USER MANUAL

OUMAN S203

Controller for three circuits

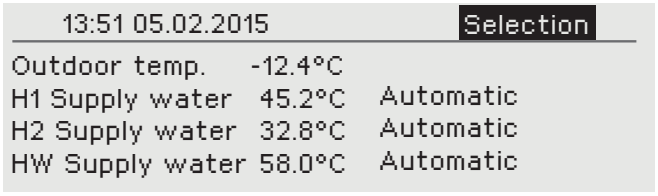
- control for 2 heating circuits
- 1 domestic hot water control

www.ouman.fi

This user manual consists of two parts. Issues that are intended for all users are presented in the first part of user manual. The issues related to service mode are at the end of it. In addition there are issues, which are only intended for persons in maintenance or who has in-depth knowledge of the control process. The user manual can also be downloaded from www.ouman.fi /en/document-bank/.

The S203 is a heating controller for 3 circuits (two heating circuits and one hot water circuit). Wiring and configurating selections define what is seen on the display screen.

Basic view



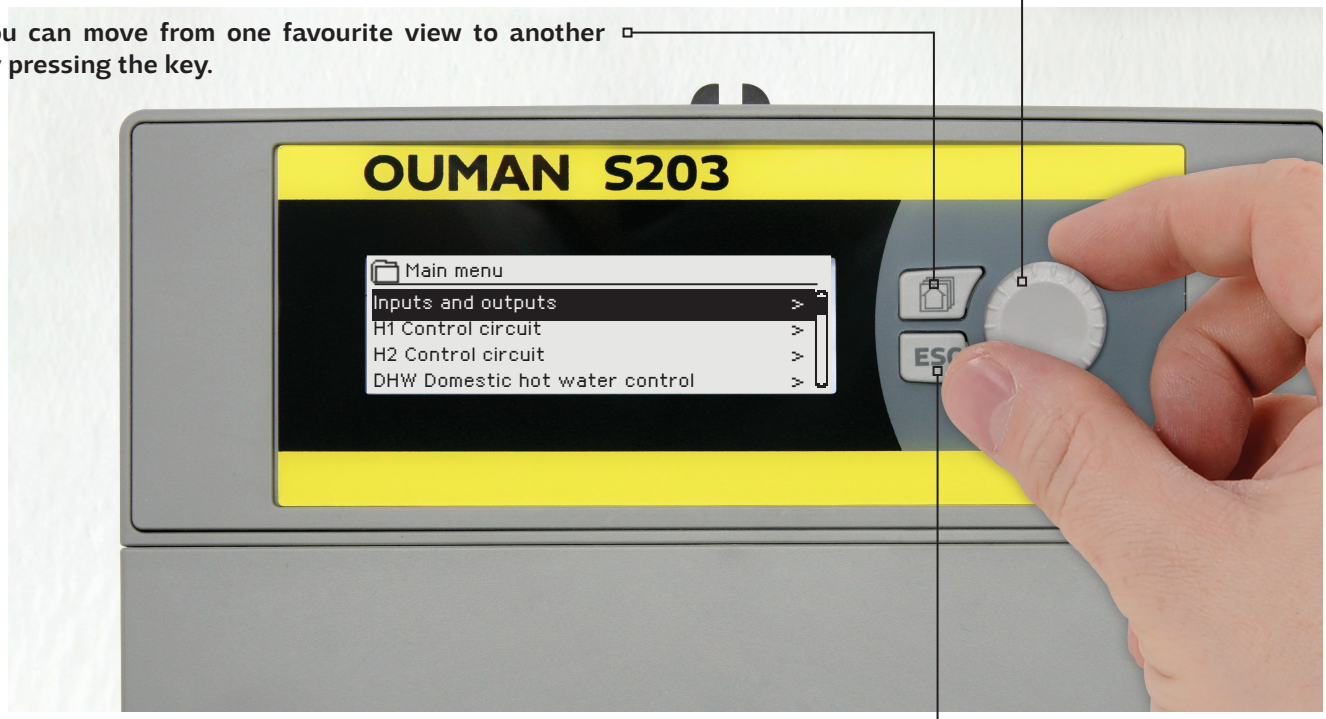
A maximum of five views can be displayed with the favourite views key. Default settings for favourite views show menus for each circuit, which include all default settings that can be changed by the user as well as information about measurements and the regulator's operation.

You can move from one favourite view to another by pressing the key.

Control knob and OK

Press the control knob to enter the menu and accept the changes.

Turn the control knob to navigate in the menu.



Cancel button

Holding the key down for an extended period of time returns the regulator to its basic mode. The display shows the basic view, the background light of the display dims and the keyboard locks if the locking function is in use.

Contents

1 Display menus 4
1.1 Basic view 4
1.2 Favourite views 5
1.3 Menu structure 6

2 Inputs and outputs 7

3 Regulation of supply water in heating circuits 9
3.1 Info 9
3.2 Heating curve 11
3.3 Setting values 13
3.4 Control mode 14
3.5 Time programs 15
3.5.1 Weekly schedule 16
3.5.2 Exception schedule 16
3.5.3 Special days 16
3.5.4 Temperature level according to time program 16

4 Domestic hot water control 17

5 Relay controls 18

6 Trends 19

7 Alarms 20
7.1 Routing schedule 22

8 System settings 23
8.1 Setting date, time and language 23
8.2 Text message (SMS) settings 24
8.3 Network settings 24
8.4 Display settings 28
8.5 Type information 28
8.6 Lock code 28

9 Connection instructions 29
9.1 Connections and configuration 32

10 Service settings 35

11 Restore settings and updates 41

12 Text messages Quick guide 42

Remote use 44

Optional accessories 45

Index 47

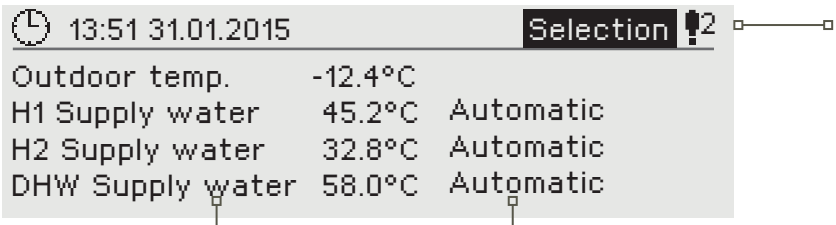
Technical information 48

1 Display menus

Different levels of display menus are used to make the S203 clear and easy to use. The basic view shows the most important information for monitoring operation of the unit. Favourite views that can be changed by users enable them to easily access desired menus. Setting values needed by the user can easily be found in the versatile menu structure.

1.1 Basic view

Central factors related to controlling heating are visible in the regulator's basic view. When the unit is idle state (keys have not been touched for a while) the display shows the basic view.



Alarm indication

- A blinking exclamation point means the unit has active alarms.
- The number indicates the number of active alarms.

Symbol indicates that alarms are disabled.

Temperature measurements enable quickly determining proper operation of the circuit.

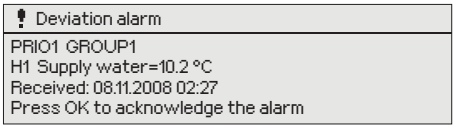
Circuit control. This shows whether the circuit's heating level has been continuously forced to a particularly level or if the controller is in manual mode.

Acknowledging alarms: Press OK and the alarm sound will me muted. If the reason for the alarm is still present, the exclamation point in the top right will continue to blink.

Alarm notice

Ouman S203 can generate alarms for several different reasons. In the event of an alarm, an alarm window pops up showing detailed alarm information and a beeping alarm signal goes on.

If there are several unacknowledged alarms, the latest activated alarm is always shown in the display. As soon as all active alarms have been acknowledged, the alarm window disappears and the alarm signal goes off.



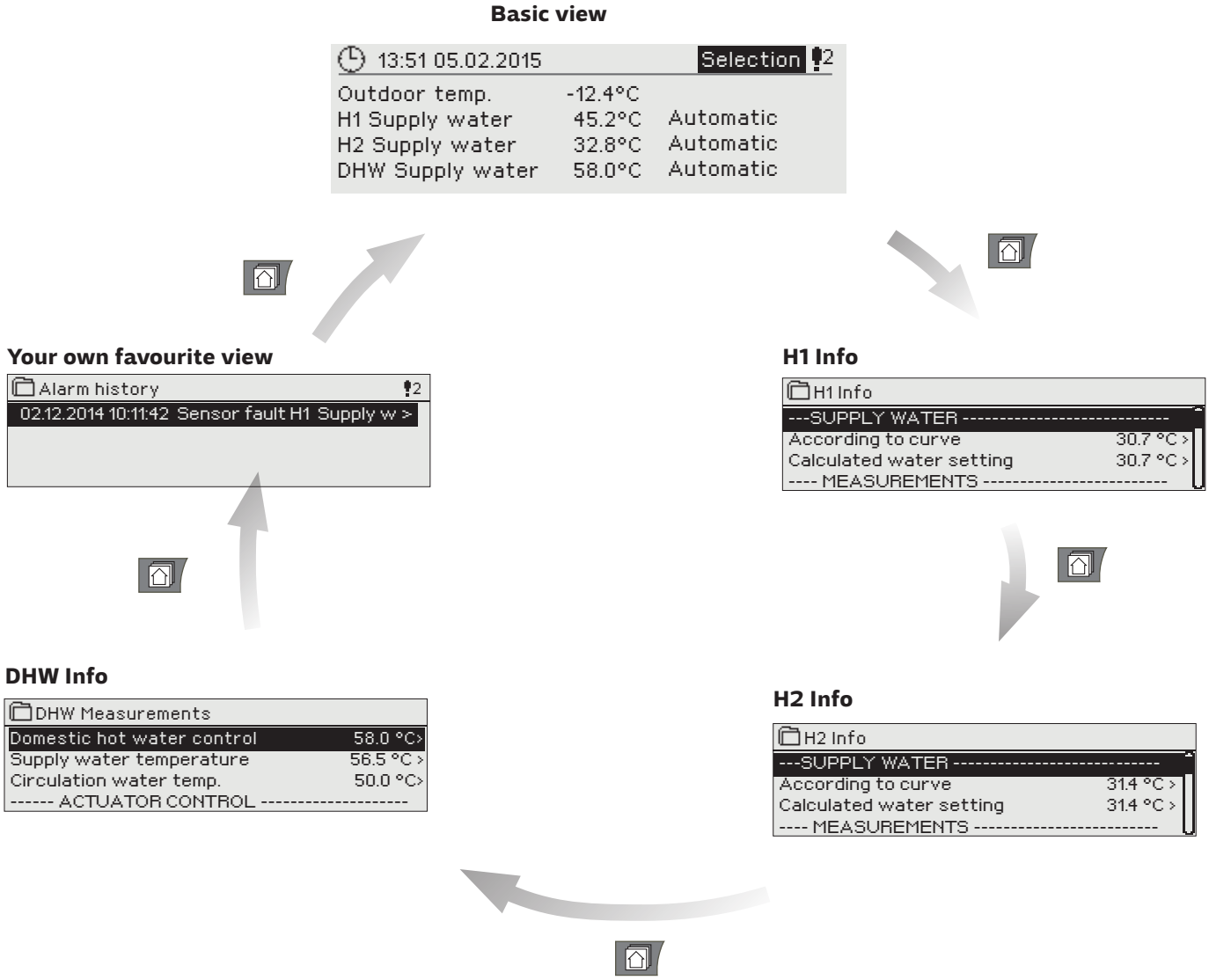
Alarm signal of all active alarms may also be muted by pressing Esc button. When you press Esc, the alarm signal stops and the last alarm windows disappear from the display.

