

Uponor Smatrix Wave Flow - for installer

EN Configuration manual

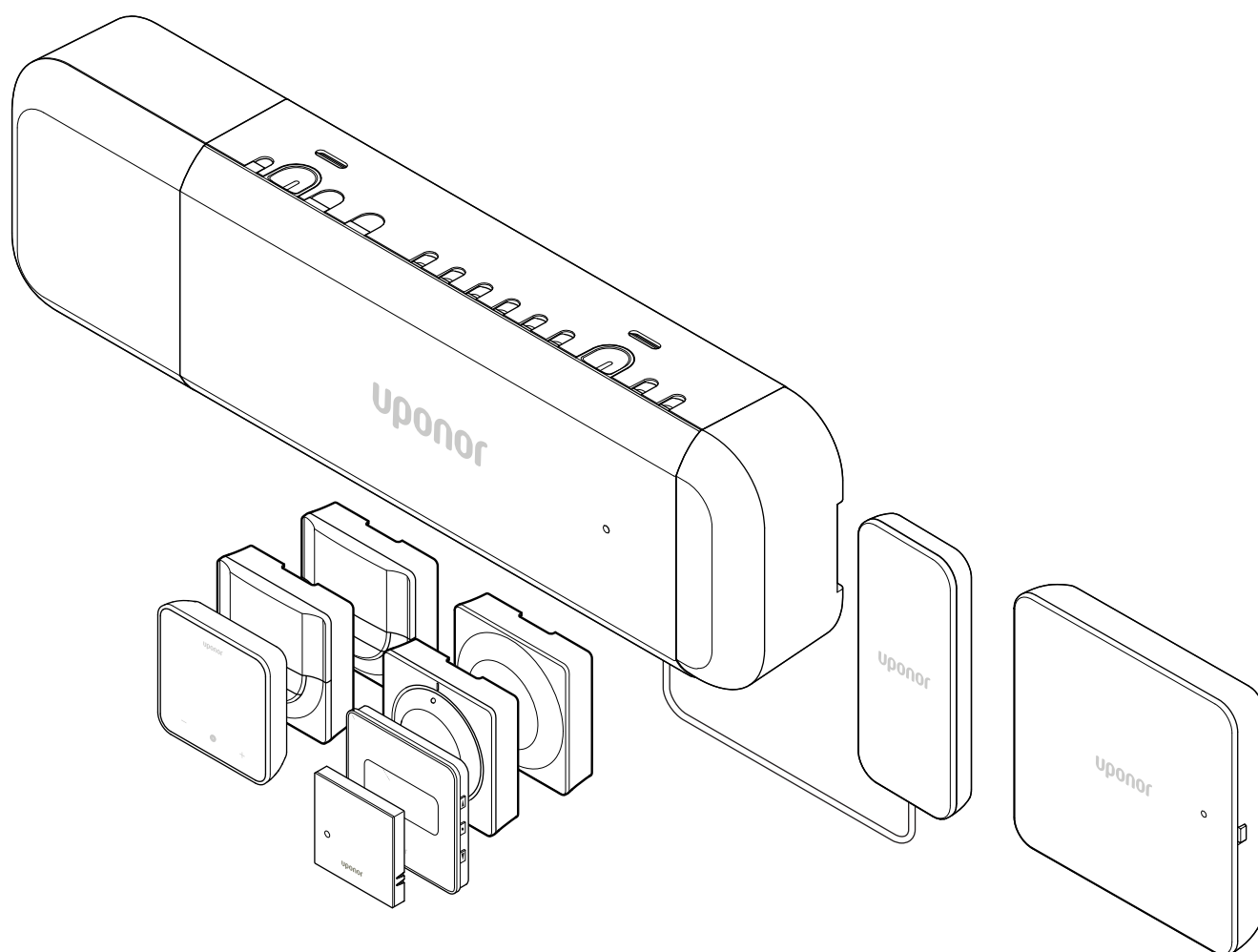


Table of contents

1	Safety instructions and disclaimer.....	3	7.6	Consumption management.....	25
1.1	Safety instructions.....	3	7.7	Cooling function (standalone system).....	25
1.2	Limitations for radio transmission.....	3	7.8	Cooling function (connected system).....	26
1.3	Correct disposal of this product (Waste Electrical and Electronic Equipment).....	3	7.9	Electrical underfloor heating.....	27
1.4	Copyright and disclaimer.....	3	7.10	Fallback.....	27
			7.11	Floor temperature management.....	27
2	System description.....	5	7.12	Override analogue thermostats with the Uponor Smatrix Flow app.....	28
2.1	System compatibility.....	5	7.13	Pump management.....	28
2.2	Room controller.....	5	7.14	Room bypass.....	28
2.3	Communication module.....	6	7.15	Setpoint limits.....	28
2.4	Expansion module.....	7	7.16	Smatrix AI supply temperature control.....	28
2.5	Relay module.....	8	7.17	Supply diagnostics.....	28
2.6	Thermostats and thermostatic heads.....	8	7.18	System clock.....	29
2.7	Accessories.....	8	7.19	System shut-off.....	29
2.8	Uponor actuators.....	8	7.20	Two-stage heating.....	29
			7.21	Uponor Smatrix Flow app and cloud services.....	29
			7.22	Valve and pump exercise.....	30
			7.23	Virtual thermostat.....	30
3	System setup.....	9	8	Installation type examples.....	31
3.1	Setting up the system without app (standalone).....	9	8.1	Underfloor heating or underfloor heating/cooling with multiple room controllers.....	31
3.2	Setting up the system with communication module and app.....	9	8.2	Underfloor heating or underfloor heating/cooling with a single room controller.....	34
4	Electrical connection setup.....	11	8.3	Underfloor heating/cooling with two standalone room controllers.....	37
4.1	Setting up the room controller input for a heating/cooling switch.....	12	8.4	Underfloor heating and radiators with multiple room controllers.....	39
4.2	Room controller relays.....	12	8.5	Underfloor heating or underfloor heating/cooling, and electrical underfloor heating with a single room controller....	41
4.3	Relay module.....	13	8.6	Underfloor and ceiling heating/cooling with a single room controller.....	44
4.4	Setting up electrical underfloor heating.....	14	8.7	Underfloor heating with a loop in one more room.....	45
5	Controller registration mode.....	15	9	Troubleshooting.....	47
5.1	Room controller LEDs in registration mode.....	15	9.1	General.....	47
5.2	Registering thermostats to the room controller.....	15	9.2	The room temperature is too cold or too warm.....	47
5.3	Registering thermostatic head to the room controller.....	16	9.3	There is a problem with the room controller.....	49
5.4	Registering system devices to the room controller.....	18	9.4	There is a problem with the communication module.....	52
5.5	Unregistering a thermostat, thermostatic head or system device from the room controller.....	19	9.5	There is a problem with the thermostat.....	53
6	Forced mode.....	21	9.6	There is a problem with the thermostatic head.....	53
6.1	Room controller LEDs in forced mode.....	21	9.7	There is noise from the system at the same time each week.....	54
6.2	Changing to forced mode to do a test of actuators.....	21	9.8	The app shows a different setpoint than the thermostat/thermostatic head.....	54
7	System functions.....	22	9.9	The app shows an alarm.....	54
7.1	System functions overview.....	22	10	Technical data.....	58
7.2	Actuator control.....	23	10.1	Technical specifications.....	58
7.3	Boiler control.....	24	10.2	Cable specifications.....	60
7.4	Comfort and ECO modes.....	24	10.3	Minimum distances.....	60
7.5	Comfort heating.....	25	10.4	Dimensions.....	61

1 Safety instructions and disclaimer

1.1 Safety instructions

Safety messages used in this document

	Warning! Risk of injury and damage. Ignoring warnings can cause personal injury and/or damage to products and other property.
	Caution! Risk of malfunctions. Ignoring cautions can cause the product to not operate as intended.
	Note Important information to the section in the manual.

Uponor uses safety messages in the document to indicate special precautions required for the installation and operation of any Uponor product.

Safety measures

	Note For safe and proper use, obey the instructions given in this document. Keep them for future reference.
---	---

The installer and operator agree to comply with following measures regarding Uponor products:

- Read and obey the instructions and processes in the document.
- The installation must be performed by a qualified installer in accordance with local regulations.
- Uponor is not liable for modifications not specified in this document.
- Switch off all connected power supplies before starting any wiring work.
- Do not expose the Uponor components to flammable vapours or gases.
- Do not use water to clean electrical Uponor products/components.

Uponor is not liable for damage caused by ignoring the instructions in this document or the applicable building code.

Power

	Warning! Uponor system power supply: 230 V AC, 50 Hz. In case of emergency, immediately disconnect the power.
---	--

Technical constraints

	Caution! To avoid interference, keep data cables away from components bearing power of more than 50 V.
---	--

1.2 Limitations for radio transmission

Wireless Uponor products use radio transmission for communication. The used frequency is reserved for similar applications, and the risk of interference with other radio sources is very low.

However, in some rare cases, radio communication can be faulty. The transmission range is sufficient for most applications, but certain surroundings affect the radio communication and maximum transmission distance.

If communication disturbances occur, Uponor recommends to relocate the antenna to a better position. Preferably, install Uponor radio sources some distance apart to prevent exceptional disturbances.

Distance to room controller antenna:

- At least 40 cm for thermostats/thermostatic heads/system devices
- At least 100 cm for the communication module

1.3 Correct disposal of this product (Waste Electrical and Electronic Equipment)

	Note Applicable in the European Union and other European countries with waste separation systems.
---	---



This icon on the product, or in the related documents indicates that it should not be disposed with household waste. Please, recycle responsibly to support the sustainable use of resources and prevent possible harm to human health and/or the environment.

Household users should contact the retailer where they purchased this product, or their local government office, for details on where and how they can take it for recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. Do not dispose this product with other commercial waste.

1.4 Copyright and disclaimer

This is a generic, European-wide document version. The document may show products that are not available in your location for technical, legal, commercial, or other reasons.

For any questions or queries, please visit the local Uponor website or speak to your Uponor representative.

“Uponor” is a registered trademark of Uponor Corporation.

Uponor has prepared this document solely for information purposes, images are only representations of the products. The content (text and images) of the document is protected by worldwide copyright laws and treaty provisions. You agree to comply with these when using the document. Modification or use of any of the content for any other purpose is a violation of Uponor’s copyright, trademark, and other proprietary rights.

This disclaimer applies to, but is not limited to, the accuracy, reliability, or correctness of the document.

The presumption for the document is that the product related safety instructions are fully obeyed. The following requirements apply to the Uponor product (including any components) as covered by the document.

- The system (combination of products) is selected and designed by a competent planner. It is installed and put into operation by a licensed and/or competent installer in compliance with the instructions provided by Uponor. Locally applicable building and plumbing codes/regulations have been obeyed.
- Temperatures, pressure and/or voltage limits according to product and design information have not been exceeded.
- The product remains in its originally installed location and is not repaired, replaced, or interfered with, without prior written consent of Uponor.
- The product is connected to potable water supplies or compatible plumbing, heating and/or cooling systems approved or specified by Uponor.
- The product is not connected to or used with third-party products, parts, or components except for those approved or specified by Uponor.
- The product does not show evidence of tampering, mishandling, insufficient maintenance, improper storage, neglect, or accidental damage before installation and being put into operation.

While Uponor has made all effort to ensure that the document is accurate, the company does not guarantee or warrant the accuracy of the information. Uponor reserves the right to change the product portfolio and the related documentation without prior notification, in line with its policy of continuous improvement and development.

Always make sure that the system or product complies with current local standards and regulations. Uponor cannot guarantee the full compliance of the product portfolio and related documents with all local regulations, standards, or working methods.

Uponor disclaims all warranties related to the content of this document, expressed or implied, to the fullest extent permissible unless otherwise agreed or statutory.

Uponor is under no circumstances liable for any indirect, special, incidental, or consequential damage/loss that results from the use or inability to use the product portfolio and related documents.

This disclaimer and any provisions in the document do not limit any statutory rights of consumers.

2 System description

Uponor Smatrix Wave Flow is a management system for underfloor heating and cooling installations. Comfort, user-friendliness, and temperature control for each room of a home can be put together through multiple components.

2.1 System compatibility

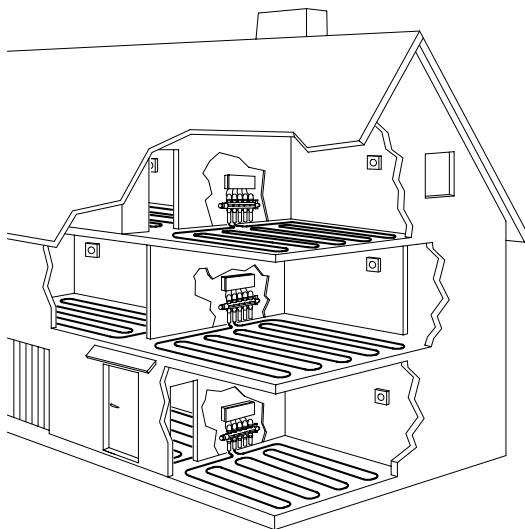
Uponor Smatrix Flow has a room controller, thermostats, actuators, an optional communication module and other accessories. The room controller manages the the actuators' operation when the thermostats sense a demand for heating or cooling.

The room controller also manages the room temperature in rooms with radiators and wireless thermostatic heads.

Uponor Smatrix Flow can operate with a mixture of different types of thermostats. Designed for maximum comfort, the thermostats communicate with the room controller through a radio link.

Uponor Smatrix Flow operates as a:

- Standalone (less functionality)
The room controller can operate without the communication module. It then becomes a standalone system with less functionality.
- System (connected or not connected to Uponor Cloud services)
The optional communication module (necessary to operate as a system) lets the Uponor Smatrix Flow app set up and optimise the system, and control the settings (for up to four room controllers).



SD0000010

2.2 Room controller

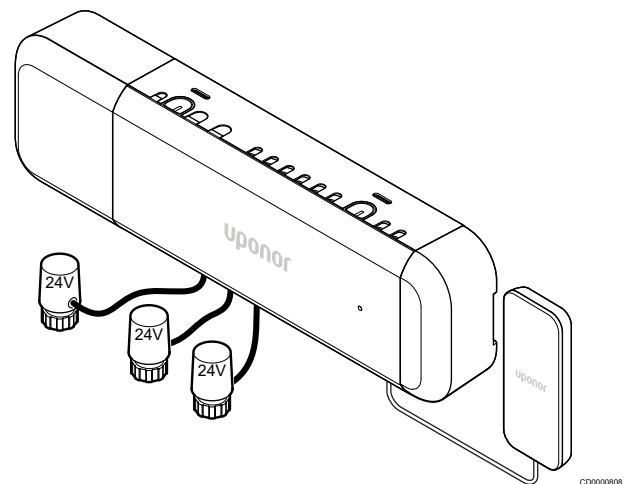


Caution!

Only 24 V AC Uponor actuators are compatible with the room controller.

The room controller uses information from the thermostats (such as room temperature), and it sets system parameters to operate the actuators. This has an effect on the flow of the supply water and changes the indoor temperature.

The room controller operates up to eight channels and ten actuators. The room controller is usually located near the hydraulic system manifolds.



CD0000808

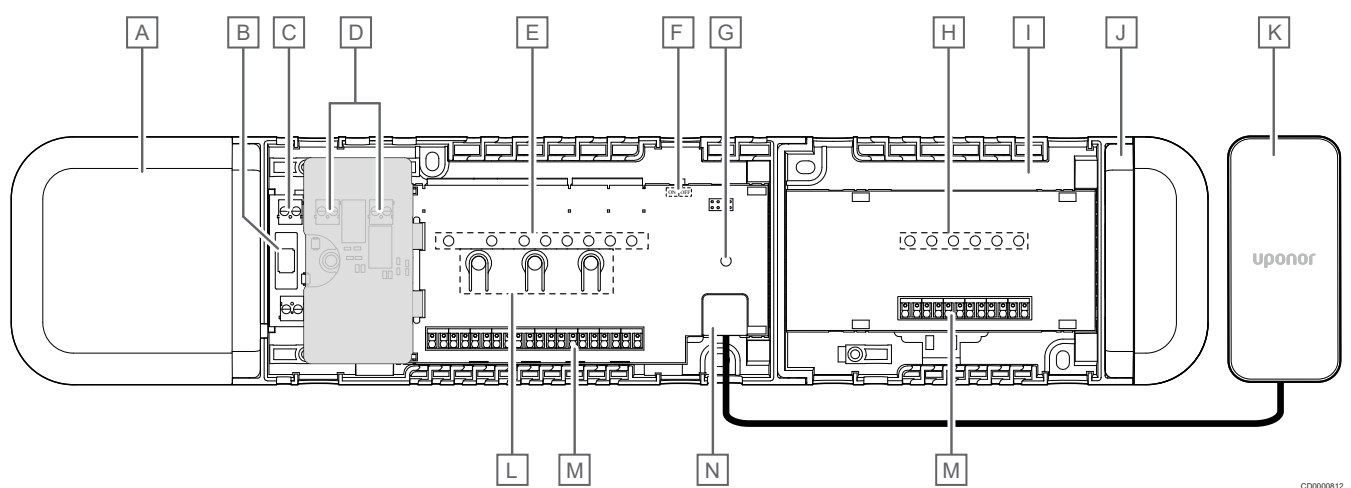
Controller features

Primary characteristics:

- Energy-saving functions, for example:
 - Autobalancing (ON by default)
 - Comfort setting (Uponor Smatrix Flow app is necessary)
 - Supply temperature adjustment recommendations (Uponor Smatrix Flow app is necessary)Uponor cloud services are also necessary in some situations.
- Electronic control of actuators
- Connection of up to ten actuators (24 V AC)
- 2-way communication with up to eight room thermostats
- Input (IN) to connect an external switch for:
 - Heating/cooling switch (Uponor Smatrix Flow app can also be used)
- Two independently operated relays (dry contacts) on the controller to activate a function:
 - Circulation pump (default, Relay 1)
 - Boiler (Uponor Smatrix Flow app is necessary)
 - Chiller (Uponor Smatrix Flow app is necessary)
 - Dehumidifier (Uponor Smatrix Flow app is necessary)
 - Heating/Cooling (default, Relay 2)
 - Comfort/ECO (Uponor Smatrix Flow app is necessary)The Uponor Smatrix Flow app is necessary to access advanced functionality and settings.
- Room bypass (Uponor Smatrix Flow app is necessary)
- Valve and pump exercise

- Relative humidity control (Uponor Smatrix Flow app is necessary)
 - Condensation control (Uponor condensation set is necessary)
 - DIP switch on the controller to enable or disable Autobalancing
 - Virtual thermostat (Uponor Smatrix Flow app is necessary):
 - Possibility to use the same thermostat with two controllers
- Options:**
- Local system access through the Uponor Smatrix Flow app (communication module is necessary)
 - Remote system access through the Uponor Smatrix Flow app (communication module and cloud service are necessary)
 - Possibility to expand the room controller with an expansion module (which adds six more thermostat channels and six more actuator outputs)
 - Possibility to connect up to four room controllers to one system (Uponor Smatrix Flow app is necessary)
 - Detachable transformer for modular placement
 - Cabinet or wall-mounted (DIN rail or supplied screws)
 - Free placement and orientation to install the room controller (antenna/communication module must be installed vertically)
 - The antenna can be hidden in the end cap. Horizontal installation of the room controller is necessary, but it must not be in a metal cabinet.

Room controller layout



Item	Description
A	Transformer, 230 V AC, 50 Hz power module
B	Fuse (T5 F3.15AL 250 V)
C	Input (IN)
D	Relay outputs (default: pump and heating/cooling management)
E	LEDs for channels 01–08
F	Autobalancing switch
G	Power LED
H	LEDs for channels 09–14
I	Uponor Smatrix Wave Expansion Module Flow M-362 6X (optional)
J	End cap
K	Antenna
L	Channel registration buttons
M	Quick connectors for actuators
N	Antenna connector

2.3 Communication module

!

Note

To set up a system with a communication module, you must have a mobile device (smartphone/tablet).

!

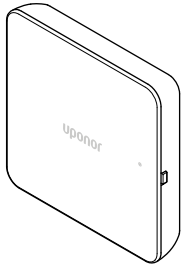
Note

Uponor recommends that you do not install the communication module in a metallic cabinet because it can have a negative effect on radio and Wi-Fi communication.

!

Note

The communication module must not be put nearer than 1 m from a room controller antenna.



With the communication module you have local and remote access to the room controller from a mobile device. For this access you need a connection to the Uponor cloud services and the Uponor Smatrix Flow app must be installed on your mobile device.

The communication module contains:

- An internal antenna for communication with a room controller
- Bluetooth Low Energy (BLE) module for local app access and initial setup
- Ethernet connector for internet connection
- Wi-Fi for internet connection

The app is the user interface for installers and end users. The app shows information and lets you do simplified programming of all related system settings. You can download the Uponor Smatrix Flow app from Google Play (Android) or the App Store (iOS). To use the app, you must create a user account. User confirmation is done through email.

You can operate the Uponor Smatrix Wave Flow system without the app and communication module, but with only basic functionality (with the use of the thermostats).

Communication module features

Primary characteristics:

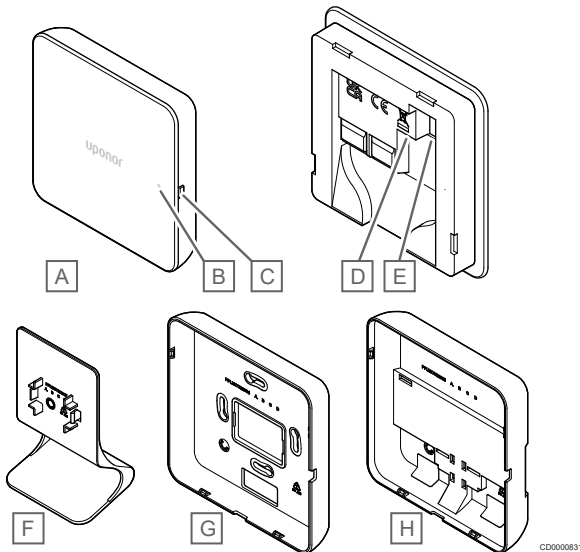
- Uponor Smatrix Flow app connectivity
- Connection to router with Wi-Fi or Ethernet
- Power supplied through USB-C
- Internal radio antenna for communication in the room controller (it continues to be necessary to have the regular antenna for the room controller to communicate with thermostats and system devices).
- Bluetooth Low Energy (BLE) module for local app access and initial setup
- More functionality (with Uponor Smatrix Flow app):
 - Analogue thermostat override (thermostat setpoint only set from app)
 - Heating/cooling settings
 - More relay functionality (chiller, dehumidifier, and so on)
 - Integrate up to four room controllers into one system.
 - Autobalancing is enabled/disabled in the app, not the DIP switch on the controller.
- More functionality (with Uponor Smatrix Flow app and Uponor Cloud Services):
 - Comfort/ECO schedules
 - Holiday mode (with all thermostats)
 - Guest users
 - Trends
 - Supply diagnostics
 - Weather information
 - Google/Alexa integration
 - Heat pump integration
 - Automatic Over-The-Air (OTA) software updates
 - Remote connection to the system

Options:

- Cabinet or wall-installed:
 - On DIN rail (not in cabinet)
 - With supplied screws
- Table stand

Communication module layout

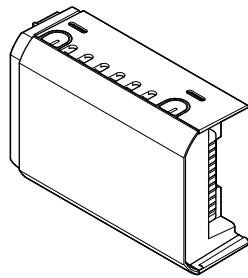
The illustration shows the parts of the communication module.



Item	Description
A	Communication module
B	Communication module LED
C	Communication module button
D	Power supply connector (USB-C)
E	RJ45 Ethernet connection (10/100BaseT)
F	Table mount
G	Wall mount
H	DIN-rail mount

2.4 Expansion module

The room controller can be extended with six more channels and actuator outputs with the use of an expansion module.



Expansion module features



Note

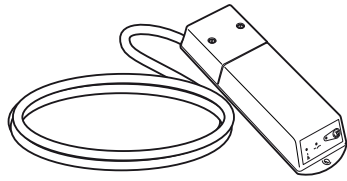
Only one expansion module is supported for each room controller.

