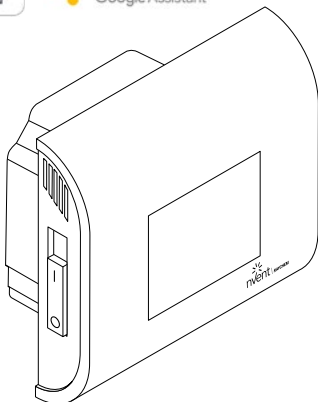




RAYCHEM

SENZ WIFI

Software version 2
Instruction Manual



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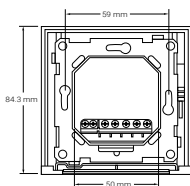
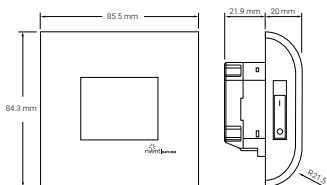
nVent.com/RAYCHEM

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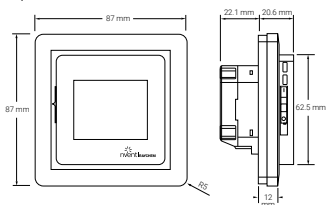
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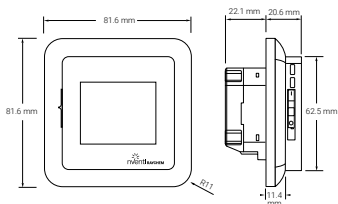
nVent RAYCHEM SENZ WIFI



SENZ WIFI Square frame



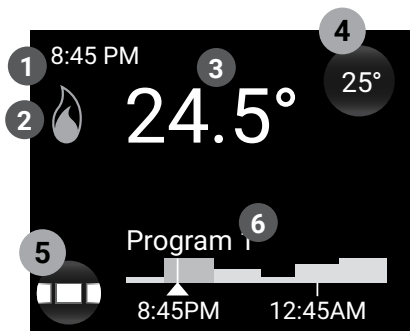
SENZ WIFI Round frame



ENGLISH

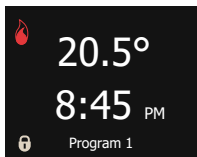
DISPLAY

Home Screen



- 1 Time
- 2 Heating symbol: thermostat is heating
- 3 Actual temperature
- 4 **Set temperature button**
- 5 **Menu button**
- 6 Visualization of the schedule and working mode

Screen Saver



- 1 Heating symbol
- 2 Actual temperature
- 3 Time
- 4 Lock symbol
- 5 Working mode

DESCRIPTION

The SENZ WIFI is a smart and easy to use touchscreen thermostat for electrical underfloor heating. It is designed to combine the best comfort with the lowest energy consumption. The SENZ WIFI is equipped with an ambient sensor and a floor sensor and is thus capable of monitoring and controlling your electrical floor heating in 4 different sensing modes (Room sensing mode / floor sensing mode / Room sensing mode with floor limiter / No sensor mode) depending on your needs.

The controlling and setup of the thermostat is incredibly intuitive thanks to the smart navigation enabled by the newest technologies: capacitive touchscreen, full color LCD display, enhanced processing power and controlling with swiping method.

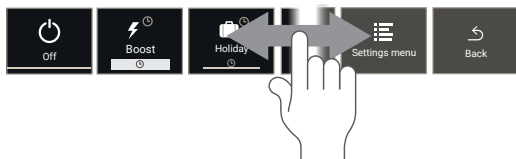
The SENZ WIFI can be controlled by a smartphone app (iOS and Android) that can be downloaded for free on the App Store or on Google Play. It can also be controlled by voice command using an Amazon Alexa or Google Assistant compatible smart speaker.



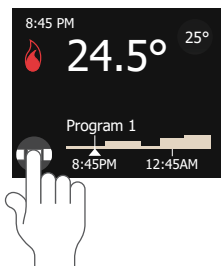
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NAVIGATION PRINCIPLE

The SENZ WIFI is a Touchscreen thermostat. The buttons on the thermostat can be activated by touching the screen. In order to scroll up and down through the menus or to change values on the wheels, the swiping method is used.



