Instructions

thermo SphereO

BT21 Bluetooth Programmable Thermostat

The fastest, simplest and easiest thermostat to set up and program

Leading the charge for electric heating

Contents

Sensor compatibility

This thermostat is compatible with the most popular floor sensor probes. There are two NTC10k sensor included in the box. You can change the floor sensor type in the BT21 app.

- 2k
- 10k (Default)
- 12.5k
- 15k
- 33k

If you have an existing floor probe from another thermostat that is not compatible, set your thermostat to ambient temperature sensing mode.

(Not advisable for timber or other temperature sensitive floors).

What’s in the box?

Check you've got everything:

- BT21 Bluetooth Programmable Thermostat
- Two Floor sensor probes (3m)
- Fixing screws
- Installation guide and warranty information

You will also need:

- Floor sensor conduit (2m)
- Electrical screwdriver
- Electrical back box
- Electrical test meter

Before you start

Your thermostat should be:

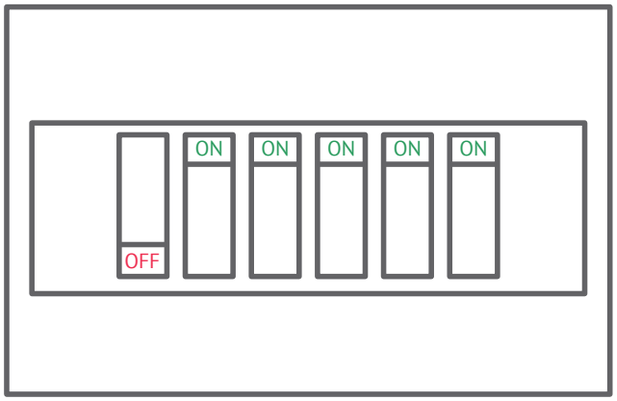
- Installed 1.2 - 1.5m from the floor
- On an internal wall
- Outside any wet zones (IP21)
- Installed on an RCD protected circuit
- Away from drafts or other heat influences
- Installed so that the floor sensor probe can be laid in a heated area of the floor
- Installed by a professional, in line with current electrical regulations and relevant local standards

Installing your thermostat

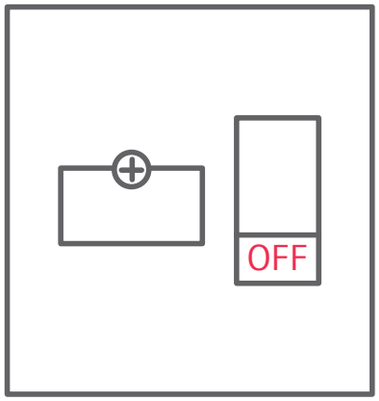
Switch off mains power

You will be installing your thermostat as part of a mains electrical circuit. To ensure your safety and to protect the thermostat, isolate the circuit from the mains power.

CAUTION
Mains Voltage
Cables



Fuse Box



Fused Switch

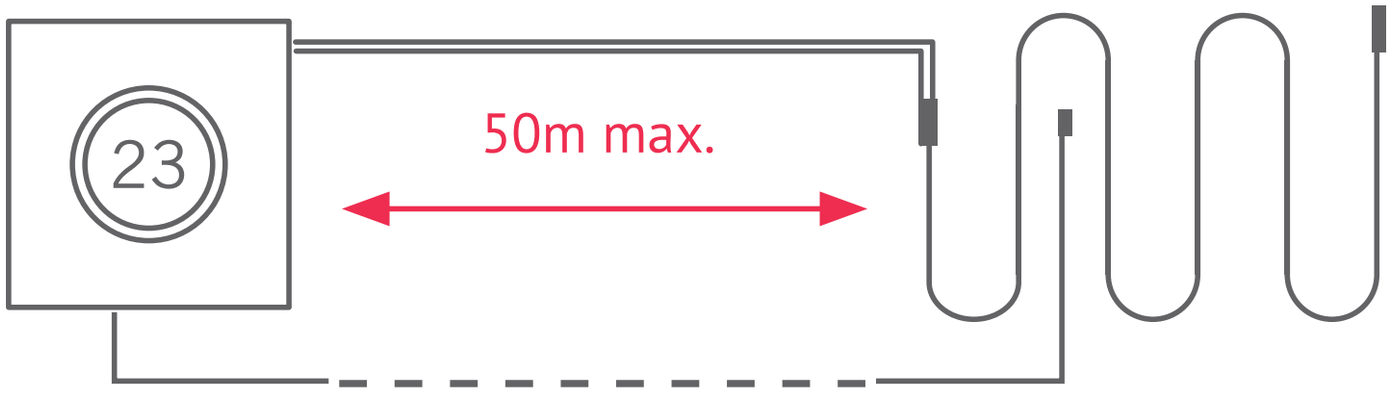
Installing your thermostat

Maximum distances

Your thermostat can be installed up to 50m away from the underfloor heating system it is controlling, provided that the floor sensor is used to control the temperature.

Underfloor heating cold tails and floor sensor probes can be extended up to 50m.

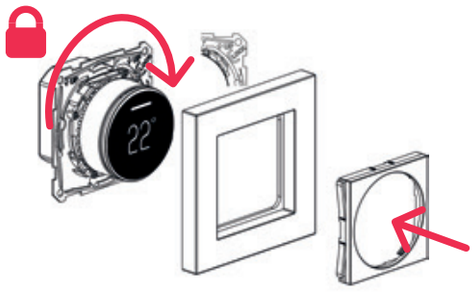
Connect multiple heaters in parallel.

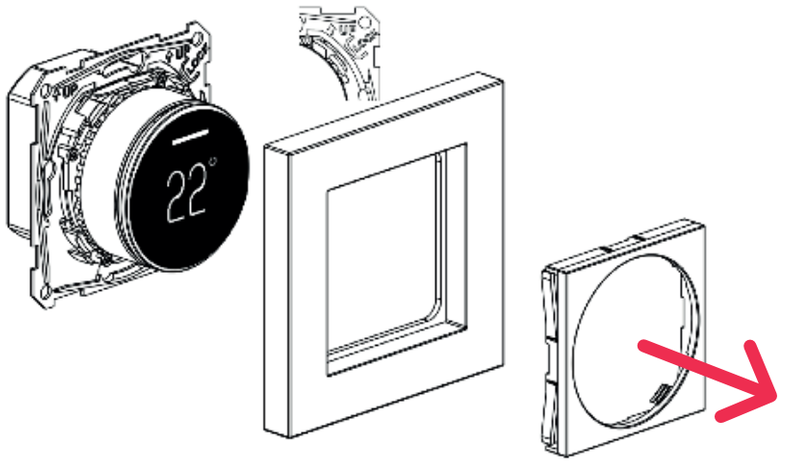


Installing your thermostat

Unlock the fascia plate

Push the dial in and twist anti-clockwise to unlock the fascia plates. Remove the inner fascia first and then the outer plate.



