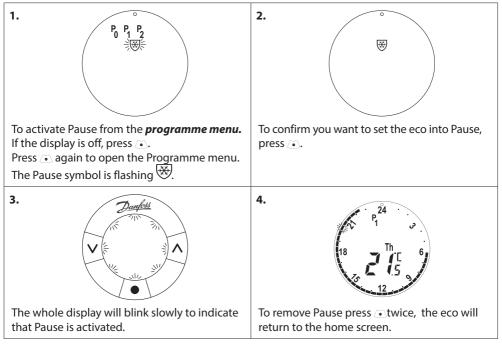


#### Display symbols in the Advanced menu

$\checkmark$	Confirm selection.	
dS	Deactivate/activate automatic daylight saving time - see chapter 5.2.	
Fa	Deactivate/activate intelligent control (Forecast) - see chapter 5.5.	
Hc	Select moderate or quick heating control - see chapter 5.3.	
MAX MIN	Set the max and min temperature range - see chapter 5.6	
1	Child Lock - see chapter 5.7	

Note! Symbols must be flashing to be activated.

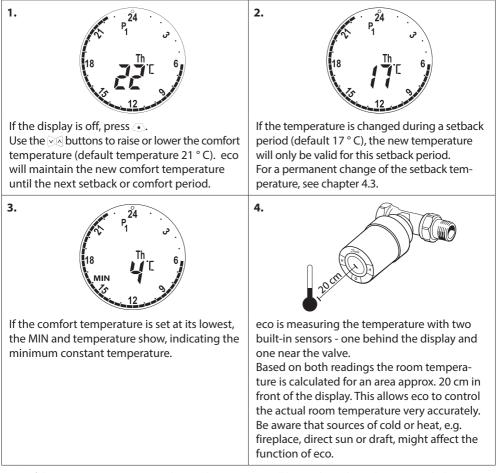
#### 3.5 Pause



Note! The default Pause temperature is 6  $^{\circ}$ C, to adjust the Pause temperature see chapter 4.9.

## 4. Temperature and programme settings

#### 4.1 Setting the comfort temperature



Note! If the set temperature is raised more than 1 °C eco will boost the radiator heat to reach the new temperature faster. You can feel the valve and radiator are getting warmer. Minor temperature changes will not evoke a heat boost, and so the changes are made without any immediate indication.

#### 4.2 Default programme settings

#### Programme P<sub>0</sub>

This programme is without automatic temperature reduction. It will maintain the temperature at a constant comfort level all day and night.

0	3	6	9	12	15	18	21	24
				21 °C				

#### Programme P<sub>1</sub>

This is the default savings programme, which has a comfort temperature of 21 °C and one setback period from 22:30 to 6:00 hrs with a temperature of 17 °C. Time and temperature are configurable for both comfort and setback periods.

0	3	6	9	12	15	18	21	24
	17 °C		21 °C					17 °C

#### Programme P<sub>2</sub>

This is the extended savings programme with a setback period from 22:30 to 6:00 hrs and an additional setback period from 8:00 to 16:00 hrs on weekdays. Time and temperature are configurable for both comfort and setback periods.

Weekdays:
-----------

	,							
0	3	6	9	12	15	18	21	24
	17 °C	21 °C		17 °C		21 °C		17 °C
Weeke	end:							
0	3	6	9	12	15	18	21	24
	17 °C				21 °C			17 °C

#### Travel Programme 📗

This programme keeps the setback temperature (default 17 °C) all day and night. Use the programme to save energy, when you are away from home. Time and temperature are configurable.

0	3	6	9	12	15	18	21	24

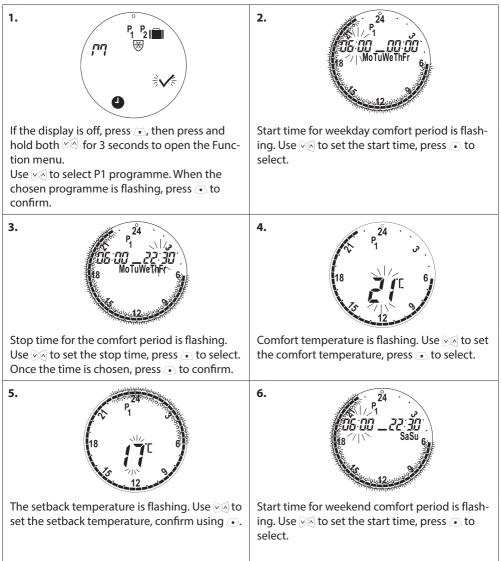
## Pause Programme 👹

This programme keeps a low temperature (default 6 °C) all day and night. Use the programme to prevent damage of the radiator, when you are away from home. The temperature is configurable.