The SENZ WIFI thermostat is controlled by a central menu where the user can choose between different Working Modes and a simple set of settings. Touch the Menu button to activate the central menu:



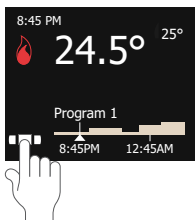
CENTRAL MENU



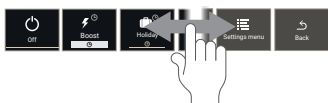
Navigation Example:

How to set the thermostat in constant mode

Touch the menu button



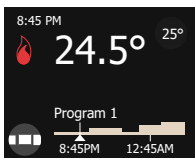
Swipe to the right



Touch the Constant mode symbol










You are now in constant mode
(1 set temperature only)



In this example, the set temperature is 25° and the measured temperature is 24.5°. The thermostat is heating the floor.

WORKING MODES

Working Mode	Description	Symbol
OFF	The OFF Mode is the stand-by mode for the SENZ WIFI.	
Boost	Using the Boost Mode, the user can decide to temporarily boost his temperature. The user can choose the temperature and the duration.	
Holiday	The Holiday Mode is used to plan a Holiday period (this means a period of multiple days where nobody will be present in the area heated by the thermostat)	
Program 1	Program 1 is the first pre-set and adjustable weekly schedule of the SENZ WIFI	
Program 2	Program 2 is the second pre-set and adjustable weekly schedule of the SENZ WIFI	
Program 3	Program 3 is the third adjustable weekly schedule of the SENZ WIFI. The third schedule has not been pre-defined as a factory default and can be fully customized by the user.	
Constant	In the Constant Mode, the SENZ WIFI is aiming for 1 temperature only. You can adapt this set temperature by clicking on the set temperature icon	

SETTING MENU

When selecting the Settings Menu in the Central Menu a set of settings is available for the user:



- **Edit program**

Used to create or adapt the weekly schedules of Program 1, Program 2 or Program 3.

- **Energy**

Used to visualize the energy consumption of the underfloor heating system.

- **Settings**

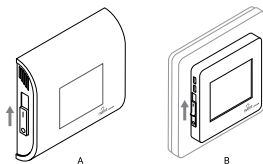
Used to change the settings of the thermostat

- **WIFI**

Used to set-up a WIFI connection between the SENZ WIFI and the App to control the thermostat

GETTING STARTED

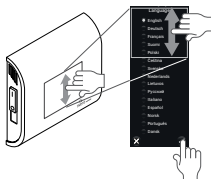
Once the SENZ WIFI is installed according to the installation instructions (EU0646), the thermostat can be started up. Use the 2-pole main switch to start up the thermostat.



The SENZ WIFI will start with a design wizard.

The wizard will ask for the following topics:

- **Select a language**

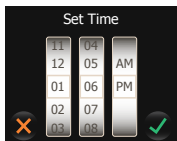


There are 15 languages to select from the list.

- **Set Date**

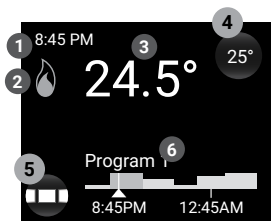


- **Set Time**



NAVIGATION

HOME SCREEN



- 1 Time
- 2 Heating symbol: thermostat is heating
- 3 Actual temperature
- 4 **Set temperature button**
- 5 **Menu button**
- 6 Visualization of the schedule and working mode

From the Home screen, the user can only press on 2 buttons:

- 4 **Set temperature button**
- 5 **Menu button**

A button on the home screen is always represented by a round area with a shadow. Besides the Set temperature button and the Menu button, there are also the following buttons:

- **Boost duration button** (See BOOST mode)
- **Planned Holiday button** (See HOLIDAY mode)
- **Holiday button** (See HOLIDAY mode)

All the other information that can be found on the home screen is information on the status or on the future status of the thermostat.

- **Time**
- **WIFI symbol**
Shows if the WIFI is active and connected to the wireless router
- **Actual temperature**
Shows the actual measured temperature. This can be the floor or the room temperature depending on the settings of the thermostat (see Sensor Application)
- **Schedule display**
Shows the weekly schedule for the past hour and for the next 5 hours
- **Heating symbol**
The heating symbol is active when the heating is ON

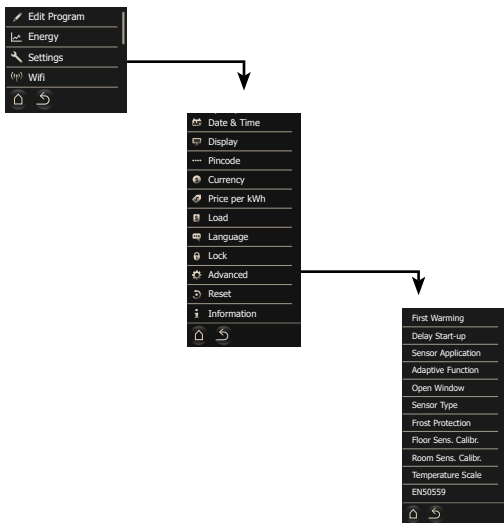
CENTRAL MENU

When pressing on the Menu button **4**, the user enters the Central Menu. He will see a list of Working mode buttons followed by Setting menu and Back button.