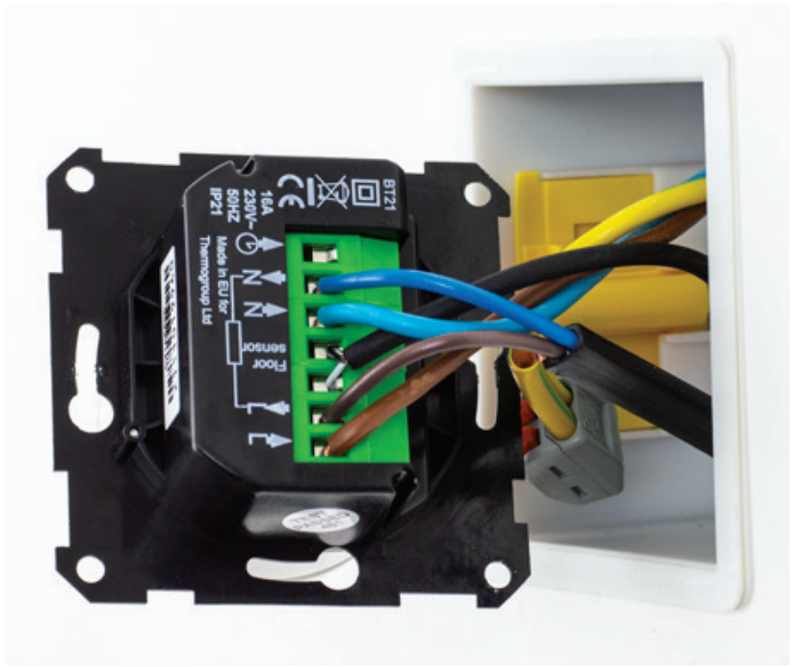


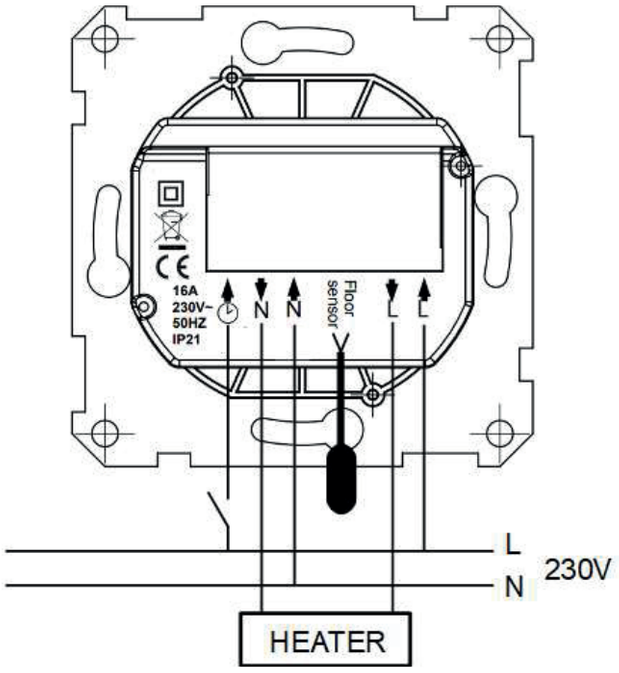
Scan to see how its done

Installing your thermostat

Wiring diagram

Connect the underfloor heating cold tail, power supply and floor temperature sensor. Don't leave any copper exposed.
The floor temperature sensor is not polarity sensitive.



