User Guide

X̲thermostat™ **TS 500**

Intuitive Fully Programmable Thermostat

celebrating
40
years of
eXcellence

Devex®
systems
heating eXcellence

Table of Contents

1   INTRODUCTION

Xthermostat™ **TS 500** is an electronic thermostat specially designed for, but not limited to, floor heating systems. The thermostat has the following features:

- Touchscreen display in colour with easy-to-follow menu-driven system.

- Settings with timer that enables energy-saving for pre-set desired temperatures at specific times (i.e. arriving from work or upon wake-up).

- Holiday settings that suspends the program schedule for a specific period of time.

- Consumption meter for weekly, monthly and yearly usage.
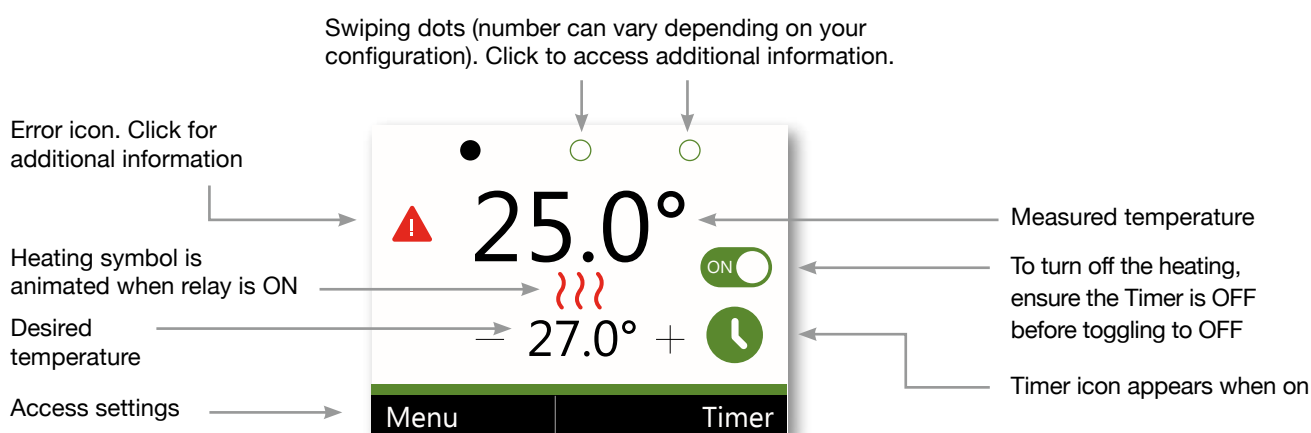
1.1 Safety Instructions

Please observe the following guidelines:

- Do not cover the thermostat, i.e. by hanging towels or similar items. This will impair the ability of the thermostat to sense and adjust the room temperature correctly.

- Do not spill liquids of any kind on the thermostat.

- Do not open, disassemble, or tamper with the thermostat in any way.

- If the thermostat is installed in a place frequented by small children, use the safety lock.

- Do not interrupt the power supply to the thermostat.

2   SETTING UP YOUR THERMOSTAT

2.1 Home Screen Information

Swiping dots (number can vary depending on your configuration). Click to access additional information.

Error icon. Click for additional information

Heating symbol is animated when relay is ON

Desired temperature

Access settings

Measured temperature

To turn off the heating, ensure the Timer is OFF before toggling to OFF

Timer icon appears when on

25.0°
27.0° +
ON
Menu   Timer

2.2 Using the Setup Wizard

The Setup Wizard will give you step-by-step instructions. Below are a few tips to keep in mind when setting up your thermostat with the Setup Wizard.

Return to home page by using home icon 🏠.

Cancel changes by pressing **CANCEL.**

Set up time

00 : 00

Cancel   OK

Press (and hold) arrows to increase and decrease values.