Primary characteristics:

- Easy plug-in installation to a room controller
- Register up to six more thermostats to the room controller.
- Connect up to six more actuators (24 V).
- Electronic control of actuators
- Valve exercise

2.5 Relay module

The relay module adds two output relays to the system.



CD0000815

Relay module features

Primary characteristics:

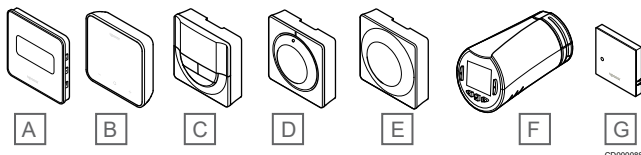
- Internal radio antenna for communication in the room controller
- Two potential-free contacts (230 V AC, 5 A)
- A room controller is necessary
- Pump control and boiler output function (default)
- Optional control functions (Uponor Smatrix Flow app is necessary):
 - Pump
 - Dehumidifier
 - Chiller
 - Heating/cooling
 - Comfort/ECO
- It can be put up to 30 m away from the room controller.

2.6 Thermostats and thermostatic heads

Note

The temperature of the surrounding surfaces and the ambient air temperature have an effect on the thermostat.

The thermostats and thermostatic heads communicate with the room controller through radio transmissions.

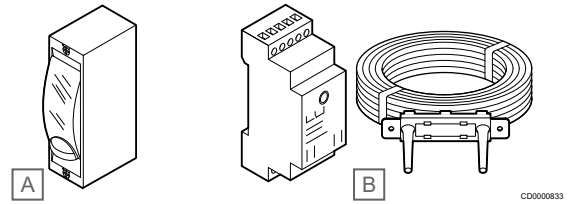


CD0000883

Item	Product name	Description
A	Uponor Smatrix Wave T-169	Digital thermostat with a relative humidity sensor and an operative sensor
B	Uponor Smatrix Wave T-267	Digital thermostat with a relative humidity sensor
C	Uponor Smatrix Wave T-168	Programmable digital thermostat with a relative humidity sensor
D	Uponor Smatrix Wave T-165	Standard thermostat with print on dial
E	Uponor Smatrix Wave T-163	Public thermostat
F	Uponor Smatrix Wave T-162	Thermostatic head
G	Uponor Smatrix Wave T-161	Room sensor thermostat with a relative humidity sensor and an operative sensor

2.7 Accessories

Uponor has accessories to use with the standard portfolio.

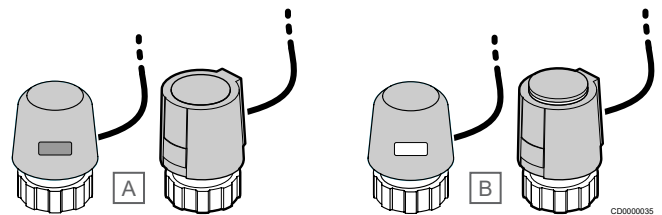


CD0000833

Item	Component	Description
A	Uponor heating/cooling relay	Relay to connect an external voltage signal from a heating/cooling source, such as a heat pump, to a room controller input
B	Uponor Base condensation set S-80 230 V	A condensation sensor to decrease the risk of condensation in standalone systems with cooling

2.8 Uponor actuators

Uponor actuators are installed on top of the manifold valves and operated with Pulse-Width Modulation (PWM) signals or ON/OFF signals.



CD0000035

Item	Description
A	The actuator closed the valve – empty indicator
B	The actuator opened the valve – white indicator

3 System setup

The system operates in standalone or connected operation (with or without a communication module).

In a standalone system the installation can only operate with the switches, settings and parameters available on the room controller, and the thermostats and system devices that can be registered to the room controller. When a communication module (connected operation) is connected (through radio communication) to a room controller, more functions and settings are available through the Uponor Smatrix Flow app.

3.1 Setting up the system without app (standalone)



Note

Electrical underfloor heating does not work in standalone system.

To set up a standalone system (without a communication module and app):

1. Connect the actuators to the room controller.
2. If it is a:
 - Heating system: Go to step 4.
 - Heating/Cooling system: Go to step 3.
3. Connect (if necessary) the heating/cooling switch to:
 - The room controller input (IN)
4. Connect (if necessary) the controller relay outputs to:
 - Circulation pump (relay 1)
 - Heating/cooling switch input of the device to control. This device will follow the heating/cooling status defined by the controller.
5. Connect (if necessary) the external relay module outputs to:
 - Circulation pump (relay 1)
 - Boiler (relay 2)
6. Activate/deactivate autobalancing (ON by default)
7. Energise the room controller.
8. Energise the relay module (if installed).
9. Energise the condensation set (if installed).
10. Register the thermostats to the room controller.
11. Register the thermostatic heads to the room controller, if necessary (install the thermostatic head on radiators before you register to the controller).
12. Register a system device to the room controller, if necessary:
 - Relay module
 - Public thermostat connected to a condensation set for condensation control sensor input for the heating/cooling switch
 - Public thermostat with Comfort/ECO switch from contact

3.2 Setting up the system with communication module and app

Requirements:

- Uponor Smatrix Flow app must be downloaded and installed.
- A user account must be created (Internet access is necessary).

To set up a system (with a communication module and app):

1. Connect the actuators to each room controller.
2. Connect electrical underfloor heating to each room controller, if necessary.
3. If it is a:
 - Heating system: Go to step 5.
 - Heating/Cooling system: Go to step 4.
4. Connect a heating/cooling switch, if necessary (the Uponor Smatrix Flow app can be used as a heating/cooling switch), to:
 - The input (IN) on a room controller
5. Connect the controller relay outputs (later configured in the Uponor Smatrix Flow app), if necessary:
 - Circulation pump
 - Boiler
 - Chiller
 - Dehumidifier
 - Heating/Cooling
 - Comfort/ECO
6. Connect the relay module outputs (later configured in the Uponor Smatrix Flow app), if necessary:
 - Circulation pump
 - Boiler
 - Dehumidifier
 - Chiller
 - Heating/Cooling
 - Comfort/ECO
7. Energise the room controller/controllers
8. Energise the relay module (if installed).
9. Energise the communication module
10. Register the thermostats to the room controller.
11. Register the thermostatic heads to the room controller, if necessary (install thermostatic heads on the radiators before you register them to the controller).
12. Register a system device to the room controller, if necessary:
 - Relay module
 - Public thermostat with Comfort/ECO switch from contact
13. Open the Uponor Smatrix Flow app on a mobile device.
14. Obey the installation wizard step to continue.
 - 14.1. Connect the communication module to the app locally (with Bluetooth).
 - 14.2. Recommended: Give temporary Wi-Fi credentials to the module to update its software.
 - 14.3. Register more room controllers to the communication module (if necessary).
 - 14.4. Activate cooling mode if the system is for heating and cooling.

When the cooling mode is activated, these settings must be configured:

 - Cooling setpoint offset
 - Heating/cooling switch method (app, heating/cooling input, or indoor/outdoor temperature)
 - Other cooling parameters
 - 14.5. Configure the relay outputs.

14.6. Configure your installation type:

	Note If there are two radiant surfaces and one is a wall, it must be selected as ceiling in the application setup, and not to be stopped by the floor sensor limitation.
	Note Electrical underfloor heating and underfloor heating cannot be installed in the same room.
	Note Radiators and underfloor heating cannot be installed in the same room.

- 14.6.1. Select an applicable installation type for the system.
 - One radiant surface (the system uses one radiant surface: floor, ceiling or wall)
 - Two radiant surfaces (the system uses two radiant surfaces: floor, ceiling or wall)
 - One radiant surface + radiator (the system uses one radiant surface: floor, ceiling or wall, together with radiators, in different rooms).
 - One radiant surface + electric underfloor heating (the system uses one radiant surface in different rooms: floor, ceiling or wall, together with electric underfloor heating).
- 14.6.2. If "Two radiant surfaces" is selected, virtual thermostats can be configured.
 Example: If floor and ceiling actuators are connected to two separate controllers, the same thermostat can be used for both controllers, if a virtual thermostat link is added.
- 14.6.3. If cooling is available in the installation and there are thermostats with RH sensors, activate/deactivate RH control for the system and configure:
 - General room relative humidity setpoint
 - Dead zone for each controller
- 14.6.4. For each room in all room controllers, select for each channel the type of system it will control:
 - Two radiant surfaces. For each channel, select the radiant surface it will control (floor or ceiling). If the surface is a wall, select it as ceiling to prevent floor temperature sensor limitations.
 - One radiant surface + EUFH. Select a radiant surface: floor, ceiling or wall, and EUFH.
 - One radiant surface + radiator. In this alternative, radiator channels will be shown if already selected.

If cooling is available in the system, select for each channel if it will be used for heating, cooling, or heating and cooling. (EUFH channels and radiator channels can only be used for heating).

If system RH control is activated and the room thermostat has a humidity sensor, RH control for this room can be activated/deactivated. If a dehumidifier is connected to the controller, the room can be used for dehumidifier management if activated.
- 14.6.5. If a minimum of one room has two heating systems, two cooling systems, or two heating systems and two cooling systems, one or two

stages can be selected for heating, cooling, or heating and cooling:

- Two heating systems (floor, ceiling or wall)
- Two cooling systems (floor, ceiling or wall)
- Two heating systems and two cooling systems (floor, ceiling or wall)

If two stages are selected, the heating or cooling offset must be set. The second stage is activated when the room temperature is different from the setpoint by the offset value.

14.7. Configure the bypass function.

14.8. Activate/deactivate autobalancing.

	Note The setting in the Uponor Smatrix Flow app overrides the position of the autobalance switch on the room controller.
---	--

14.9. Activate/deactivate the valve/pump exercise.

14.10. Review and the apply configuration.

4 Electrical connection setup

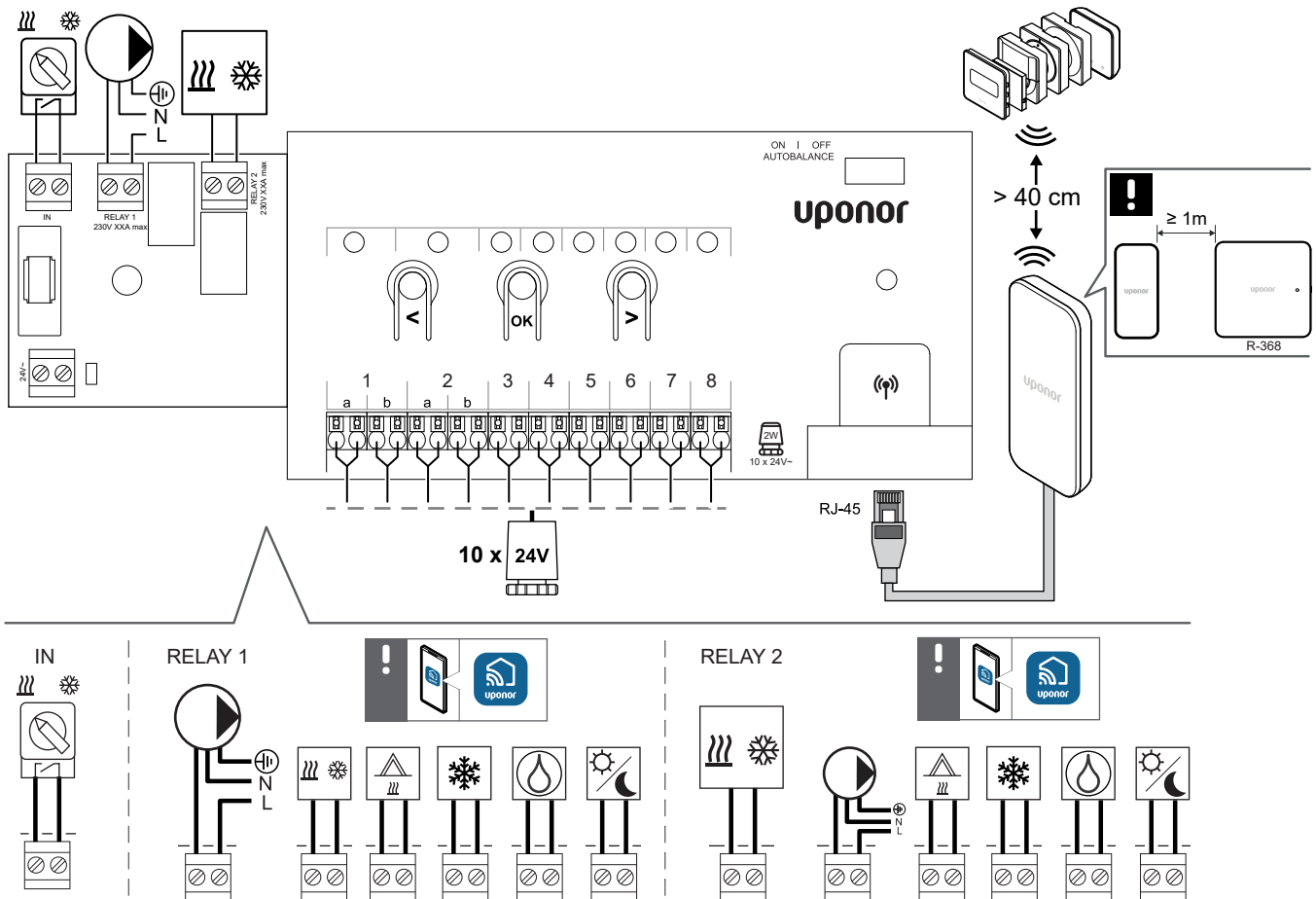


Figure 1. Room controller wiring diagram

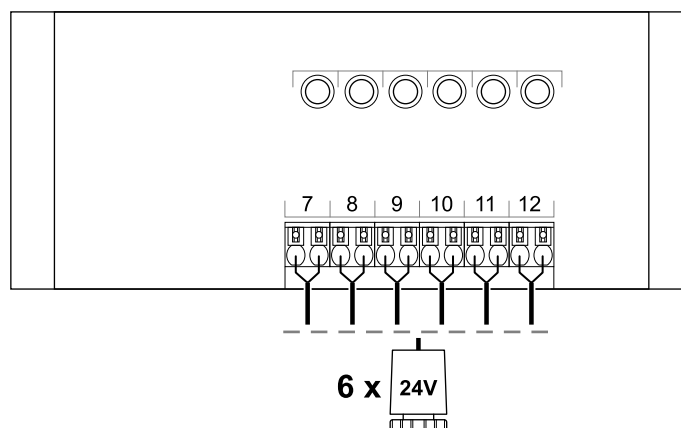
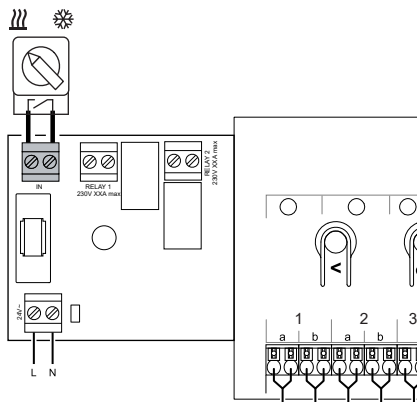


Figure 2. Expansion module wiring diagram

4.1 Setting up the room controller input for a heating/cooling switch



Note

The heating/cooling relay can be used if it is necessary to make a conversion from an external signal into a dry contact.

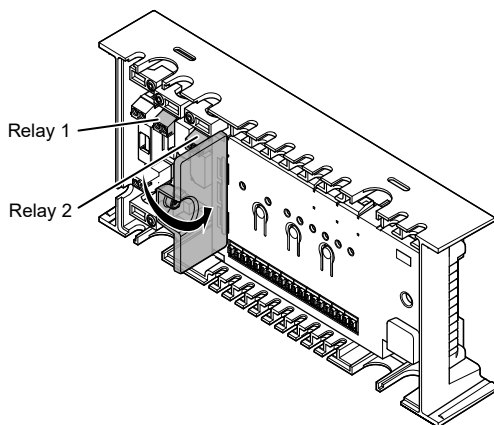
Requirements:

- Power must be disconnected from the room controller during the installation.
- The heating/cooling switch must be connected to the input on the room controller (identified with IN).
- The heating/cooling switch must be a dry contact.

To configure the room controller input:

- In standalone: No configuration on the room controller is necessary. This is the default value.
- In systems with a communication module: Heating/cooling switch method must be set to "Controlled by an external input" in the app.

4.2 Room controller relays



Note

The room controller supplies no power to the output.

Note

The room controller relays outputs are normally open dry contacts.



Note

The electrical circuits for the output must be protected by a circuit breaker with a maximum rating of 8 A.

The relays (normally open dry contacts) in the room controller can be operated independently. A relay module can be used in installations where the distance between the device and the room controller makes wiring difficult, or if more relays are necessary.

Refer to the room controller installation manual for more information.

Room controller relay and relay module overview

	Standalone	With the app
Circulation pump	X	X
Boiler		X
Chiller		X
Dehumidifier		X
Heating/cooling	X	X
Comfort/ECO		X
Not used		X

Setting up the room controller relay (standalone)



Warning!

A qualified electrician must supervise electrical installation and service behind secured 230 V AC covers.



Note

The room controller relay has no power to supply the connected function. The connector in the room controller is only a dry contact.

Requirements:

- Power must be disconnected from the room controller during the installation.
- Power must be disconnected from the controlled device (circulation pump, heating/cooling input) during the installation.
- Circulation pump:
 - The documentation from the circulation pump supplier and the related Uponor wiring diagrams must be read.
 - The L-wire to/from the circulation pump must be connected through one of the relay connections on the room controller (the Relay 1 connector in a standalone system).
- Heating/cooling:
 - The heating/cooling unit must have a dry contact that senses input for this function.
 - The heating/cooling unit must be connected to Relay 2 on the room controller.

To set up the function for a room controller relay:

1. No configuration on the room controller is necessary.

Setting up the room controller relay (with the app)

	Warning! A qualified electrician must supervise electrical installation and service behind secured 230 V AC covers.
	Note The room controller relay has no power to supply the connected function. The connector in the room controller is only a dry contact.

Requirements:

- Power must be disconnected from the room controller during the installation.
- Power must be disconnected from the controlled device (circulation pump, boiler, and so on) during the installation.
- The controlled device (circulation pump, boiler, and so on) must be connected to one of the relays on the room controller.
- A communication module and the Uponor Smatrix Flow app are necessary to set up this function.
- Circulation pump:
 - The documentation from the circulation pump supplier and the related Uponor wiring diagrams must be read.
 - The L-wire to/from the circulation pump must be connected through one of the relay connections on the room controller.
- Boiler:
 - The boiler must have a dry contact that senses input for this function.
- Chiller:
 - The chiller must have a dry contact sensing input for this function.
- Dehumidifier:
 - The dehumidifier must have a dry contact sensing input for this function.
- Heating/cooling:
 - The heating/cooling unit must have a dry contact sensing input for this function.
- Comfort/ECO:
 - The external unit with Comfort/ECO must have a dry contact that senses input for this function.

To set up the function for a room controller relay:

1. Select the function for the connected relay in the Uponor Smatrix Flow app (a communication module is necessary during setup):
Functions:
 - Not used (default)
 - Circulation pump
 - Boiler
 - Chiller
 - Dehumidifier
 - Heating/cooling
 - Comfort/ECO

4.3 Relay module

The relay module adds two more output relays to a room controller. This increases the total number of relays for each room controller to four.

The relay module makes it possible to control remote components (that are in radio range) that else must be connected to the room controller.

If more than one room controller is available in the system, one relay module for each room controller can be installed. The function is set in the Uponor Smatrix Flow app (a communication module is necessary).

If there is no communication module and app, the relay module will have the default values (pump/boiler).

	Note The relay module cannot supply power for the output.
	Note The relay module uses a dry contact connection on the terminal block to control the output.
	Note The electrical circuits of the output must be protected by a circuit breaker with a maximum rating of 8 A.
	Note Refer to the related component supplier documentation and the Uponor wiring diagram before you connect the component.

Setting up the relay module (stand alone)

	Warning! A qualified electrician must supervise electrical installation and service behind secured 230 V AC covers.
---	---

Requirements:

- Power must be disconnected from the relay module during the installation.
- Power must be disconnected from the controlled device (circulation pump, boiler) during the installation.
- The relay module must be registered as a system device to the room controller.
- Circulation pump:
 - The documentation from the circulation pump supplier and the related Uponor wiring diagrams must be read.
 - The L-wire to/from the circulation pump must be connected through one of the relay connections on the relay module (connectors 1A and 1B in a standalone system).
- Boiler:
 - The boiler must have a dry contact that senses input for this function.
 - The boiler must be connected to one of the relays on the relay module (connectors 2A and 2B in a standalone system).

To set up a function (circulation pump, boiler) for a relay module:

1. No configuration on the room controller or relay module is necessary.

Setting up the relay module (with the app)



Warning!

A qualified electrician must supervise electrical installation and service behind secured 230 V AC covers.

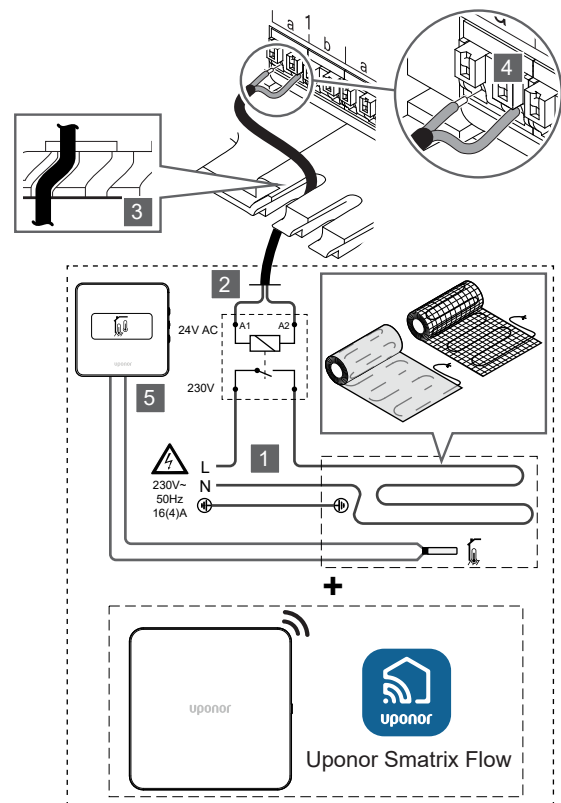
Requirements:

- Power must be disconnected from the relay module during the installation.
- Power must be disconnected from the controlled device (circulation pump, boiler, and so on) during the installation.
- The controlled device (circulation pump, boiler, and so on) must be connected to the relay module.
- A communication module and the Uponor Smatrix Flow app is necessary to setup this function.
- The relay module must be registered as a system device to the room controller.
- Circulation pump:
 - The documentation from the circulation pump supplier and the related Uponor wiring diagrams must be read.
 - The L-wire to/from the circulation pump must be connected through one of the relay connections on the relay module.
- Boiler:
 - The boiler must have a dry contact that senses input for this function.
- Chiller:
 - The chiller must have a dry contact sensing input for this function.
- Dehumidifier:
 - The dehumidifier must have a dry contact sensing input for this function.
- Heating/cooling:
 - The heating/cooling unit must have a dry contact that senses input for this function.
- Comfort/ECO:
 - The external unit with Comfort/ECO must have a dry contact that senses input for this function.

To set up the function (chiller, boiler, and so on) to a relay module:

- Select the function for the connected relay in the Uponor Smatrix Flow app (a communication module is necessary during setup):
 - Not used (default)
 - Circulation pump
 - Boiler
 - Chiller
 - Dehumidifier
 - Heating/cooling
 - Comfort/ECO

4.4 Setting up electrical underfloor heating



Requirements:

- The communication module and Uponor Smatrix Flow app are necessary to configure this function.
- The electrical underfloor heating mat/wire must be connected to a 24 V AC relay dimensioned for the correct load.
 - The load (L, 230 V) and the electrical underfloor heating supply must be connected to a dry open contact.
- The actuator output from the room controller (24 V AC) must be connected to the A1 and A2 connection terminals on the relay.
- The cables from the relay must be put through the cable entries at the bottom of the room controller frame.
- Rooms with EUFH must have a thermostat with an external sensor that works as a floor sensor. It can be installed in compatible room thermostat.



Note

Heating demand for room controller channels configured for EUFH does not:

- Start the circulation pump.
- Start the boiler (if installed).
- Use Autobalancing PWM signals to control the room temperature.