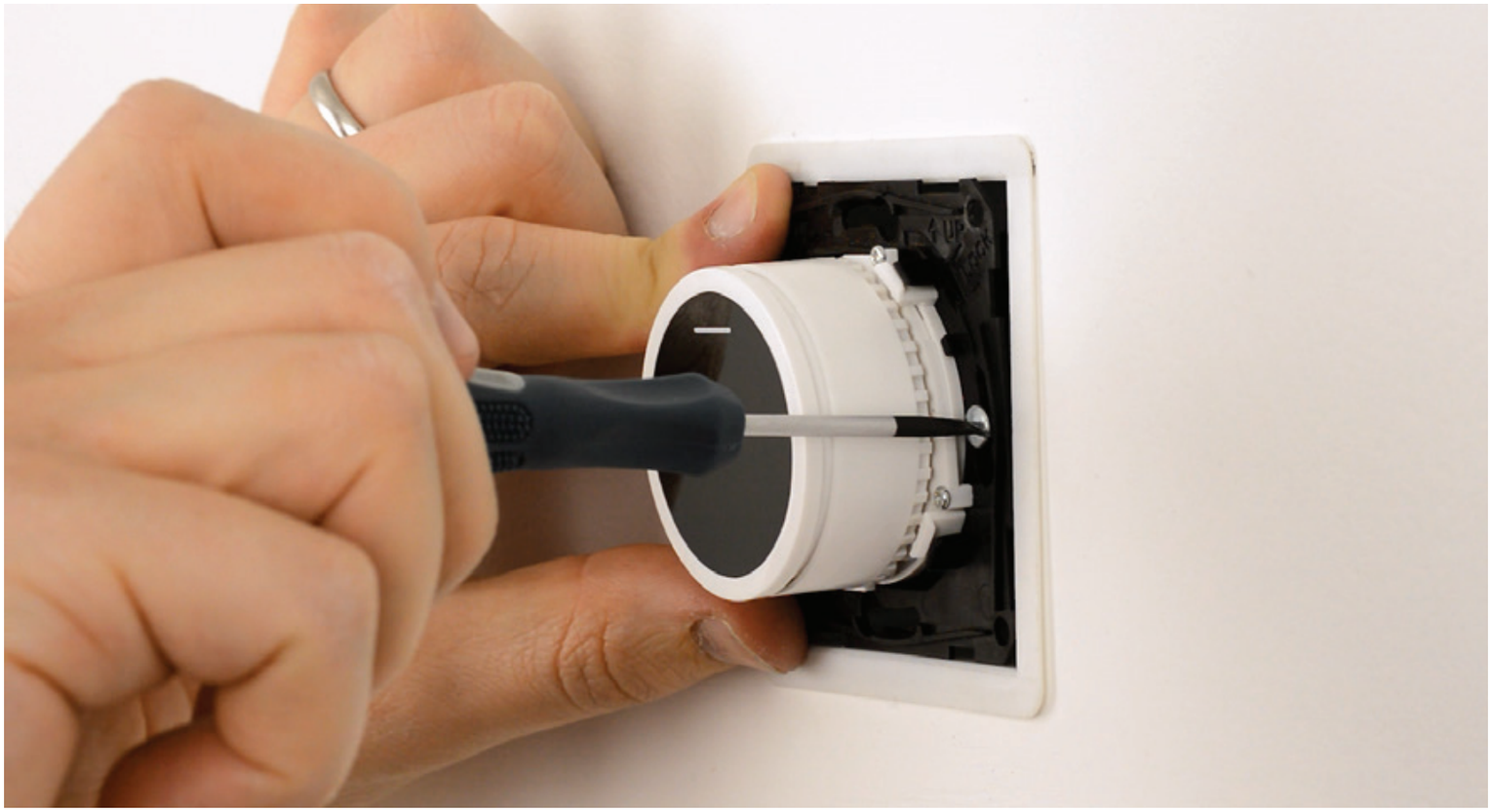


Scan to watch the wiring video

Installing your thermostat

Fix mounting plate in position

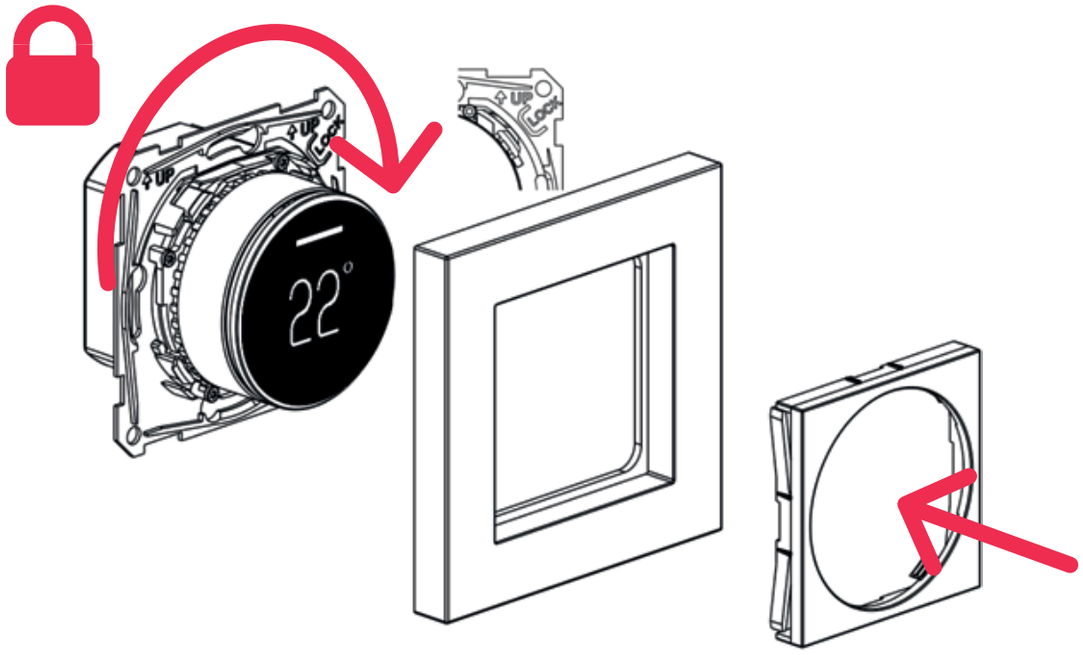
Push the power block into the back box and use a screwdriver to securely fix the mounting plate in position.



Installing your thermostat

Replace and lock the fascia plate

First make sure the TwistLock mechanism is in the LOCK position.
To do this, grip the dial, push in and turn it clockwise into the LOCK position.
Locate the outer fascia first and then “click” the inner fascia into position.



Installing your thermostat

Switching on your system

It is important that all adhesives and grouting is dry and fully cured before you switch on your underfloor heating.

Most adhesives take between 7 to 10 days to cure. Follow manufacturer guidelines for drying time.

The temperature of your underfloor heating should be increased gradually to avoid thermal shock in the floor. Start at 15°C and work up to your desired temperature by 1°C per day.

Observe any maximum temperature guidelines from your flooring manufacturer.

Wait for
14 Days before
you switch on

What's on the thermostat?

The BT21 is a bit different to other thermostats. It's the fastest and easiest thermostat to program and once you've set it up you shouldn't need to fiddle with it too much!

Set button

- Enter the menu
- Select a setting

Dial

- Activate display
- Adjust temperature
- Cycle through menu
- Confirm app settings

Mode indicator

Heating indicator

User interface

Comfort mode set point

Eco mode set point

The thermostat dial

What can you do on the thermostat dial and screen?

- View the measured temperature
- Adjust the Comfort set point temperature
- Adjust the Eco set point temperature
- Turn the thermostat off
- View the active sensor mode
- Access support documents via a QR code

The unique thing about the BT21 is that, apart from adjusting the temperature, you do everything else on the app.

The thermostat dial menu

To access the menu, turn the dial to activate the display and then press the “SET” button at the top of the screen. You can then use the dial to cycle through the menu. Press “SET” to select one of the modes, power off or to exit.

Comfort mode

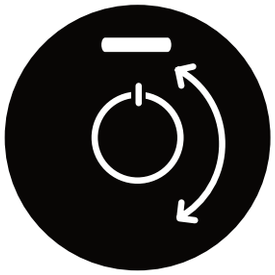
Set to a comfortable warm temperature. 22°C to 25°C is a good comfort temperature.

Eco mode

Set to a lower temperature to use less energy or set to around 10°C if you would like your heating off.

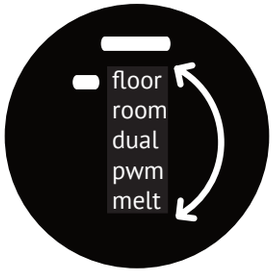
Boost mode

You can boost your heating to a higher temperature for 1 hour without editing your heating schedule. After the hour has elapsed, the thermostat will return to your heating schedule.



Power off

This is how you turn the thermostat off. Turn the dial to switch it back on again.