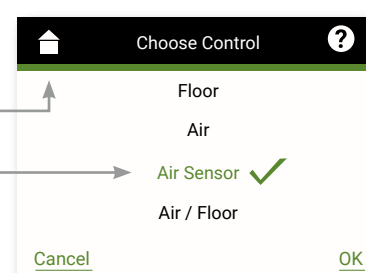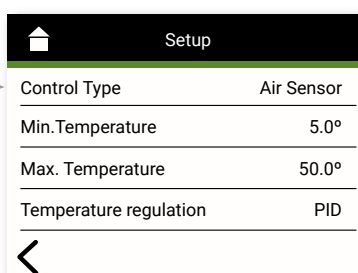Confirm a value by pressing **OK.**
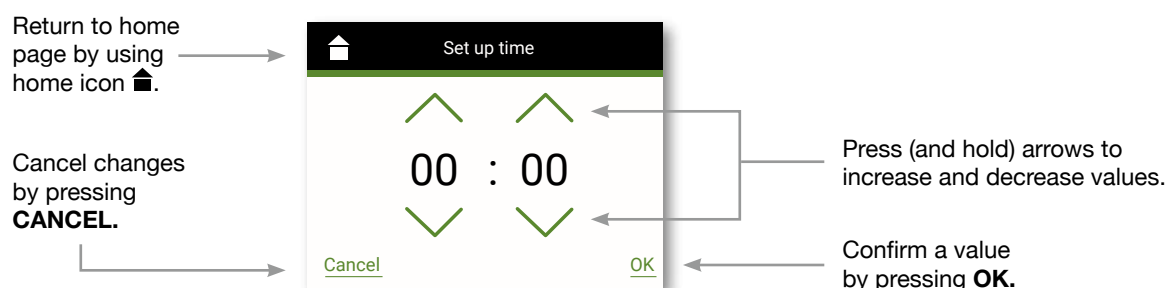
2.3 Manual Setup

2.3.1 Control Type

The Xthermostat™ TS 500 can be set up with 4 different control types:

- **Floor:** This is the standard control type for underfloor heating. The thermostat regulates the floor temperature rather than the air temperature. This allows for a better control, as the issues that could arise with air sensing (opened windows, inconsistent temperature through the room) are eliminated. The thermostat needs to be connected to a sensor probe that measures the temperature of the floor. Note that typical setup temperature should be 27°C or more.

- **Air:** The thermostat regulates the air (room) temperature using the internal sensor.

- **Air sensor:** The thermostat regulates the air (room) temperature using an external probe. This is an benefit when the thermostat is located in an area where the temperature is not representative of the room temperature (near a window, a fireplace etc).

- **Air/Floor:** The thermostat regulates the air/room temperature, while keeping the floor temperature to a maximum limit. This control type is to be used with underfloor heating with a timber finish, as it is important to keep the floor board below a certain temperature (usually 27°C) to avoid warping/cracking. Contact your timber supplier for specific temperature information.

How to set up the control type
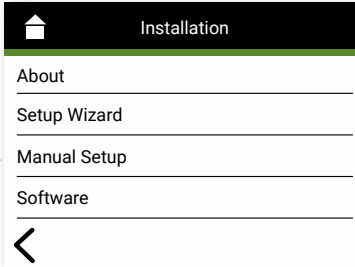
❶ Touch the thermostat display to activate it, then press **Menu.**

❷ Press Installation then **Manual Setup.**

❸ Press **Control Type.**

Setup	
Control Type	Air Sensor
Min.Temperature	5.0º
Max. Temperature	50.0º
Temperature regulation	PID

‹

❹ Select the desired control type then press **OK** to confirm.

❺ To return to the home page press 🏠.