You may look into the alarms later by going to "Alarms" > "Active alarms". If an alarm has not been acknowledged, an exclamation mark will appear in the beginning of the row.

When controller is configured, it's possible to disable alarms. When the alarms are disabled, the symbol will be displayed in the main menu. Alarms are enabled in the service mode → Alarm settings → Sensor fault alarms: Disabled/Enabled.

1.2 Favourite views

You can easily navigate from the basic view to the desired menu using the favourite view function. You can navigate from one favourite view to another by pressing the button. There can be a maximum of five of these views. H1, H2 and DHW Info views are set as fixed favourite views. In addition to these fixed views, user can define 2 more favourite views. You can return from favourite views to the basic view by pressing the ESC key until the basic view appears.

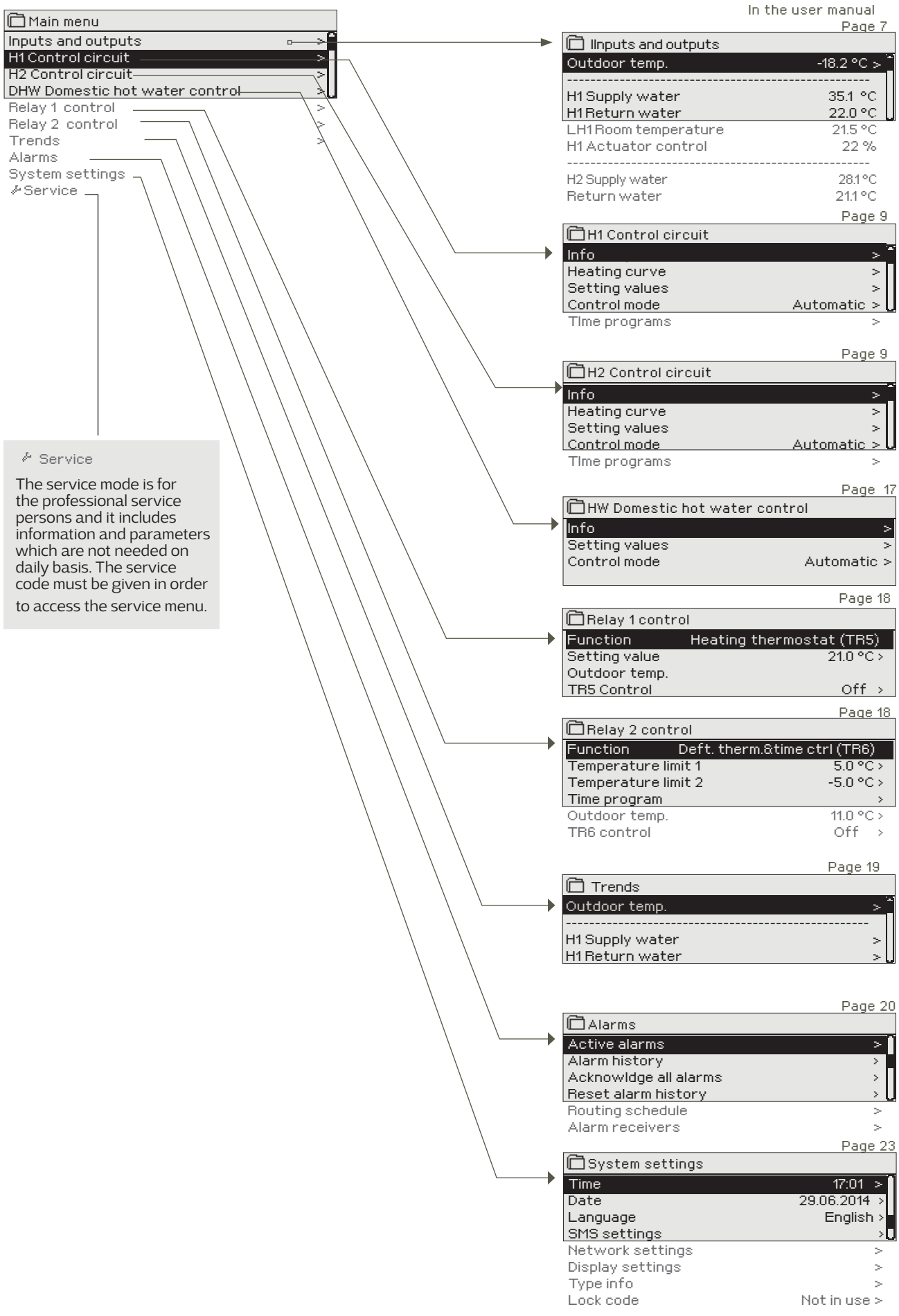


Setting a favourite view

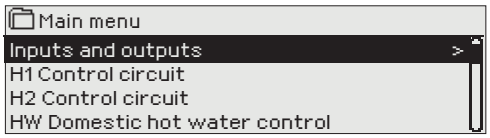
Navigate to the view you want to add to your favourite views. Hold down the key for an extended period of time until the "Save view in memory location" menu appears. Select the memory location where you want to add the favourite view and press OK. If you select a location where a favourite view has already been saved, the new favourite view will replace the existing one.

You can't set service menus as your favourite view. You can't set any favourite views as long as the service code is active. To deactivate the service code press Esc -button until the main menu is shown and background light of the display is dimmed.

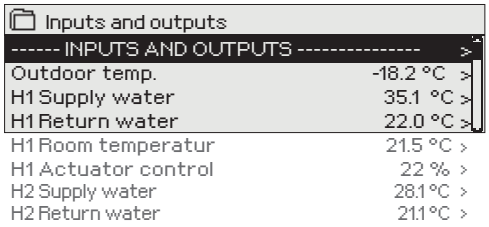
1.3 Menu structure



2 Inputs and outputs



Inputs and outputs



You can see the inputs and outputs of S203 which are configured in use. Configuration of the inputs and outputs is done in service menu (see p. 32-34).

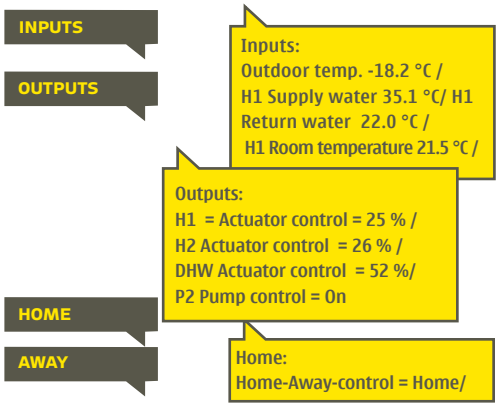
General measurements are temperature measurements witch can be used for serial different purposes. The default names of the measurements can be changed according to use case.
If the sensor is not connected or is defective, the measurement value shown will be -50°C (cross sensor) **or +130 °C** (sensor circuit shorted)**. If a measurement is in manual mode, a hand image is shown in the beginning of the line.**

1. Inputs and outputs are shown by the regulator in circuit-specific groups. First H1, then H2 and last DHW
2. Informational general measurements, which can be used for several purposes. Measurements can be named in the service menu. (Navigate: Service → Connections and configuration).

Measurement	Range	Measurement information
Home-Away-control	Home/Away	Home-Away mode. By pressing OK you can change the status of the Home/Away mode. The mode can also be changed by Home/Away-switch or by text message "Home" or "Away" when a GSM-modem (optional) is available.
------ INPUTS----------		
Outdoor temp.	-50...+130 °C	Measured current outdoor temperature.
1 Supply water	-50...+130 °C	Current temperature of the water entering the heating network.
Return water temperature	-50...+130 °C	Current temperature of the water returning form the heating network.
Room temperature	-50...+130 °C	Current room temperature.
DHW Supply water	-50...+130 °C	Current domestic hot water temperature.
DHW Circulation water temp.	-50...+130 °C	When there is no consumption, the measurement shows the temperature of DHW return water. During consumption, the measurement will show the mixed temperature of cold water and return water, in which case the measurement is used in so-called anticipation to improve the regulation result.
2 H1(2) DH Return	-50...+130 °C	Temperature of return water after the district heat exchanger or other freely named temperature measurement.
2 DH Supply water temp.	-50...+130 °C	Temperature of water coming from the district heating plant.
2 DH Return water temp.	-50...+130 °C	Temperature of water returning to the district heating plant.
M10 (M11) Switch alarm mode	Off/On	Information of the alarm contact.
General compensation	0...100%	General compensation input value.
Measurement M12 (M13)	-50...+130 °C	Freely nameable general measurement.
Pressure measurement	0.... 16 bar	Pressure of the heating network.
Pressure switch mode	Off/ On	When the pressure of the network lowers below the pressure alarm level, the state of the switch is changed to on and an alarm is activated.
P2 (3) Pump	Off/On	The state of the pump.
Previous day's average outdoor temp.		The value is used to control the autumn dry function and as an alternative to outdoor temperature measurement if the sensor malfunctions.
DI 1(2) Water volume		The measured amount of water consumption (cumulative value).
DI 1(2) Energy measurement		The measured amount of energy consumption (cumulative value).
Moisture sensor	wet/dry	Shows the state (wet/dry) of the moisture sensor.