Sensor mode

This screen shows you which sensor mode is active. You can change sensor modes in the BT21 app.

Floor - Floor temperature
Room - Air temperature
Dual - Air temperature with floor limit, PWM - Sensor is disabled,
Melt - Snow melting mode (requires external wireless sensor)

QR code

Scan this code with your phone to access our support documentation and tutorial videos.

Exit

Takes you back to the main screen.

Using the BT21 as a manual thermostat

If you want a simple manual dial thermostat then you can use the BT21 in this way.

Simply use the dial to set the temperature that you want your heating to get to and the thermostat will maintain that temperature until you change it. It is best to use Comfort mode for this application.

We recommend using the BT21 app to set up a simple heating schedule that will save you money on your heating bills and help the environment by using less energy.

The BT21 is the fastest and easiest thermostat to set up. So give it a go!

Setting up a heating schedule

This is going to be so much easier than you're expecting!

First you need to use the dial on the thermostat to set your Comfort and Eco temperatures. With the BT21 you only have to set the temperatures once.

1. Turn the dial to activate the display.

2. Turn the dial to set the Comfort temperature. This is the temperature you'd like your heating to reach.

3. Tap the SET button to enter the thermostat menu.

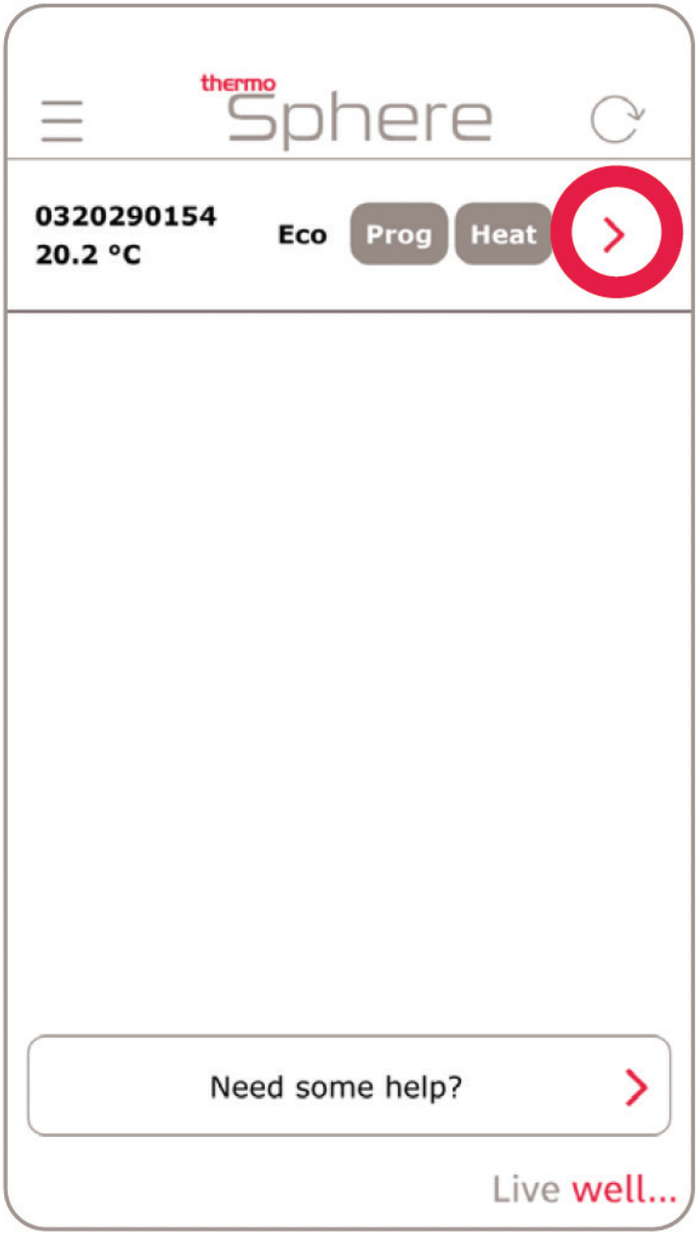
Scan here to watch the schedule set up and app settings guide video

4. Turn the dial clockwise to select Eco mode.

5. Tap to confirm.

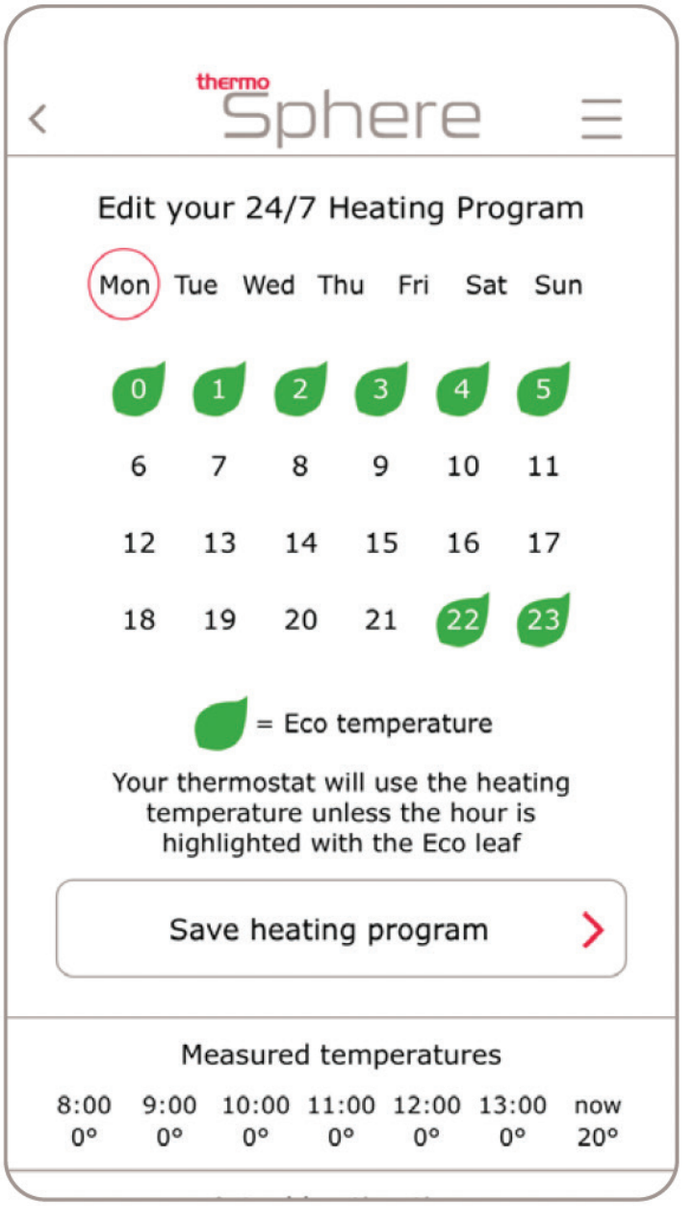
6. Turn the dial to set the Eco temperature. Set this to 10°C if you'd like your heating to be off.