To configure electrical underfloor heating for the room controller:

- Set the channels as EUFH channels in the Uponor Smatrix Flow app.
- Set the control mode (digital thermostat) or DIP switch (public thermostat) on the thermostat.
 - Digital thermostat: "Room temperature with external floor sensor" (RFT)
 - Public thermostat: "Room temperature sensor and floor temperature sensor"

5 Controller registration mode

This mode is used to connect the thermostats, the communication module and the remaining system components to the controller.

In registration mode, the regulation does not work. The actuators and relay will stay in the same status as they were before they enter registration mode.

5.1 Room controller LEDs in registration mode

Power LED	Icon	Status
White ON		The room controller is in thermostat registration mode.
Red-white FLASHES		The selector points at the power LED.
White FLASHES		The room controller is in system device registration mode.
Channel LED	Icon	Status
Red ON		The thermostat or system device is registered, but with communication errors.
Green ON		The thermostat or system device is registered, and communication is OK.
Red-green FLASHES		The selector points at the channel with a thermostat registered and pointed.
Green FLASHES		The channel selected to be registered.
OFF		The selector does not point at the channel, or the thermostat is not registered.

5.2 Registering thermostats to the room controller

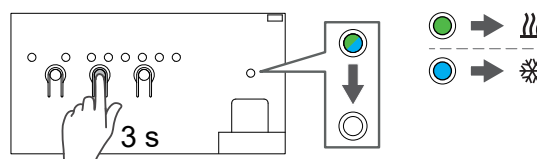
Requirement:

- To prevent interference, make sure that the thermostat is a minimum of 40 cm from the room controller antenna.

	Note Uponor recommends that you register all channels to the thermostat at the same time.
	Note After approximately 10 minutes of inactivity, the room controller will return to normal operation. A reset of the timer occurs when a button is pushed or if a device is registered to it.
	Note The thermostat registration is not saved until the registration mode is changed to run mode.

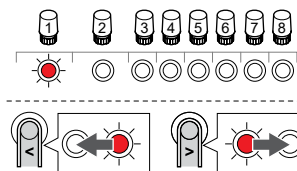
To register a thermostat to a room controller:

- Push and hold the **OK** button on the room controller until the power LED changes to white to enter registration mode.



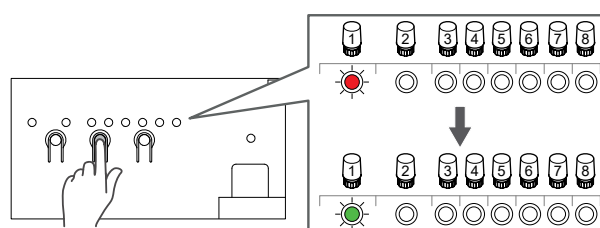
S10000876

- Use the buttons **<** or **>** to move the pointer (LED flashes red).



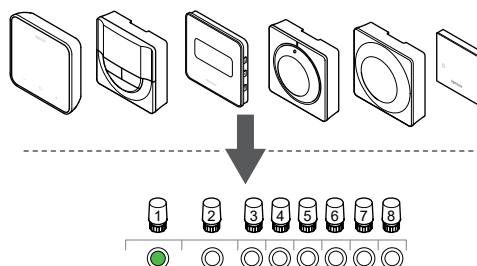
S10000877

- Push the **OK** button to select a channel for registration. The LED for the selected channel starts to flash green.



S10000972

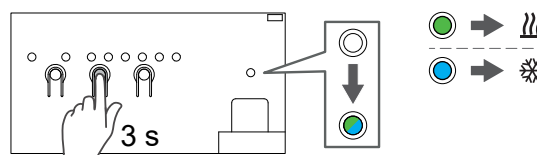
- Select all channels to be registered to the thermostat and continue.
- Register the thermostat. To do this, push the correct registration buttons in the thermostat (dependent on the type).
The LEDs of the selected channels on the room controller then become continuously green. The registration is now completed. Refer to the thermostat installation manual for more information.



S10000888

If the LED on the room controller does not change to green, do steps 2 – 5 again.

- Push and hold the **OK** button on the room controller until the power LED changes to blue (cooling mode) or green (heating mode) to exit registration mode or enter run mode. If nothing is done, the controller enters run mode after 10 minutes.



S10000878

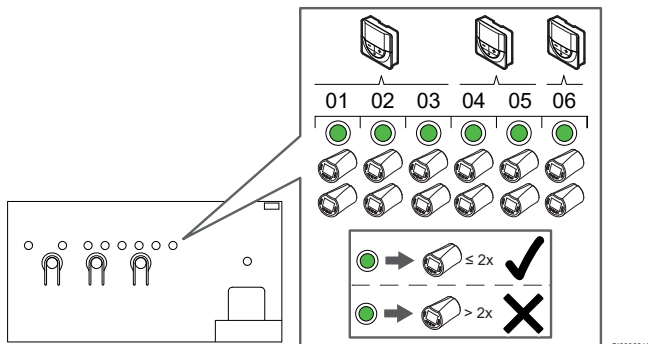
To unregister a registered thermostat, see Chapter: "Unregistering a thermostat, thermostatic head or system device from the room controller"

5.3 Registering thermostatic head to the room controller

	Caution! You must install the thermostatic head on a radiator before you register it to a room controller. This is because the thermostatic head (when registered) will do a valve stroke calibration. This calibration is necessary for the thermostatic head to accurately operate the valve on the radiator.
	Caution! To keep the regulation performance, Uponor recommends that you do not connect more than 24 thermostatic heads in a system.
	Note After approximately 10 minutes of inactivity, the room controller will return to normal operation. A reset of the timer occurs when a button is pushed or if a device is registered to it.
	Note The thermostatic head registration is not saved until the registration mode is changed to run mode.

A thermostatic head can be used in a room with or without a thermostat.

Registering thermostatic head to the room controller in a room with a thermostat



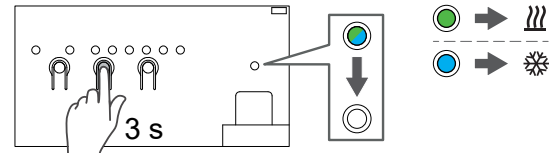
Requirements:

- A thermostat, which will control a thermostatic head, must be registered to the room controller before this procedure.
- A thermostatic head must not be registered to a room channel where an actuator is connected.
- A thermostat must be registered to a sufficient number of channels to control all the thermostatic heads in a room. A maximum of two thermostatic heads can be registered to one channel.
- To prevent interference, make sure that the thermostatic head is a minimum of 40 cm from the room controller antenna.

	Note The controller does not show if a thermostatic head is registered to a channel.
--	--

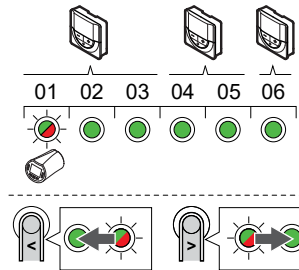
To register a thermostatic head to a room controller in a room with a thermostat:

1. Push and hold the **OK** button on the room controller until the power LED changes to white to enter registration mode.



2. Use the buttons **<** or **>** to move the pointer (LED flashes red) to the intended thermostat channel (green LED). The LED flashed red and green.

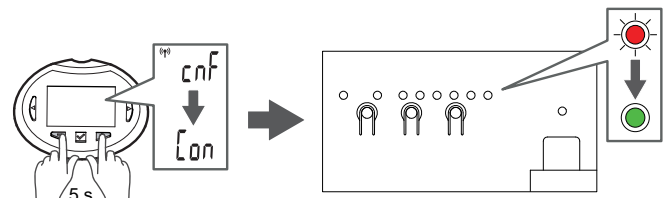
	Note If two thermostatic heads are registered to a channel, register the third thermostatic head to the next channel in the sequence. If more thermostat channels are necessary, you can add them in thermostat registration mode.
--	--



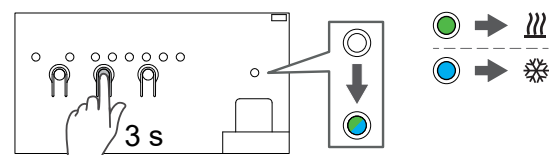
3. Push and hold the **-** and **+** buttons on the thermostatic head at the same time until the display shows the text **CnF** (configure) and a communication icon.

The display shows the text **Con** when the registration is completed. The selected channel LED in the room controller becomes continuously green.

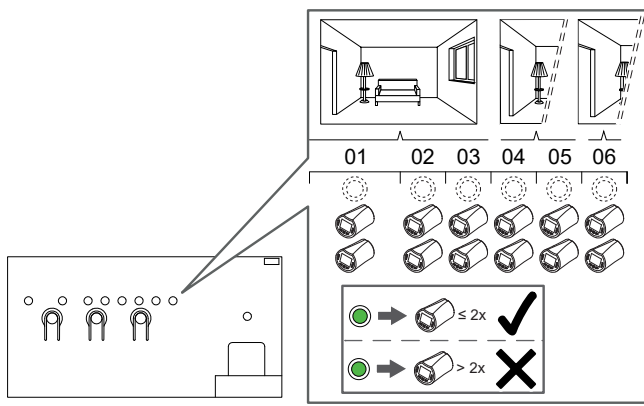
	Note If the thermostatic head display shows the text --- , the registration was unsatisfactory. Go to step 1 to start this procedure again. Try the next channel in line if two other thermostatic heads are already registered to the current one.
--	--



4. The thermostatic head does a stroke calibration.
5. Do you want to register more thermostats?
 - Yes: Stay in the registration mode.
 - No: Obey the instructions in Step 6 to exit the registration mode.
6. Push and hold the **OK** button on the room controller until the power LED changes to blue (cooling mode) or green (heating mode) to exit registration mode. The room controller changes to run mode.



Registering thermostatic head to the room controller in a room without a thermostat



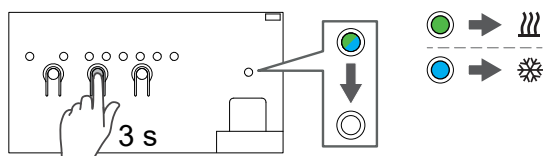
Requirements:

- A sufficient number of channels must be assigned to the room in advance if you register thermostatic heads in a room without a thermostat. A maximum of two thermostatic heads can be registered to one channel.
- To prevent interference, make sure that the thermostatic head is a minimum of 40 cm from the room controller antenna.

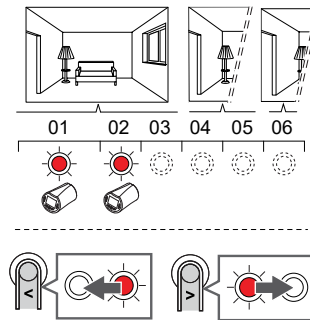
	Caution! Register thermostatic heads for one room at a time. Exit registration mode and enter it again to register thermostatic heads in the next room.
	Note The controller does not show if a thermostatic head is registered to a channel.
	Note You can select as many channels as are necessary to install all heads for this room, but with a maximum of two heads for each channel. For the thermostatic head to operate correctly, the thermostat cannot have room controller channels without a thermostatic head assigned.

To register a thermostatic head to a room controller in a room without a thermostat:

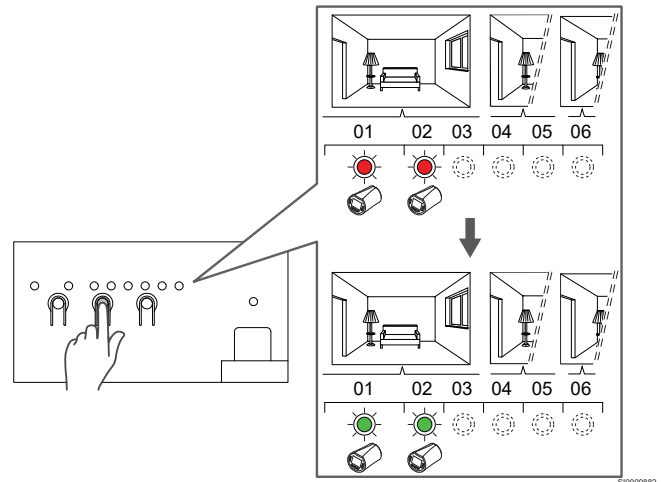
- Push and hold the **OK** button on the room controller until the power LED changes to white to enter registration mode.



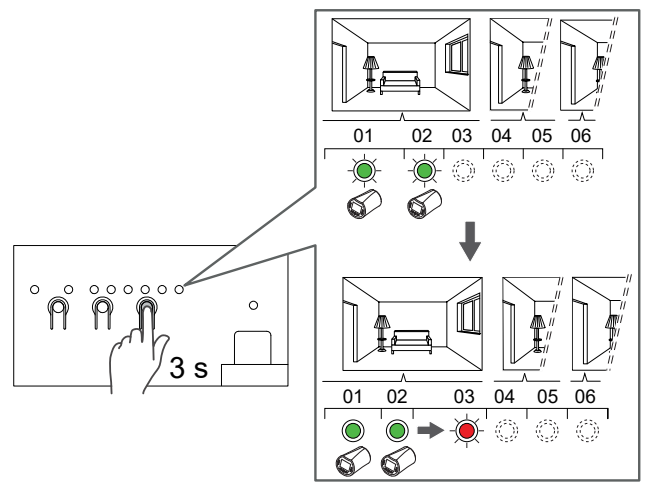
- Use the buttons **<** or **>** to move the pointer (LED flashes red) to the first empty channel necessary for the room.



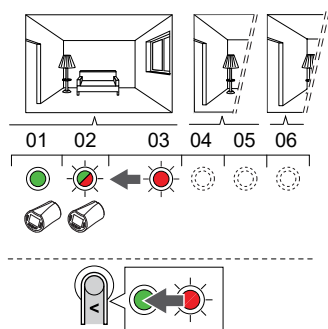
- Push the **OK** button to select a channel for registration. The LED of the selected channel starts to flash green.
Do the selection of channels again until a sufficient number of channels for the room are created.



- Push and hold the **>** button on the room controller until the selected channels change to green and the next channel in the sequence starts to flash red. This creates a room without a thermostat.



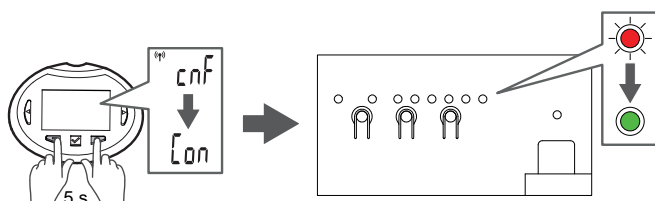
5. Use buttons < or > to move the pointer (LED flashes red) to the first channel of the room (green LED). The LED flashes red and green.
If the first channel is full, move the pointer to the next channel in the sequence.



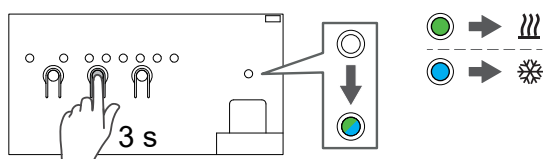
6. Push and hold the - and + buttons on the thermostatic head at the same time until the text **CnF** (configure) and a communication icon are shown on the display.
The display shows the text **Con** when the registration is completed. The selected channel LED in the room controller becomes continuous green.

Note

If the thermostatic head display shows the text ---, the registration was unsatisfactory. Go to step 1 to start this procedure again. Try the next channel in line if two other thermostatic heads are already registered to the current one.



7. Do you want to register more thermostats?
- Yes: Stay in the registration mode.
 - No: Obey the instructions in Step 8 to exit the registration mode.
8. Push and hold the **OK** button on the room controller until the power LED changes to blue (cooling mode) or green (heating mode) to exit registration mode. The room controller changes to run mode.



5.4 Registering system devices to the room controller

Requirements:

- To prevent interference, make sure that the system device is a minimum of 40 cm from the room controller antenna.
- To prevent interference, make sure that the communication module is a minimum of 100 cm from the room controller antenna.



Note

After approximately 10 minutes of inactivity, the room controller will return to normal operation. A reset of the timer occurs when a button is pushed or if a device is registered to it.

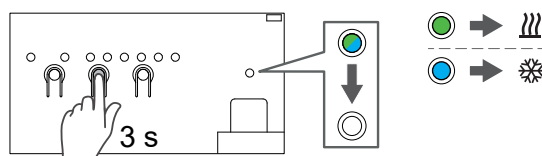


Note

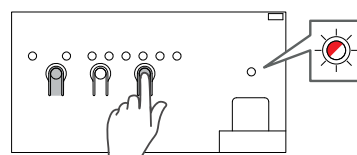
The system device is not saved until the registration mode is changed to run mode.

To register a system device:

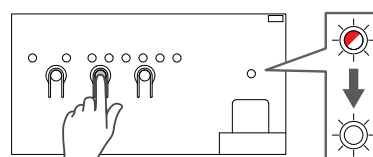
1. Push and hold the **OK** button on the room controller until the power LED changes to white to enter registration mode.



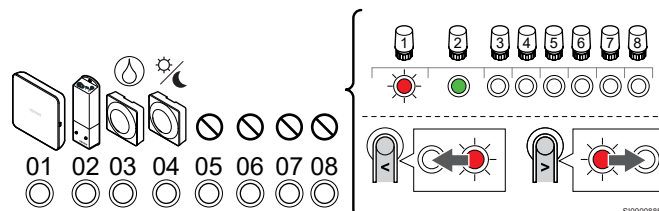
2. Use the buttons < or > to move the pointer to the power LED (LED flashes red and white).



3. Push the **OK** button to change to system device registration mode (power LED). The power LED starts to flash white.



4. Use the buttons < or > to move the pointer (LED flashes red) to the necessary channel.

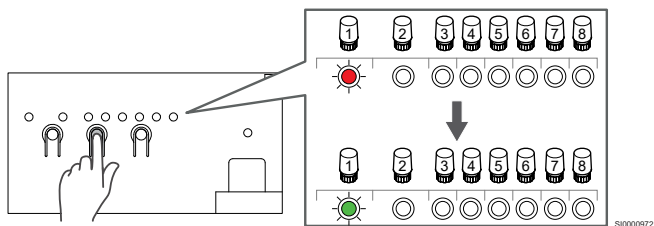


Channel	
1	Communication module ¹
2	Relay module
3	Public thermostat with condensation control sensor input for heating/cooling switch. ¹
4	Public thermostat with Comfort/ECO switch from contact
5	Not used
6	Not used
7	Not used
8	Not used

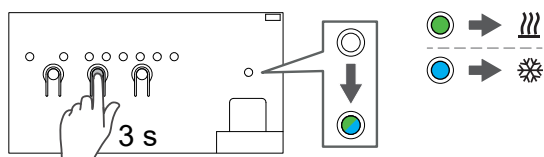
¹) Channels 1 and 3 cannot register at the same time in the same system. The condensation set and communication module are not compatible in the same system (humidity control in systems with the communication module is done with the humidity control feature configured through the app).

The Uponor Smatrix Flow app must be used to register the communication module.

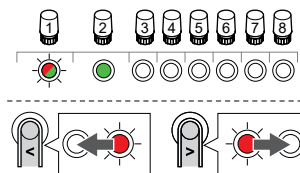
- Push the **OK** button to select a channel for registration. The LED for the selected channel starts to flash green.



- Do the registration on the system device. When the system device registration is completed, the LED becomes to fixed green.
Refer to the system device installation manual for more information.
- Push and hold the **OK** button on the room controller until the power LED changes to blue (cooling mode) or green (heating mode) to exit registration mode. The room controller changes to run mode.

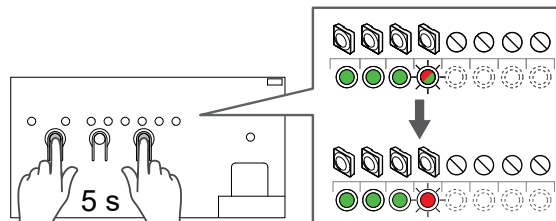


SI0000878



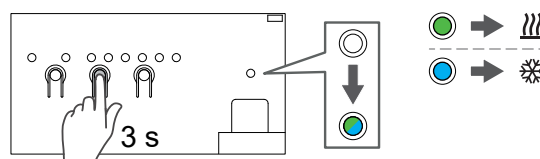
SI0000880

- Push the **<** and **>** buttons at the same time (for approximately 5 seconds) until the LED for the selected channel starts to flash red.



SI0000873

- Push and hold the **OK** button on the room controller until power LED changes to blue (cooling mode) or green (heating mode). The room controller changes to run mode.



SI0000878

5.5 Unregistering a thermostat, thermostatic head or system device from the room controller

Note

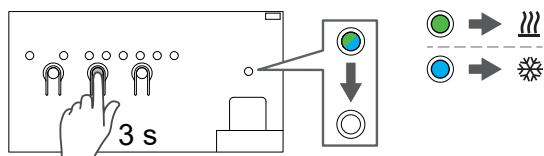
Make sure that the room controller is in run mode. If it is in registration mode or forced mode, push and hold the **OK** button for approximately 5 seconds or until the LEDs go off.

If a thermostat, thermostatic head or system device is not accurately registered, or if a registration must be done again, it is possible to erase the current registration from the room controller.

Unregistering a thermostat or thermostatic head from the room controller

To unregister a thermostat or thermostatic head from the room controller:

- Push and hold the **OK** button on the room controller until the power LED changes to white.



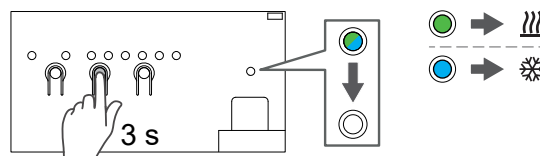
SI0000876

- Use the buttons **<** or **>** to move the pointer (LED flashes red) to the channel (green LED) to unregister. The channel LED then flashes red and green.

Unregistering all thermostat/thermostatic head channels from the room controller

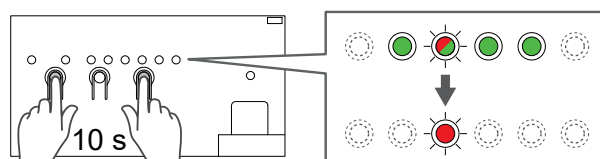
To unregister all thermostat/thermostatic head channels from the room controller:

- Push and hold the **OK** button on the room controller until the power LED changes to white.



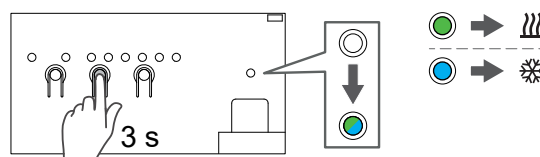
SI0000876

- Push the **<** and **>** buttons at the same time (for approximately 10 seconds) until the LEDs for all channels but one change to OFF.



SI0000884

- Push and hold the **OK** button on the room controller until the power LED changes to blue (cooling mode) or green (heating mode). The room controller changes to run mode.

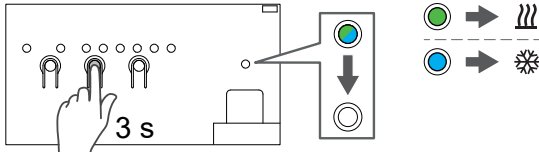


SI0000878

Unregistering a system device from the room controller

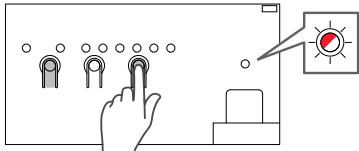
To unregister a system device from the room controller:

- 1. Push and hold the **OK** button on the room controller until the power LED changes to white.



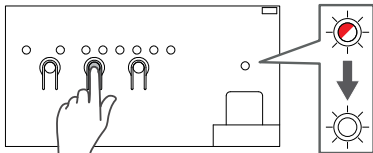
SI0000876

- 2. Use the buttons **<** or **>** to move the pointer to the power LED (LED flashes red and white).



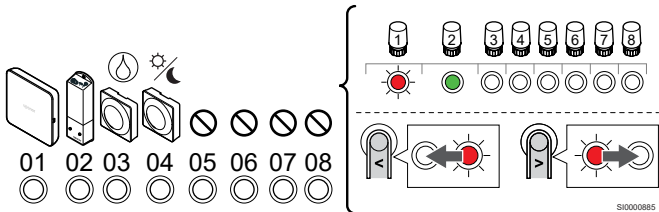
SI0000886

- 3. Push the **OK** button to change to system device registration mode (power LED). The power LED starts to flash white.