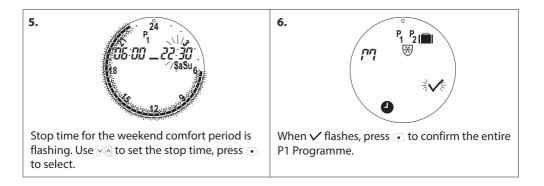
0	3	6	9	12	15	18	21	24

#### 4.3 Adjusting the programme settings, P1

Change the default P1 and P2 programmes to your own schedule and preffered time and temperature settings.



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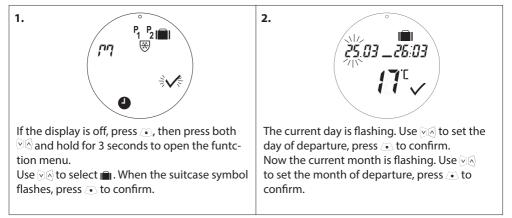
#### 4.4 Adjusting the programme settings, P<sub>2</sub>

#### eco P2 programme is adjusted as P1.

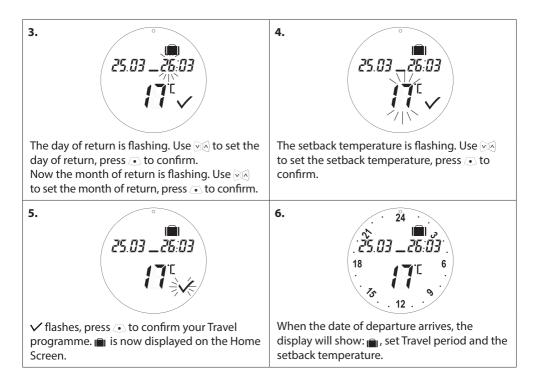
Note - Weekdays have 2 comfort periods.

#### 4.5 Creating a Travel programme

A Travel programme keeps the setback temperature for a period, defined by you. Use a Travel programme to save energy, when you are away from home.

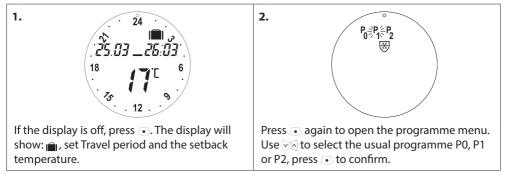


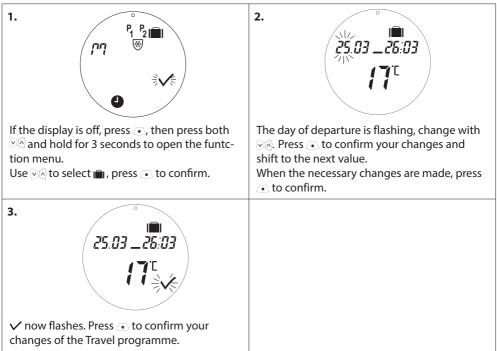
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User Guide
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#### 4.6 Overrule a Travel programme (early return)

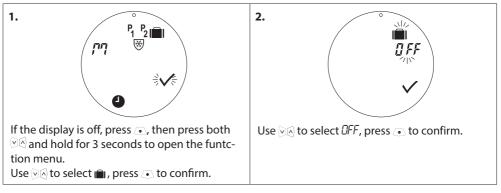
If returning earlier than expected you might wish to shift from the Travel programme to your normal programme.





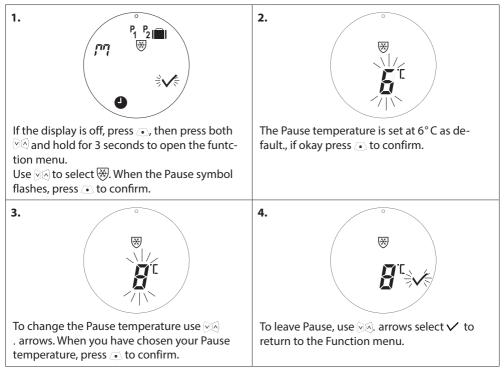
#### 4.7 Changing an existing Travel programme

#### 4.8 Deleting a Travel programme



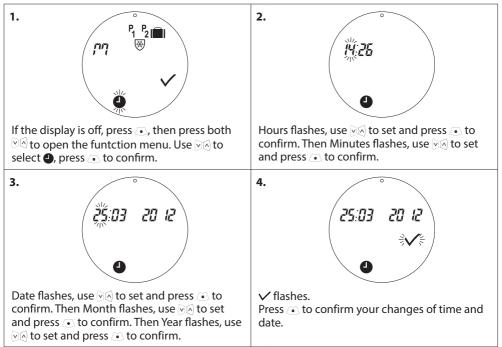
#### 4.9 Adjusting the Pause temperature

The Pause programme keeps the setback temperature until another programme is selected.