7. Tap to confirm.



8. Open the BT21 app and tap the red arrow to connect to your new thermostat.

You'll see the ThermoSphere logo on the thermostat when you're connected.

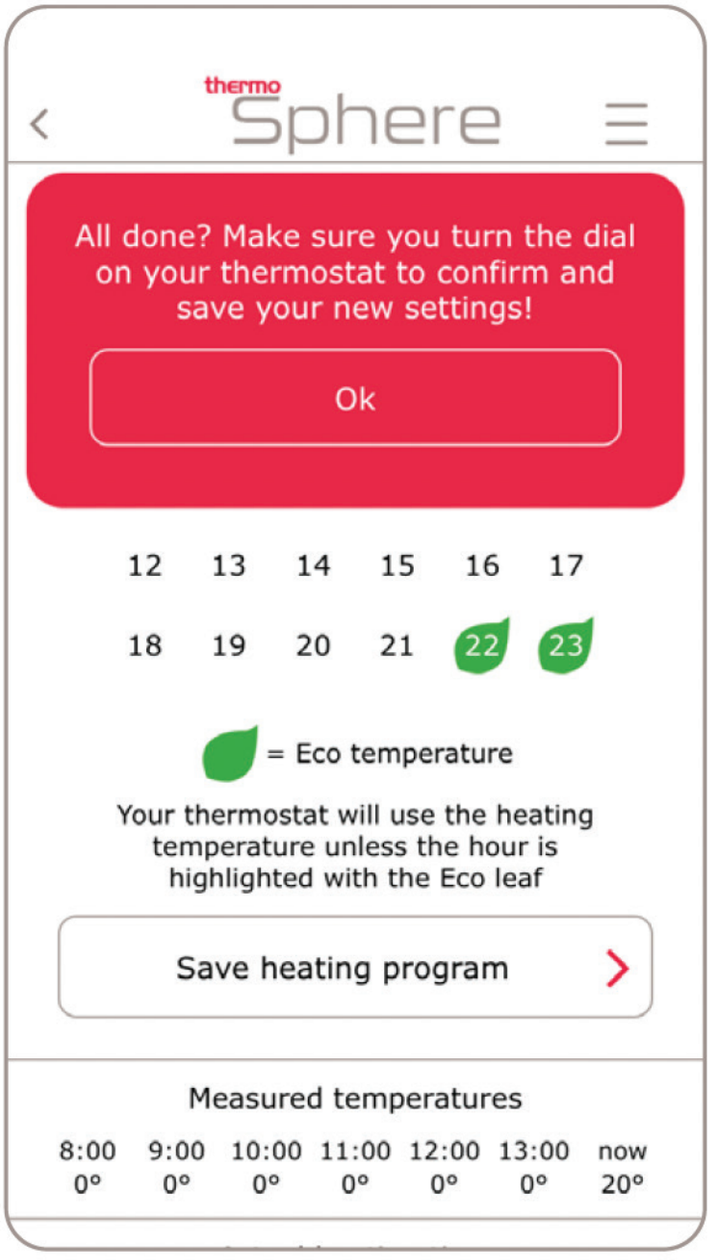


9. Tap the day you'd like to edit and tap each hour that you'd like to set to the Eco mode.

The green leaf icon means the thermostat will maintain the Eco temperature for that hour.

The thermostat will maintain the Comfort temperature for the rest of the day.

Repeat for the rest of the days of the week.