SI0000887

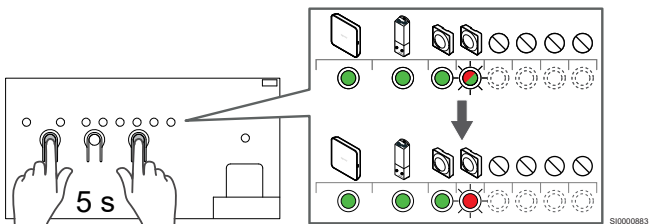
- 4. Use the buttons **<** or **>** to move the pointer (LED flashes red) to the channel to unregister (green LED).



SI0000885

Channel	
1	Communication module
2	Relay module
3	Public thermostat with condensation control sensor input for heating/cooling switch
4	Public thermostat with Comfort/ECO switch from contact
5	Not used
6	Not used
7	Not used
8	Not used

- 5. Push the **<** and **>** buttons at the same time until the LED for the selected channel starts to flash red for approximately 5 seconds.



SI0000883

- 6. Push and hold the **OK** button on the room controller until the green LEDs go off. The room controller changes to run mode.

6 Forced mode

Forced mode is used to do a test of the channel outputs/actuators.

- 5. If it is necessary to deactivate forced mode for the selected channel, push the **OK** button again for 3 seconds when the room controller is in forced mode.

6.1 Room controller LEDs in forced mode

Power LED	Icon	Status
Orange ON		The room controller is in forced mode.

Channel LED	Icon	Status
Green ON		The actuator is activated.
Red FLASHES		The selector points at the channel.
OFF		The selector does not point at the channel, or is not activated.

6.2 Changing to forced mode to do a test of actuators

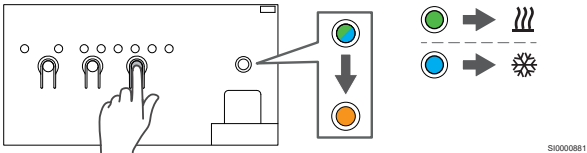


Note

Approximately 10 minutes are necessary to do a test of an actuator. The controller automatically returns to run mode after the test.

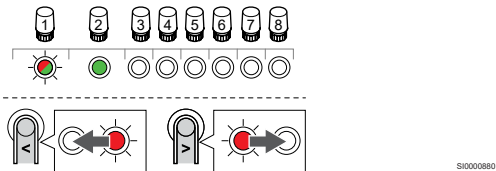
To do a test of the actuators:

- 1. To change to forced mode, push the **>** button while in run mode.

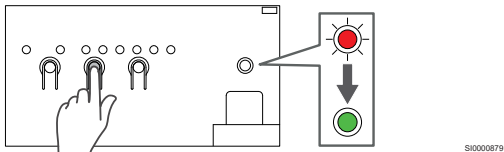


The room controller is in run mode during regular operation. If the room controller is in a different mode, push and hold the **OK** button for approximately 3 seconds to change to run mode.

- 2. Use the buttons **<** or **>** to move the pointer (LED flashes red) to a preferred channel.



- 3. Push the **OK** button to activate forced mode for the selected channel.



- 4. If the channel LED does not change to green, it can be caused by a system state or an error. See Chapter: "Room controller LEDs in forced mode"
If the channel LED changes to green, make sure that the actuator opens.

7 System functions



Note

To set up a system with a communication module, you must have a mobile device (smartphone/tablet).

The installation can operate in these configurations:

- With only one controller as a standalone.
- With a communication module and 1-4 controllers as a system (cloud-connected or not cloud-connected if the internet is not available)

7.1 System functions overview

Function		Standalone	Communication module + App (local connection)	Communication module + App (cloud connection)
				
Number of controllers in the installation		1	4	4
Maximum number of thermostats in the installation	Controller only	8	32	32
	Controller with expansion module	14	56	56
Maximum number of actuators	Controller only	10	40	40
	Controller with expansion module	16	64	64
Maximum number of relay outputs	Controller only	2	8	8
	Controller with relay module	4	16	16
Setpoint change through	Thermostats	X	X	X
	Uponor Smatrix Flow app		X	X
Local system access through the Uponor Smatrix Flow app			X	X
Remote system access through the internet and the Uponor Smatrix Flow app				X
Comfort/ECO switch connected to a T-163 public thermostat (registered as a system device)		X	X	X
Comfort/ECO schedules through	Programmable thermostat T-168	X		
	Uponor Smatrix Flow app			X
Holiday mode				X
Away mode			X	X
Fallback function	On by default	X	X	X
	Configurable		X	X
Setpoint limits			X	X
Guest users				X
Trends				X
System shut-off			X	X
Supply diagnostics				X
Room usage analysis (heating/cooling demand for each room during the day)				X
Weather information			X	X
Google/Alexa integration				X
Smatrix AI				X
Automatic Over-The-Air (OTA) software updates				X
Relative humidity control			X	X
Condensation control (with a condensation set and thermostat T-163 as system device)		X		
Analogue thermostat override (thermostat setpoint only set from app)			X	X
Valve and pump exercise		X	X	X
Thermostat T-161 compatibility			X	X
Pump management	Individual	X	X	X
	Common		X	X
Autobalancing		X	X	X

Function		Standalone	Communicati on module + App (local connection)	Communicati on module + App (cloud connection)
				
Autobalancing enables/disables through	Switch on the room controller (ON by default)	X		
	Uponor Smatrix Flow app		X	X
The possibility to use the same thermostat for two controllers (floor and ceiling in two different manifolds, virtual thermostat)			X	X
System heating/cooling change through	Switch connected to the room controller input (IN)	X	X	X
	Uponor Smatrix Flow app		X	X
	Indoor/outdoor temperature limits		X	X
Control of underfloor or ceiling heating/cooling		X	X	X
Control of	Electrical underfloor heating (EUFH) + one radiant surface (floor or ceiling or wall)		X	X
	Radiators + one radiant heating/cooling surface (floor or ceiling or wall)	X	X	X
	Two radiant heating/cooling surfaces		X	X
2-stage heating and/or cooling management (if two heating/cooling systems are installed in a room)			X	X
Control of electrical underfloor heating through actuator outputs			X	X
Room controller relays	Not used		X	X
	Pump control	X	X	X
	Heating/cooling	X	X	X
	Boiler control		X	X
	Chiller control		X	X
	Dehumidifier control		X	X
	Comfort/ECO		X	X
Relay module	Configurable		X	X
	Not used		X	X
	Pump control	X	X	X
	Boiler control	X	X	X
	Heating/cooling		X	X
	Chiller control		X	X
	Dehumidifier control		X	X
	Comfort/ECO		X	X

7.2 Actuator control

The room controller operates the actuator outputs with ON/OFF signals or with Autobalancing (ON by default), with the use of PWM signals (Pulse Width Modulation).

ON/OFF control

During the installation of a system with ON/OFF control, the system must be balanced manually.

When a thermostat measures a lower temperature (in heating mode) or a higher temperature (in cooling mode) than the setpoint temperature, a demand is sent to the room controller to open the actuators. The room controller uses the current operating mode and other settings to open the actuators. When the room temperature is at the set temperature, this information is sent, and the actuators are closed. A white bar on the indicator shows that the actuator is moving (to its open or closed position). If the white indicator is fully shown, the actuator is fully opened. If no white bar is shown, the actuator is closed.

Some of minutes can be necessary for an actuator to open and close.

Autobalancing (PWM control)



Note

Autobalancing is not recommended to be used in combination with hydronic balancing.



Note

If autobalancing is enabled, some actuators can be closed even if there is heating/cooling demand for the room.

The Autobalancing function (ON by default) makes sure that the necessary quantity of energy is used to keep the defined room temperatures (setpoint) without manual balancing. Autobalancing makes sure that the circulation pump has a minimum run time of 30 minutes to increase the lifetime of the energy sources (especially heat pumps) in the installation.

The function calculates the timing of the actuators and cyclically adapts (with the use of Pulse Width Modulation signals) to changed conditions. Hence, the function makes sure that the necessary quantity of energy is always available to the rooms and that thermal adjustment of the rooms occurs.

This means that the actuators follow an intelligent algorithm that automatically distributes heating and cooling to the rooms to get to the set room temperatures.

This gives:

- Constant and comfortable room temperatures.
- Faster system reaction times.
- Smooth warm-up and cool down (without manual adjustment) of the house.
- Lower energy consumption than standard ON/OFF control.
- All balancing valves can be fully opened during the installation of a system with Autobalancing. The system is balanced automatically.

Autobalancing can be enabled/disabled:

- On the room controller (standalone systems only)
- In the Uponor Smatrix Flow app (communication module is necessary)

7.3 Boiler control

The system can start/stop a boiler if connected to the room controller.

Boiler output

The relay outputs in the system can be used to start/stop a boiler.

- Relay CLOSED = Boiler starts (when there is a heating demand in the system)
- Relay OPEN = Boiler stops (when the heating demand is obeyed)

These relay outputs can be used:

- Standalone system (without communication module and app)
 - Relay 2 on a relay module.
- Connected system (the communication module and the Uponor Smatrix Flow app are necessary)
 - Relay 1 or 2 on a room controller (configured in the Uponor Smatrix Flow app)
 - Relay 1 or 2 on a relay module (configured in the Uponor Smatrix Flow app)

7.4 Comfort and ECO modes

Note

Use only one Comfort/ECO switch in the system. If you connect an external Comfort/ECO switch to the system (public thermostat system device), it disables Away and Holiday modes in the Uponor Smatrix Flow app.

The Comfort/ECO modes are used to adjust the temperature setpoints (when in heating mode and cooling mode) to decrease the system energy demand.

Your system has two main modes:

- Comfort mode: Keeps the room accurately at the temperature you set on the thermostat.
- ECO mode: Changes the temperature somewhat to save energy when you are not at home or full comfort is not necessary.

How it works:

Comfort:

- Heating mode: The room increases to the temperature you select.
- Cooling mode: The room decreases to the temperature you select.

ECO

- Heating mode: The system decreases the temperature by a small number of degrees (the ECO offset) to not increase the temperature in an empty house and waste energy.
- Cooling mode: The system increases the temperature by a small number of degrees (the ECO offset) to not decrease the temperature in an empty house and waste energy.

For example, if you set your thermostat to 22 °C:

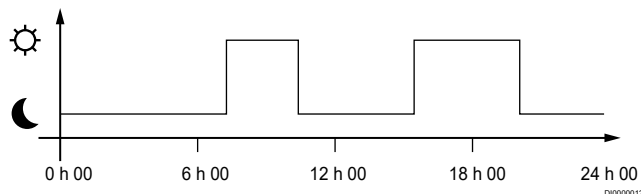
- Comfort mode (you are home): The room stays at 22 °C.
- ECO mode (you are away): If the ECO offset is 2 °C and heating mode is on, the room setpoint can decrease to 20 °C. In cooling mode, the room setpoint can increase to 24 °C to save energy.

The thermostat setpoint is adjusted with the ECO offset temperature, and cooling offset temperature (if in Cooling mode):

- Heating mode, Home and in Comfort mode: Setpoint = Thermostat setpoint
- Heating mode, Away or in ECO mode: Setpoint = Thermostat setpoint - ECO offset
- Cooling mode, Home and in Comfort mode: Setpoint = Thermostat setpoint + Cooling offset
- Cooling mode, Away or in ECO mode: Setpoint = Thermostat setpoint + Cooling offset + ECO offset

The room controller can change between Comfort and ECO mode with:

- An external Comfort/ECO switch connected to a public thermostat (registered as a system device). ECO offset is set to 4 °C and cannot be changed.
- The Home/Away function (Uponor Smatrix Flow app is necessary)
- The Holiday function, where a start and stop date is set (Uponor Smatrix Flow app is necessary)
- Comfort/ECO schedules (Uponor Smatrix Flow app or a programmable thermostat is necessary)



The example shows that the system supplies heat in Comfort mode in the morning and afternoon/early evening. The system operates in ECO mode during the night and during the middle of the day, when the house is usually empty.

Comfort/ECO mode output



Note

The Uponor Smatrix Flow app is necessary for this function.

The system can change comfort/ECO mode in an external device (example: connected to a comfort/ECO input on a heat pump or ventilation unit, and so on), if connected to the room controller or relay module.

Comfort/ECO output (Uponor Smatrix Flow app is necessary)



Note

The Uponor Smatrix Flow app is necessary for this function.

The relay outputs in the system can be used to change comfort/ECO mode in an external device (example: connected to a comfort/ECO input on a heat pump or ventilation unit and so on).

- Relay OPEN = Comfort
- Relay CLOSED = ECO

For this function, the external unit (heat pump, ventilation unit, and so on) must support ECO (Economy) mode.

These relay outputs can be used:

- Relay 1 or 2 on a room controller (configured in the Uponor Smatrix Flow app)
- Relay 1 or 2 on a relay module (configured in the Uponor Smatrix Flow app)

7.5 Comfort heating



Note

The Uponor Smatrix Flow app is necessary for this function.

Comfort heating helps to decrease the necessary time to increase the room temperature with other heating sources not controlled by the system (fireplace, large windows on a sunny day, and so on).

The function sets the lowest level of heating (a percentage of time the actuators are open) in the room when there is no heating demand. Thus, it decreases the necessary time to increase the room temperature when the other heating source is stopped or removed.

7.6 Consumption management

The consumption management prevents to open too many actuators at the same time. The consumption management waits to open some actuators to decrease peak power demand. This is because actuators consume most current during activation.

You can open up to eight actuators at the same time. More actuators must wait and are opened in sequence. This means that a room can have a heating/cooling demand, but the actuators are closed until they can be opened.

7.7 Cooling function (standalone system)

Cooling applications

This is the only cooling application in the system:

- Radiant cooling (floor, ceiling or wall)
Cold water circulates in the connected surface to decrease the temperature in the system.

Cooling/heating setpoint adjustment

When your system changes between heating and cooling, it automatically adjusts the set temperature (setpoint) by a small quantity (cooling offset).

When the system changes to cooling, it increases the setpoint by the cooling offset value (2 °C by default).

When the system changes back to heating, the system decreases the setpoint by the cooling offset value (2 °C by default).

This helps the system to run more smoothly and prevents you to manually change the thermostat each time the mode changes, because people usually prefer a smoother temperature during summer.

Heating/cooling mode input

These inputs can be used to change the heating/cooling mode in the system:

- A switch connected to the input (IN) on the room controller
- The T-267 digital thermostat

Heating/cooling mode output

The system can change heating/cooling mode in an external device (example: connected to a heating/cooling input on a heat pump) if connected to relay 2 on the room controller.

Heating/cooling output

The relay outputs in the system can be used to change heating/cooling mode in an external device (example: connected to a heating/cooling input on a heat pump).

- Relay OPEN = Heating
- Relay CLOSED = Cooling

This relay output can be used:

- Relay 2 on the room controller

Condensation control



Note

This function is only for standalone systems.

If a condensation sensor is installed in the system (a T-163 thermostat as a system device is necessary) and senses condensation, cooling stops (all actuators close and the circulation pump stops). Cooling starts again (the actuators open and the circulation pump starts) when condensation has not been sensed for 30 minutes.

7.8 Cooling function (connected system)

Cooling applications

These cooling applications can be set up in the system:

- One radiant heating/cooling surface (underfloor or ceiling or wall)
Cold water circulates in the connected surface to decrease the temperature in the system.
- Two radiant heating/cooling surfaces (combination floor/ceiling/wall)
Cold water circulates in the surface to decrease the temperature in the system. The system selects the used surface to make sure that the system gives optimal comfort. Two-stage cooling (select one or two stages) can be used in this application.
One stage:
 - Water circulates in the surface, which provides optimal comfort for the system.Two stages:
 - Water circulates in the surface which provides optimal comfort for the system. If the system cannot reach the set temperature in a specified time period, the second stage is started.
- Radiators + one radiant heating/cooling surface (floor or ceiling or wall)
Cooling mode: Cold water circulates in the surface to decrease the temperature in the system. Radiators are not used.
Heating mode: Hot water circulates in the surface and the radiators to increase the temperature in the system.
Radiant heating/cooling surfaces (floor or ceiling or wall) and radiators must not be installed in the same room.
- Electrical underfloor heating (EUFH) + one radiant surface (floor or ceiling or wall)
Cooling mode: Cold water circulates in the surface to decrease the temperature in the system. EUFH is not used.
Heating mode: Hot water circulates in the surface, and EUFH is activated to increase the temperature in the system.
Radiant heating/cooling surfaces (floor or ceiling or wall) and EUFH must not be installed in the same room.

Cooling/heating setpoint adjustment

Note

The default offset is 2 °C, but you can adjust this value in the Uponor Smatrix Flow app (dependent on your system setup). With this method, you select the temperature difference used during the change between heating and cooling.

When your system changes between heating and cooling, it automatically adjusts the set temperature (setpoint) by a small quantity (cooling offset).

When the system changes to cooling, it increases the setpoint by the cooling offset value (2 °C by default).

When the system changes back to heating, the system decreases the setpoint by the cooling offset value (2 °C by default).

This helps the system to run more smoothly and prevents you to manually change the thermostat each time the mode changes, because people usually prefer a smoother temperature during summer.

The cooling offset must be set during installation to be of applicable value for the system.

Chiller control



Note

The Uponor Smatrix Flow app is necessary for this function.

The system can start/stop a chiller if connected to a relay (configured in the Uponor Smatrix Flow app) on the room controller or relay module.

Chiller output (Uponor Smatrix Flow app is necessary)

The relay outputs in the system can be used to start/stop a chiller.

- Relay CLOSED = Chiller starts (when there is a cooling demand while in cooling mode)
- Relay OPEN = Chiller stops (when the cooling demand is obeyed)

These relay outputs can be used:

- Relay 1 or 2 on a room controller (configured in the Uponor Smatrix Flow app)
- Relay 1 or 2 on a relay module (configured in the Uponor Smatrix Flow app)

Dehumidifier control



Note

The Uponor Smatrix Flow app is necessary for this function.

The system can start/stop a dehumidifier if connected to a relay (configured in the Uponor Smatrix Flow app) on the room controller or relay module. Only one dehumidifier for each room controller/relay module combination can be connected. The Uponor Smatrix Flow app is used to select which rooms the dehumidifier can be activated in.

Dehumidifier output (Uponor Smatrix Flow app is necessary)

The relay outputs in the system can be used to start/stop a dehumidifier.

- Relay CLOSED = The dehumidifier starts (when the relative humidity is at its setpoint while in cooling mode).
- Relay OPEN = The dehumidifier stops (after a minimum runtime of 30 minutes has been completed, and when the relative humidity has decreased below a specific value).

These relay outputs can be used:

- Relay 1 or 2 on a room controller (configured in the Uponor Smatrix Flow app)
- Relay 1 or 2 on a relay module (configured in the Uponor Smatrix Flow app)

Heating/cooling mode input

These inputs can be used to change the heating/cooling mode in the system:

- A switch connected to the input (IN) on the room controller
- The Uponor Smatrix Flow app
- Automatically at set indoor or outdoor temperatures

Heating/cooling mode output

The system can change the heating/cooling mode in an external device (example: connected to a heating/cooling input on a heat

pump) if connected to a relay (configured in the Uponor Smatrix Flow app) on the room controller or relay module.

Heating/cooling output

The relay outputs in the system can be used to change the heating/cooling mode in an external device (example: connected to a heating/cooling input on a heat pump).

- Relay OPEN = Heating
- Relay CLOSED = Cooling

These relay outputs can be used:

- Relay 1 or 2 on a room controller (configured in the Uponor Smatrix Flow app)
- Relay 1 or 2 on a relay module (configured in the Uponor Smatrix Flow app)

Relative humidity control function

	Note Relative humidity control is activated in the Uponor Smatrix Flow app (the communication module is necessary).
	Note These humidity protection functions must be enabled in the Uponor Smatrix Flow app. In the app, the humidity limit (RH setpoint) can be adjusted to protect the rooms in the system according to set preferences.

To prevent condensation with a cooling system, Uponor recommends that you measure the relative humidity (RH) in the rooms. The relative humidity is measured with one or more thermostats (with an RH sensor).

When the system is connected to the communication module, it can protect the home from humidity problems during cooling. This is done through two methods:

- Preventive protection (dehumidifier control)
If a dehumidifier is connected, the system can start it automatically while cooling. The dehumidifier starts when the humidity in a room becomes near the set limit (RH setpoint - dead zone). It then runs a minimum of 30 minutes or until the humidity decreases to a safe level.
- Corrective protection (humidity control)
If humidity gets to the set limit (RH setpoint), the system temporarily closes the cooling valves in that room. This prevents condensation (for example, water starts to occur on the floor or ceiling). Cooling starts again automatically when humidity decreases to a safe level (RH setpoint - dead zone). While this protection is active, the Uponor Smatrix Flow app shows an RH shutdown alarm.

Two-stage cooling

The system is compatible with two-stage cooling and is configured in the Uponor Smatrix Flow app.

If the system has more than one radiant cooling surface, has a high cooling demand, and the temperature increases above the setpoint + offset (configured in the Uponor Smatrix Flow app), the second-stage cooling is started. The second stage cooling circulates water in the second radiant cooling surface to reach the set temperature. The surface that gives the best comfort is used as the first stage.

7.9 Electrical underfloor heating

	Note The communication module and the Uponor Smatrix Flow app are necessary for this function.
	Note Electrical underfloor heating and underfloor heating cannot be installed in the same room.

The room controller can operate the electrical underfloor heating with the use of the actuator outputs. If the system is in cooling mode, the EUFH is deactivated.

To prevent unwanted temperature changes in rooms with electrical underfloor heating, the channels must be set as EUFH in the Uponor Smatrix Flow app.

The electrical underfloor heating mat/wire must be connected to the controller through a relay (dimensioned for the correct load) because of the 24 V AC controller output.

7.10 Fallback

	Caution! Do not deactivate fallback mode if the system is in an area with low outdoor temperatures (freeze risk). Because then the system cannot keep the water flow at the necessary level to not freeze the system.
---	---

The room controller starts fallback mode in these situations:

- A thermostat has a malfunction.
- The system does not sense a thermostat.
- The communication module loses connection to the system.

You can also enable or disable fallback mode with the app.

Heating mode:

- Fallback mode keeps the actuators open (with a circulation pump and boiler, if necessary) during some periods to prevent the pipes to freeze until the problem is solved.

Cooling mode:

- Fallback mode closes all actuators to prevent condensation in the system until the problem is corrected.

7.11 Floor temperature management

	Note A thermostat with the floor temperature sensor and control mode set to RFT (Room Temperature sensor and Floor temperature sensor) is necessary for this function.
	Note If the floor sensor has a malfunction or is not sensed by the thermostat, the actuators follow the room temperature irrespective of the floor temperature limits.

Floor temperature management is used to show and control the floor temperature in a room.

Maximum and minimum floor temperature limits can be set in the Uponor Smatrix Flow app or in the digital thermostat menu system (standalone systems) if the thermostat control mode is set to RFT.

7.12 Override analogue thermostats with the Uponor Smatrix Flow app



Note

The Uponor Smatrix Flow app is necessary for this function.

This function permits the Uponor Smatrix Flow app to override the temperature set on the dial and public thermostats. When the function is activated, the temperature cannot be changed on the thermostat.

7.13 Pump management



Note

In systems with the communication module, all relays are initially set to **Not configured**. The relays must be configured during the installation in the Uponor Smatrix Flow app.

A circulation pump can be used in a system to supply the correct water flow to the different room channels.

This function manages the pumps according to the demand in each controller. Available settings:

- **Individual** if there is one pump for each controller
- **Common** if there is one pump for all room controllers in the installation

Common mode

The relay function is set on a system-wide basis. One circulation pump for the system is connected (to one of the room controllers). When there is a demand somewhere in the system, the pump starts. The circulation pump starts after a short delay (added by the system) to let the actuator(s) for the room open.

Individual mode

The relay function is set on a room-controller basis. One circulation pump for each room controller is connected. When there is a demand for a specific room controller, only the circulation pump connected to that room controller starts. The circulation pump starts after a short delay (added by the system) to let the actuator(s) for the room open.

Circulation pump output

The relay outputs in the system is used to start/stop the circulation pump.

- Relay CLOSED = The circulation pump starts (when there is a demand for heating or cooling).
- Relay OPEN = The circulation pump stops (when there is no demand for heating or cooling).