Measurement	Range	Measurement information
------ OUTPUTS----------		
Actuator control	0....100 %	Current actuator 1 control.
Actuator control 2	0....100 %	Current actuator 2 control. If series driving is in use, actuator 1 will first open the valve and the controller will then start up actuator 2.
P2 (3) Pump control	Off/On	The control of the pump.
TR5 (6) control (nameable)	Off/On	Relay control mode at the moment. TR3 control is a relay control 1 and TR4 is the relay control 2.
Solenoid valve control	Open/ Closed	When the moisture sensor detects the moisture, the valve is driven to closed position. If there is a 3-point controlled actuator in H1 control circuit, the solenoid valve can't be connected to the controller.

Key word:



If a GSM modem is connected to the controller, you can read measurement information with a mobile phone. (If the device ID is in use, add the device ID in front of the key word, e.g., TC01 Inputs)

Send a message: Inputs

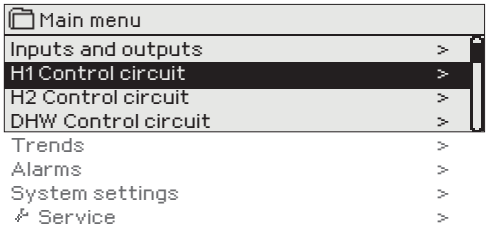
The controller sends the current measurement information to your mobile phone.

Same way send a message: Outputs

You can also change Home/Away mode.

Send a message: **Home.** The controller sends a response message, which shows that Home/Away -control is on Home-mode. Similarly you can send a message **Away.**

3 Regulation of supply water in heating circuits

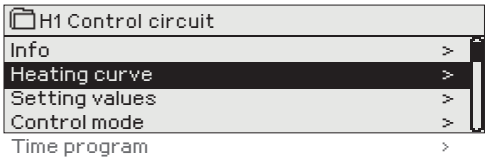


The S203 enables control of two different supply water circuits independently (H1 and H2).

Regulation of the temperature of supply water is controlled by the outside temperature. Use of room temperature measurements keeps room temperature more consistent.

3.1 Info

H1 (H2) Control circuit-> Info



The info shows which factors are affecting currently the supply water temperature control. The starting point is the supply water temperature according to the outdoor temperature (according to the heating curve).
If a room sensor is connected to the controller, you can check which factors currently determine the room temperature setting value at the time of inspection.
In addition the info menu contains the measurement temperature data affecting to supply water control and information of control of actuators.

Factors effecting the supply water temp.	Explanation
According to curve	Supply water temperature setting according to the curve at the current outdoor temperature.
Effect of parallel shift	Effect of parallel shift on the supply water temperature.
Effect of time program	Effect of weekly or exception schedule mode on the temperature of supply water. Near the end of the temperature reduction time, the pre-increase operation can increase the temperature of supply water.
Force control effect	Supply water has been forced permanently to the desired temperature reduction level (see Control mode selection).
Away -control effect	"Away" control for reduction of supply water temperature. The trigger can come from the Home/Away switch, the controller or be sent as a text message (see 43).
Outdoor temp delay effect	The effect of the outdoor temperature delay on the supply water temperature.
Floor heat. anticipate	Effect of anticipation of floor heating on the temperature of supply water.
Effect of autumn drying	Effect of automatic autumn drying on the supply water temperature.
Return water compensation	Increase in supply water temperature due to return water compensation.
Effect of room compensation	Effect of room compensation on the supply water.
Room comp. time adjustment	Additional correction for more precise room compensation based on realised regulation (effect of I-regulation).
General compensation effect	General compensation can be based for example on wind, solar or pressure measurements.
Bus compensation effect	The amount of required compensation is determined by an external device to the S203, for example from bus compensation to weather compensation.
Min limit effect	Supply water temperature increase due to the minimum limit.
Max limit effect	Supply water temperature drop due to the maximum limit.
Calculated supply water setting	**Current supply water temperature determined by the controller.**
Controller is stopped for summer	When the regulator is in summer function mode, the supply water information says "Controller is stopped for summer."
Controller is in manual control	Control circuit mode is set to " Manual control".

Factor effecting the room temperature	Explanation
----- ROOM TEMPERATURE -----	
Room temperature setting	Room temperature setting set by the user.
Time program effect on room temp.	Room temperature drop by weekly or exception schedule.
Away -control effect	Home/Away mode for reduction of room temperature. The trigger can come from the controller (see Inputs and outputs→ Home-Away-control), from the Home/Away switch or be sent as a text message.
Force control effect	Room temperature has been forced permanently to the desired reduction in room temperature (see Control mode selection, p.14).
Effect of autumn drying	Effect of automatic autumn drying on room temperature.
Calculated room temperature	Current room temperature setting determined by the controller.
----- MEASUREMENTS -----	
Supply water temperature	Current measured supply water temperature.
Outdoor temp.	The measured outdoor temperature. Outdoor temperature data is displayed if the delayed outdoor temperature is not used in supply water control.
Delayed outdoor temperature	If the heating mode is set to radiator heating, the delayed temperature measurement can be used in supply water control. Typically 2 hours delay time is used (time can be set in service menu). In supply water control the controller uses delayed measurement as an outdoor temperature.
Anticipated outdoor temperature	If the heating mode is set to floor heating, the anticipated temperature measurement can be used in supply water control. Typically 2 hours anticipation time is used (time can be set in service menu). In supply water control the controller takes into account the outdoor temperature change rate.
Room temperature	The measured room temperature or room temperature from the bus. The measurement is not necessarily taken into use in all control processes.
Delayed room temperature	The floating average of room temperature. The controller uses this value, when calculating the room compensation demand (the delay time of room temperature measurement is adjustable, default 0.5 hours).
Return water temperature	Presents measured return water temperature.
----- ACTUATOR CONTROL -----	
Actuator control	Current actuator control.
Actuator control 1 (2) Actuators control	Current actuator 2 control. If serial-driving is in use, actuator 1 will first open the valve and the controller will then start up actuator 2. 50 % means that the valve 1 is totally open and the valve 2 is totally closed. 100% means that both valves are open.

Key words:

H1 INFO

H2 INFO

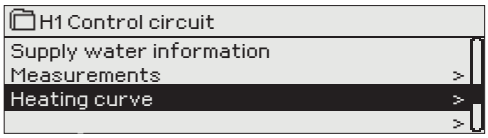
H1 info:
--- H1 SUPPLY WATER----------
According to curve 35.1 °C/
Away -control effect -6.0 °C/Calculated supply water
setting = 29.1 °C.
--- MEASUREMENTS ----------
Supply water = 35.2 °C
Outdoor temp.= -10.7 °C
--- ACTUATOR CONTROL----------
Actuartor control = 20 %

Send a message: H1 Info.

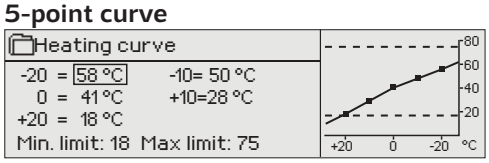
The controller sends a supply water info from the H1 heating circuit to your mobile phone that shows current supply water temperature at the present and the factors effecting supply water control.
The message also includes the measurements which are affecting the supply water control and the actuator control.
The message cannot be changed or sent back to the controller.

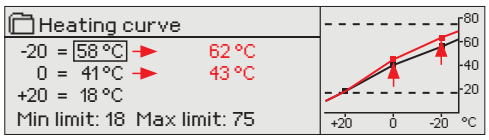
3.2 Heating curve

H1 (H2) Control circuit-> Heating curve

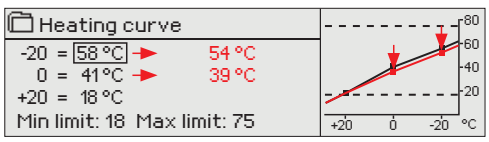


The supply water temperature for different outdoor temperatures is set with heating curve. With S203 the heating curve can be adjusted exactly to meet the needs of the facility from either three or five temperature points.
A radiator heating mode and 5 point curve is the factory setting.

Setting	Factory setting	Explanation
3-point curve 		**With 3-point curve you can change supply water temperatures with the outdoor temperature values -20°C, 0°C and +20°C.**
5-point curve 		**With 5-point curve you can change the curve to the outdoor temperature values -20°C and +20°C as well as to three other outdoor temperatures between -20°C and +20°C. To change the outdoor temperature point, press OK for a long period of time.**
Min limit	18 °C	**Minimum allowed supply water temperature. A higher minimum temperature is used in moist rooms and tiled rooms than in, e.g., rooms having a parquet floor to ensure a comfortable temperature and removal of moisture in the summer.**
Max limit	75 °C	**Maximum allowed supply water temperature. The maximum limit prevents the temperature in the heating circuit from rising too high, preventing damage to pipes and surface materials. If, e.g., the heating curve setting is incorrect, the maximum limit prevents excessively hot water from entering the network.**



If room temperature drops, make the curve steeper.
(Set higher values for supply water temperature at the outdoor temperatures -20 °C and 0 °C).



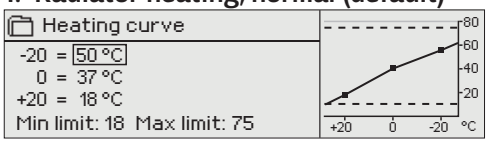
If room temperature rises, make the curve less steep.
(Set lower values for supply water temperature at the outdoor temperatures -20 °C and 0 °C).

Note! Changes influence room temperature slowly. Wait at least 24 hours before readjusting the settings. Especially in buildings with foor heating, the delays in room temperature changes are quite long. The supply water minimum limit setting ensures that pipes will not freeze. The maximum limit setting ensures that excessively hot water that could damage structures (e.g. parquet in case of foor heating) does not enter the heating system.