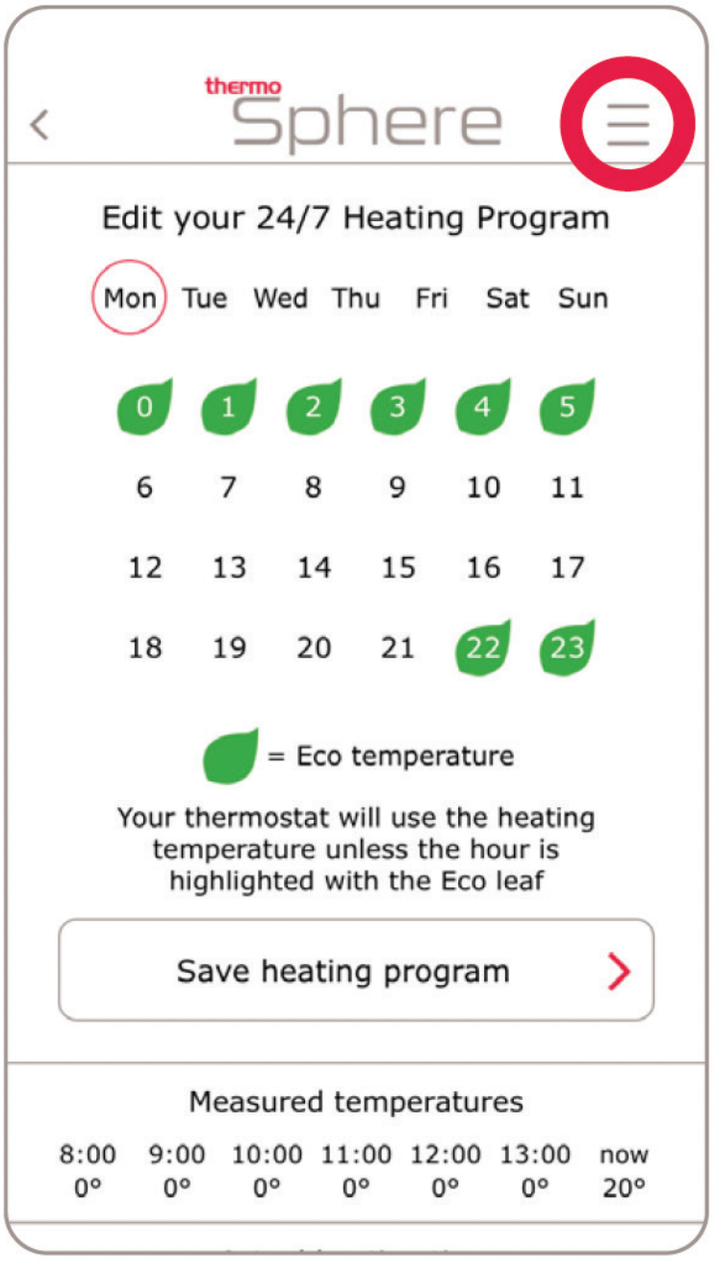


10. When you're done hit "Save heating program" and press "OK".

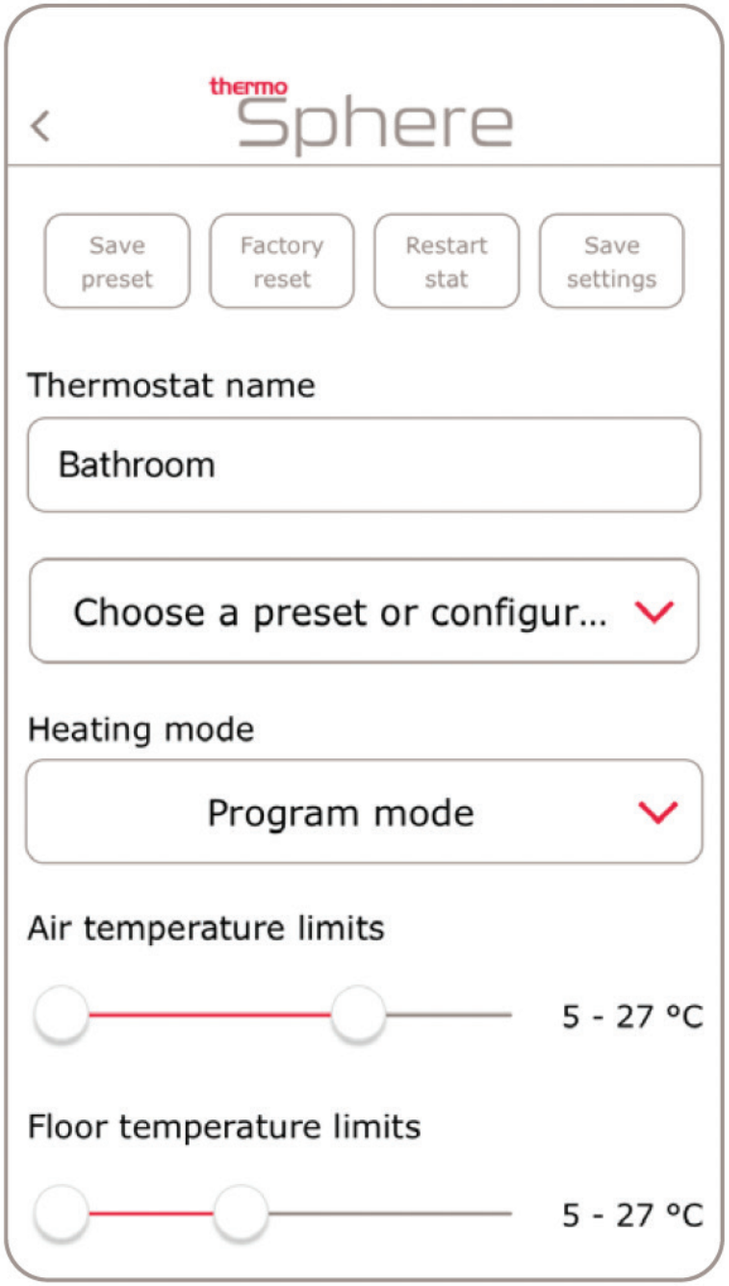
11. Turn the dial on your thermostat to save the changes you have made.

Don't skip this step! If you don't turn the dial to confirm your settings they won't be saved to your thermostat.

Change your settings on the app



To access the settings for your thermostat tap on the three lines in the top right corner of the app screen.



Save preset: Save your heating schedule and all settings as a preset that you can copy to all of your other thermostats.

Factory reset: Erase the thermostat and go back to factory settings.

Restart stat: This restarts the thermostat software.

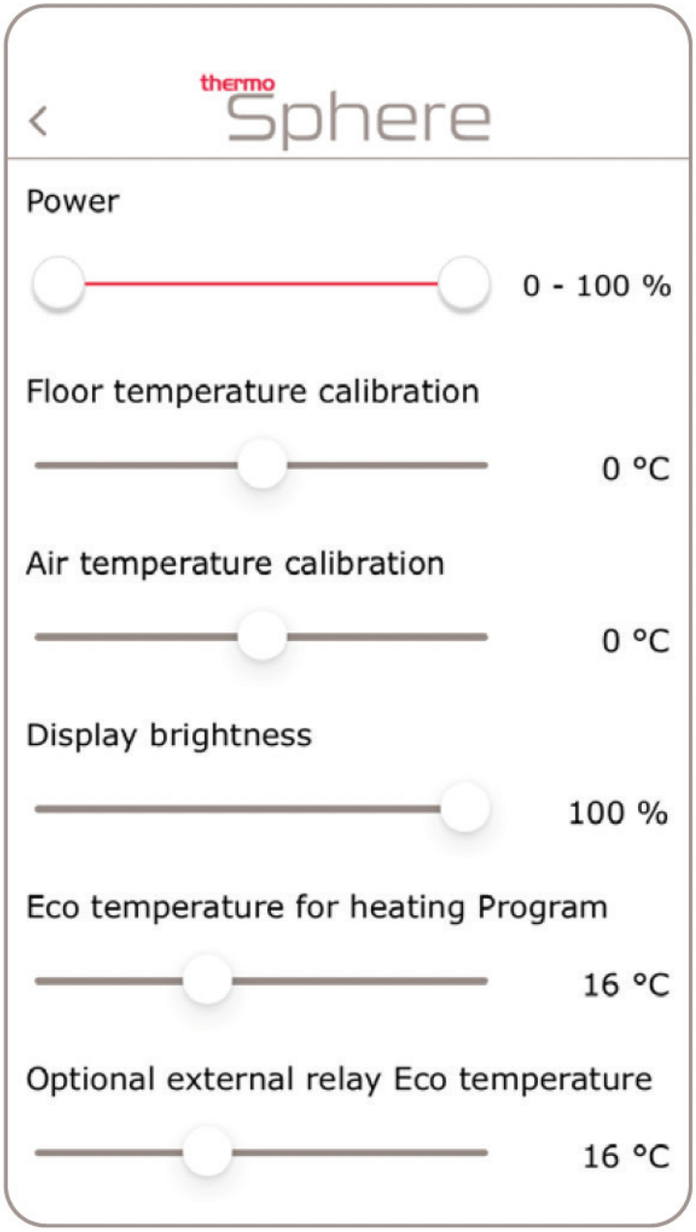
Save settings: Save the changes you just made in the app. Remember to confirm on the thermostat dial.