These relay outputs can be used:

- Standalone system (without communication module and app)
 - Relay 1 on the room controller
 - Relay 1 on the relay module
- Connected system (the communication module and the Uponor Smatrix Flow app are necessary)
 - Relay 1 or 2 on a room controller (configured in the Uponor Smatrix Flow app)
 - Relay 1 or 2 on a relay module (configured in the Uponor Smatrix Flow app)

7.14 Room bypass



Note

The Uponor Smatrix Flow app is necessary for this function.



Note

If room bypass is deactivated, it can cause problems in the installation, pump, and energy source.

The room bypass function protects the system as follows:

- To protect the circulation pump in installations without pump management when there is no heating/cooling demand
- To make sure that there is always a minimum flow through the heat pump (to prevent low flow alarms in the heat pump), when there are rooms with heating/cooling demands that cannot give sufficient flow in the installation

7.15 Setpoint limits



Note

The Uponor Smatrix Flow app is necessary for this function.

Maximum and minimum available setpoints can be set for the thermostat in a room. This puts a limit on the thermostat, and the setpoint cannot be set higher than maximum or lower than minimum.

7.16 Smatrix AI supply temperature control



Note

The Uponor Smatrix Flow app and Uponor cloud services are necessary for this function.

Smatrix AI is a supply temperature control function for underfloor heating connected to a heat pump. It predicts the home's heating demand and adjusts the supply temperature setpoint automatically with "artificial intelligence" (AI) and weather forecast data.

This function:

- Makes the indoor temperature stable
- Makes the heat pump more efficient
- Decreases energy consumption
- Removes previously necessary manual heating curve adjustments.

7.17 Supply diagnostics



Note

The Uponor Smatrix Flow app and Uponor cloud services are necessary for this function.

This function examines if the supply temperatures are too high or too low.

Approximately 24 hours are necessary for this function. The app shows the result and information on how to optimise the system when the function is completed.

7.18 System clock

To make it easier to get accurate log data, scheduling, and different timer settings, the room controller receives the correct date and time from one of these input devices:

- Communication module connected to Uponor cloud services
The date and time from the Uponor cloud services are used for all functions that use that data. The date and time on registered thermostats that can show date and time are overwritten.
- Programmable thermostat (standalone systems only)
If more than one programmable thermostat is registered, the date and time from the first thermostat overwrites the date and time on the other thermostats.

7.19 System shut-off



Note

Do not use this function in low-temperature areas that can freeze.

In system shut-off (Uponor Smatrix Flow app is necessary), the system enters a low-power mode where room temperature regulation stops (you cannot change the room temperature with a setpoint change on the thermostats or in the app).

This function deactivates automatically to prevent the risk of freezing (the system enters run mode and an alarm is shown) if one of these is true:

- The temperature decreases in a room below the low-temperature limit, or a thermostat loses communication.
- The fallback function is activated.

In shut-off mode (Uponor Smatrix Flow app is necessary):

- All relay outputs are deactivated.
- Room temperature regulation stops (all actuators close).
- Only the valve/pump exercise function is active.

Room controller LEDs

Power LED	Icon	Status
Green MICRO FLASHES		The room controller in shut-off mode.
Red FLASHES		There is a problem with the system.
Channel LED	Icon	Status
Red FLASHES		Thermostat communication error or low battery Tamper alarm (public thermostat)

Activate/deactivate system shut-off



Requirement:

- The communication module must be connected to the room controller.

To activate/deactivate system shut-off:

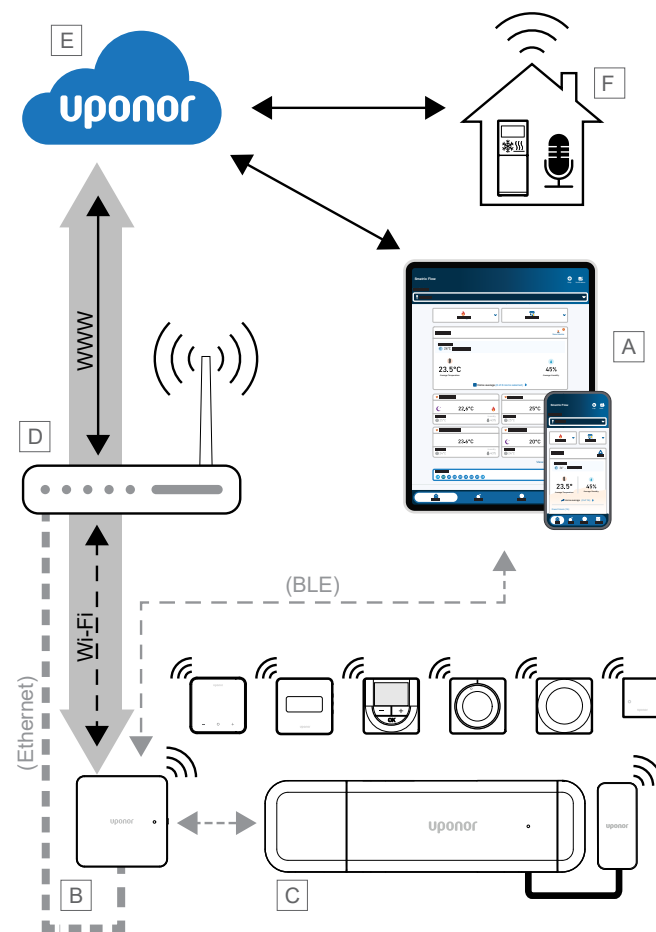
1. Open the Uponor Smatrix Flow app on a mobile device.
2. Find the system shut-off function in the Uponor Smatrix Flow app.
3. Activate/deactivate system shut-off.

7.20 Two-stage heating

The system is compatible with two-stage heating and is configured in the Uponor Smatrix Flow app.

If the system has more than one radiant heating surface, has a high heating demand, and the temperature decreases below the setpoint - heating offset (configured in the Uponor Smatrix Flow app), the second stage heating is started. The second-stage heating circulates water in the second radiant heating surface to reach the set temperature. The surface that gives the best comfort is used as the first stage.

7.21 Uponor Smatrix Flow app and cloud services



Note

To set up a system with a communication module, you must have a mobile device (smartphone/tablet).

The system (room controller with a communication module and thermostats) (C) can be set up and controlled with a mobile device

(A) with the Uponor Smatrix Flow app, with the use of these connection methods:

- Direct connection through Bluetooth (local app connection only)
- Connection through the internet (app and cloud services are necessary – communication always goes through the cloud services)

An external system (F), for example, a heat pump or a voice control assistant, can use this connection method:

- Third-party connection (app and cloud services are necessary)

Local connection (Bluetooth)



Note

Bluetooth Low Energy (BLE) must be activated (button on the communication module) each time local connection is to be used.

This method is used during system installation and setup. It is also used during normal operation when no internet is available.

The communication between the Uponor Smatrix Flow app and the communication module can be done locally through Bluetooth Low Energy (BLE) if the internet is not available.

The communication is done as follows:

- The mobile device (A) connects directly to the communication module (B) through Bluetooth.
- The system (C) connects to the communication module (B) through radio communication.

Connection through Uponor cloud services (internet)

This method is used during normal operation.

Requirements:

- The communication module must be connected to the internet through Wi-Fi or Ethernet.
- The user must set up an Uponor cloud services account to connect through the cloud.

Communication with remote connection:

- The mobile device (A) connects to Uponor cloud services (E) through the internet (through local network or mobile network).
- Uponor cloud services (E) connect to the communication module (B) through an internet-connected Wi-Fi router (D).
- The communication module (B) connects to the router (D) through Wi-Fi or Ethernet.
- The room controller (C) connects to the communication module (B) through radio communication.

Third-party connection

This method is used when external systems (F), for example, heat pumps, smart home systems or voice control assistants, communicate with the Uponor Smatrix Flow system.

Requirement:

- The user must set up an Uponor cloud services account to use third-party connections (heat pump, Google Assistant, Alexa, and so on).

Communication with third-party connections:

- The external system (F) connects to Uponor cloud services (E).
- Uponor cloud services (E) connect to the communication module (B) through the local internet-connected Wi-Fi router (D).
- The communication module (B) connects to the router (D) through Wi-Fi or Ethernet.
- The room controller (C) connects to the communication module (B) through radio communication.

7.22 Valve and pump exercise

The room controller has an automatic exercise function. This function includes a test run that prevents the pump and actuators to stop because of inactivity.

This exercise occurs at an interval of 7 days:

- The pump exercise occurs only if the pump has not operated in the last 7 days. During the exercise, the pump is ON for 3 minutes.
- The actuator exercise occurs only if the actuators have not operated since the last exercise. The exercise opens and closes the actuators at different intervals.

If the system includes a communication module, the exercise function can be activated in the Uponor Smatrix Flow app.

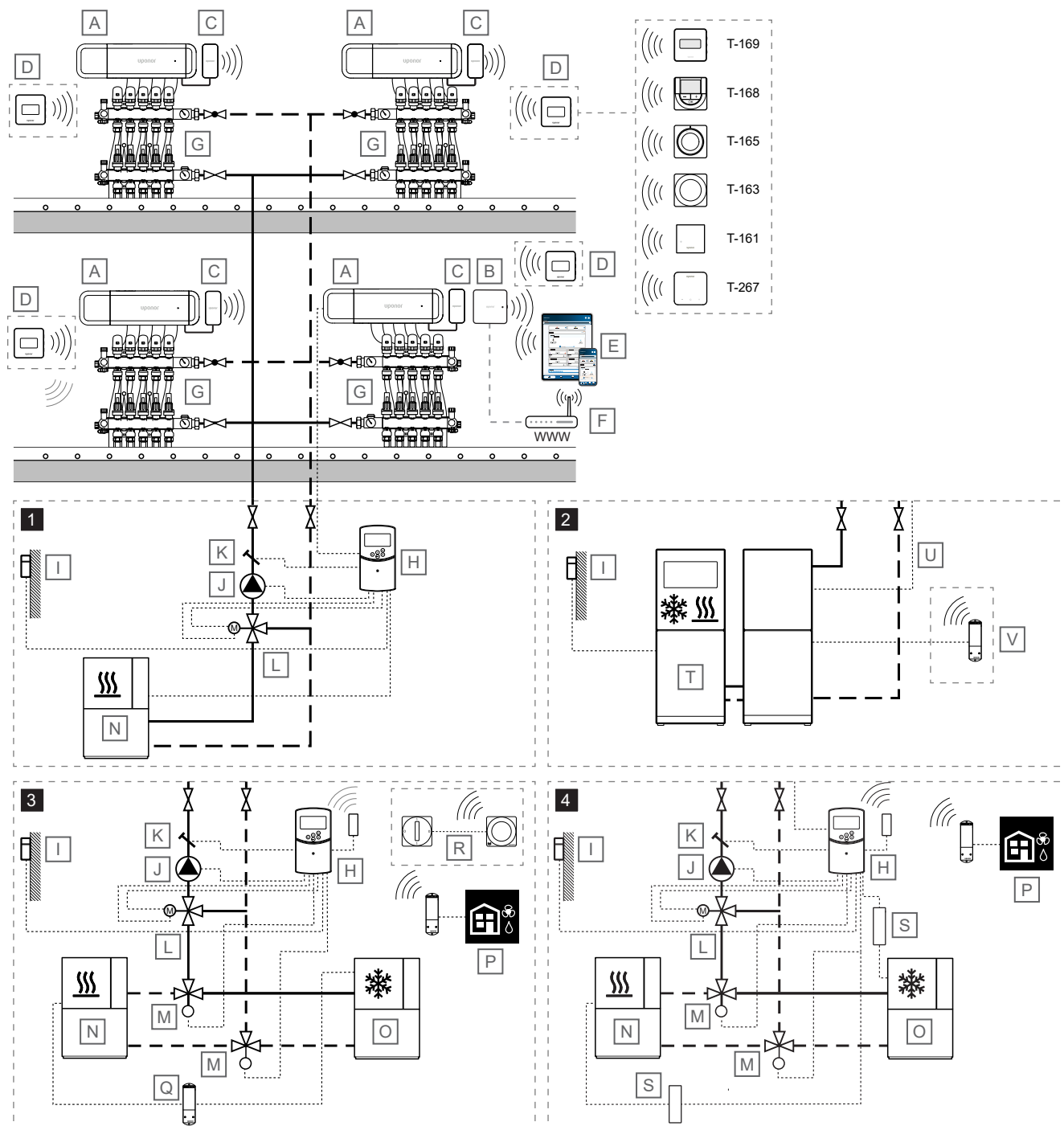
7.23 Virtual thermostat

Virtual thermostats are used to virtually register one thermostat to two different room controllers. In installations where there are two different manifolds, each with its own controller, the use of virtual thermostats makes it possible to use only one physical thermostat to control two room controllers in the same room.

It is possible to use virtual thermostats only with the Uponor Smatrix Flow app.

8 Installation type examples

8.1 Underfloor heating or underfloor heating/cooling with multiple room controllers



SD0000417

Note	
These are outline diagrams. Real systems must comply with applicable norms and regulations.	
Item	Description
A	Uponor Smatrix Wave Flow X-365 Room controller
B	Uponor Smatrix R-368 Communication module
C	Uponor Smatrix Wave Flow A-365 Antenna
D	Room thermostat - Uponor Smatrix Wave T-161 Room sensor thermostat with a relative humidity sensor and an operative sensor - Uponor Smatrix Wave T-163 Public thermostat - Uponor Smatrix Wave T-165 Standard thermostat with print on dial - Uponor Smatrix Wave T-267 Digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-168 Programmable digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-169 Digital thermostat with a relative humidity sensor and an operative sensor
E	Mobile device (smartphone, tablet, and so on)
F	Wi-Fi router
G	Manifold with actuator
H	Uponor Smatrix Move X-157 the temperature controller with an optional antenna (necessary with a room thermostat)
I	Outdoor temperature sensor
J	Circulation pump
K	Supply temperature sensor
L	3-way mixing valve with 230 V 3-point actuator
M	Heating/cooling switchover valve with 230 V actuator
N	Heat source
O	Chiller
P	<i>Optional</i> Dehumidifier activation from the room controller (one dehumidifier for each room controller) through Uponor Smatrix Wave M-161 (relay module)
Q	<i>Optional</i> Boiler/chiller activation from the room controller through Uponor Smatrix Wave M-161 (relay module)
R	<i>Optional</i> External heating/cooling switch connected to a Uponor Smatrix Wave T-163 (registered as a system device)
S	Heating/cooling relay, 230 V
T	Heat pump (which optionally can supply heating/cooling)
U	Wire for heating/cooling switchover Connected between a room controller (relay 2, configured to heating/cooling output) and the heat pump (contact sensing input, configured for heating/cooling switch)
V	<i>Optional</i> Uponor Smatrix Wave M-161 (relay module), registered to the room controller and connected to a contact sensing input, configured for a heating/cooling switch, in the heat pump

Room temperature control

This application example shows underfloor heating, or underfloor heating/cooling, with multiple room controllers.

The four Uponor Smatrix Wave Flow room controllers and thermostats (merged into one large system) control the room temperature (heating and/or cooling). When the room temperature changes from the setpoint, the room controllers open/close the actuators on the manifold (adjusts the flow) to increase/decrease the room temperature.

Use one of these alternatives to do the heating/cooling switchover:

- Uponor Smatrix Flow app
- An automatic function that uses the indoor/outdoor temperature to do the switchover
- The room controller input (IN)
- Manually on a T-267 thermostat (standalone systems only)

Supply temperature control

The application example shows different methods to control the supply temperature.

1 - Heating with Uponor Smatrix Move supply controller

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor and heating curve controls the supply temperature.

The supply temperature controller is connected to these:

- Room controller
- Heat source
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve

The room controller that has a relay configured as *Circulation pump* connects that relay to one of the supply temperature controller ROOMSTAT input (setup as **C_b**). When the relay in the room controller closes, the supply temperature controller starts the circulation pump.

2 - Heating/cooling with a heat pump

Note
A heat pump, which can supply heating and cooling, is necessary for this supply temperature control option.

The heat pump controls the supply temperature (for heating and cooling if the heat pump can supply heating and cooling).

The room controller connects the circulation pump relay to the heat pump (to an input for heat demand). When the relay in the room controller closes, the heat pump starts the circulation pump.

The room controller also connects the other relay (set up as a heating/cooling switch) to the heat pump (to an input for heating/cooling switch). When the relay in the room controller closes, the heat pump changes to cooling.

Optionally, the heat pump can change between heating and cooling with a wireless relay module, registered to a room controller (configured as a heating/cooling switch).

3 - Heating/cooling (switched from room controller) with Uponor Smatrix Move supply temperature controller

The supply temperature controller (Uponor Smatrix Move) with outdoor temperature sensor (through thermostat), and heating/cooling curves, controls the supply temperature.

The supply temperature controller is connected to these:

- Circulation pump
- Supply temperature sensor
- 3-way mixing valve
- Heating/cooling switchover valve

The relay module (registered to a room controller) controls the heat source and chiller.

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

Optionally, one dehumidifier (through relay module Uponor Smatrix Wave M-161) for each room controller can be connected. An external heating/cooling switch through Uponor Smatrix Wave T-163 (as system device) can be registered to one of the room controllers. Do not use a dehumidifier together with fancoils.

4 - Heating/cooling with Uponor Smatrix Move supply temperature controller

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor (through thermostat), and heating/cooling curves, controls the supply temperature.

The supply temperature controller is connected to these:

- Heat source (through a heating/cooling relay)
- Chiller (through a heating/cooling relay)
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve
- Heating/cooling switchover valve

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

Optionally, one dehumidifier (through relay module Uponor Smatrix Wave M-161) for each room controller can be connected. Do not use a dehumidifier together with fancoils.

5 - Heat pump (HP) integration with Uponor Smatrix Flow

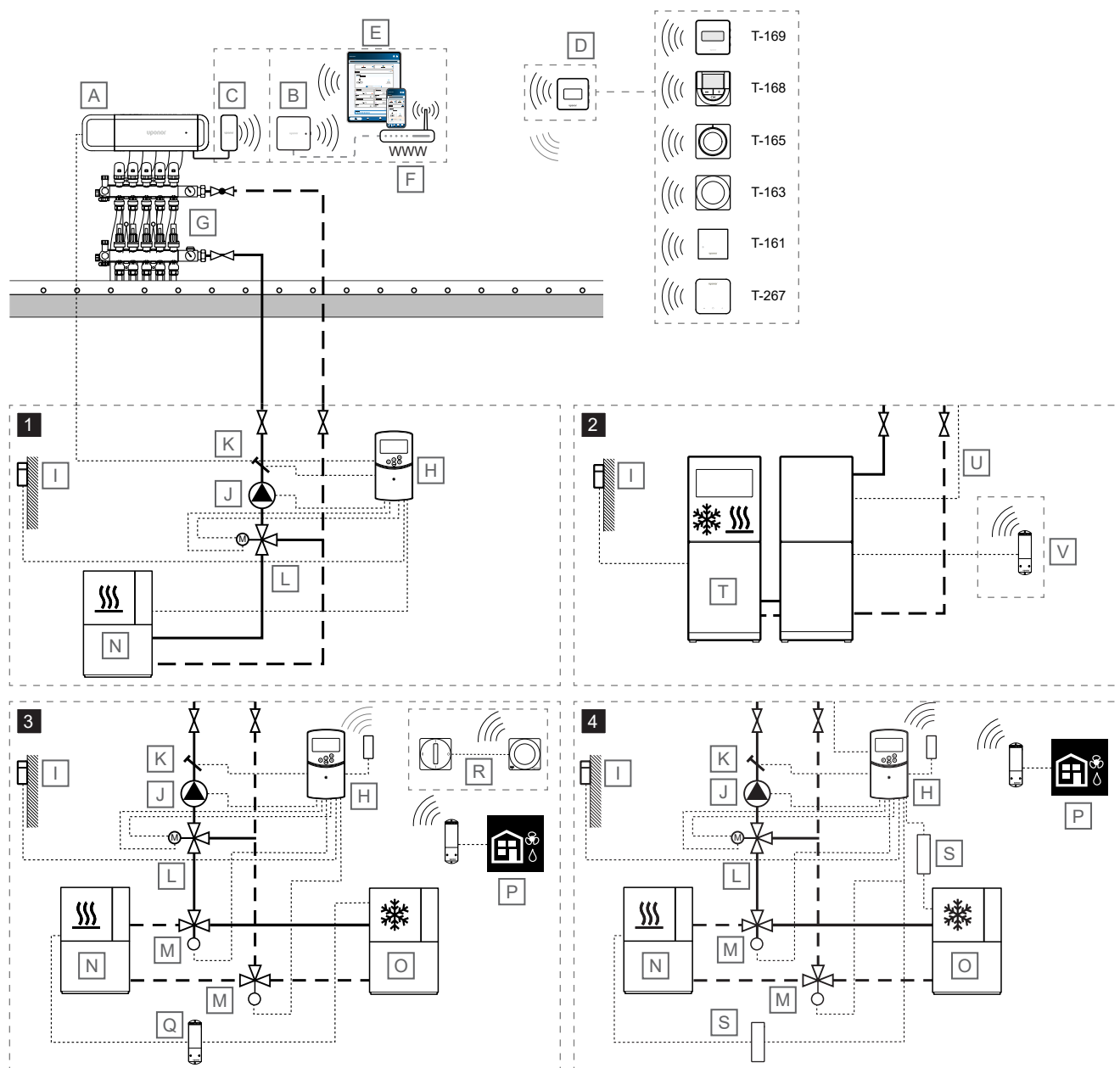
	Note Contact the manufacturer for information about which type of heat pump supports this integration with the software version of the room controller.
	Note An account for Uponor Smatrix Flow is necessary to create the integration. Contact the heat pump manufacturer for information about what is necessary to connect the heat pump.

The Uponor Smatrix Flow controller can connect to compatible heat pumps through the cloud.

The integration makes sure that the heat curve setting (which changes the supply temperature setpoint) in the heat pump is automatically optimised to real system requirements.

The function is activated in the Uponor Smatrix Flow app (a communication module is necessary).

8.2 Underfloor heating or underfloor heating/cooling with a single room controller



SD0000428

Note	
These are outline diagrams. Real systems must comply with applicable norms and regulations.	
Item	Description
A	Uponor Smatrix Wave Flow X-365 Room controller
B	Uponor Smatrix R-368 Communication module
C	Uponor Smatrix Wave Flow A-365 Antenna
D	Room thermostat • Uponor Smatrix Wave T-161

Item	Description
	Room sensor thermostat with a relative humidity sensor and an operative sensor
	• Uponor Smatrix Wave T-163 Public thermostat
	• Uponor Smatrix Wave T-165 Standard thermostat with print on dial
	• Uponor Smatrix Wave T-267 Digital thermostat with a relative humidity sensor
	• Uponor Smatrix Wave T-168 Programmable digital thermostat with a relative humidity sensor
	• Uponor Smatrix Wave T-168 Digital thermostat with a relative humidity sensor and an operative sensor

Item	Description
E	Mobile device (smartphone, tablet, and so on)
F	Wi-Fi router
G	Manifold with actuator
H	Uponor Smatrix Move X-157 Supply temperature controller, with optional antenna (necessary with a room thermostat)
I	Outdoor temperature sensor
J	Circulation pump
K	Supply temperature sensor
L	3-way mixing valve with 230 V 3-point actuator
M	Heating/cooling switchover valve with 230 V actuator
N	Heat source
O	Chiller
P	<i>Optional</i> Dehumidifier activation from the room controller (one dehumidifier for each room controller) through Uponor Smatrix Wave M-161 (relay module)
Q	<i>Optional</i> Boiler/chiller activation from the room controller through Uponor Smatrix Wave M-161 (relay module)
R	<i>Optional</i> External heating/cooling switch connected to a Uponor Smatrix Wave T-163 (registered as a system device)
S	Heating/cooling relay, 230 V
T	Heat pump (which optionally can supply heating/cooling)
U	Wire for heating/cooling switchover Connected between a room controller (relay 2, configured to heating/cooling output) and the heat pump (contact sensing input, configured for heating/cooling switch)
V	<i>Optional</i> Uponor Smatrix Wave M-161 (relay module), registered to the room controller and connected to a contact sensing input, configured for a heating/cooling switch, in the heat pump

Room temperature control

	Caution! The communication module is necessary for use with Supply temperature control 2 - 4 .
	Note The system can be operated without a communication module, with only an antenna attached to the room controller. But this decreases the system's functionality.