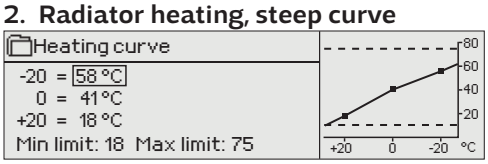
Typical heating curve settings:

3-point curve

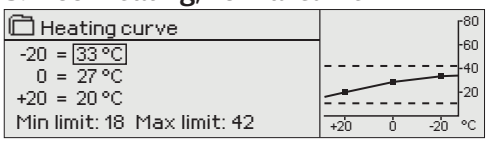
1. Radiator heating, normal (default)



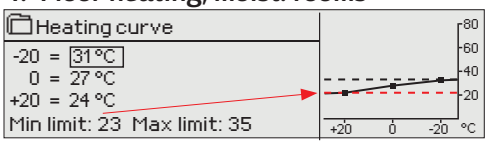
2. Radiator heating, steep curve



3. Floor heating, normal curve

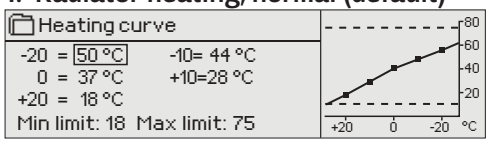


4. Floor heating, moist. rooms

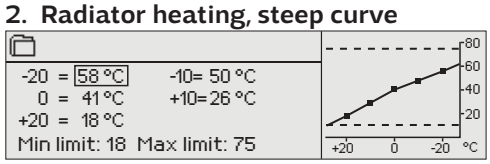


5-point curve

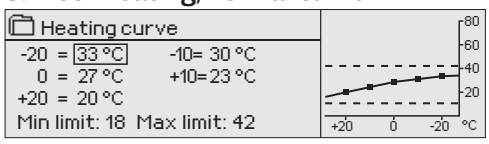
1. Radiator heating, normal (default)



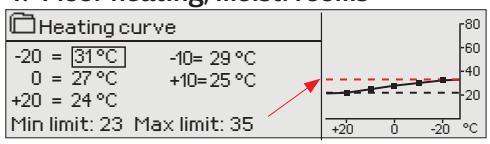
2. Radiator heating, steep curve



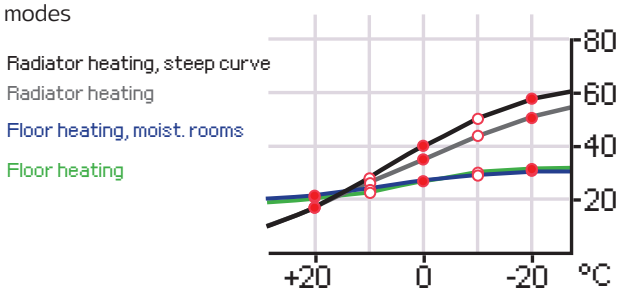
3. Floor heating, normal curve



4. Floor heating, moist. rooms



Settings of the heating curves of different heating modes



The preseted heating curves are typical average curves for the heating mode in question. The curve may need to be adjusted to suit your building. The setting should be done during the cold period and if the room compensation is in use, it should be switched off during the setting. The curve is appropriate when the room temperature is maintained constant although the outdoor temperature changes.

H1 Heating curve

H1 Heating curve
Suppl.w. (-20) = 50°C/
Outd.t. 2 = -10°C/
Suppl.w. 2 = 44°C/
Outd.t. 3 = 0 °C/
Suppl.w. 3 = 37°C/
Outd.t. 4 = 10°C/
Suppl.w. 4 = 28°C/
. (+20) = 18 °C
m limit = 18°C/
m limit = 42°C/

H1 Heating curve
Suppl.w. (-20) = 54°C/
Outd.t. 2 = -10°C/
Suppl.w. 2 = 47°C/
Outd.t. 3 = 0 °C/
Suppl.w. 3 = 39°C/
Outd.t. 4 = 10°C/
Suppl.w. 4 = 23°C/
Suppl.w. (+20) = 20 °C
Minimum limit = 18°C/
Maximum limit = 42°C/

H2 Heating curve

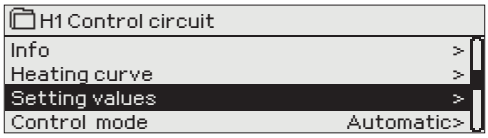
Send message: H1 Heating curve

The controller sends a message showing curve settings.

You can change the settings by replacing the setting value with a new one and sending a message back to the controller.

S203 will make the requested changes and send a new message showing the changes made.

3.3 Setting values



The regulator has two types of setting values: those that are always visible and those than can only be changed using a service code (see page 35).

Changing a setting:

- Choose the desired setting by turning the control knob.
- Press OK to go to the view where editing is possible. Change the setting.
- Press OK to accept the change.
- If you want to exit edit mode without making any changes, press ESC.

H1 (H2) Control circuit-> Setting values

Both circuits have the same circuit-specific setting values.

Setting	Factory setting	Range	Explanation
Room temperature setting	21.5	5... 50 °C	Basic room temperature setting for the controller set by the user. This setting value is not visible unless room compensation is in use. The room compensation can be taken in use from the "Room temperature settings" menu.
Summer function outdoor t. limit	19.0	10 ... 35 °C	Summer function outdoor temperature limit. When the measured or forecast outdoor temperature exceeds the outdoor temperature limit of the summer function, the valve will be closed and the circulation water pump will stop as selected. The summer function is switched off, when the temperature drops 0.5 °C under summer function outdoor temperature limit. In this case, the pump is switched on and the valve returns back to control mode.
Pump summer stop	In use	In use/ Not in use	If the controller is connected to control the pump, the pump can be stopped when the summer function is active.
Valve summer close	In use	In use/ Not in use	The setting value is used to select whether or not the valve is closed when the summer function is in use.
Autumn dry effect on supply water Autumn dry effect on room temp.	4.0 1.0	0... 25 °C 0.0... 1.5 °C	The setting value defines how much the autumn dry function increases supply water temperature. If room temperature regulation is in use, the user sets how much the room temperature is increased.
Room compensation settings			
Room compensation	In use	In use/ Not in use	With room compensation it's defined whether room temperature affects regulation of supply water. If the measured room temperature differs from its setting value, room compensation corrects the temperature of the supply water.
Room compensation ratio	4.0	0...7	Coefficient which is used in applying the difference between room measurement and the room setting value to the supply water setting value. For example, if room temperature in radiator heating is one degree below the setting value, supply water is raised by four degrees.
Temperature drops			
Temperature drop	3.0	0... 40 °C	Temperature drop of supply water, which can start due to time programs or a Home/Away text message command or when selecting continuous temperature drop as the circuit's control mode. If room temperature measurement has been taken into use, the temperature drop is given directly as a room temperature drop.
Home/Away control	Not in use	In use/ Not in use	The Home/Away control changes the temperature levels. If transmitter for general compensation is connected to controller, it's not possibe to connect Home/Away switch. In this case Home/Away mode can be switched with SMS or from "Inputs and Outputs" menu.

Key words:

H1 Setting values

H2 Setting values

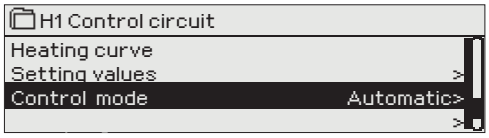
H1 Setting values:
Room temperature = 21.5 °C/
Temperature drop = 3.0 °C/

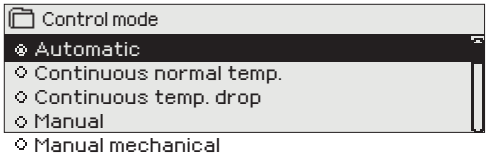
Send a message: H1 Settings.

The controller sends settings to your mobile phone. Editing the setting values: write the new setting in place of the old setting and send a message back to the controller. The controller sends back the setting as a confirmation.

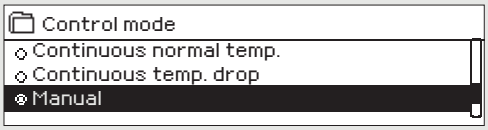
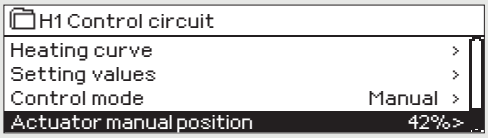
3.4 Control mode

H1 (H2) Control circuit-> Control mode





Automatic control is the mode that is used normally. You may change automatic control to manual control here, and drive the valve to the desired position. You can also force control to the desired temperature level. A continuous mode command bypasses possible scheduling programmes.

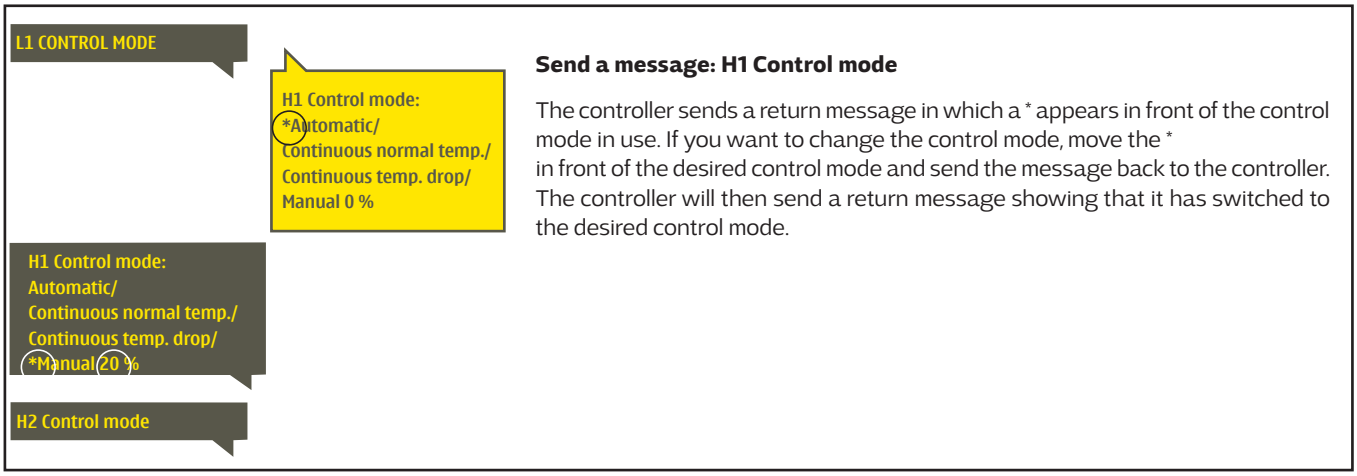
Control mode	Explanation
Automatic	S203 controls the supply water temperature automatically according to the heating demand and time programs.
Continuous normal temp.	Forced normal heating. All time programs are by-passed.
Continuous temp. drop	Forced temperature drop. All time programs are by-passed.
Manual   	The controller runs the valve to manual position. The controller has the latest manual position in the memory. You can change the actuator manual position by changing the setting value. In manual mode the valve's position is changed with the setting value "H1 (H2) Manual mode position."