Using the Working mode buttons, he can activate the different working modes (see Working Modes)

When entering the Setting Menu, the user will navigate and update the settings. The structure of the Menu is represented in the graph below



WORKING MODES

The SENZ WIFI is controlling the underfloor heating in order to bring a certain comfort feeling. It does this by activating the heating system that is embedded in the floor. This results in a comfortable warm floor and has the effect of heating the room to a certain temperature. In order to achieve this goal, the SENZ WIFI has to be set in one of his 7 working modes.

Each working mode has a slightly different home screen, this makes it easy to understand in which mode the SENZ WIFI is working.

OFF MODE

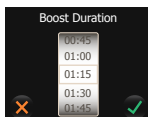
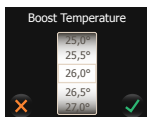
The OFF working mode is the stand-by mode of the SENZ WIFI. In the OFF mode, the thermostat can still be asked to keep the temperature above the freezing point (See Frost Protection).



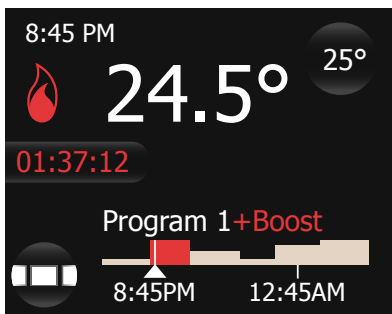
In the SENZ WIFI, the thermostat can still be reached by the app or by voice control through an Amazon Alexa or Google Assistant compatible smart speaker even when it is in OFF mode.

BOOST MODE

The BOOST mode is a temporary override of one of the other working modes for a couple of hours. At the end of the BOOST mode, the SENZ WIFI will return in the working mode that was active before the activation of the BOOST mode.



The user can choose the set temperature and the duration of the BOOST mode. When activating the BOOST mode for the second time, the SENZ WIFI will remember the selection of the Temperature and the desired duration.



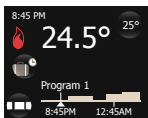
On the home screen of the BOOST Mode, the remaining BOOST duration is counting down on the screen. In addition to this, a visualization of the BOOST time and temperature is shown on the schedule bar.

The remaining BOOST time is a Button and can be pressed by the user at any time to adapt the remaining BOOST duration.

HOLIDAY MODE

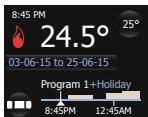
The HOLIDAY mode is a temporary override of one of the other working modes for a couple of days (or for a longer period). At the end of the HOLIDAY mode, the SENZ WIFI will return in the working mode that was active before the activation of the HOLIDAY mode.

The Holiday mode can be programmed in advance. When done so, a **Planned Holiday Button** will appear on the screen.



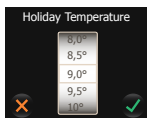
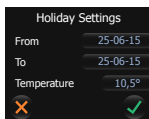
By pressing on this **Planned Holiday Button**, the user can adapt the Holiday schedule.

As soon as the start date of the Holiday is reached, the home screen will change into the following screen:



In this screen, you will see that the holiday is ongoing from 03/06/2015 to 25/06/2015 and that the SENZ WIFI will return in Program 1 after this Holiday period. By pressing on the Holiday Button, the user can adapt the schedule.

When initiating the **Holiday Mode**, the user will fill in the Holiday period and the desired temperature to maintain during this period.



When activating the Holiday for the second time, the thermostat will remember the preferred Holiday temperature.

Note that any change through a voice command with a Google Home or Amazon Alexa smart speaker will cancel the Holiday Mode.