This application example shows underfloor heating, or underfloor heating/cooling, with a single room controller.

The Uponor Smatrix Wave Flow room controller and thermostats control the room temperature (heating and/or cooling). When the room temperature changes from the setpoint, the room controllers open/close the actuators on the manifold (adjusts the flow) to increase/decrease the room temperature.

Use one of these alternatives to do the heating/cooling switchover:

- Uponor Smatrix Flow app
- An automatic function that uses the indoor/outdoor temperature to do the switchover
- The room controller input (IN)

- Manually on a T-267 thermostat (standalone systems only)

Supply temperature control

The application example shows different methods to control the supply temperature.

1 - Heating with Uponor Smatrix Move supply controller

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor and heating curve controls the supply temperature.

The supply temperature controller is connected to these:

- Room controller
- Heat source
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve

The room controller that has a relay configured as *Circulation pump* connects that relay to one of the supply temperature controller ROOMSTAT input (setup as **C_b**). When the relay in the room controller closes, the supply temperature controller starts the circulation pump.

2 - Heating/cooling with a heat pump

	Note A heat pump, which can supply heating and cooling, is necessary for this supply temperature control option.
---	--

The heat pump controls the supply temperature (for heating and cooling if the heat pump can supply heating and cooling).

The room controller connects the circulation pump relay to the heat pump (to an input for heat demand). When the relay in the room controller closes, the heat pump starts the circulation pump.

The room controller also connects the other relay (set up as a heating/cooling switch) to the heat pump (to an input for heating/cooling switch). When the relay in the room controller closes, the heat pump changes to cooling.

Optionally, the heat pump can change between heating and cooling with a wireless relay module, registered to a room controller (configured as a heating/cooling switch).

3 - Heating/cooling (switched from room controller) with Uponor Smatrix Move supply temperature controller

The supply temperature controller (Uponor Smatrix Move) with outdoor temperature sensor (through thermostat), and heating/cooling curves, controls the supply temperature.

The supply temperature controller is connected to these:

- Circulation pump
- Supply temperature sensor
- 3-way mixing valve
- Heating/cooling switchover valve

The relay module (registered to a room controller) controls the heat source and chiller.

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

Optionally, one dehumidifier (through relay module Uponor Smatrix Wave M-161) for each room controller can be connected. An external heating/cooling switch through Uponor Smatrix Wave T-163 (as system device) can be registered to one of the room controllers. Do not use a dehumidifier together with fancoils.

4 - Heating/cooling with Uponor Smatrix Move supply temperature controller

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor (through thermostat), and heating/cooling curves, controls the supply temperature.

The supply temperature controller is connected to these:

- Heat source (through a heating/cooling relay)
- Chiller (through a heating/cooling relay)
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve
- Heating/cooling switchover valve

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

Optionally, one dehumidifier (through relay module Uponor Smatrix Wave M-161) for each room controller can be connected. Do not use a dehumidifier together with fancoils.

5 - Heat pump (HP) integration with Uponor Smatrix Flow

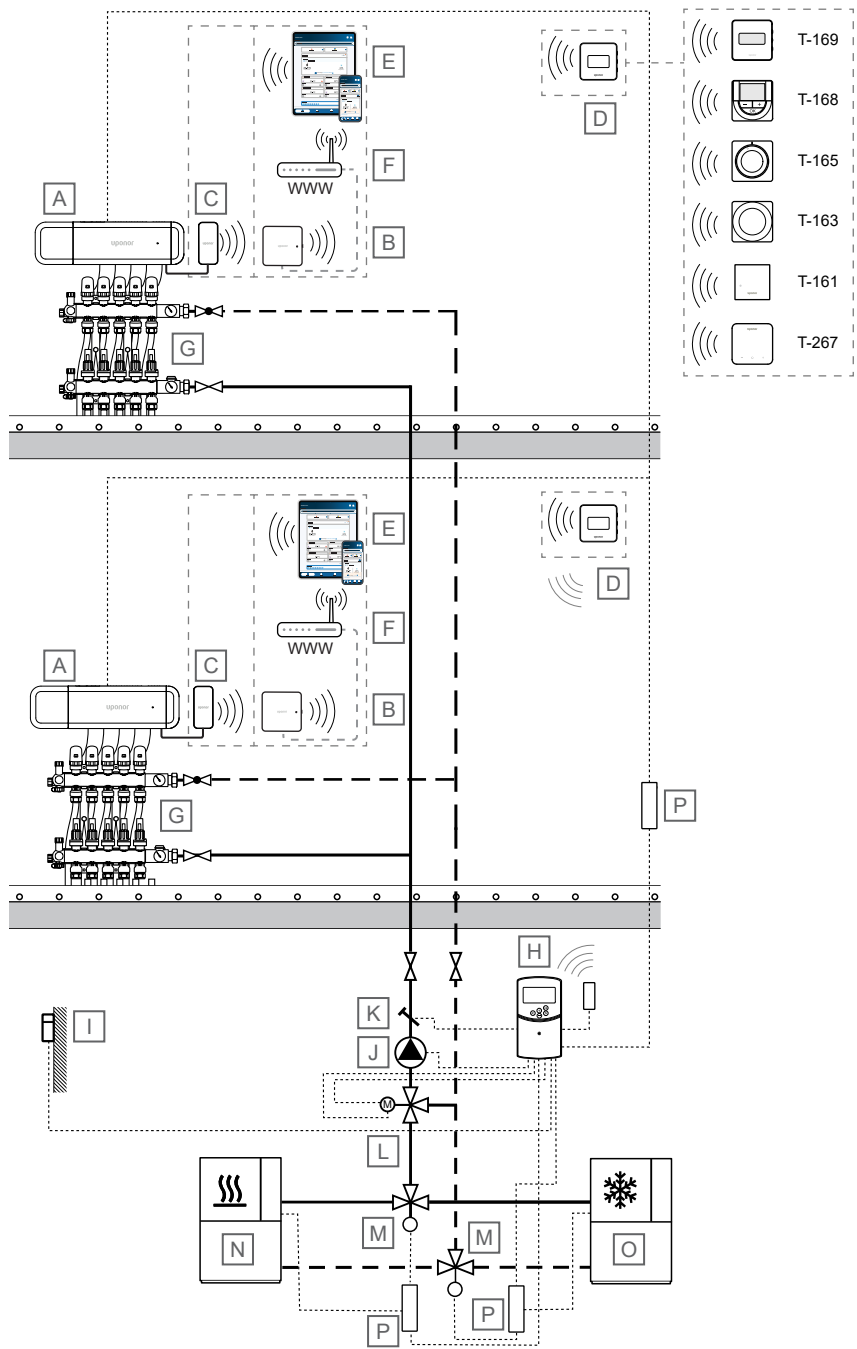
!	Note Contact the manufacturer for information about which type of heat pump supports this integration with the software version of the room controller.
!	Note An account for Uponor Smatrix Flow is necessary to create the integration. Contact the heat pump manufacturer for information about what is necessary to connect the heat pump.

The Uponor Smatrix Flow controller can connect to compatible heat pumps through the cloud.

The integration makes sure that the heat curve setting (which changes the supply temperature setpoint) in the heat pump is automatically optimised to real system requirements.

The function is activated in the Uponor Smatrix Flow app (a communication module is necessary).

8.3 Underfloor heating/cooling with two standalone room controllers



SD0000427

Item	Description
A	Uponor Smatrix Wave Flow X-365 Room controller
B	Uponor Smatrix R-368 Communication module
C	Uponor Smatrix Wave Flow A-365 Antenna

Item	Description
D	Room thermostat - Uponor Smatrix Wave T-161 Room sensor thermostat with a relative humidity sensor and an operative sensor - Uponor Smatrix Wave T-163 Public thermostat - Uponor Smatrix Wave T-165 Standard thermostat with print on dial - Uponor Smatrix Wave T-267 Digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-168

Item	Description
	Programmable digital thermostat with a relative humidity sensor
	• Uponor Smatrix Wave T-169
	Digital thermostat with a relative humidity sensor and an operative sensor
E	Mobile device (smartphone, tablet, and so on)
F	Wi-Fi router
G	Manifold with actuator
H	Uponor Smatrix Move X-157
	Supply temperature controller, with optional antenna (necessary with a room thermostat)
I	Outdoor temperature sensor
J	Circulation pump
K	Supply temperature sensor
L	3-way mixing valve with 230 V 3-point actuator
M	Heating/cooling switchover valve with 230 V actuator
N	Heat source
O	Chiller
P	Heating/cooling relay, 230 V

Room temperature control

	Note The system can be operated without a communication module, with only an antenna attached to the room controller. But this decreases the system's functionality.
---	--

This application example shows underfloor heating/cooling with two stand alone room controllers.

The room temperature (heating and/or cooling) in each system is controlled by one Uponor Smatrix Wave Flow room controller with thermostats. When the room temperature changes from the setpoint, the room controllers open/close the actuators on the manifold (adjusts the flow) to increase/decrease the room temperature.

Use one of these alternatives to do the heating/cooling switchover:

- Uponor Smatrix Flow app
- An automatic function that uses the indoor/outdoor temperature to do the switchover
- The room controller input (IN)

- Manually on a T-267 thermostat (standalone systems only)

Supply temperature control

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor (through thermostat), and heating/cooling curves, controls the supply temperature.

The supply temperature controller is connected to these:

- Heat source (through a heating/cooling relay)
- Chiller (through a heating/cooling relay)
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve
- Heating/cooling switchover valve

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

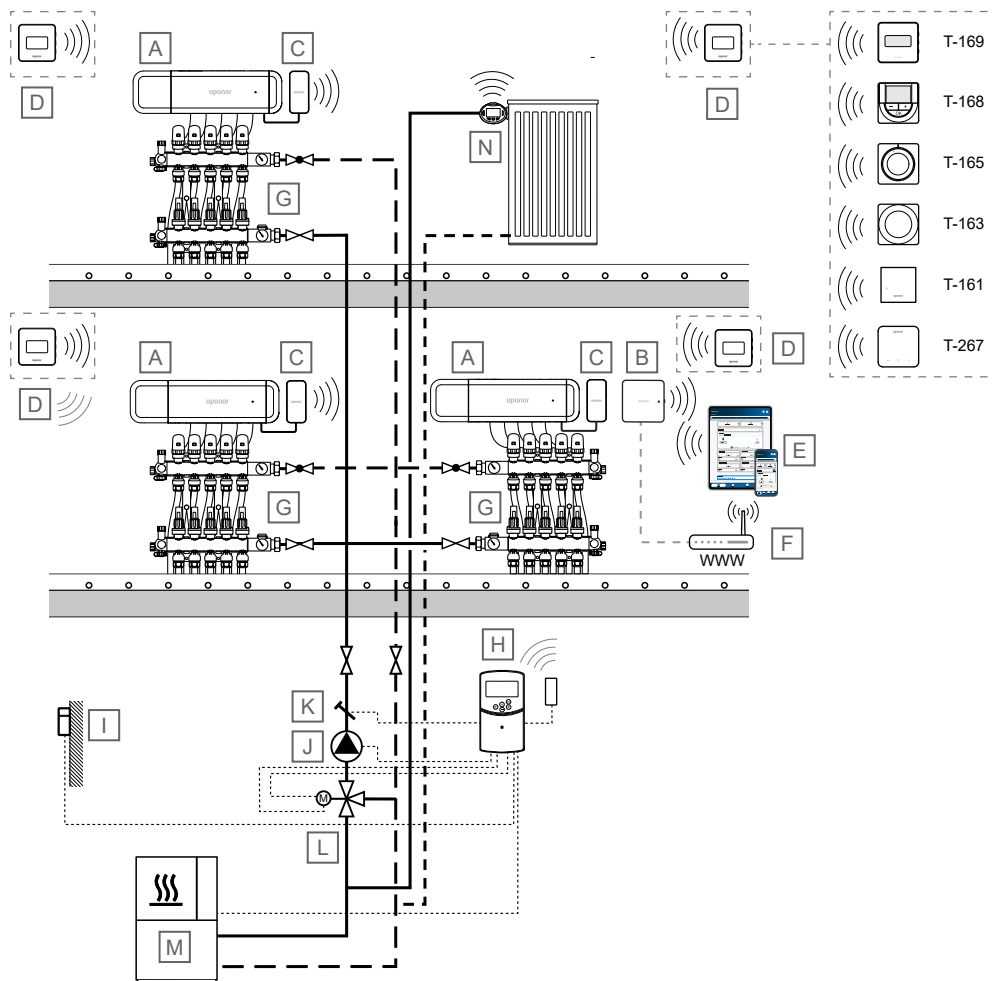
System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

Optionally, one dehumidifier (through relay module Uponor Smatrix Wave M-161) for each room controller can be connected. Do not use a dehumidifier together with fancoils.

8.4 Underfloor heating and radiators with multiple room controllers



SD0000426

Item	Description	Note
		These are outline diagrams. Real systems must comply with applicable norms and regulations.
A	Uponor Smatrix Wave Flow X-365 Room controller	
B	Uponor Smatrix R-368 Communication module	
C	Uponor Smatrix Wave Flow A-365 Antenna	
D	Room thermostat	- Uponor Smatrix Wave T-161 Room sensor thermostat with a relative humidity sensor and an operative sensor - Uponor Smatrix Wave T-163 Public thermostat - Uponor Smatrix Wave T-165 Standard thermostat with print on dial - Uponor Smatrix Wave T-267 Digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-168 Programmable digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-169

Item	Description
	Digital thermostat with a relative humidity sensor and an operative sensor
E	Mobile device (smartphone, tablet, and so on)
F	Wi-Fi router
G	Manifold with actuator
H	Uponor Smatrix Move X-157 Supply temperature controller, with optional antenna (necessary with a room thermostat)
I	Outdoor temperature sensor
J	Circulation pump
K	Supply temperature sensor
L	3-way mixing valve with 230 V 3-point actuator
M	Heat source
N	Uponor Smatrix Wave T-162 Thermostatic head

Room temperature control



Note

Radiators and underfloor heating cannot be installed in the same room.

This application example shows underfloor heating and radiators with multiple room controllers.

The three Uponor Smatrix Wave Flow room controllers and thermostats (merged into one large system) control the room temperature. When the room temperature changes from the setpoint, the room controllers open/close the actuators on the manifold (adjusts the flow) or adjusts the radiator valves with a thermostatic head, to increase/decrease the room temperature.

Supply temperature control

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor and heating curve controls the supply temperature.

The supply temperature controller is connected to these:

- Room controller
- Heat source
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

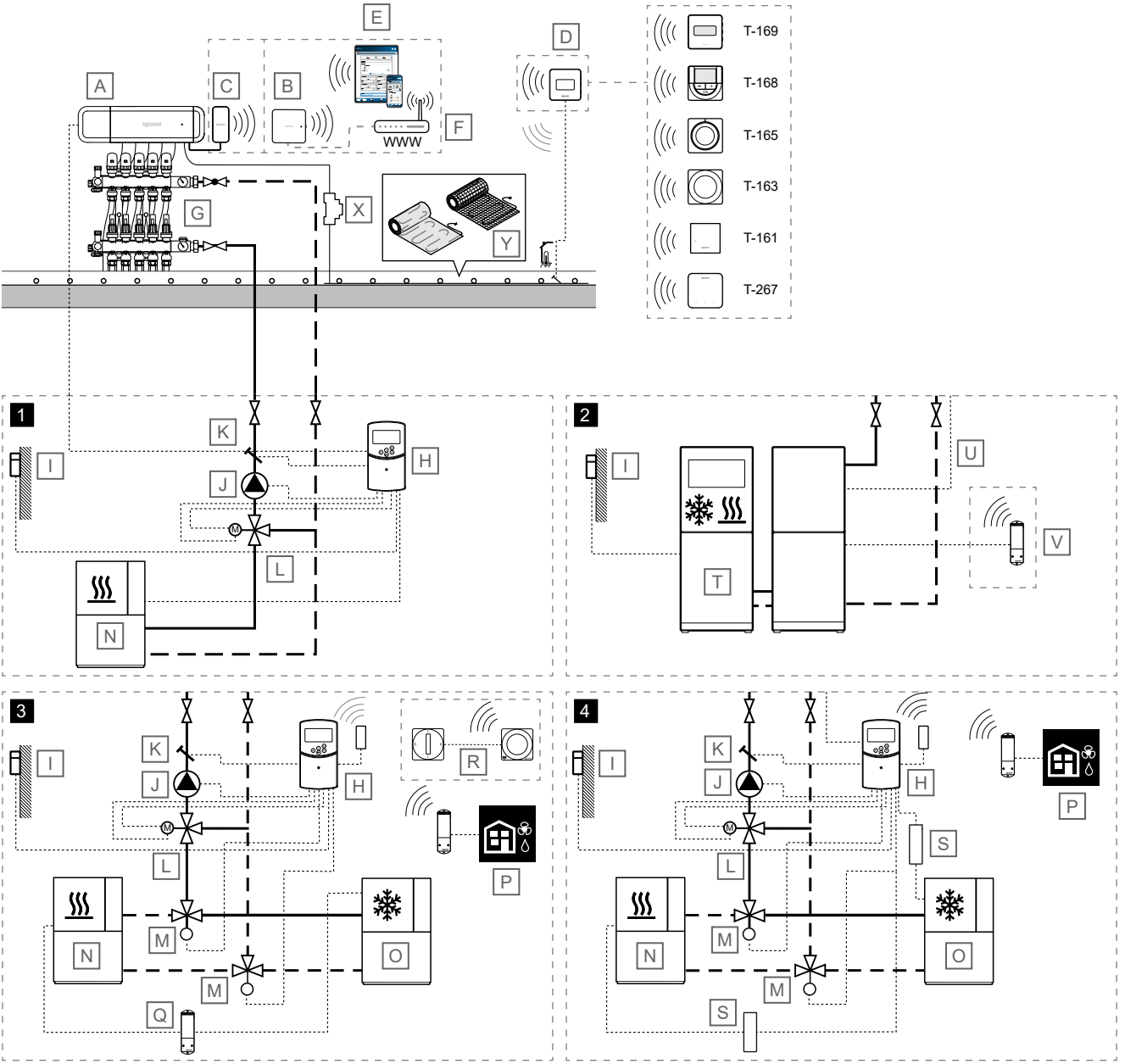
Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

8.5 Underfloor heating or underfloor heating/cooling, and electrical underfloor heating with a single room controller



! Note These are outline diagrams. Real systems must comply with applicable norms and regulations.	
Item	Description
A	Uponor Smatrix Wave Flow X-365 Room controller
B	Uponor Smatrix R-368 Communication module
C	Uponor Smatrix Wave Flow A-365 Antenna
D	Room thermostat Uponor Smatrix Wave T-161

Item	Description
	Room sensor thermostat with a relative humidity sensor and an operative sensor - Uponor Smatrix Wave T-163 Public thermostat - Uponor Smatrix Wave T-165 Standard thermostat with print on dial - Uponor Smatrix Wave T-267 Digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-168 Programmable digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-169 Digital thermostat with a relative humidity sensor and an operative sensor

Item	Description
E	Mobile device (smartphone, tablet, and so on)
F	Wi-Fi router
G	Manifold with actuator
H	Uponor Smatrix Move X-157 Supply temperature controller with optional antenna (necessary with a room thermostat)
I	Outdoor temperature sensor
J	Circulation pump
K	Supply temperature sensor
L	3-way mixing valve with 230 V 3-point actuator
M	Heating/cooling switchover valve with 230 V actuator
N	Heat source
O	Chiller
P	<i>Optional</i> Dehumidifier activation from the room controller (one dehumidifier for each room controller) through Uponor Smatrix Wave M-161 (relay module)
Q	<i>Optional</i> Boiler/chiller activation from the room controller through Uponor Smatrix Wave M-161 (relay module)
R	<i>Optional</i> External heating/cooling switch connected to a Uponor Smatrix Wave T-163 (registered as a system device)
S	Heating/cooling relay, 230 V
T	Heat pump (which optionally can supply heating/cooling)
U	Wire for heating/cooling switchover Connected between a room controller (relay 2, configured to heating/cooling output) and the heat pump (contact sensing input, configured for a heating/cooling switch)
V	<i>Optional</i> Uponor Smatrix Wave M-161 (relay module), registered to the room controller and connected to a contact sensing input, configured for heating/cooling switch, in the heat pump
X	24 V AC relay (dimensioned for the correct load)
Y	Uponor electrical heating cable mat

Room temperature control

	Caution! The communication module is necessary for this solution because the room with electrical underfloor heating must be set to "Cooling not allowed" in the Uponor Smatrix Flow app.
	Note Electrical underfloor heating and underfloor heating cannot be installed in the same room.

This application example shows underfloor heating or underfloor heating/cooling, and electrical underfloor heating with a single room controller.

The Uponor Smatrix Wave Flow room controller and thermostats control the room temperature (heating and/or cooling). When the room temperature changes from the setpoint, the room controllers open/close the actuators on the manifold (adjusts the flow) to increase/decrease the room temperature. It also controls the electrical underfloor heating mats (connected to the room controller actuator connections, through a 24 V AC relay, which is dimensioned for the correct load).

Use one of these alternatives to do the heating/cooling switchover:

- Uponor Smatrix Flow app

- An automatic function that uses the indoor/outdoor temperature to do the switchover
- The room controller input (IN)
- Manually on a T-267 thermostat (standalone systems only)

Supply temperature control

The application example shows different methods to control the supply temperature.

1 - Heating with Uponor Smatrix Move supply controller

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor and heating curve controls the supply temperature.

The supply temperature controller is connected to these:

- Room controller
- Heat source
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve

The room controller that has a relay configured as *Circulation pump* connects that relay to one of the supply temperature controller ROOMSTAT input (setup as **C_b**). When the relay in the room controller closes, the supply temperature controller starts the circulation pump.

2 - Heating/cooling with a heat pump

	Note A heat pump, which can supply heating and cooling, is necessary for this supply temperature control option.
---	--

The heat pump controls the supply temperature (for heating and cooling if the heat pump can supply heating and cooling).

The room controller connects the circulation pump relay to the heat pump (to an input for heat demand). When the relay in the room controller closes, the heat pump starts the circulation pump.

The room controller also connects the other relay (set up as a heating/cooling switch) to the heat pump (to an input for heating/cooling switch). When the relay in the room controller closes, the heat pump changes to cooling.

Optionally, the heat pump can change between heating and cooling with a wireless relay module, registered to a room controller (configured as a heating/cooling switch).

3 - Heating/cooling (switched from room controller) with Uponor Smatrix Move supply temperature controller

The supply temperature controller (Uponor Smatrix Move) with outdoor temperature sensor (through thermostat), and heating/cooling curves, controls the supply temperature.

The supply temperature controller is connected to these:

- Circulation pump
- Supply temperature sensor
- 3-way mixing valve
- Heating/cooling switchover valve

The relay module (registered to a room controller) controls the heat source and chiller.

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

Optionally, one dehumidifier (through relay module Uponor Smatrix Wave M-161) for each room controller can be connected. An external heating/cooling switch through Uponor Smatrix Wave T-163 (as system device) can be registered to one of the room controllers. Do not use a dehumidifier together with fancoils.

4 - Heating/cooling with Uponor Smatrix Move supply temperature controller

The supply temperature controller (Uponor Smatrix Move) with an outdoor temperature sensor (through thermostat), and heating/cooling curves, controls the supply temperature.

The supply temperature controller is connected to these:

- Heat source (through a heating/cooling relay)
- Chiller (through a heating/cooling relay)
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve
- Heating/cooling switchover valve

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

Optionally, one dehumidifier (through relay module Uponor Smatrix Wave M-161) for each room controller can be connected. Do not use a dehumidifier together with fancoils.