Manual mechanical

Mechanical manual control option is taken into use in the controller. Connections and configuration → H1 (H2) Actuator control → Manual mech. control "Available".

If you want the voltage controlled actuators to be controlled by manual mechanical control, H1 actuator power supply must come from strip connector 55 and H2 actuator power supply from strip connector 59. The controller switches off the power supply, when the control mode is manual mechanical control.

The valve position is set in the actuator when using mechanical manual control.

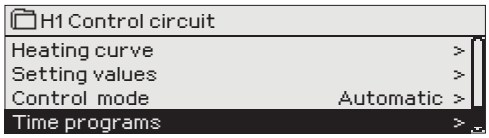


Send a message: H1 Control mode

The controller sends a return message in which a * appears in front of the control mode in use. If you want to change the control mode, move the * in front of the desired control mode and send the message back to the controller. The controller will then send a return message showing that it has switched to the desired control mode.

3.5 Time programs

H1 (H2) Control circuit-> Time programs

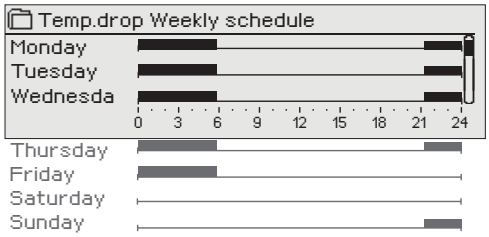


Weekly schedules, special days and exception schedules can be added to heating regulation in the S203. You can lower temperatures desired times by using these time programs.

3.5.1 Weekly schedule

H1 (H2) Control circuit-> Time programs ->Temp. drop Weekly schedule

Graph view

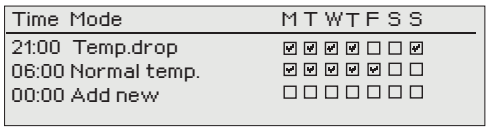


Weekly programmes have a general graph view as well as a edit view showing the exact time when the new state will be executed. In the graph view, exceptions to normal temperature of control are shown as bars.

Browsing a weekly schedule:

Turn the control knob to browse a weekly schedule. If you wish to see the exact switch times or you wish to change, delete or add switch times, press OK at any weekday.

Editing view

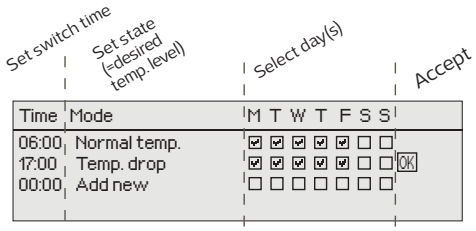


In this example, you can see a weekly temperature drop program. Temperature drop is on from 10 pm to 6 am from Monday to Friday.

Adding a new switch time:

1. Press OK at the "Add new" row.
2. You can select the value you want to change using the control knob. By pressing OK you can change the value. Press ESC to return without changing the value.
3. Set the switch time (set hours and minutes separately). Press OK to accept.
4. Press OK and then turn the control knob to set the temperature level. Press OK to accept.
5. Press OK at each weekday you wish to choose.
6. Press OK at the end of the row to accept the new time program. Note! Remember also to define when the control returns to automatic (=normal). Press Esc to exit.

Editing view



Editing a weekly schedule:

1. Turn the control knob to move to the value you wish to change and press OK.
2. Turn the control knob to change the time and temperature. Press OK to accept.
3. Press the OK button to change the day of the week.
4. Press Esc to exit.

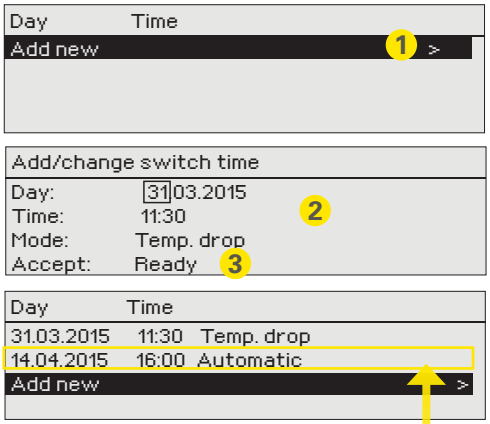
Deleting a switch time:

1. Turn the control knob to move to the switch time you wish to delete and press OK.
2. Press OK at temperature level and select "Delete switch time".
3. Press OK at the end of the row.

Tip: Use the pre increase function. With the pre increase function the controller automatically increases supply water temperature at the end of the reduction phase. Normal temperature has already been reached when the heating mode changes to normal heat.

3.5.2 Exception schedule

H1 (H2) Control circuit-> Time programs ->Temp. drop Exception schedule



The picture shows an exception schedule. Heat reduction is on from 31 March 2015, 11:30 to 14 April 2015, 16:00

NOTE! Remember to also set the end time for the exception schedule! When you set the date and time, the mode will change to "Automatic". In this case, the control returns back to the weekly schedule.

You can easily make changes that differ from normal routine use by using the exception schedule. The date, time and mode to which heating will be changed in the period in question are entered in the exception schedule. To switch from an exception schedule to weekly schedule mode, select automatic mode.

Adding a new switch time:

1. Navigate to "Exception schedule" and press OK. The display will read "Add new." Press OK
2. Press OK and set the start date for the program, then the time and mode. You can select from the following:
   - one day schedule from the weekly schedule (Monday - Sunday)
   - a special day from the special day program (SD1 - SD7)
   - one of the following heating levels: "temperature drop," or "normal"
   - "automatic."
3. Accept the exception schedule you created by pressing "Ready."

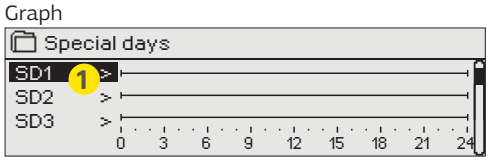
Deleting a switch time from an exception schedule:

1. Navigate to the row with the activation time you want to delete.
2. Select "Delete switch time."
3. Accept the deletion by pressing "Ready."

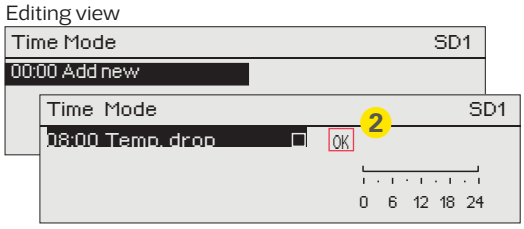
3.5.3 Special days

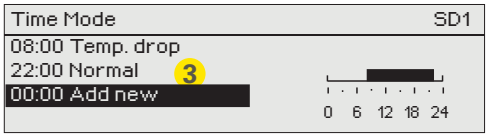
H1 (H2) Control circuit-> Time programs ->Temp. drop Special days

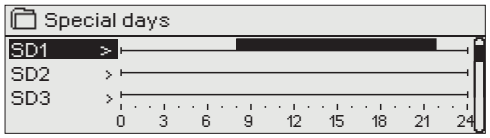
Graph



Editing view







You can enter special day programs as exceptions to normal weekly schedule. You can designate a maximum of 7 special day programs (SD). A special day program is typically created for each holiday. When the special day program will be applied it is set in the exception schedule.
Adding a new switch time:

1. Navigate to "Special days" and press OK. Select an unused special day and press OK.
2. Place the cursor on "Add new" and press OK. Set the time for the program (hours and minutes are set separately). Select the mode to be switched to at the time specified. Accept the program by pressing OK when the cursor is on OK.
3. Navigate to the "Add new" row. Set the time when the mode will change from temperature drop mode back to normal temperature. Accept the program by pressing OK. You can set several different periods of temperature drop for the same special day.

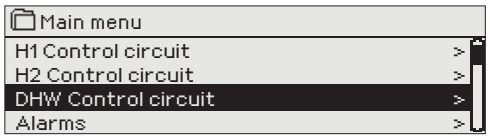
Deleting a switch time from special day program:

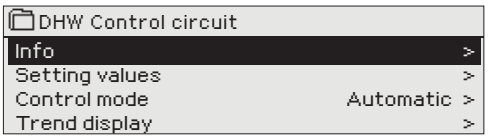
1. Navigate to the row with the switch time you want to delete.
2. Select "Delete switch time."
3. Accept the deletion by pressing "Ready."

3.5.4 Temp. level according to time program

Controller shows, what is the current heat level according to the time program.

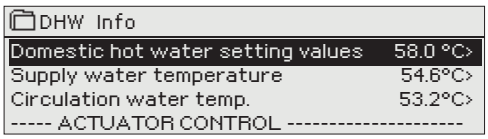
4 Domestic hot water control





The S203 keeps the temperature of domestic hot water at the designated value. Because of the danger of bacteria, it is recommended that the domestic hot water temperature is not permanently set below +55 °C.

Info

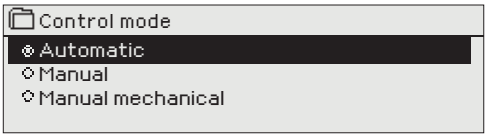
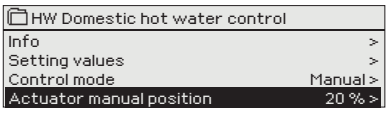


Info-menu shows the domestic hot water settings, the measurements and actuator control related to the domestic hot water.