Thermostat name: Give your thermostat a name.

Choose a preset: Apply one of your presets to the thermostat.

Heating mode: Choose between Manual or Program mode.

Air & Floor temperature limits: Set an upper and lower limit for the air and floor temperatures.



Power: Use to limit the surface temperature of electric panel heaters.

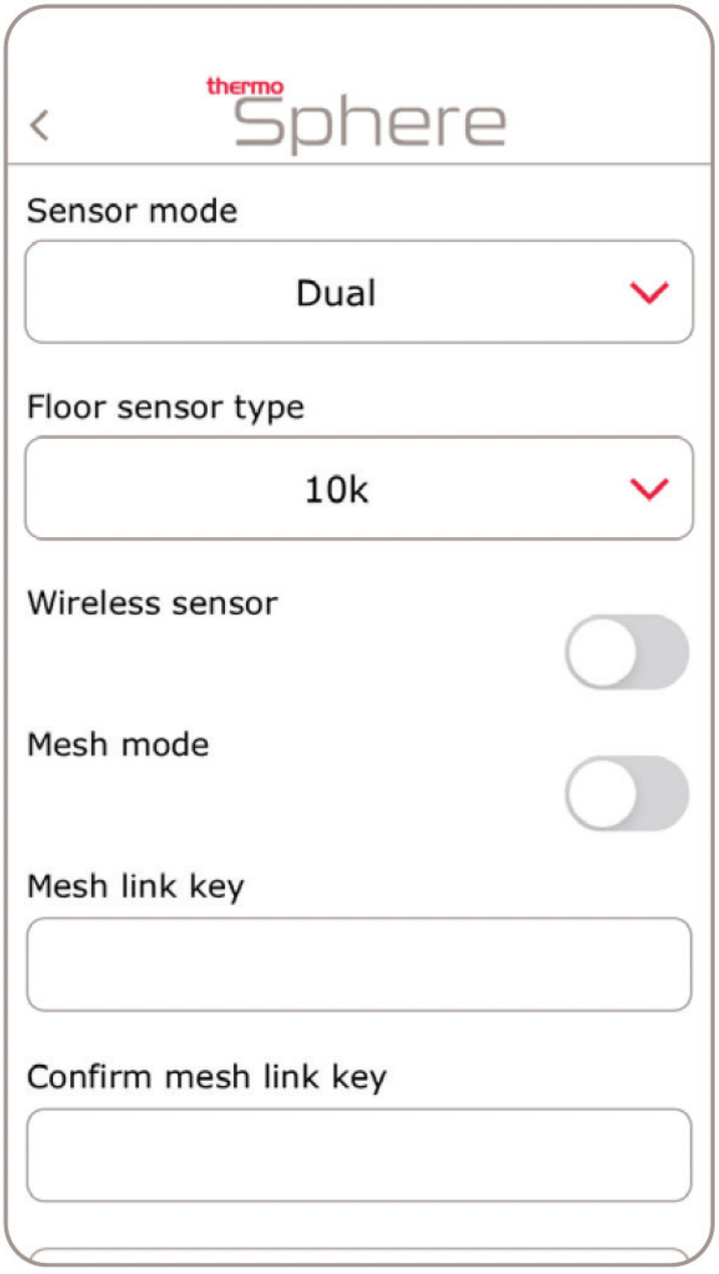
Floor temperature calibration: Use a thermometer to measure the floor surface temperature and calibrate accordingly.

Air temperature calibration: Use a thermometer to measure the air temperature and calibrate accordingly.

Display brightness: Adjust the brightness of the active screen.

Eco temperature for heating program: Adjust the lower Eco temperature used in the heating program.

Optional external relay Eco temperature: It is possible to wire an external pilot signal relay to the BT21. When a signal input is received the thermostat will change to this temperature.



Sensor mode: Select from 5 different sensor modes. If you connect a floor sensor the thermostat will automatically select Floor.

Floor - Floor temperature

Air - Ambient air temperature

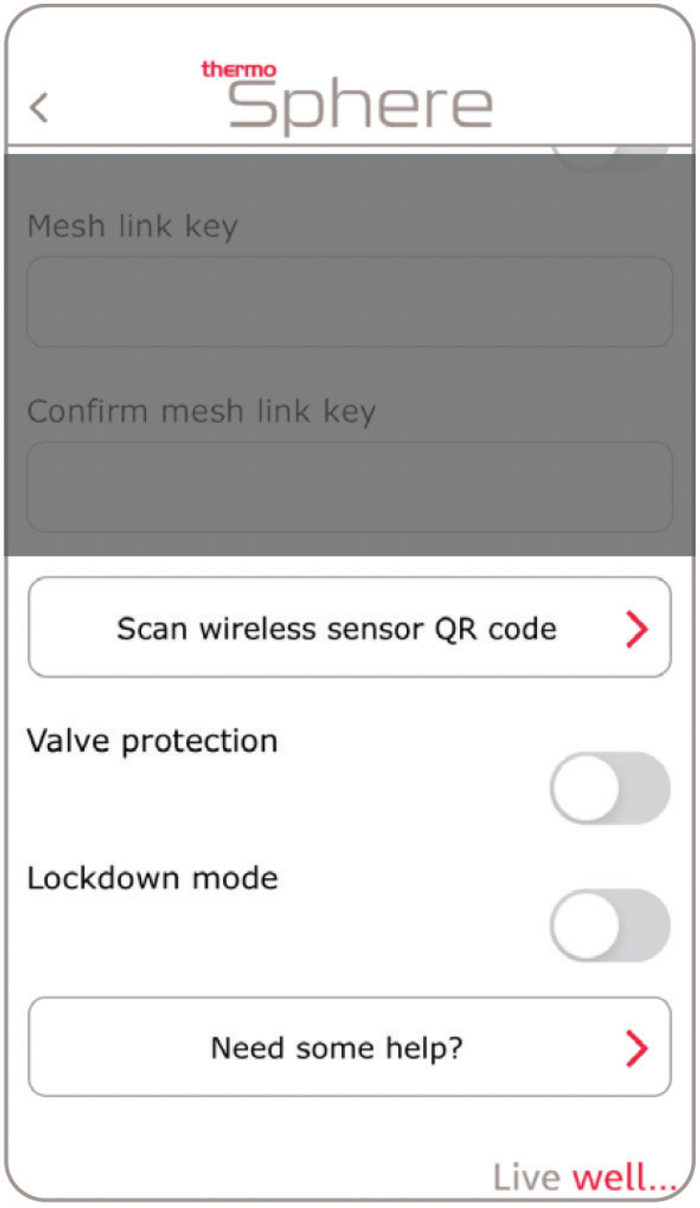
Dual - Air temperature with floor limit

PWM - Temperature sensing is disabled

Snow melting - For outdoor heating applications only. Requires external wireless sensor.