Choose Control	❓
Floor	
Air	
Air Sensor	✓
Air / Floor	
Cancel	OK

2.3.2   Minimum Temperature

How to set the minimum floor temperature above the specified lower level.
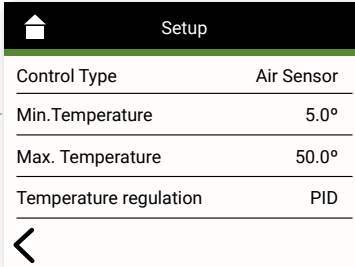
❶ Touch the thermostat display to activate it, then press **Menu.**

❷ Press Installation then **Manual Setup.**

Installation

About
Setup Wizard
Manual Setup
Software

❸ Press **Min. Temperature.**

❹ Use arrows up and down to adjust temperature.

❺ To return to the home page press 🏠.

Setup

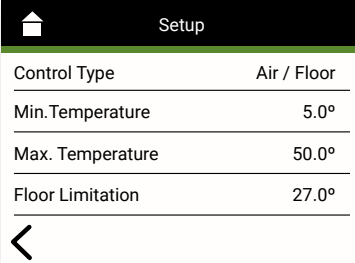| Control Type	Air Sensor
Min.Temperature	5.0º
Max. Temperature	50.0º
Temperature regulation	PID

2.3.3   Maximum Temperature

Repeat steps 1 and 2 from 2.3.2. Once at Step 3 select **Max. Temperature**.
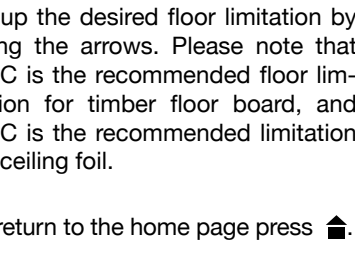
2.3.4   Floor Limitation

This menu item will appear only if Air/Floor is selected as a control type. From this section, you will be able to setup the maximum temperature of the floor.

How to set up the floor limitation

❶ Touch the thermostat display to activate it, then press **Menu.**

❷ Press **Installation** then **Manual Setup.**

❸ Press **Floor Limitation.**

Setup

Control Type	Air / Floor
Min.Temperature	5.0º
Max. Temperature	50.0º
Floor Limitation	27.0º

❹ Setup the desired floor limitation by using the arrows. Please note that 27ºC is the recommended floor limitation for timber floor board, and 40ºC is the recommended limitation for ceiling foil.
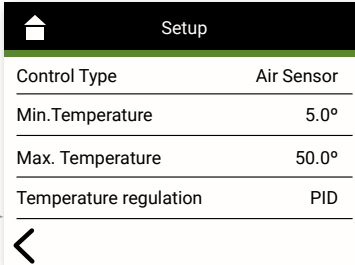
❺ To return to the home page press 🏠.

2.3.5   Temperature Regulation
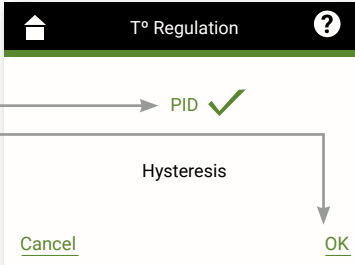
The TS 500 comes with two different temperature regulations: PID and Hysteresis. In essence, the thermostat is programmed to follow certain rules to decide when the heating is turned on and off. We recommend selecting PID for a quick heating system (i.e. electric heating mats or in-screed electric floor heating) and hysteresis for slower heating systems (i.e. in-slab hydronic floor heating).

How to set up the temperature regulation

❶ Touch the thermostat display to activate it, then press **Menu.**

❷ Press Installation then **Manual Setup.**

❸ Press **Temperature regulation.**

Setup

Control Type	Air Sensor
Min.Temperature	5.0º
Max. Temperature	50.0º
Temperature regulation	PID

❹ Choose your desired **T° Regulation**, then press OK.

❺ To return to the home page press 🏠.

T° Regulation ❓

PID ✓

Hysteresis

Cancel   OK

2.3.6   Sensor Calibration

The temperature measured by the thermostat can sometimes appear offset compared to the actual temperature. In such cases, the sensor needs to be calibrated. Both internal and external sensor can be calibrated.