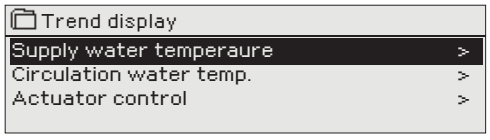
Setting values

Setting name	Factory setting	Range	Explanation
Domestic hot water setting value	58.0 °C	20...90 °C	Domestic hot water temperature setting.
Anticipation control	In use	In use/ Not in use	Anticipation speeds up regulation when water consumption changes by using measurement information from the circulation water sensor. The controller automatically starts to use anticipation when the sensor is connected. If desired, the anticipation can be taken out of use.

Control mode

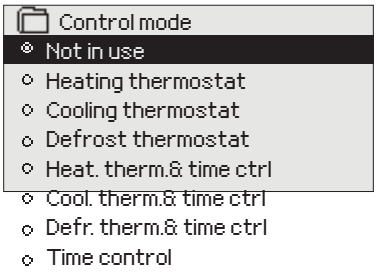
Control mode	Explanation
	**Automatic mode is normally used in regulating domestic hot water. Here you can switch from automatic to manual mode and move the vent into the desired position. You can use manual mode for example when a sensor malfunctions.**
Automatic	S203 maintains the temperature of domestic hot water at the setting value set by the user.
Manual	The desired position of the valve is set with the setting value "Actuator Manual position." 
Manual mechanical	Manual mechanical control option must be taken into use. (Connections and configuration → DHW Actuator control → Manual mech. control "Available"). If you want the voltage controlled actuators to be controlled by manual mechanical control, DHW actuator power supply must come from strip connector 58. The controller switches off the power supply, when the control mode is set manual mechanical control. The valve position is set in the actuator when using mechanical manual control

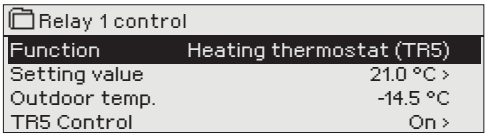
Trend display

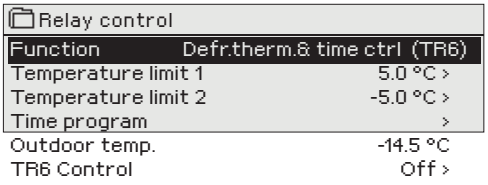


You can read the real-time trends of the temperatures of supply water and circulation water. Also the real-time trend of actuator control in domestic hot water circuit can be read. The sampling interval is 1 s.

5 Relay control







S203 has two relays, which can be used for thermostat functions. The relay controls can be taken into use in service menu (see p.34).

The relays are time- and/or temperature controlled. You can select, if the relay control 1 is outdoor temperature controlled or if it is controlled according to temperature measurement 10. The relay control 2 can be either outdoor temperature controlled or controlled according to the measurement 11.

Heating thermostat: When the temperature drops to the setting value, the relay goes to on position. The relay goes to off-position when the temperature has risen equal to hysteresis amount (default 1.0 °C) above the setting value. If you want to edit the hysteresis setting value, navigate to the "Maintenance" → "Connections and configuration".

Cooling thermostat: When the temperature rises to the setting value, the relay goes to on position. When the temperature drops equal to the hysteresis amount (default 1.0 °C) below the setting value, the relay goes to off.

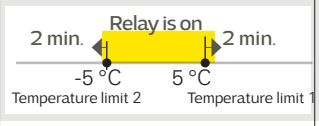
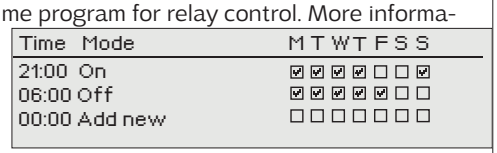
Defrosting thermostat: When the temperature is between the values Temperature limit 1 and 2, the relay is on. The relay is off, when the measured temperature is outside the area between Temperature limits 1 and 2 for 2 minutes. The range of both temperature limits is -30...+80 °C.

Heating thermostat and time control: The relay is controlled according to the time program and the temperature. The relay is on when the temperature is below the setting value and the time program allows the heating to go on. After the temperature has risen equal to the hysteresis amount above (default 1.0 °C) the setting value, the relay is off.

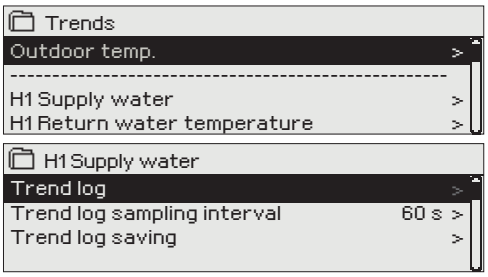
Cooling thermostat and time control: The relay is controlled according to the time program and the temperature. The relay is on, when the temperature rises to the setting value and the time program allows the cooling to go on. After the temperature has dropped equal to the hysteresis amount (default 1.0 °C) below the setting value, the relay is off.

Defrost thermostat and time control: The relay is controlled according to the time program and the temperature. The relay is on, when the temperature is between the Temperature limits 1 and 2 and the time program allows the defrosting to go on. The relay is off, when the measured temperature is outside the area between the Temperature limits 1 and 2 for 2 minutes. The range of both temperature limits is -30...+80 °C.

Relay control

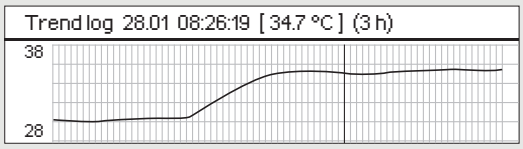
Setting	Factory setting	Range	Explanation
Setting	21.0	-50.0...100.0	The relay 1 control is based on outdoor temperature or according to measurement 10. Relay 2 is controlled either according to the outdoor temperature or the measurement 11. These selections are done in controller configuration.
TR5 control/TR6 control	automatic	automatic/ manual	The active control mode is shown in the display. You can change the control mode from automatic to manual. A hand image appears to the display on the line TR5(6) if the control mode is manual.
Temperature limit 1 Temperature limit2 	5.0 -5.0	-30...80 °C	**The setting values of defrosting:** Defrosting is on, when the temperature controlling the relay is between the Temperature limits 1 and 2 (and the time program allows the defrosting). Defrosting is off, when the measured temperature is outside the temperature area between temp. 1 and 2 for 2 minutes.
Time program	-	On/Off	You can create a time program for relay control. More information see p. 15. 

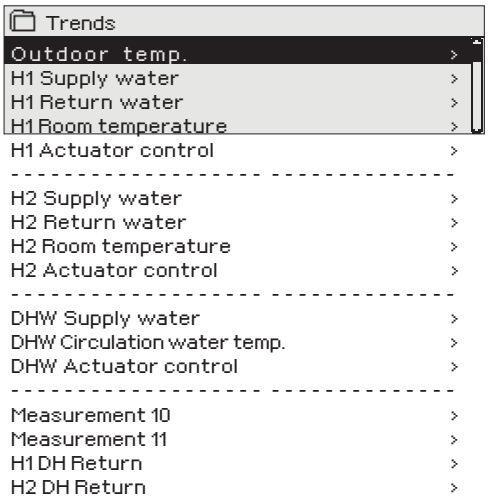
6 Trends



S203 saves automatically trend data from measurements.

When you press OK on the measurement in Trend menu you can review the trend log, change the sampling interval or save the trend log to the micro SD card.

Setting	Factory setting	Range	Information about setting
Trend log			The trend log is not shown in real time, i.e. the view is not updated in real time. The interval for trend-log monitoring can be changed and the log can be saved to a micro SD card. 
Trend log sampling interval	60 s	1 ... 600	A different sampling interval can be set for different measurements. The memory can store 10,000 measurement samples. For example, if the sample interval is 60 seconds, the trend buffer will contain measurement information for one week. If the sampling interval is 1 seconds the buffer will contain measurement history approximately 2.7 hours.
Trend log saving			The trend log can be saved to a micro SD card. A csv file is created on the micro SD card, which is named according to the measured point. For example, the trend log for outdoor temperature is saved in a file named UI1.csv.

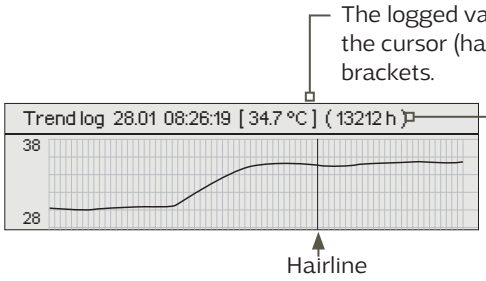


Sampling interval

Measurement	Factory setting	Range
Outdoor temperature	60 s	1 ... 600 s
H1/ H2 Supply water	60 s	1 ... 600 s
H1/ H2 Return water	60 s	1 ... 600 s
H1/ H2 Room temperature	60 s	1 ... 600 s
DHW Supply water	10 s	1 ... 600 s
DHW Circulation water	10 s	1 ... 600 s
H1 Actuator control	60 s	1 ... 600 s
H2 Actuator control	60 s	1 ... 600 s
DHW Actuator control	10 s	1 ... 600 s

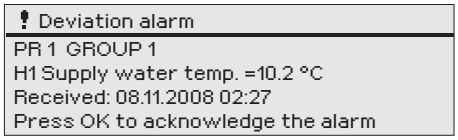
You can define the desired sampling interval for each measurement separetly.

You can browse the trend log by turning the control knob.



7 Alarms

Acknowledging alarms: press OK and the alarm sound will mute. If the reason for the alarm is still present, the exclamation point in the top right will continue to blink.



An alarm can activate in for a number of different reasons. Information about the activated alarm is shown on the display. Also a continous alarm signal is given.

If the controller has a number of unacknowledged alarms and you acknowledge the last one, the one before it will appear on the display. When all active alarms have been acknowledged, the alarm window closes and the alarm sound goes off.

Alarm signal can be muted by pressing Esc key. It shoud be noted that the alarms remain unacknowledged.

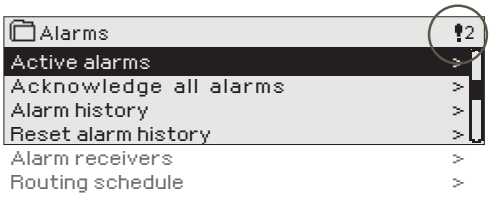
You can find both active alarms and Alarm history in the Alarm menu.