5 - Heat pump (HP) integration with Uponor Smatrix Flow

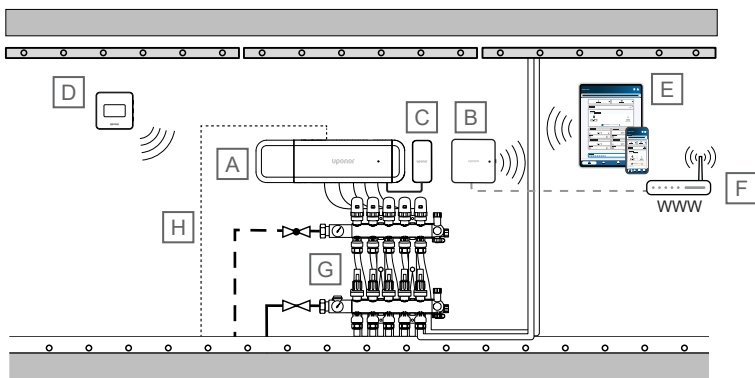
!	Note Contact the manufacturer for information about which type of heat pump supports this integration with the software version of the room controller.
!	Note An account for Uponor Smatrix Flow is necessary to create the integration. Contact the heat pump manufacturer for information about what is necessary to connect the heat pump.

The Uponor Smatrix Flow controller can connect to compatible heat pumps through the cloud.

The integration makes sure that the heat curve setting (which changes the supply temperature setpoint) in the heat pump is automatically optimised to real system requirements.

The function is activated in the Uponor Smatrix Flow app (a communication module is necessary).

8.6 Underfloor and ceiling heating/cooling with a single room controller



SD0000423



Note

These are outline diagrams. Real systems must comply with applicable norms and regulations.

Item	Description
	Connected to room controller relay 2 (configured to heating/cooling)

Item	Description
A	Uponor Smatrix Wave Flow X-365 Room controller
B	Uponor Smatrix R-368 Communication module
C	Uponor Smatrix Wave Flow A-365 Antenna
D	Uponor Smatrix Wave T-169 Digital thermostat with a relative humidity sensor and an operative sensor
E	Mobile device (smartphone, tablet, and so on)
F	Wi-Fi router
G	Manifold with actuator
H	Wire for heating/cooling switchover

Room temperature control

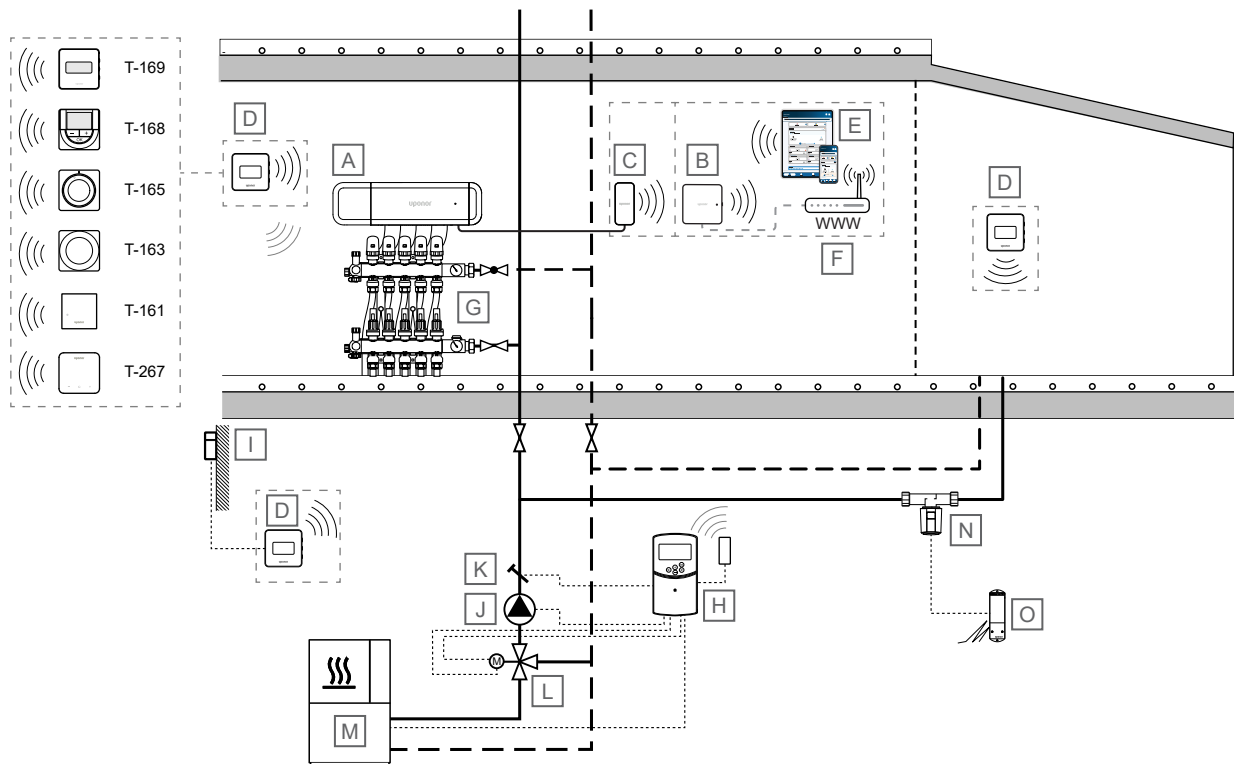
This application example shows underfloor and ceiling heating/cooling.

Room controller channels (underfloor and ceiling loops) are configured as necessary for:

- Heating
- Cooling
- Heating and cooling

The Uponor Smatrix Wave Flow room controller with one thermostat controls the room temperature. Some actuators control the ceiling cooling. When the room temperature changes from the setpoint, the room controllers open/close the actuators on the underfloor manifold (adjusts the flow) to increase/decrease the room temperature.

8.7 Underfloor heating with a loop in one more room



SD0000422

Note	
These are outline diagrams. Real systems must comply with applicable norms and regulations.	
Item	Description
A	Uponor Smatrix Wave Flow X-365 Room controller
B	Uponor Smatrix R-368 Communication module
C	Uponor Smatrix Wave Flow A-365 Antenna
D	Room thermostat ^{1) 2)} - Uponor Smatrix Wave T-161 Room sensor thermostat with a relative humidity sensor and an operative sensor - Uponor Smatrix Wave T-163 Public thermostat - Uponor Smatrix Wave T-165 Standard thermostat with print on dial - Uponor Smatrix Wave T-267 Digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-168 Programmable digital thermostat with a relative humidity sensor - Uponor Smatrix Wave T-169 Digital thermostat with a relative humidity sensor and an operative sensor
E	Mobile device (smartphone, tablet, and so on)
F	Wi-Fi router
G	Manifold with actuator
H	Uponor Smatrix Move X-157

Item	Description
	Supply temperature controller with optional antenna (necessary with a room thermostat)
I	Outdoor temperature sensor
J	Circulation pump
K	Supply temperature sensor
L	3-way mixing valve with 230 V 3-point actuator
M	Heat source
N	Valve with 230 V actuator
O	Uponor Smatrix Wave M-161 Relay module

1) Only digital thermostats can be used when a relay module is registered through thermostat menu 9 (Climatic controller integration).

2) The outdoor temperature sensor can only be connected to the public and digital thermostats.

Room temperature control



Note

The system can be operated without a communication module, with only an antenna attached to the room controller. But this decreases the system's functionality.

This application example shows underfloor heating when, for example, one more loop is necessary in an expansion to the house, and so on.

The Uponor Smatrix Wave Flow room controller and thermostats control the room temperature (heating and/or cooling). When the room temperature changes from the setpoint, the room controllers open/close the actuators on the underfloor manifold (adjusts the flow) to increase/decrease the room temperature. The flow to the new loop is controlled from the room controller through a relay module (valve connected to relay 2 on the relay module). The relay module is registered to a room thermostat (thermostat menu 9, Climatic controller integration), which is already registered to the room controller.

Supply temperature control

The supply temperature controller (Uponor Smatrix Move) with outdoor temperature sensor (through thermostat), and heating curve, controls the supply temperature.

The supply temperature controller is connected to a:

- Heat source
- Circulation pump
- Supply temperature sensor
- 3-way mixing valve

With a registered wireless thermostat (antenna A-155 is necessary), the Uponor Smatrix Move controller integrates with an Uponor Smatrix Wave Flow system to enhance the capabilities of a full climate system. At the same time, the integration removes the necessity of a separate thermostat and outdoor sensor (if connected to the Wave Flow system) for the Move system.

Information about the system state and reference room temperature is forwarded to the supply temperature controller, which then adjusts the supply temperature.

System states and temperatures that can be forwarded:

- Comfort/ECO mode*
- Heating/cooling mode
- Holiday mode*
- Reference room temperature and setpoint
- Outdoor temperature (if installed in the thermostat)
- Remote sensor (if installed in the thermostat)
- Indication if the relative humidity is more than the set limits (the digital thermostat T-168 or T-169, and the communication module are necessary)

*) Through the change of setpoint, with the ECO setback value from the integrated system. The Move controller shows no indication or change of mode.

9 Troubleshooting

9.1 General

Initial troubleshooting

Most of the errors can be corrected by:

1. Visually examine the LEDs on the room controller to make sure that:
 - The room controller is energised.
 - There are no errors on the room controller. For more information see Chapter:
"The LED on the room controller is not green or blue"
2. Visually examine the LED on the communication module to make sure that:
 - The communication module is energised.
 - There are no errors on the communication module. For more information see Chapter:
"The LED on the communication module is not green"
3. Make sure there are no alarms in the Uponor Smatrix Flow app. For more information see Chapter:
"The app shows an alarm"
4. Make sure that the correct heating/cooling mode is selected.
5. Make sure that the correct Comfort/ECO mode is selected.
6. Replace the batteries in the thermostats/thermostatic heads.
7. Make sure that these components are not installed in metal cabinets or shielded by nearby objects:
 - Room controller antenna
 - Communication module
 - Relay module
 - Thermostat
 - Thermostatic head
8. Make sure that a thermostat/thermostatic head is not intalled nearer than 40 cm from the room controller antenna.
9. Make sure that the communication module is not intalled nearer than 100 cm from the room controller antenna.
10. Make sure that the antenna is correctly installed (vertical position).

Instructions to the Installer

To determine if the control system or the supply system has caused a problem:

Room controller system

1. Loosen the actuators from the manifold for the applicable room.
2. Wait for some minutes.
3. Examine if the flow of the underfloor heating loop is warm.
4. If the pipe is not warm, the problem is in the heating system. If the loop is warm, the cause can be the room control system.

Supply system

1. Examine the boiler and circulation pump. A supply system malfunction can be identified by no warm water in the manifold.

9.2 The room temperature is too cold or too warm

If the room temperature is too cold or too warm, it can be because of:

- The actuators on the manifold do not open or close. For detailed information, see the relevant subchapter.
- The actuators on the manifold open and close at a fixed interval. For detailed information, see the relevant subchapter.
- The floor is cold, but the room temperature is at the setpoint. For detailed information, see the relevant subchapter.
- The floor is warm/cold after a long time without a heating/cooling demand. For detailed information, see the relevant subchapter.
- The room has an incorrect setpoint. For detailed information, see the relevant subchapter.
- The room or system is in ECO mode. For detailed information, see the relevant subchapter.
- The supply water temperature is too high. For detailed information, see the relevant subchapter.
- The system is in the wrong heating/cooling mode. For detailed information, see the relevant subchapter.
- The thermostat/thermostatic head shows the incorrect temperature. For detailed information, see the relevant subchapter.
- The thermostats/thermostatic head has the incorrect minimum/maximum limits. For detailed information, see the relevant subchapter.

The actuators on the manifold do not open or close

Possible indications:

- The white indicator does not show in the actuator, and the actuator does not open.
- The white indicator shows in the actuator, and the actuator does not close.

Recommended corrections:

1. Make sure that the actuator connection to the room controller is correct.
2. Make sure that the room controller output works correctly (24 V when activated).
3. Replace the actuator.

The actuators on the manifold open and close at a fixed interval

Possible indications:

- The room controller power LED flashes red.
- The communication module (if installed) LED flashes RED.
- The thermostat/thermostatic head has a malfunction.
- The thermostat/thermostatic head shows a communication error.
- The Uponor Smatrix Flow app shows an error (a communication module is necessary).
- The Fallback function is activated, and there is a communication error in the system.

Recommended corrections:

1. Examine the thermostats/thermostatic heads.
 - 1.1. Replace the batteries.
 - 1.2. Connect the thermostat/thermostatic head again if the connection is lost.
 - 1.3. Make sure that the thermostat/thermostatic head is not shielded by nearby objects.
 - 1.4. Make sure that a thermostat/thermostatic head is not installed nearer than 40 cm from the room controller antenna.
 - 1.5. Make sure that the room controller and thermostat/thermostatic head have compatible software versions.
2. Examine the communication module (if installed).
 - 2.1. Make sure that the communication module (if installed in the system) is energised.
 - 2.2. Make sure that the communication module (if installed in the system) is not in a metal cabinet or is shielded by nearby objects.
 - 2.3. Make sure that the communication module is not installed nearer than 100 cm from the room controller antenna.
 - 2.4. Connect the communication module again if the connection is lost.
3. Examine the room controller antenna.
 - 3.1. Make sure that the room controller antenna is not in a metal cabinet or is shielded by nearby objects.

The floor is cold, but the room temperature is at the setpoint

Recommended corrections:

1. Examine if the underfloor heating system has a heat demand.
2. Examine if the room is heated by a secondary heat source.

The floor is warm/cold after a long time without a heating/cooling demand

Possible indications:

- The thermostat shows no heating/cooling demand.
- The Uponor Smatrix Flow app shows no heating/cooling demand
- The white indicator is shown in the actuators.
- The thermostat, or Uponor Smatrix Flow app, shows that the room temperature is at the setpoint.
- An external heat source (wood burning stove, sunshine, and so on) increases the floor temperature.
- An external cooling source (a chiller, open doors/windows from colder areas) decreases the floor temperature.

Recommended corrections:

1. Remove the external heating/cooling source.
2. Make sure that the supply temperature to the system is correct.

The room has an incorrect setpoint

Recommended corrections:

1. Change the temperature setpoint.
2. Use the maximum and minimum settings in the Uponor Smatrix Flow app to protect the system from the effects of unreasonable temperature settings.

The room or system is in ECO mode

Possible indications:

- The Uponor Smatrix Flow app (the communication module is necessary) shows the holiday or away symbol.
- The Uponor Smatrix Flow app (the communication module is necessary) shows the ECO symbol for the system
- One or all the thermostats show the ECO symbol.

Recommended corrections:

1. Cancel holiday mode.
2. Change to home mode.
3. Change the ECO profile or select a different profile for the room.
4. Decrease the ECO setback value for the room.

The supply water temperature is too high

Possible indications:

- The Uponor Smatrix Flow app shows an error "Floor temperature limit reached".
- The floor continues to be warm/cold long after there has been a heating/cooling demand.

Recommended corrections:

1. Examine the boiler or shunt and make sure that they operate correctly.
2. Activate the supply diagnostics function in the Uponor Smatrix Flow app.

The system is in the wrong heating/cooling mode

Possible indications:

- The Uponor Smatrix Flow app shows the incorrect heating/cooling symbol.
- All thermostats show the incorrect heating/cooling symbol.
- The room controller power LED shows the incorrect colour:
 - Green: Heating mode
 - Blue: Cooling mode
- The system does not change between heating and cooling when the heating/cooling switch is activated.

Recommended corrections:

1. Make sure that the correct heating/cooling mode is selected.
2. Examine the boiler information and operation mode in the Uponor Smatrix Flow app.
3. Examine the chiller information and operation mode in the Uponor Smatrix Flow app.
4. Examine the heat pump and make sure that the same heating/cooling mode is selected in the Uponor Smatrix Flow app.
5. Make sure that the heating/cooling switch is installed and configured correctly.
6. Make sure that the correct signal from the external device is used.
7. Make sure that the boiler, chiller and heat pump connections to the room controller/relay module are correct.

The thermostat/thermostatic head shows the incorrect temperature

Possible indications:

- The thermostat is in direct sunlight.
- The measured temperature in the room is higher than in equivalent rooms.
- The thermostat is warm when touched.
- The temperature in a different room changes when the setpoint on the thermostat is adjusted.

Recommended correction:

1. Use the installation instructions to examine the thermostat's position and change it, if necessary.
2. Put the thermostat/thermostatic head in the correct room or change the thermostat/thermostatic head registration in the room controller.

The room controller has lost communication with a thermostat, a thermostatic head, or the communication module, and heating fallback is activated

Possible indications:

- The room controller power LED flashes red.
- The communication module (if installed) LED flashes RED.
- The thermostat/thermostatic head has a malfunction.
- The thermostat/thermostatic head shows a communication error.
- The Uponor Smatrix Flow app shows an error (a communication module is necessary).

Recommended corrections:

1. Examine the thermostats/thermostatic heads.
 - 1.1. Replace the batteries.
 - 1.2. Connect the thermostat/thermostatic head again if the connection is lost.
 - 1.3. Make sure that the thermostat/thermostatic head is not shielded by nearby objects.
 - 1.4. Make sure that a thermostat/thermostatic head is not installed nearer than 40 cm from the room controller antenna.
 - 1.5. Make sure that the room controller and thermostat/thermostatic head have compatible software versions.
2. Examine the communication module (if installed).
 - 2.1. Make sure that the communication module (if installed in the system) is energised.
 - 2.2. Make sure that the communication module (if installed in the system) is not in a metal cabinet or is shielded by nearby objects.
 - 2.3. Make sure that the communication module is not installed nearer than 100 cm from the room controller antenna.
 - 2.4. Connect the communication module again if the connection is lost.
3. Examine the room controller antenna.
 - 3.1. Make sure that the room controller antenna is not in a metal cabinet or is shielded by nearby objects.

The thermostats/thermostatic head has the incorrect minimum/maximum limits

Possible indication:

- The setpoint/eco offset/cooling offset cannot be set higher or lower than specified values.

Recommended correction:

1. Change the minimum/maximum limit in the Uponor Smatrix Flow app.

9.3 There is a problem with the room controller

If there is a problem with the room controller, most frequently:

- The LED on the room controller is not green or blue.
For detailed information, see the relevant subchapter.

The problem can be because:

- The room controller does not start.
For detailed information, see the relevant subchapter.
- A channel LED on the room controller flashes red.
For detailed information, see the relevant subchapter.
- The power LED on the room controller flashes red.
For detailed information, see the relevant subchapter.

The room controller does not start

Possible indications:

- The room controller LED does not come on.
- The fuse on the room controller is blown.

Recommended corrections:

1. Replace the fuse if blown.
2. Examine the power cable to make sure that it is not defective.
3. Make sure that the room controller is connected to AC power.
4. Examine the wiring in the 230 V compartment
5. Make sure that the wall socket has 230 V AC power.

The LED on the room controller is not green or blue

Requirement:

- The room controller cover must be removed to see the channel LEDs.

Power LED	Icon	Status
Green ON		The room controller is energised and in heating mode.
Blue ON		The room controller is energised and in cooling mode.
Red FLASHES		There is a problem, for example: • No radio transmission from a thermostat for more than 1 hour

Channel LED	Icon	Status
Green ON		The actuator is activated and is in heating mode.
Green FLASHES		The channel waits for activation and is in heating mode.
Blue ON		The actuator is activated and in cooling mode.
Blue FLASHES		The channel waits for activation and is in cooling mode.
Red FLASHES		• Thermostat communication error or low battery indication • Tamper alarm (public thermostat)
OFF		No heating or cooling demand

A channel LED on the room controller flashes red

Possible causes:

- The thermostat is not correctly located.
- The room controller antenna is not correctly installed or located.
- The room controller antenna is installed in a metal cabinet or shielded by nearby objects.
- The communication module is installed in a metal cabinet or shielded by nearby objects.

Recommended corrections:

1. Make sure that the thermostat's signal is not shielded by an object.
2. Make sure that the wiring and antenna connection are correct.
3. Make sure that a thermostat/thermostatic head is not intalled nearer than 40 cm from the room controller antenna.
4. Make sure that the communication module is not intalled nearer than 100 cm from the room controller antenna.
5. Change the location of the antenna.
6. Change the location of the communication module.

The power LED on the room controller flashes red

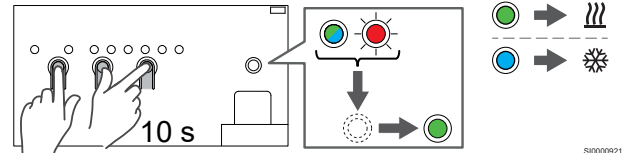
Possible causes:

- There is an alarm in the system.
- There are communication problems with thermostats/thermostatic heads.
- There are communication problems with system devices.
- There are communication problems with the communication module (if installed in the system)

Recommended correction:

1. For systems not connected, examine the alarm information in the thermostats.
2. For systems with com. module, check alarm information in the app.
3. Examine the thermostats/thermostatic heads.
 - 3.1. Replace the batteries.
 - 3.2. Examine if the display shows alarm information (standalone only).
 - 3.3. Examine if the Uponor Smatrix Flow app shows an alarm (the communication module is necessary).
 - 3.4. Connect the thermostat/thermostatic head again if the connection is lost.
 - 3.5. Make sure that the thermostat/thermostatic head is not shielded by nearby objects.
 - 3.6. Make sure that a thermostat/thermostatic head is not installed nearer than 40 cm from the room controller antenna.
 - 3.7. Make sure that the room controller and thermostat/thermostatic head have compatible software versions.
4. Examine the communication module (if installed).
 - 4.1. Make sure that the communication module (if installed in the system) is energised.
 - 4.2. Make sure that the communication module (if installed in the system) is not in a metal cabinet or is shielded by nearby objects.
 - 4.3. Make sure that the communication module is not installed nearer than 100 cm from the room controller antenna.
 - 4.4. Connect the communication module again if the connection is lost.
5. Examine the room controller antenna.
 - 5.1. Make sure that the room controller antenna is not in a metal cabinet or is shielded by nearby objects.

Doing a factory reset of the room controller to default parameter values



S80000921

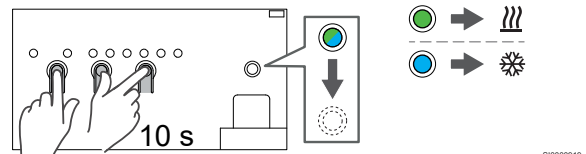
Note
Make sure that the room controller is in run mode. If it is in registration mode or forced mode, push and hold the **OK** button for approximately 5 seconds or until the LEDs go off.

Note
If you do a reset of the room controller, it erases all registration information and settings from the room controller. It is then necessary to register the thermostats and system devices again.

If there are problems, for example, incorrect channel registration, do a reset of the room controller.

To do a reset of the room controller:

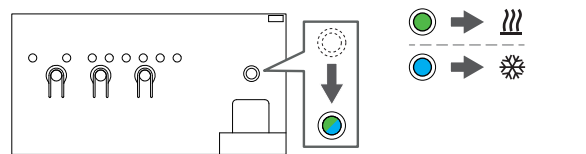
1. Make sure that the room controller is in run mode.
2. Push the **<**, **OK**, and **>** buttons at the same time and keep them pushed (for approximately 10 seconds) until the LEDs go off.



S80000919

3. Release the buttons.
4. Wait until the process is completed, the room controller starts again, and the power LED changes to green (heating mode) or blue (cooling mode).

All registration information and settings from the room controller are now erased.

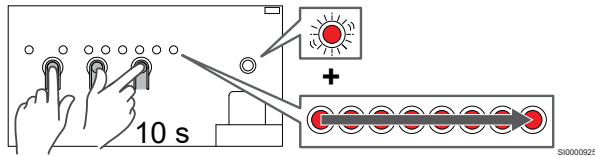


S80000920

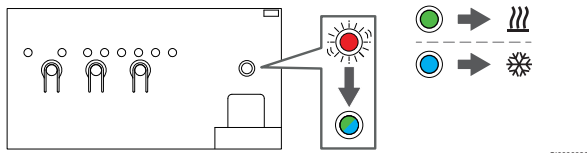
Doing a reset of the room controller to factory software

To do a reset of the room controller to the factory software version:

1. De-energise the controller.
2. Push the <, **OK**, and > buttons at the same time and keep them pushed, and energise the room controller. Keep the buttons pushed (for approximately 10 seconds) until you are instructed to release.



3. When the room controller is energised, the power LED flashes red very fast, and the channel LEDs start a sequence to get red (to show that the process progresses).
4. Release the buttons and wait until the process is completed (the power LED changes to green or blue). All registration information from the room controller is now erased.



5. De-energise and then energise the full installation and make sure in the app that the room controllers' forced to factory software show the correct software version (if it is a connected system).

9.4 There is a problem with the communication module

If there is a problem with the communication module, most frequently:

- The LED on the communication module is not green. For detailed information, see the relevant subchapter.