How to set up the sensor calibration

1 Touch the thermostat display to activate it, then press **Menu.**

2 Press **Installation** then **Manual Setup.**

3 Scroll down and press **Sensor calibration**.

Setup	
Floor limitation	27.0º
Temperature regulation	PID
Sensor calibration	
Sensor Probe	15K (default)

4 Press either **Offset air sensor** or **Offset floor sensor.**

Calibration	
Offset air sensor	0.0º
Offset floor sensor	0.0º

5 Use the arrows to setup the desired calibration. Press **OK** to confirm.

**6** To return to the home page press ⌂.
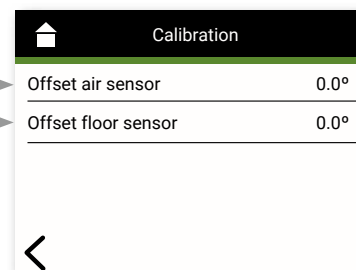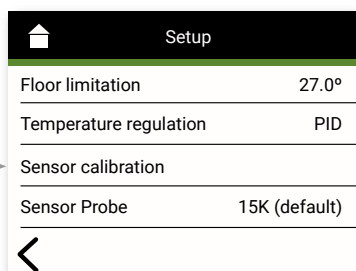
2.3.7   Sensor Probe

The TS 500 comes with the Devex Systems 15 kOhm sensor, but it can be used with other sensors, including 10 kOhm and 12 kOhm. It is important to select the right sensor to get the right temperature reading.

How to select the desired sensor probe.

1 Touch the thermostat display to activate it, then press **Menu.**

2 Press Installation then **Manual Setup.**

Setup	
Floor limitation	27.0º
Temperature regulation	PID
Sensor calibration	
Sensor Probe	15K (default)

3 Scroll down and Press **Sensor Probe**. Press **OK** to confirm.

4 To return to the home page press ⌂.
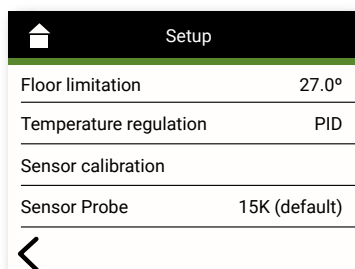
2.4 General Settings

2.4.1   Date/Time

1 Touch the thermostat display to activate it, then press **Menu.**

2 Press **General Settings.**

Menu
General Settings
Special Features
Installation

3 Press **Time or Date.**

4 Use the arrows to set the hours and minutes. Press **OK** to confirm.

5 Use the arrows to change the day, month and year. Press OK to confirm.

Time / Date	
Time	19:18
Date	10/05/2019

6 To return to the home page press ⌂.

2.4.2   Turning the Heat ON and Off Manually

When the timer is switched off, an ON/OFF toggle is shown on the home page. You can use this toggle to manually turn on and off the heating. The temperature can also be changed manually by using the arrows.

2.4.3   Screen Brightness
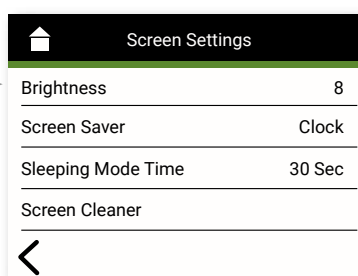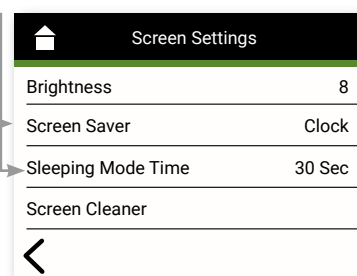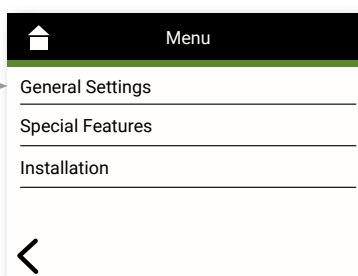
❶ Touch the thermostat display to activate it, then press **Menu.**

❷ Press **General Settings**, then press **Brightness**.