If the sensor is defective, the regulator's display will show the measurement reading -51 °C (cable of the sensor is broken) **or 131 °C** (sensor short circuited)**.**

The disabling of alarms can be activated when configuring the controller. If the alarms are disabled, the next symbol is shown in the main display.
The disabling is taken out of use in service mode → Alarm settings - > Alarms: Disabled/ Enabled.

			Sensor error alarm (SE)		Delay areas: 0...600 s			
Row connection	Sensor type	Sensor	Alarm text	Operation when a sensor is defective	Entry delay	Exit delay	Alarm group	Alarm priority
1	NTC-10	TMO	Sensor fault Outdoor temperature	The control system uses the value of the outdoortemp. at -5 ° C.	20 s	10 s	2	2
2	NTC-10	TMW/TMS	Sensor fault H1 Supply water	Valve remains in the position it was in before the sensor defect.	20 s	10 s	1	1
3	NTC-10	TMW/TMS	Sensor fault H1 Return water	Return water control is disabled.	20 s	10 s	2	2
4	NTC-10	TMR	Sensor fault UI 4	Room control is taken out of use.	10 s	10 s	2	2
	NTC-10	TMW/TMS	Sensor fault UI 4	Informational measurement (H1 DH Return)	10 s	10 s	2	2
5	NTC-10	TMW/TMS	Sensor fault H2 Supply water	Valve remains in the position it was in before the sensor defect. Return water regulation is taken out of use.	20 s	10 s	1	1
6	NTC-10	TMW/TMS	Sensor fault H2 Return water	Room control is disabled.	20 s	10 s	2	2
7	NTC-10	TMR	Sensor fault UI 7	Informational meas. (H2 DH Return)	10 s	10 s	2	2
	NTC-10	TMW/TMS	Sensor fault UI 7	Valve is closed.	10 s	10 s	2	2
8	NTC-10	TMW/TMS	Sensor fault HW Supply water	Does not affect regulation.	20 s	10 s	1	1
9	NTC-10	TMW/TMS	Sensor error HW circulation water	Informational measurement (DH Supply)	20 s	10 s	2	2
10	NTC-10	TMW/TMS	Sensor fault DH Supply water	Informational measurement (DH Return)	10 s	10 s	2	2
11	NTC-10	TMW/TMS	Sensor fault DH Return water		10 s	10 s	2	2

Active alarms



In the alarm menu of S203 device, you can check the active alarms and what alarms have been active. The number of active alarms will be shown in the right corner of the main view.

Every active alarm is shown in a separate row, where you can see when the alarm has become active. Press OK to get more information about the alarm.

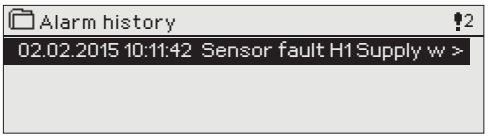
- **An exclamation mark in front of the date shows that the alarm has not been acknowledged.**
- **The reason for the alarm is shown in the heading.**
- **You can also see, what is the alarm priority (1 ...5) and what alarm group it belongs to (Group 1 has urgent alarms, group 2 malfunction alarms and group 3 service alarms).**
- **Source of the alarm.**
- **Time the alarm was received**

ACTIVE ALARMS	**Send message: Active alarms** The regulator sends a message showing all active alarms. Message is informational.

Acknowledge all alarms

You can acknowledge all alarms by pressing OK.

Alarm history



The reason, source and inactivation time (02.02.2015 10:11:42) is shown for every alarm in alarm history. The last 10 alarms can be seen in inactive alarms.

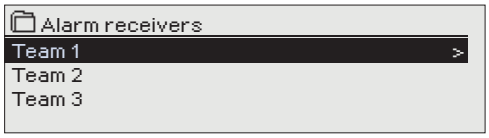
ALARM HISTORY	**Send message: Alarm history** The controller sends a message showing the last 10 alarms. Message is informational.

Reset alarm history

S203 requests confirmation before deleting alarm history.

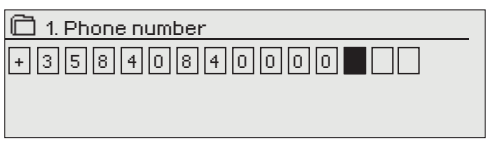
Alarm receivers

Alarm receivers



A GSM modem can be connected to the S203 for alarm sending a text message to the alarm team. The alarms are sent to correct team according to alarm routing schedule. When alarm is activated, the controller sends alarm messages automatically to phone numbers defined in team. If the alarm isn't acknowledged within 5 minutes, the alarm message will be re-sent to same recipients and also to backup number. The S203 send max. 100 within one day.

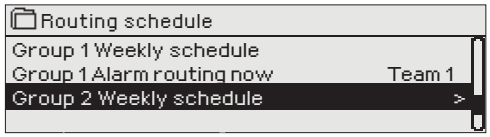
Entering the telephone numbers:



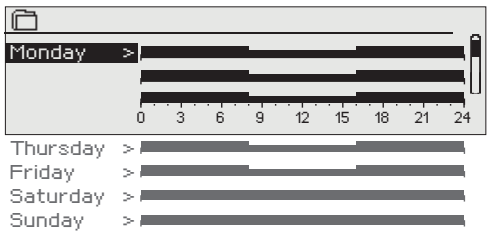
1. Turn the control knob. Press OK to accept a number/sign.
2. Press OK to move to the next square.
   Press Esc to return to the previous square. OK
3. Press OK for a number of seconds to accept the number. Press Esc for a number of seconds to cancel

7.1 Routing schedule

Alarms > Routing schedule



Graph



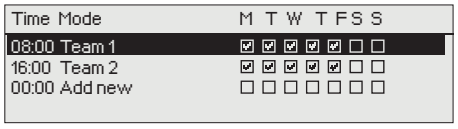
This example shows that group 1 alarms are always forwarded. During business hours (Monday - Friday 8:00 a.m. - 4:00 p.m.) alarms are forwarded to different teams than during evenings and weekends. More detailed information is shown in the "Editing view".

S203 default alarm groups are:

- **Group 1:** Urgent alarm that should always be immediately routed.
- **Group 2:** Malfunction alarms than can be frouted during business hours.
- **Group 3:** Service alarms or non-urgent alarms.

You can see where alarms are currently being routed from the routing schedule menu. You can also set up a routing schedule for each alarm group.
You can create a weekly schedule for each alarm group. Weekly schedule have a general graphic view and an editing view, where you can see to which alarm team each alarm is sent at different times. In the graph, alarm teams are distinguished from each other by the bars with different thickness.

Editing view



Turn the control knob to browse a weekly schedule. If you wish to see the exact switch times and names of alarm teams, or if you wish to edit, remove or add switch times, press OK at any weekday.

Browsing a weekly schedule:

An editing view opens, and it shows all the switch times and also to which alarm teams alarms are routed at these times on the chosen days.

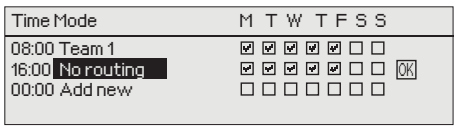
---

1. Set switch time

2. Set alarm team | 3.Select day(s)

Adding a new switch time:

1. Press OK at the "Add new" row.
2. Press OK. Set the switch time for alarm routing (set hours and minutes separately) and press OK.
3. Press OK and then turn the control knob to set the alarm team or the "No routing" option. (No routing option means that alarms will not be sent.) Accept by pressing OK.
4. Press OK at desired weekdays you wish to choose.
5. Press OK at the end of the row to accept the created schedule.
6. Press Esc to exit.



Editing a weekly schedule:

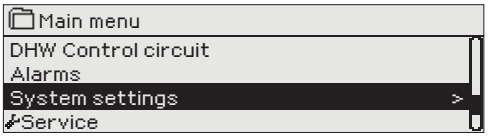
1. Turn the control knob to navigate to the value you wish to change and press OK.
2. Turn the control knob to make the time and alarm team changes. Press OK to accept.
3. Press the OK button to change the day of the week.
4. Press Esc to exit.

Deleting a switch time:

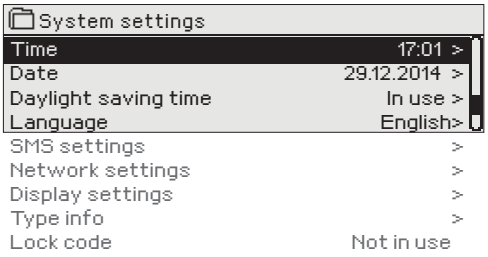
1. Turn the control knob to navigate to the switch time you wish to delete and press OK.
2. Press OK at the alarm team and select "Delete switch time"
3. Press OK at the end of the row.
4. To exit edit mode, press ESC.

Alarms are routed according to the routing schedule. You can acknowledge an alarm by forwarding the same message to the S203.

8 System settings

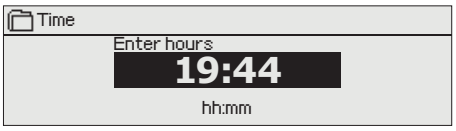


System settings include date and time, language, SMS and network settings, display settings and device type information.



8.1 Setting date, time and language

System settings > Time



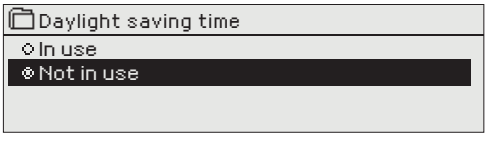
It is important that date and time are correct. The date and time are used e. g. in time programs as well as alarm indication and routing. The S203 clock takes daylight savings and leap years into account automatically. The clock has a backup for power outages lasting at least three days.

1. **Set hours and press OK to accept.**
2. **Set minutes and press OK to accept.**
3. **To exit without saving and changes press Esc.**

System settings > Date

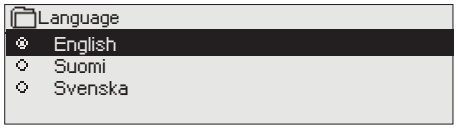
1. **Set day and press OK to accept (name of weekday is updated automatically).**
2. **Set month and press OK to accept.**
3. **Set year and press OK to accept.**
4. **To exit without saving and changes press Esc.**

System settings > Daylight saving time



The controller will automatically be switched to to daylight saving time and to standard time, if the selection "In use" is made.