The problem can be because:

- The communication module does not start. For detailed information, see the relevant subchapter.
- The communication module cannot connect to the Wi-Fi network. For detailed information, see the relevant subchapter.

The communication module does not start

Possible indications:

- The communication module has no power.
- The LED on the communication module does not come on.

Recommended corrections:

1. Examine the power cable to the communication module. Make sure that the cable is connected correctly.
2. Replace the power cable if necessary.
3. Replace the power supply.
4. Replace the communication module.

The communication module cannot connect to the Wi-Fi network.

Possible causes:

- The communication module is installed in a metal cabinet or shielded by nearby objects.
- The router has the incorrect wireless mode.
- The communication module is installed out of the range of the Wi-Fi network.

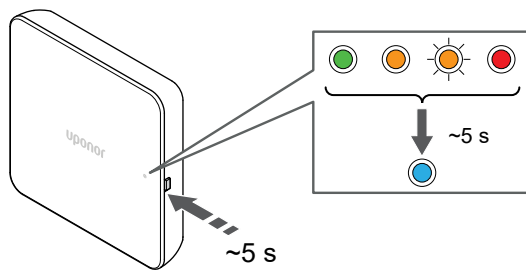
Recommended corrections:

1. Make sure that the communication module is not in a metal cabinet or is shielded by nearby objects.
2. Make sure that the communication module is not installed nearer than 100 cm from the room controller antenna.
3. In some situations, you must change the **Wireless mode** parameter in the router (or 802.11 mode or equivalent) to communicate with the communication module through Wi-Fi (802.11 b/g/n at 2.4 GHz).
4. Connect the communication module to the local network with an Ethernet cable.

The LED on the communication module is not green

LED	Icon	Status
Red ON		The communication module is not connected through Bluetooth or to a LAN.
Red FLASHES		The communication module has lost connection to one or more room controllers.
Orange ON		The communication module is connected through Bluetooth.
Orange FLASHES		Bluetooth is activated but not connected.
Orange FLASHES FAST		The communication module is connected through Bluetooth, but you must push the button to acknowledge.
White or White/Orange FLASHES		The communication module is now in pairing mode with a room controller.
Blue ON		A factory reset has been done on the Wi-Fi credentials on the communication module.
Blue FLASHES		A factory reset is currently done on the communication module.
Blue FLASHES FAST		The communication module is currently set to the factory software version.
Purple FLASHES		The communication module firmware is currently updated.

Doing a reset of the Wi-Fi credentials



S10000946



Note

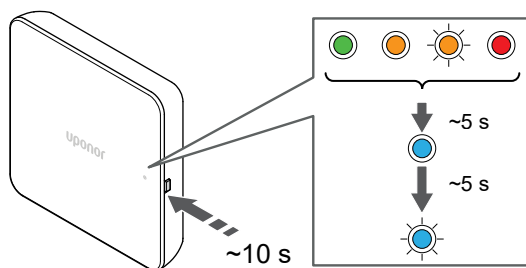
When a reset of the Wi-Fi credentials is done, no reset is done of other configurations in the system.

This function does a reset of the Wi-Fi credentials in the communication module and is usually used to move the system to a new Wi-Fi network.

To do a reset of Wi-Fi credentials:

1. Push the button (for approximately 5 seconds) until the function LED changes to blue ON.
2. Release the buttons. The communication module then does a reset of the Wi-Fi credentials.
3. Configure the new Wi-Fi credentials with the Uponor Smatrix Flow app.

Doing a factory reset of the communication module



S10000873



Note

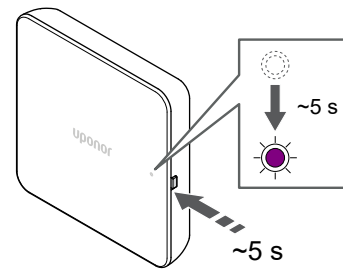
All system configuration variables are set to the default values, all linked devices are removed, and the Wi-Fi credentials are deleted. Do not do a reset of the module unless you know your installation settings or contact an installer.

This function sets the communication module to factory settings and is usually used to do a reset of all the system configuration variables.

To do a factory reset of the communication module:

1. Push the button (for approximately 10 seconds) until the function LED flashes blue.
2. Release the button. The communication module reboots to factory settings.
3. Remove the communication module from the BLE connection list on the mobile devices that have been connected to the system earlier.
4. Obey the instructions in the Uponor Smatrix Flow app to configure the system again.

Doing a factory reset of the communication module and returning to factory software



S10000947



Caution!

This function cannot be undone.



Note

All system configuration variables are set to the default values, all linked devices are removed, and the Wi-Fi credentials are deleted. Do not do a reset of the module unless you know your installation settings or contact an installer.

This function includes the reset specified in *Doing a factory reset of the communication module*, Page 53, and installation of the factory software in the communication module.

This function must only be used when the communication module does not respond to other actions.

To continue:

1. De-energise the communication module.
2. Push the button (do not release it) and then energise the communication module.
3. Release the button (for approximately 5 seconds) until the LED flashes purple. The communication module reboots to the factory software version.
4. Remove the communication module from the BLE connection list on the mobile devices that have been connected to the system earlier.
5. Configure the system with the Uponor Smatrix Flow app.

9.5 There is a problem with the thermostat

If there is a problem with the thermostat, refer to the thermostat's operation manual.

9.6 There is a problem with the thermostatic head

If there is a problem with the thermostatic head, refer to the thermostatic head's operation manual.

9.7 There is noise from the system at the same time each week

Possible indication:

- There is noise from the circulation pump.

Recommended correction:

- Change the time for the pump exercise in the Uponor Smatrix Flow app.

9.8 The app shows a different setpoint than the thermostat/thermostatic head

Possible cause:

- The thermostat/thermostatic head has a malfunction.

Recommended corrections:

1. Make sure that the thermostat/thermostatic head is installed in the correct room
2. Replace the thermostat/thermostatic head.

9.9 The app shows an alarm

If an alarm occurs, the Uponor Smatrix Flow app shows an alert. The app also shows alarm information and possible solutions. If connected to Uponor cloud services, the mobile phone receives the alarm as a push notification.

Communication module offline



Note

This is a medium-level alarm.

Possible cause:

- The communication module is not energised.
- A communication failure has occurred with the communication module.
 - The room controller LED flashes red.
 - The communication module LED is continuously red or flashes orange.

Recommended correction:

1. Make sure that the communication module (if installed in the system) is energised.
2. Make sure that the communication module is connected to an internet-connected router through Wi-Fi or Ethernet.
3. Obey the instructions in the app to connect to the communication module again.
4. Start the router again, if necessary.
5. Start the controller and communication module again, if necessary (disconnect and then connect the controller to the wall socket).

Comfort/ECO switch not found



Note

This is a low-level alarm.

Possible cause:

- The room controller cannot communicate with the system device configured as a Comfort/ECO switch.

Recommended correction:

1. Move the external switch (from position A to B and B to A on the thermostat connection terminal) to cause it to transmit.

If the problem continues:

1. The system device thermostat is not in range.
Find a new position for the system device thermostat and/or the antenna, or move objects that prevent signal communication.
2. New installations in the building prevent radio signals (for example, a safe with a metal door)
Find a new position for the system device thermostat and/or the antenna, or move objects that prevent signal communication.
3. The transmitter in the system device thermostat is defective.
Replace the thermostat.

Floor temperature limit reached



Note

This is a low-level alarm.

The floor temperature is at its limit. Heating or cooling is deactivated until the floor temperature changes to a safe value.

Possible causes and recommended corrections:

1. The floor is heated by the sun or a different heat source.
Decrease/remove the external heat source and wait until the floor temperature has decreased.
2. A draft or a different cooling source makes the floor cold.
Remove/stop the external cooling source and wait until the floor temperature has increased.

Floor temperature measurement error



Note

This is a low-level alarm.

Possible cause:

- An error was sensed with the floor temperature sensor connected to the thermostat.

Recommended corrections:

1. Disconnect the external sensor and examine it with an ohmmeter. Make sure that the value agrees with the temperature sensor diagram.

If the error continues, replace the external sensor.

High supply temperature



Note

This is a high-level alarm.

This alarm is shown only if the supply diagnostics function is activated.

Possible cause:

- The supply temperature is too high for the system.

Recommended correction:

1. Examine the heat source or supply temperature controller to decrease the supply temperature.

If the problem continues, contact the installer.

Low temperature limit reached



Note

This is a medium-level alarm.

The temperature in one of the rooms in your system is below the configured low-temperature limit (activated in user settings).

Possible causes and recommended corrections:

1. The thermostat setpoints are too low, compared to the set limit. Increase the setpoints on the thermostats in the rooms where the average temperature is calculated.
2. The supply temperature is too low for the system. Examine the heat source or supply temperature controller to decrease the supply temperature. Other possible causes: too low flow on the supply line, or a circulation pump has a malfunction. If the problem continues, contact the installer.
3. There are open windows/doors. Close windows/doors that can have an effect on the measured temperature.

Low radio signal



Note

This is a low-level alarm.

Low radio signal sensed (sporadic communication with the connected unit)

Possible causes:

- The thermostat/thermostatic head is not in range.
- New installations in the building prevent radio signals (for example, a safe with a metal door)

Recommended corrections:

1. Find a new position for the thermostat and/or antenna, or move the object that prevents signal communication.

Low supply temperature



Note

This is a low-level alarm.

This alarm is shown only if the supply diagnostics function is activated.

Possible cause:

- The supply temperature is too low for the system.

Recommended correction:

1. Examine the heat source or supply temperature controller to increase the supply temperature.

If the problem continues, contact the installer.

Low thermostat battery level



Note

This is a low-level alarm.

Possible cause:

- Thermostat battery power is low.

Recommended correction:

- Replace the batteries.

Outdoor temperature measurement error



Note

This is a low-level alarm.

Possible cause:

- An error was sensed with the outdoor temperature sensor connected to the public thermostat.

Recommended corrections:

- Examine the connection of the outdoor temperature sensor.
- Disconnect the external sensor and examine it with an ohmmeter. Make sure that the value agrees with the temperature sensor diagram.

If the error continues, replace the external sensor.

Relative humidity sensor limit



Note

Relative humidity control is activated in the Uponor Smatrix Flow Uponor Smatrix Flow app (communication module is necessary).



Note

This is a low-level alarm.

The relative humidity is at its limit. Cooling is deactivated until the relative humidity changes to a safe value.

Recommended correction:

- Start a dehumidifier or increase the supply temperature setpoint to decrease the humidity level.

Relay module lost



Note

This is a high-level alarm.

Possible cause:

- Communication failure with the relay module

Recommended corrections:

- Make sure that the relay module is energised.
- Register the relay module again with the room controller.

If the problem continues, contact the installer.

Room controller lost



Note

This is a high-level alarm.

Possible cause:

- Communication failure with the room controller. The room controller LED flashes red.

Recommended corrections:

- Make sure that the room controller is energised.
- Find a new position for the communication module and/or the room controller antenna, or move objects that are shields for the thermostat/antenna.

If the problem continues, contact the installer.

Room temperature measurement error



Note

This is a high-level alarm.

Possible cause:

- An error was sensed with the internal temperature sensor in the thermostat, or an external sensor connected to the thermostat.

Recommended correction:

1. Examine which control mode the thermostat is set to:
 - RT, RFT or RO:
Replace the thermostat.
 - RS:
The problem is with the external sensor.

Thermostat communication error



Note

This is a medium-level alarm.

Possible cause:

- The room controller cannot communicate with the thermostat.

Recommended correction:

1. Change the temperature setpoint to cause the thermostat to transmit.

If the problem continues:

1. The thermostat is not in range.

Find a new position for the thermostat and/or the room controller antenna, or move objects that are shields for the thermostat/antenna.

2. New installations in the building prevent radio signals (for example, a safe with a metal door)

Find a new position for the thermostat and/or antenna, or move the object that prevents signal communication.

Thermostatic head communication error



Note

This is a medium-level alarm.

Possible cause:

- The room controller cannot communicate with the thermostatic head.

Recommended corrections:

1. Change the temperature setpoint on the room thermostat to cause the thermostatic head to transmit.
2. Wait for some minutes.
3. Make sure that the thermostatic head shows the same setpoint as the thermostat (use the </> buttons).

If the problem continues:

1. The thermostatic head is not in range.
Find a new position for the room controller antenna.
2. New installations in the building prevent radio signals (for example, a safe with a metal door)
Find a new position for the room controller antenna, or move the object that prevents signal communication.

Thermostat lost



Note

This is a high-level alarm.

The fallback function is activated to prevent pipe freeze (heating mode) or system condensation (cooling mode) when this alarm is active.

Possible cause:

- The room controller cannot communicate with the thermostat.

Recommended correction:

1. Change the temperature setpoint to cause the thermostat to transmit.

If the problem continues:

1. The thermostat is not in range.
Find a new position for the thermostat and/or the room controller antenna, or move objects that are shields for the thermostat/antenna.
2. New installations in the building prevent radio signals (for example, a safe with a metal door)
Find a new position for the thermostat and/or antenna, or move the object that prevents signal communication.
3. Register the thermostat to the room controller again.
4. The transmitter in the thermostat is defective.
Replace the thermostat.

Thermostat tamper alarm



Note

This is a medium-level alarm.

Possible cause:

- The public thermostat was removed from the wall.

Recommended correction:

1. Examine the thermostat settings.
2. Put the thermostat back on the wall.

Thermostatic head lost



Note

This is a high-level alarm.

Possible cause:

- The room controller cannot communicate with the thermostatic head.

Recommended corrections:

1. Change the temperature setpoint on the room thermostat to cause the thermostatic head to transmit.
2. Wait for some minutes.
3. Make sure that the thermostatic head shows the same setpoint as the thermostat (use the </> buttons).

If the problem continues:

1. The thermostatic head is not in range.
Find a new position for the room controller antenna.
2. New installations in the building prevent radio signals (for example, a safe with a metal door)
Find a new position for the room controller antenna, or move the object that prevents signal communication.
3. Register the thermostatic head to the room controller again.
4. The transmitter in the thermostatic head is defective.
Replace the thermostatic head.

Thermostatic head not working properly



Note

This is a low-level alarm.

Possible cause:

- The thermostatic head valve stroke calibration was not done correctly.

Recommended correction:

- Install the thermostatic head on a radiator and make sure that the valve stroke calibration is done correctly. An adapter can be necessary if the actuator does not touch the valve pin.

10 Technical data

10.1 Technical specifications

Room controller X-365

Description	Value
IP	IP20
Protection class	Class II (IP: degree of inaccessibility to active parts of the product and degree of water)
Maximum ambient RH (relative humidity)	85% at 20 °C
Power supply	230 V AC +10/-15%, 50 Hz or 60 Hz
CE marking	Yes
Internal fuse	T5 F3.15AL 250 V: 5x20 3.15 A: quick acting
Maximum consumption	45 W, Average 40 VA at 45 degrees, 35 VA at 55 degrees
Pump and boiler relay outputs	230 V AC +10/-15 %, 250 V AC 8 A maximum Micro distance, Normally Open (NO)
Input (IN)	Only dry contact
Valve outputs	24 V AC: 0.2 A peak for max. 2 minutes (resistive load)
Connection terminals for power, pump, IN and boiler	Up to 4.0 mm ² solid or 2.5 mm ² flexible with ferrules
Connection terminals for valve outputs	0.2 mm ² to 1.5 mm ²
ERP (with the communication module and the Uponor Smatrix Flow app)	VIII
ERP (without the communication module and the Uponor Smatrix Flow app)	IV
Rated impulse voltage	2.5 kV, OVC II
Pollution degree	2
Software class	A
Operating temperature	0 °C to +45 °C
Storage temperature	-20 °C to +70 °C
Power connection	1 m flexible cord, with Europlug (not in the UK), connected to the controller
Type of EMC environment	Residential
Construction of control	Electronic independently mounted control
Method of connection and disconnection	Type Y (electric/wiring intervention only by an accredited service agent or the manufacturer)
Type of action	Type 1C (micro-interruption)
Temperature for ball pressure test	75 °C
Low-voltage tests	EN 60730-1* and EN 60730-2-9***
EMC (electromagnetic compatibility requirements) tests	EN 60730-1 and EN 301-489-3
ERM (electromagnetic compatibility and radio spectrum matters) tests	EN 300 220-3

Communication module R-368

Description	Value
IP	IP20
Protection class	Class III (IP: degree of inaccessibility to active parts of the product and degree of water)
Maximum ambient RH (relative humidity)	85% at 20 °C
Power supply	USB PD3.0 Input: AC 100-240V One USB-C PD output: DC 5 V 3 A / 9V 2.22 A / 12 V 1.67 A (20 W) PPS output: 3.3 V-5.9 V 3 A / 3.3 V-11 V 2A
Pollution degree	2
Software class	A
Operating temperature	0 °C to +45 °C
Storage temperature	-20 °C to +70 °C

Description	Value
Wi-Fi connectivity	802.11 b/g/n at 2.4 GHz
Wi-Fi security	WPA & WPA2
Radio frequency	868.3 MHz +/- 300 KHz – ERP < 25 mW
Maximum power transmitted	12 dBm
Transmitter duty cycle	< 1%
Receiver class	2
Connection terminals	RJ45 Ethernet connection (10/100BaseT)
Type of EMC environment	Residential
Construction of control	Electronic independently mounted control
Method of connection and disconnection	Type X (user can plug/unplug)
Temperature for ball pressure test	75 °C
Type of action	Type 1
Software class	Class A
CE marking	CE
Low-voltage tests	EN 60730-1* and EN 60730-2-9***
EMC (electromagnetic compatibility requirements) tests	EN 60730-1 and EN 301-489-3
ERM (electromagnetic compatibility and radio spectrum matters) tests	EN 300 220-3

Expansion module M-262

Description	Value
Protection class	Class II
Valve outputs	24 V AC: 0.2 A peak for max. 2 minutes (resistive load)
Connection terminals	0.2 mm² to 1.5 mm²
Type of EMC environment	Residential
Construction of control	Electronic integrated control
Method of connection and disconnection	Type Y (electric/wiring intervention only by an accredited service agent or the manufacturer)
Type of action	Type 1C (micro-interruption)
Temperature for ball pressure test	75 °C

Relay module M-161

Description	Value
IP	IP20
Protection class	Class II (IP: degree of inaccessibility to active parts of the product and degree of water)
Maximum ambient RH (relative humidity)	85% at 20 °C
Power supply	230 V AC +10/-15%, 50 Hz or 60 Hz
CE marking	Yes
ERP	IV
Pollution degree	2
Software class	A
Operating temperature	0 °C to +50 °C
Storage temperature	-20 °C to +70 °C
Maximum consumption	2 W
Radio frequency	868.3 MHz +/- 300 KHz – ERP < 25 mW
Maximum power transmitted	12 dBm
Transmitter duty cycle	< 1%
Relay outputs	230 V AC +10/-15%, 250 V AC, 2,5 A maximum Micro distance, Normally Open (NO)
Power connection	1 m flexible cord, with Europlug (not in the UK), which is connected to the relay module
Connection terminals	Up to 4.0 mm² solid or 2.5 mm² flexible with ferrules
Low-voltage tests	EN 60730-1* and EN 60730-2-1**
EMC (electromagnetic compatibility requirements) tests	EN 60730-1 and EN 301-489-3
ERM (electromagnetic compatibility and radio spectrum matters) tests	EN 300 220-3

Antenna A-365

Description	Value
IP	IP20
Protection class	Class III (IP: degree of inaccessibility to active parts of the product and degree of water)
Maximum ambient RH (relative humidity)	85% at 20 °C
Power supply	From controller
Receiver class	2
Radio frequency	868.3 MHz +/- 300 KHz – ERP < 25 mW
Transmitter duty cycle	< 1%
Type of EMC environment	Residential
Construction of control	Electronic integrated control
Method of connection and disconnection	Type X (user can plug/unplug)
Temperature for ball pressure test	75 °C
Type of action	Type 1
Software class	Class A
Operating temperature	0 °C to +45 °C

*) EN 60730-1 Automatic electrical controls for household and similar use -- Part 1: General requirements

**) EN 60730-2-1 Automatic electrical controls for household and similar use -- Part 2-1: Particular requirements for electrical controls for electrical household appliances

***) EN 60730-2-9 Automatic electrical controls for household and similar use -- Part 2-9: Particular requirements for temperature sensing controls

Regulatory conformance

Wireless Uponor Smatrix products comply with these directives.

- CE
- UKCA

EU/UK Declaration of conformity

Hereby, Uponor declares that the radio equipment type Uponor Smatrix complies with the applicable Community harmonisation legislation.¹⁾



The full text of the EU/UK declaration of conformity is available at this internet address:

<https://www.uponor.com/doc/1071660>

1) Refer to the related Uponor product for the specified certification and compliance marks.

More product information and instructions are delivered with the Uponor product. They are available on the website www.uponor.com/services/download-centre and on the national Uponor websites in the local language.



10.2 Cable specifications

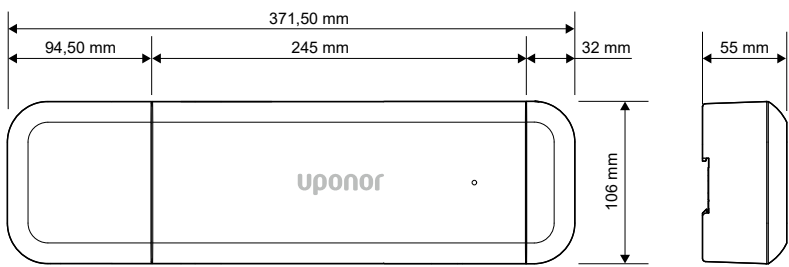
Cables	Standard cable length	Maximum cable length	Wire gauge
Cable from the room controller to the antenna	3 m	5 m	CAT.5e or CAT.6, RJ 45 connector
Cable from the room controller to the actuator	0.75 m	20 m	Room controller: 0.2 mm ² to 1.5 mm ²
External sensor cable to the thermostat	5 m	5 m	0.6 mm ²
Floor sensor cable to the thermostat	3 m	5 m	0.75 mm ²
Outdoor sensor cable to thermostat	–	5 m	Twisted pair
Cable from relay switch to room controller input (IN)	2 m	20 m	Room controller: Up to 4.0 mm ² solid or 1.5 mm ² flexible with ferrules Relay: 1.0 mm ² to 4.0 mm ²

10.3 Minimum distances

From antenna to	Value
Thermostats	40 cm
Communication module	100 cm

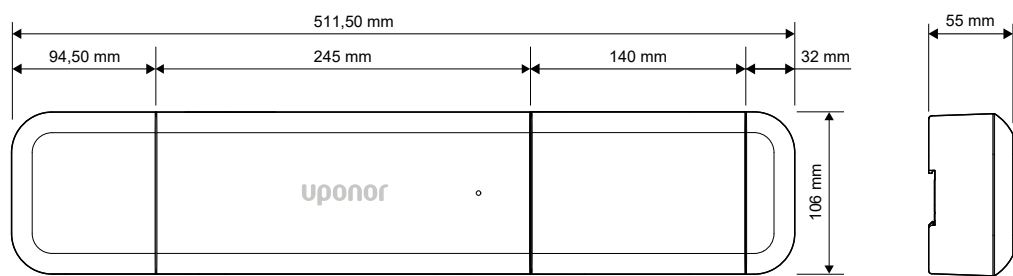
10.4 Dimensions

Room controller



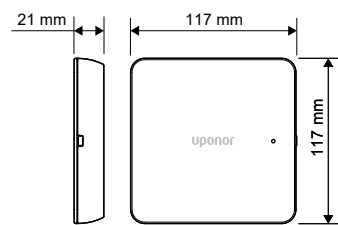
ZD0000121

Room controller with expansion module



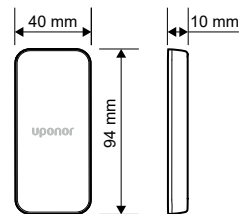
ZD0000124

Communication module



ZD0000123

Antenna



ZD0000122

Georg Fischer GmbH

Amsler-Laffon-Straße 9
8201 Schaffhausen, Switzerland

1186522 v1_09_2026
GF / SKA_CMB

Uponor reserves the right to change the product portfolio and the related documentation without prior notification, in line with its policy of continuous improvement and development.



www.uponor.com