Floor sensor type: The default is 10K but you can also select 2K, 12.5K 15K or 33K to work with the most popular sensor types.

Mesh mode: Enables mesh communication between thermostats. If the external pilot signal input is activated your thermostat will send the Eco temperature to all thermostats that have the same mesh link key.



Wireless sensor: You can connect a compatible wireless temperature and humidity sensor (required for Snow melting).

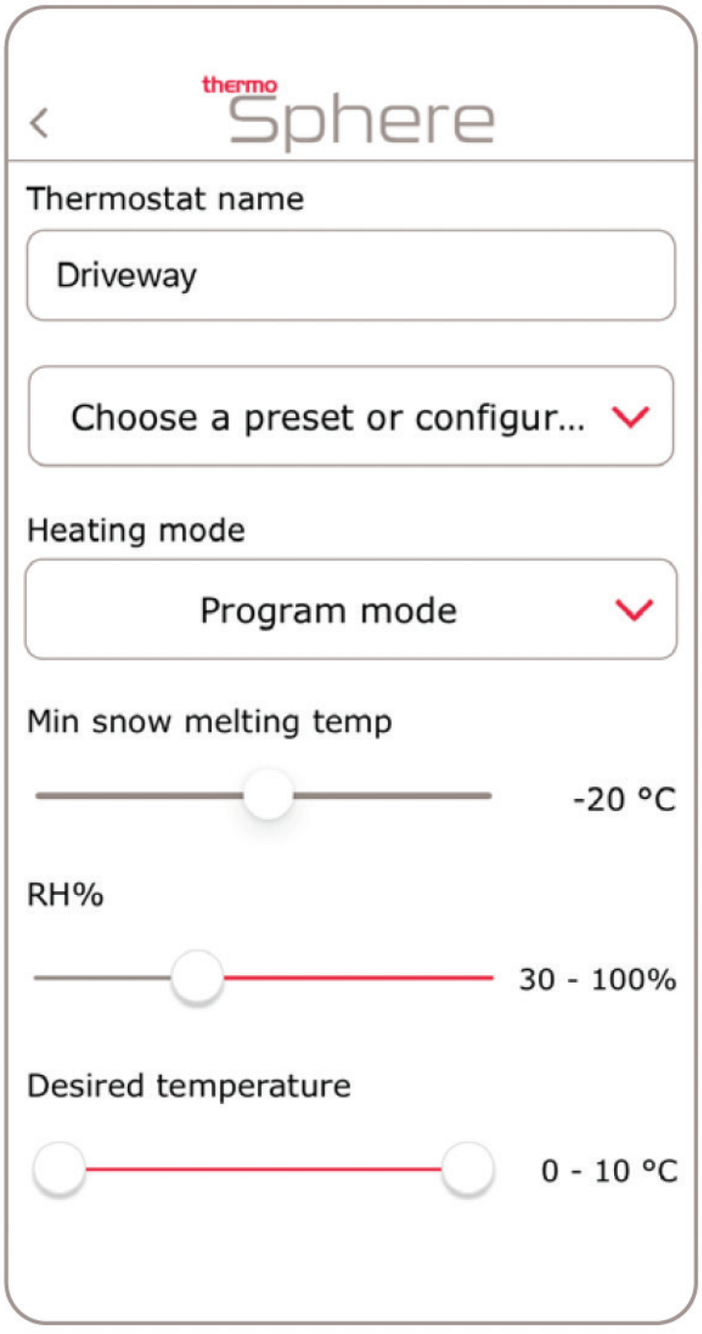
Scan wireless sensor QR code: Use this to scan the QR code on the wireless sensor and connect it to your thermostat.

Valve protection: Turn this on if you're controlling water heating valves. It will run the heating for a few minutes every Tuesday at 10am to prevent valves from jamming.

Lockdown mode: Disables the dial and SET button on the thermostat to prevent tampering. Unlock with a pin code in the app.

When lockdown mode is on, your thermostat will run the heating program as normal.

Specific settings for snow melting



If you set your thermostat to snow melting some specific settings will appear in the app.

Min snow melting temp: The thermostat won't turn the heating on if the temperature is below this.

RH%: Relative humidity percentage. This only works if a wireless temperature and humidity sensor is connected. Heating will only come on if the humidity is within the set range

Desired temperature: If RH% is within range the thermostat will maintain the temperature of the heated area between these limits.

You can use the standard floor sensor for Snow Melting but we recommend using the remote wireless sensor because it includes a humidity sensor. This is a more efficient way to control outdoor heating.

Error codes

Sensor error

Use the app to check the thermostat is set to the correct sensor mode.

Make sure the floor sensor is secured into the correct terminals.

Replace floor sensor if a fault is found. Contact us for help diagnosing sensor problems.

Wireless sensor error

Use the app to re-connect your wireless sensor.

If the wireless sensor does not connect, the battery could have run out or it could be out of range. Change the battery or move it closer to the thermostat.

Clock error

Sometimes the internal clock can become corrupted, especially if you have a power cut that lasts for longer than 3 hours.

Luckily there‘s an easy fix! Connect the thermostat to your phone via bluetooth with the BT21 app and the clock will automatically update and clear the error code.

Technical data

Supply voltage	230V 50Hz
Maximum load	16A (Resistive)
Accuracy	±0.5°C
Default sensor rating	NTC 10kΩ @ 25°C
Compatible sensors	2k, 10k, 12.5k, 15k, 33k
Warranty	3 years
IP rating	IP21
External temp setback	230V 50Hz
Bluetooth version	4.2
Dimensions	86 x 86 x 10mm
Back box depth	25mm

BT21 Instructions
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