Screen Settings	
Brightness	8
Screen Saver	Clock
Sleeping Mode Time	30 Sec
Screen Cleaner	

❸ Use the up and down arrows to select the desired brightness. Press **OK**.

❺ To return to the home page press 🏠.

2.4.4   Screen Saver

The thermostat goes into sleep mode after a certain period. You can choose among three different screen savers (blank screen, clock or air temperature).

❶ Touch the thermostat display to activate it, then press **Menu.**

❷ Press **General Settings**, then **Screen Settings.**

Menu
General Settings
Special Features
Installation

❸ Press **Sleeping Mode Time** and choose the desired time using the arrows. Press **OK** to confirm.

❹ To set up the screen saver, press **Screen Saver** and select the desired Screen Saver. Press **OK** to confirm.

Screen Settings	
Brightness	8
Screen Saver	Clock
Sleeping Mode Time	30 Sec
Screen Cleaner	

❺ To return to the home page press 🏠.

2.4.5   Screen Cleaner

The screen cleaner is used to clean the screen by disabling the touch screen for a period of time.

❶ Touch the thermostat display to activate it, then press **Menu.**

❷ Press **General Settings**, then **Screen Settings.**

Menu
General Settings
Special Features
Installation

❸ Press **Screen Cleaner.**

Screen Settings	
Brightness	8
Screen Saver	Clock
Sleeping Mode Time	30 Sec
Screen Cleaner	

❹ You will then have 15 seconds to clean your screen.

❺ To return to the home page press 🏠.

You have 15 seconds to clean the screen. During that time touch are not enable.

✕   ✓
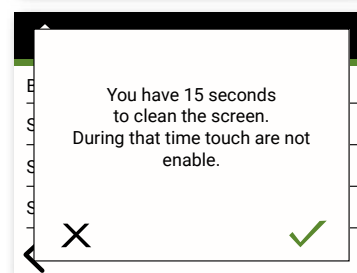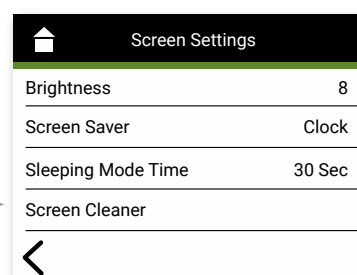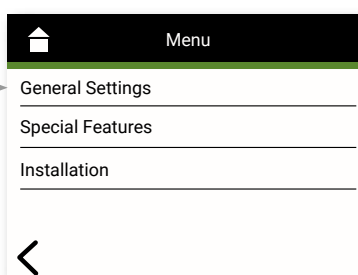
2.5 Timer Setup

The timer feature helps you programming an unlimited number of Heating Periods where the thermostat will bring the temperature up the heating temperature, as well as Setback Periods when the thermostat will bring down the temperature to the setback temperature.

2.5.1   Heating and Setback Settings

The heating temperature is the desired temperature when you want your heating system to be on. The setback temperature is the temperature for down periods. You have two options:

1 You prefer your system to be ON or OFF. In this case, set the setback temperature to the minimum allowed value (usually 5°C)
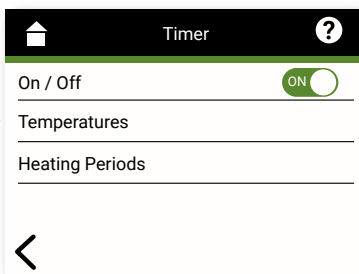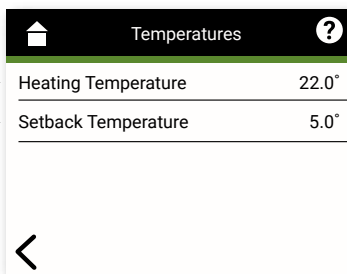
   OR

2 You prefer heating system to switch between up or down periods. In this case, your heating system is always ON. This may be a good option for slow heating systems (i.e. in-slab hydronic floor heating) or for situations when you do not want to turn off your heating system (i.e. to keep moisture out of the air).