PROGRAM 1, 2 AND 3 MODE

In the Setting Menu, select Edit Program. Select the program you want to edit (Program 1, 2 or 3). The following screen will appear:

The PROGRAM Modes are the weekly schedule modes. These modes are the most energy efficient modes as they are programmed to aim for different temperatures when people are supposed to be in the rooms they are heating.

PROGRAM 1 and 2 are pre-programmed, but can be customized to the user's needs. PROGRAM 3 is not configured when the thermostat leaves the factory.

PRESET FOR PROGRAM 1

Days	Event Time Start	Event Time End	Event Set-Point
MON-FRI	00:00	06:00	16
	06:00	08:00	23
	08:00	17:00	16
	17:00	23:00	23
	23:00	23:59	16

Days	Event Time Start	Event Time End	Event Set-Point
SAT-SUN	00:00	06:00	16
	06:00	23:00	23
	23:00	23:59	16

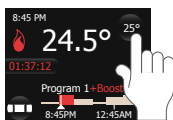
PRESET FOR PROGRAM 2

Days	Event Time Start	Event Time End	Event Set-Point
MON-FRI	00:00	06:00	16
	08:00	18:00	23
	18:00	23:59	16

Days	Event Time Start	Event Time End	Event Set-Point
SAT-SUN	00:00	23:59	16

The combination of a good weekly schedule and the **Adaptive Function** is recommended to have the lowest energy consumption at a desired comfort level. The Adaptive Function is activated in the factory settings and can be de-activated by the user in the Advanced Settings (see Adaptive Function).

In the Program Modes, when the user changes the temperature using the Set Temperature Button, the temperature is adapted temporarily until the next planned temperature change (based on the schedule of the Program). This change is highlighted in the Schedule temperature bar (see image below):



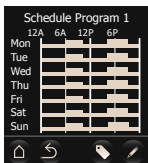
Changing the temperature through a voice command like “Alexa, raise living room by 2°C” will result in a change of Set Temperature for a period of 2 hours.

The thermostat will resume the active program after 2 hours.

Updating the schedule of PROGRAM 1, 2 or 3

The Event settings are used in order to program or adapt a weekly schedule used in the Event Mode.

In the Setting Menu, select Edit Program and select the program you want to edit (Program 1, 2 or 3). A screen with the weekly schedule overview will appear.

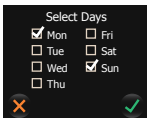


Use the name-tag button to change the Program name (in the SENZ WIFI, changing the name can be done in the APP).

Use the pen button to program the weekly schedule.

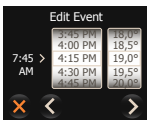
Programming the weekly schedule is done in 2 steps:

- **Step 1:** Select a day or a sequence of days to program



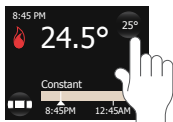
- **Step 2:** Program up to 7 periods for this day / these days

One period is consisting of a start time, a stop time and a temperature you want to maintain during this period



CONSTANT MODE

In the constant mode, the SENZ WIFI is aiming at 1 temperature only. This is a very easy to use mode, but be aware that there are more energy efficient ways to control your temperature (See PROGRAM 1, 2 and 3 mode).



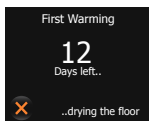
When using the Set Temperature Button on the constant mode, unlike in the program mode, the temperature is adapted until the user is changing the temperature again using the Set Temperature Button again.

In constant mode, changing the temperature through a voice command like: “Hey Google, set Bathroom to 22 degrees” will result in a permanent change of the Set Temperature.

ADVANCED SETTINGS

FIRST WARMING

The First Warming of the screed is a function that will help cure newly installed screeds. The goal of this function is to activate the underfloor heating gradually over 21 days. This function should only be used if this is in accordance with the screed manufacturer.



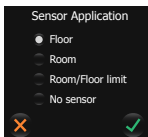
While the screed is curing, the thermostat will be blocked during 21 days (unless the user decides to de-activate the function).

DELAY START-UP

After a power interruption, it can be interesting not to start all electrical supplies at the same time. The Delay Start-Up makes it possible to start each thermostat with a delay of 1 to 15 minutes after restoring of the power supply.

SENSOR APPLICATION

In Sensor Application, the user can select the sensor that will control the floor heating.