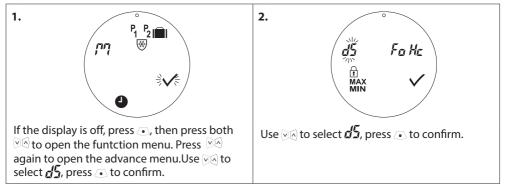


## 5. Additional settings

#### 5.1 Setting the time



#### 5.2 Deactivating automatic daylight saving time



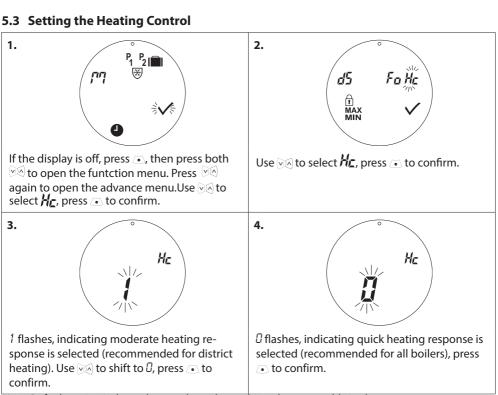
ď

time is **off**. Press / i to confirm.

I flashes, indicating automatic daylight saving

3. d5 J flashes, indicating automatic daylight saving time is on. Use is to shift to 0, press is to confirm.

Note: Default is set at Daylight Saving ON



4.

Note: Default setting is dependant on the code number - please see table in chapter 1.1

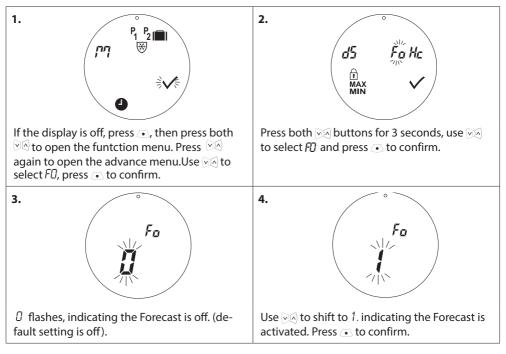
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#### 5.4 Automatic valve exercising

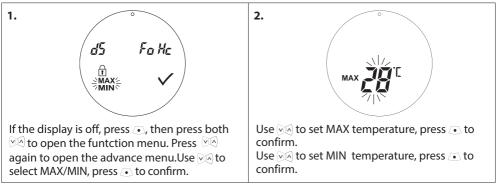
To keep the radiator valve functional and at its best, eco automatically exercises the valve every Thursday at approx. 11:00 hrs by opening it fully and then return to normal setting.

#### 5.5 Activating Intelligent Control (Forecast)

The Intelligent Control (Forecast) ensures that eco reaches the comfort temperature on time, according to the settings. The default is set to off except for Code Number 014G0080 where forecast is on.

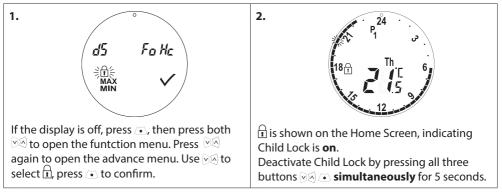




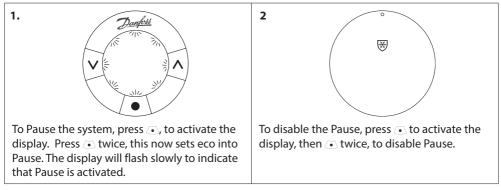


#### 5.7 Child Lock

Protect your eco settings from tampering by activating the Child Lock.



#### 5.8 Pause Function

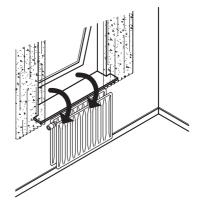


## 5.9. Open-window function

eco features an Open-window function, which closes the valve if the room temperature is falling dramatically, thus reducing the heat loss. The heat is turned off for up to 30 minutes, before eco returns to its original settings.

When Open-window has been activated, the function is quarantined for 45 minutes.

Note! Be aware that the Open-window function will be affected, if curtains or furniture are covering eco, preventing it from detecting the decreasing temperature.



## 6. Safety precautions

The thermostat is not intended for children and must not be used as a toy. Do not leave packaging materials where children may be tempted to play with them, as this is extremely dangerous.

Do not attempt to dismantle the thermostat as it contains no user-serviceable parts. If error code E1, E2 etc. is shown in the display or other defects appear, please return the thermostat to the distributor.

## 7. Disposal

The thermostat must be disposed of as electronic waste.



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