1 Touch the thermostat display to activate it, then press **Timer.**

2 Press **Temperature.**

🏠	Timer	❓
On / Off		ON ⬤
Temperatures		
Heating Periods		
‹		

3 Press **Heating Temperature** or **Setback Temperature**.

4 Setup the desired temperature for each by using the arrows. Press **OK** to confirm.

5 To return to the home page press 🏠.

🏠	Temperatures	❓
Heating Temperature		22.0˚
Setback Temperature		5.0˚
‹		

2.5.2   Heating and Setback Temperatures Setup
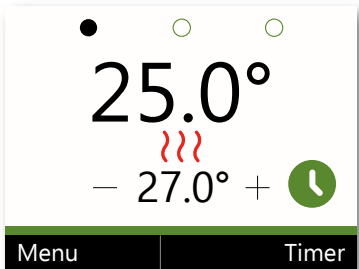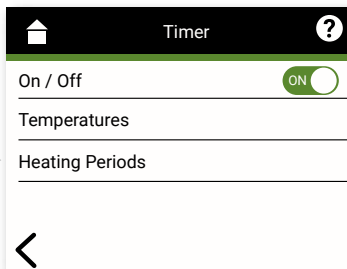
Note: When the TS 500 is regulating the floor, you actually set up the temperature of the floor, not of the air. For that reason, temperatures can easily reach 27°C – 30°C.

2.5.3   Heating Period Setup

An unlimited number of heating periods can be set up for the different days of the week.

1 Touch the thermostat display to activate it, then press **Timer.**

```
   ●      ○         ○

      25.0°
       ⌇⌇⌇
   − 27.0° +   🕐

 Menu              Timer
```

2 Press **Heating Periods.**

🏠	Timer	❓
On / Off		ON ⬤
Temperatures		
Heating Periods		
‹		

2.5.3.1 Create a Heating Period

When in doubt, refer to the help button ? to guide you through the setup.

❶ To create a Heating Period press the desired day (i.e. Monday).

❷ Shows the current time.

❷ Press **add** to create a new Heating Period and adjust by using the arrows up and down for the **beginning** and **end**. Press **OK** to confirm.

❸ Heating schedule appears on the clock once set up complete. (i.e. heat on, every Monday 6-9am). To edit or delete, tap the red schedule.

2.5.3.2 Copy a Heating Period

❶ Tap "**copy**" to copy the current programming.

❷ In this example copy Monday to any other day of the week.

2.5.3.3 Delete a Heating Period

❶ To delete a Heating Period press the heating period.

❷ Press **Delete.**

Period #1	
Start time	06:00
End time	09:00

Delete

2.5.3.4 Edit a Heating Period

❶ To edit a Heating Period press the heating period.

❷ Either adjust the **Start Time** or **End Time** or both by using the arrows. Adjust and press **OK**.

Edit Start Time

06 : 00

Cancel   OK

3 FEATURES

3.1 Holiday Mode

3.1.1 Suspend Normal Temperature Settings

1 Touch the thermostat display to activate it, then press **Menu.**

Menu
General Settings
Special Features
Installation
‹

2 Press **Special Features.**

3 Make sure away mode is activated by using the **ON/OFF** toggle.

4 Change the start and end date and time.

Holiday Mode	?
Holiday Mode	ON
Start date	07/05/2019 19:46
End date	19/05/2019 19:46
Setback temp.	5.0°
‹	

5 Press **Setback Temperature** and use the arrows to set the temperature while you are away. Press to confirm. Note: Selecting the lowest temperature available i.e. 5°C, will ensure that the system will remain "off" during the period.