The SENZ WIFI can work in the following Sensing Modes:

- **Floor:** SENZ WIFI is controlling the heating based on the floor temperature
- **Room:** SENZ WIFI is controlling the heating based on the ambient temperature
- **Room/Sensor limit:** SENZ WIFI is controlling the heating based on the ambient temperature but cut's off the heating as soon as the floor has reached the temperature defined by the limiter (see Temperature Scale)
- **No Sensor:** SENZ WIFI works as a regulator with cycles and is activating the relay for a % of each cycle

Factory setting: Floor sensing mode if the external floor sensor has been attached to the SENZ WIFI before the first power up of the thermostat.

Note: If a floor sensor is physically attached to the SENZ WIFI, then only the Floor and Room/Sensor limit modes are available. If there is no floor sensor attached to the SENZ WIFI, then the thermostat will give a warning message, and the installer will need to select one of the available sensor applications (Room or No Sensor).

If the Sensor application is set to No Sensor, then controlling the SENZ WIFI through a smart speaker will not be possible.

ADAPTIVE FUNCTION

The SENZ WIFI thermostat is a smart thermostat that adapts to the floor construction as well as to seasonality. It learns how and when to start heating in order to have the room or floor at the desired temperature at the desired time.

When the Adaptive Function is not active, the SENZ WIFI starts heating when a new event is reached. When the Adaptive Function is active, the SENZ WIFI starts heating earlier in order to reach the desired temperature on time. As the SENZ WIFI is constantly learning, the thermostat adapts to the external conditions to optimize the comfort feeling while staying extremely energy efficient.

Factory setting: The function is active.

Note: In order to make sure that the comfort is guaranteed, the SENZ WIFI thermostat will start pre-heating up to 4 hours in advance. In the first couple of weeks, this might seem to be starting excessively early, but the thermostat is learning the floor construction and the external conditions, which will give him the possibility to start heating closer and closer to the desired schedule. In other words, your thermostat will become more and more energy efficient as it learns about your floor.

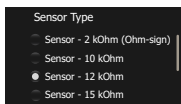
OPEN WINDOW

The SENZ WIFI is equipped with an Open Window function. This function is making sure that the thermostat is not heating while a window is opened for ventilation. If the thermostat is detecting a sudden temperature drop, it will stop heating for 30 minutes and start heating again after this short period of interruption.

Factory setting: The function is active.

SENSOR TYPE

The SENZ WIFI is delivered with a 12kΩ sensor, but is compatible with many other sensors. If you have installed a different sensor than the sensor provided with the thermostat, you can use the Sensor Type to select the sensor used in combination with the SENZ WIFI.



To change the sensor associated to the SENZ WIFI thermostat, select the sensor you want, swipe down and validate.

If you replace the sensor of the SENZ WIFI by the default nVent RAYCHEM spare sensor (1244-002952), please select the correct sensor in the Sensor Type menu: Sensor – 10kΩ.

The SENZ WIFI is compatible with sensors with the following resistance values at 25°C: 2kΩ, 10kΩ, 12kΩ (Factory Sensor), 15kΩ, 33kΩ and 100kΩ.

FROST PROTECTION

When the SENZ WIFI is put in the OFF mode, the thermostat can protect the floor from freezing by activating the underfloor heating in order not to reach temperatures under a certain threshold. This threshold is called the Frost Protection temperature. The Frost Protection function can be activated or deactivated and the Frost Protection temperature can be set into this menu.

Factory setting: OFF

FLOOR SENSOR CALIBRATION

You can calibrate the floor sensor to the actual floor temperature by using the calibration menu. The floor temperature can differ from temperature measured by the floor sensor depending on the floor construction.

Factory setting: By default, an offset of 4°C is programmed in the floor sensing mode. This is done in order to be closer to the actual floor covering (like tiles) temperature of the floor. This means that if the floor sensor is measuring 23°C, it will display a 19°C for the floor temperature. For most floor coverings and floor construction, this will be closer to the real temperature as the actual measurement in the floor.

ROOM SENSOR CALIBRATION

You can calibrate the ambient sensor to the actual room temperature by using the calibration menu. The SENZ WIFI is performing an auto calibration of the Room Sensor after each factory reset (or after first installation).

The manual calibration of the Room sensor should only be performed after this automatic calibration and only in the few cases where the automatic calibration seems not to be 100% accurate.

Please do not calibrate the room sensor before 10 days of operation of the system.

TEMPERATURE SCALE

The Temperature scale settings provide the possibility to limit the minimum and maximum settable temperature in the thermostat as well as the minimum and maximum temperature of the floor limiter.