Temperatures	?
Heating Temperature	22.0˚
Setback Temperature	5.0˚
‹	

6 On the specified start date, an **icon** with an island and palm trees will appear on the home page.

20.5°
5.0°

Menu | Timer

3.1.2 Deactivate the Away Function

If you return earlier than expected, you can deactivate the away mode.

1 Touch the thermostat display to activate it, then press the Holiday Mode on the home page, they use the toggle to switch off the Holiday mode.

Holiday Mode	?
Holiday Mode	OFF
Start date	
End date	
Setback temp.	
‹	

3.2 Screen Lock

3.2.1 Lock the Screen

1 Touch the thermostat display to activate it, then press **Menu.**

2 Press **Special Features.**

Menu
General Settings
Special Features
Installation
‹

3 Press **Screen Lock.**

Screen Lock	?
On / Off	ON
Password	
‹	

3.2.2   Unlock the Screen

1 Touch the thermostat display to activate it, then press **Menu.**

2 Press **Special Features.**

```
┌─────────────────────────────┐
│ 🏠        Menu               │
├─────────────────────────────┤
│ General Settings            │
│ Special Features            │
│ Installation                │
│                             │
│ 〈                           │
└─────────────────────────────┘
```

3 Press **Screen Lock.** Press the display again and you will be prompted for a password.

4 Enter your password and press **OK**. If you forgot your password, enter "**1978**" and press **OK**.

```
┌─────────────────────────────┐
│ 🏠        Password           │
├─────────────────────────────┤
│   1    │    2    │    3      │
│   4    │    5    │    6      │
│   7    │    8    │    9      │
│        │    0    │   del     │
│ 〈                           │
└─────────────────────────────┘
```
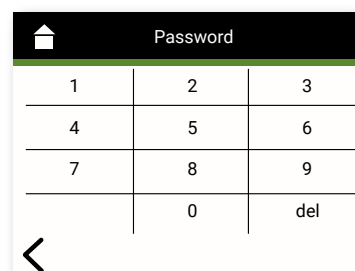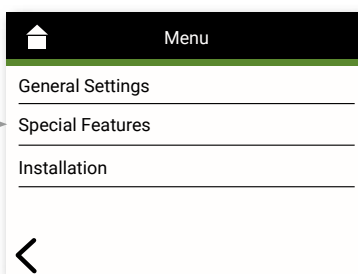
3.3 Energy Consumption

3.3.1   How to Check your Energy Consumption

1 Touch the thermostat display to activate it, then press **Menu.**

2 Press **Special Features.**

```
┌─────────────────────────────┐
│ 🏠        Menu               │
├─────────────────────────────┤
│ General Settings            │
│ Special Features            │
│ Installation                │
│                             │
│ 〈                           │
└─────────────────────────────┘
```

3 To scroll down to Power Consumption, press vertical line on the right, then Power consumption.

**4** You will have then access to the usage data weekly, monthly and yearly.

```
┌─────────────────────────────┐
│ 🏠        Features           │
├─────────────────────────────┤
│ Screen Lock              ON  │
│ Predictive Heating       OFF │
│ Timer Extension          OFF │
│ Power Consumption            │
│ 〈                           │
└─────────────────────────────┘
```
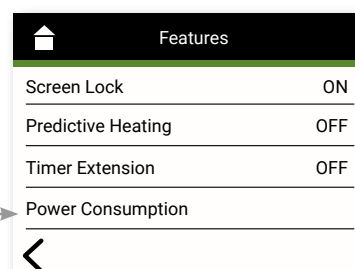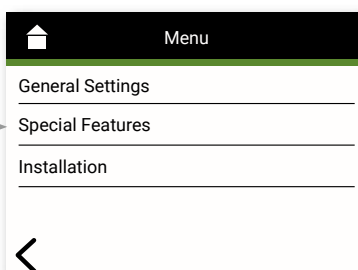
4   THERMOSTAT TROUBLESHOOTING

4.1   Resetting the Thermostat

There are three ways to reset the thermostat to recover from a potential software issue. These include **Restart**, **Soft Reset** and **Factory Reset** and impact data with a varying degree of complexity. For example, a **Soft Reset** will remove data such as settings, but won't remove data from the timer or the energy consumption. In the case of a **Factory Reset**, all data will be removed.