The Minimum/Maximum temperature limits are defining what the floor limiter should do. If under the minimum temperature limit, the heating will always be ON, if over the maximum temperature limit, the heating will always be OFF.

The Minimum/Maximum temperature scale will limit the setting of the desired temperature within the Min/Max range. When the user wants to change the temperature, he will only be allowed to do so within the selected range.

SETTING UP THE WIFI

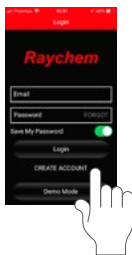
- Download the SENZ-WIFI APP

You can find the APP on Google Play and App Store



- **Create an account using the APP**

To create an account, you only need to click on the Create Account button in the APP and follow the instructions



- **Setup the WIFI on each thermostat**

On the thermostat go to Setting menu/WIFI and follow the WIFI wizard.

You will be asked to:

- **Choose a network**

A list of available networks will be shown on the thermostat screen

- **Enter a network key for the selected network**

This is the password of the LAN (also known as the WIFI password)

- **Enter a name for the thermostat**

It is possible to enter a name for the thermostat, but it is more advised to do this later with the APP as this goes faster and is easier on a mobile device. If you do not want to provide a name at this stage, just click on the next icon.

- **Provide an e-mail address**

This e-mail address will be the link between the APP and the thermostat, so it is important to use the same e-mail address as used in the APP to create an account

Once you have done the WIFI setup on the thermostat, you will get an e-mail to link the thermostat with the account. Click on the link in the e-mail and follow the instructions to get started with this thermostat in the APP.

SETTING UP THE VOICE CONTROL THROUGH GOOGLE ASSISTANT

In the GOOGLE HOME app, you can add the SENZ WIFI thermostats by doing the following:

- On the home screen, press on the +
- Choose "Set up device"
- Choose "Works With Google"
- Search for the "SENZ WIFI Thermostat"
- And follow the instructions on the screen*.

* During the setup you will need your SENZ WIFI account login and password to link your SENZ WIFI to the Google Home app.

SETTING UP THE VOICE CONTROL THROUGH AMAZON ALEXA

In the Amazon Alexa app, you can add the SENZ WIFI thermostats by doing the following:

- On the home screen, select "More"
- Choose "Skills & Games"
- Search for "SENZ WIFI Thermostat"
- And follow the instructions on the screen*

* During the setup you will need your SENZ WIFI account login and password to link your SENZ WIFI to the Amazon Alexa app.

TROUBLE SHOOTING

If a fault or error occurs, the thermostat will display one of the following error messages:

E0: Internal failure. The thermostat is defective. The thermostat must be replaced.

E1: Internal sensor defective. The thermostat must be replaced.

E2: External wired floor sensor disconnected, defective or short-circuited. Contact your installer for reconnection or replacement.

E5: Internal overheating. Contact your installer to have the installation inspected.

For more trouble shooting, go to the nVent floor heating website: nVent.com/RAYCHEM

TECHNICAL SPECIFICATION

Purpose of control:	Electronic thermostat for electric floor heating
Method of mounting:	Flush mounting
Supply voltage:	230VAC +/- 10%, 50Hz
Main power switch:	2-pole
Relay output:	230V, max. 13A
Protection class:	IP21 (IP44 with accessory 1244-017779)
Terminals:	2,5 mm ² screw cage clamp
Terminal wire size:	2,5 mm ²
Floor sensor with 3m cable:	12k @ 25°C +/- 0,75°C (no:38165)
Maximum length of floor sensor cable:	100m, 2 x 1,5mm ² (230VAC cable)
Control modes:	Floor sensor (active when floor sensor installed) Room sensor with floor limiter (active when floor sensor installed) Room sensor (active when no floor sensor installed) No sensor % regulator cycling on/off (active when no floor sensor installed)
Temperature regulation method:	PWM (pulse width modulation) with PI control loop
Type of action:	Type 1.B.
Control pollution degree:	2
Software class:	A
Overvoltage category:	III
Rated impulse voltage:	4kV
Ball pressure temperature:	125°C
SELV limits realized:	24V

“The protection against electric shock must be guaranteed by appropriate mounting. The requirements of Class II are fulfilled after appropriate mounting.”

APPROVALS AND DECLARATIONS



This thermostat is EcoDesign compliant and does incorporate the following functions:

Days	Senz Wifi
Weekly Timer	X
Predictive heating	X
Open Window	X
Distance control	X



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