1 Touch the thermostat display to activate it, then press **Menu.**

2 Press **Installation,** then scroll down to **Reset Thermostat** by pressing the vertical line on the right.

```
┌─────────────────────────────┐
│ 🏠        Installation       │
├─────────────────────────────┤
│ Setup Wizard                │
│ Manual Setup                │
│ Software                    │
│ Reset Thermostat            │
│ 〈                           │
└─────────────────────────────┘
```

3 To restart the thermostat press **Restart the device**.

4 To soft reset the thermostat, press **Soft Reset**.

5 To hard reset the thermostat, press **Factory reset**.

```
┌─────────────────────────────┐
│ 🏠     Reset Thermostat      │
├─────────────────────────────┤
│ Restart the device          │
│ Soft Reset                  │
│ Factory reset               │
│                             │
│ 〈                           │
└─────────────────────────────┘
```
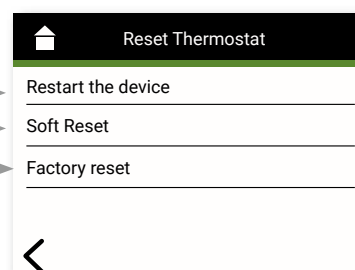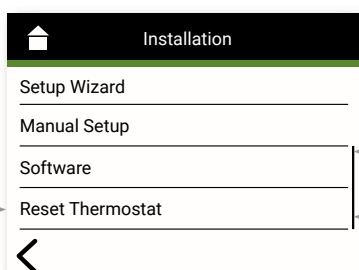
4.2 Error Message

The error message will appear on the left of the screen. To access the error details, press the error icon. The problem will be explain and the following solutions should be initiated.

Error message	Problem	Solution
⚠ **E0**	Internal fault. The thermostat is defective.	Contact your authorised installer. The thermostat must be replaced.
⚠ **E1**	Internal sensor fault. The built-in room sensor is defective or short-circuited.	Replace the thermostat or continue to use it with the floor sensor only. Go to "Sensor Application" under "Engineer Setting" and change the application to "Floor".
⚠ **E2**	External wired floor sensor fault. The floor sensor is short-circuited.	Replace the floor sensor or continue to use the thermostat with the built-in room sensor only. Go to "Sensor Settings" and change the application to "Room".
⚠ **E3**	External wired floor sensor not recognised. The floor sensor is either disconnected or defective.	Replace the floor sensor or continue to use the thermostat with the built-in room sensor only. Go to "Sensor Settings" and change the application to "Room".
⚠ **E4**	Internal overheating. The thermostat has overheated and the heating has been shut off.	Contact your authorised installer in order to have your thermostat inspected.

5   WARRANTY

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Devex Systems specialises in heating solutions for new or existing buildings in residential, commercial and industrial environments.

For more information, please contact us at: 1800 636 091 or info@devexsystems.com.au
www.devexsystems.com.au

NEW SOUTH WALES
5/83 Bassett Street
MONA VALE NSW 2103
PO Box 707 MONA VALE NSW 1660
Phone: 1800 636 091 | Fax: 02 9997 7852
Email: info@devexsystems.com.au

TASMANIA
Suite 3, 35 Melville Street
HOBART TAS 7000
Phone: 1800 636 091
Fax: 03 6273 9120
Email: tas@devexsystems.com.au

VICTORIA
PO Box 24
OFFICER VIC 3809
Phone: 1800 636 091
Fax: 03 5986 7399
Email: vic@devexsystems.com.au

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