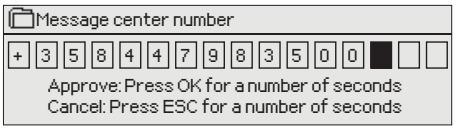
System settings > Language



The language of the user interface can be change here.

8.2 Text message (SMS) settings

System settings > SMS settings



Use of text messaging requires that the GSM modem (optional accessory) is connected to a S203.

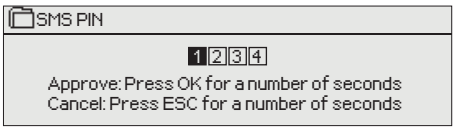
Message center number: S203 can read the operator's message center number from the SIM card. This is done after the PIN entered. If the controller isn't able to read the message center number correctly even is though PIN is correct, enter message center number manually. If you change message centre number, the number is saved on the SIM card (S203 device reads the number saved on the SIM card.)

SMS PIN:

If the SIM card has PIN inquiry in use, S203 device asks you to enter the PIN.

Entering the code:

1. **Turn the control knob and press OK to accept each number. Press ESC to return to the previous digit.**
2. **Press OK for a number of seconds to accept the code. Press ESC for a number of seconds to cancel.**



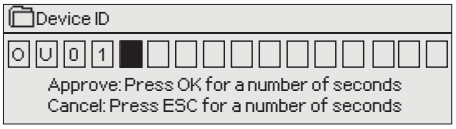
Signal strength:

Signal strength is expressed with the following descriptions: "Excellent", "Good", "Moderate", "Low", "Very low" and "Initialization failed". If signal strength indicates "No network," try changing the modem's location or use an additional antenna. If the signal strength is "Very low" you should also move the modem to another location to try to improve signal strength. If "Initialisation failed" is stated, check that the SIM card is correctly installed.

Modem state:

S203 recognizes whether the modem is connected or not. The controller initialises the GSM modem automatically.

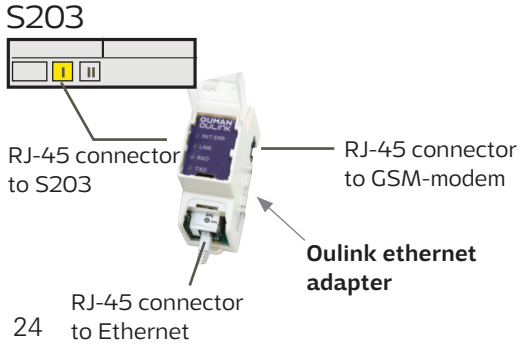
Mode	Explanation/ instructions
Ok	The modem is ready for use.
Not connected	The modem is not connected or the connection is incorrect. Connect the modem to the communication port I of S203. The power supply for modem can be taken from the controller strip connector 1 (red) and 4 (black) or through a network device.
Error	Use the SIM card in your phone and check if the SIM card is locked (PUK code).
PIN error	Enter S203 controller the same PIN as as the GSM modem's SIM card PIN.



Device ID:

It's possible to define device ID to S203. Device ID works as a password for SMS communication. When device ID is in use, it should be added in front of the keyword in every SMS (e.g. TC01 INPUTS).

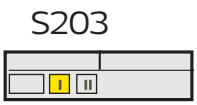
8.3 Network settings

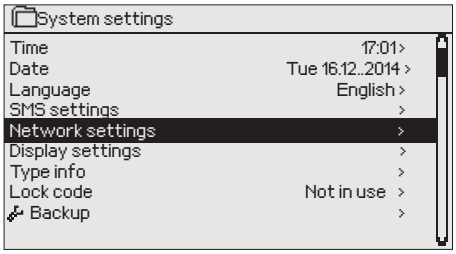


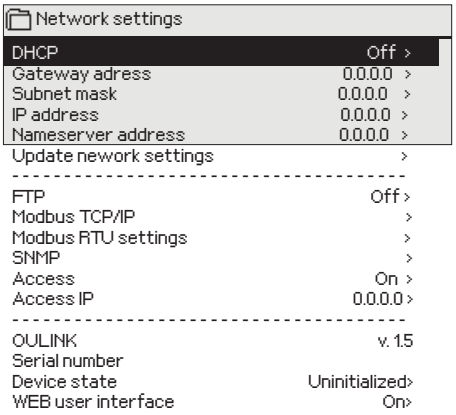
If you want to connect the S203 unit to an Ethernet network, you will need an Oulink Ethernet adapter (additional equipment). Oulink Eth is connected to RJ-45 port 1 located in the side of the controller. The maximum length of the RJ-45 cable is 10m and all 4 pairs must be connected.

OULINK ETH adapter connection:

OULINK ETH-adapter is connected to RJ-45 port I.







System settings > Network settings

There are two alternative ways to set the S203 device IP address and network settings:

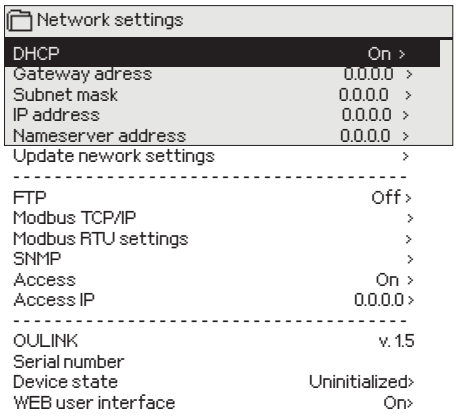
1. IP address is retrieved via DHCP function. This requires that DHCP service is in use in the network and network cables have been connected.
2. IP address is set manually.

Setting the IP address via DHCP function:

1. Go to DHCP and press OK.
2. Select "On" and press OK to accept selection.
3. Select "Update network settings" and press OK to accept selection.
4. Wait approximately one minute.
5. The network settings are now assigned to S203 by DHCP server (new settings should appear automatically in the user interface) Otherwise check the network connections and ensure that DHCP-server is available in the network.

Setting the IP address manually:

1. Request correct network settings (IP address, Gateway address, Subnet mask, Nameserver address) from the network administrator.
2. Go to "System settings" → "Network settings" → "DHCP" and press OK.
3. Select "Off" and press OK to accept selection.
4. Enter all network settings (IP address, Gateway address, Subnet mask, Nameserver address) provided by the network administrator.
5. Select "Update network settings" .



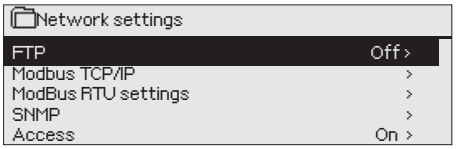
The Ouman Access service offers a secured connection to automation equipment using the in-house internet connection. If the property does not have a internet connection, you can purchase 3G-MOD2 product from Ouman. The product package includes a 3G modem without SIM card. The SIM card must be equipped with, preferably unrestricted, data roaming. The product package includes a 3G modem. SIM card with data connectivity can be acquired from your own operator. If you connect the S203 controller to the network 3G-MOD-2 using, set the controller DHCP to On state. You will automatically receive other network settings.

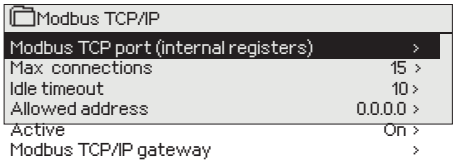
A tip! How to set the network settings easier and faster

You can make setting of the fixed network settings easier

- **if you know DHCP service exists in the network**
- **if you wish to use a fixed IP address.**

1. First, set DHCP function **On.** After the settings have been set successfully, set DHCP **Off**.
2. Change **only** IP address manually provided by the network administrator.





System settings > Network settings->Modbus TCP/IP

Modbus TCP/IP port (internal registers): Port number 502 is reserved for communication of S203 device. Information of Modbus registers of S203 device are read through this port.

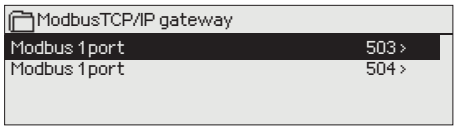
Max connections: It is possible to decrease server load by changing this setting that defines the maximum number of simultaneous connections from different IP addresses to the server.

Idle timeout: This setting defines the time after which the server closes an inactive connection.

Allowed address: It is possible to improve the information security of the system by taking permitted connection address into use. If the value is 0.0.0.0, connections to the server are permitted from any IP address. If you define one permitted connection address, connections to the server are not permitted from any other IP address.

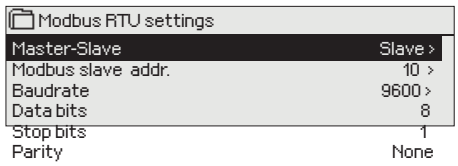
Function on: This selection either enables or disables the Modbus/TCP communication.

Modbus TCP/IP gateway →Modbus 1 port: It is possible to connect a Modbus/RTU bus to S203 controller. The bus has its own port address that is used to communicate with bus devices via Modbus/TCP interface. Port 1 setting defines the TCP/IP port that functions as a gateway to Modbus RTU-bus.



System settings > Network settings-> Modbus RTU settings

Modbus RTU settings: S203 device can be connected to ModBus RTU-bus. If S203 is connected to the bus as a slave, you have to set the address of the S203 device. Note! All the slave devices connected to the bus must have unique address.



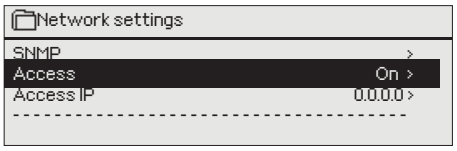
System settings > Network settings-> SNMP

SNMP: SNMP function can be used to send notifications about alarms activating, inactivating and being acknowledged via SNMP protocol to a desired server.

IP address: The IP address of the target server to which messages are sent. Ounet IP address is a default.

Active: This selection either enables or disables the entire SNMP function.

If the Ouman Access is taken into use, the sent SNMP alarm message will include the Access IP-address. In this case, Access IP address must be entered as local IP-address in Ounet.



System settings > Network settings-> Access

Access

Oulink supports Ouman Access-service which gives you a secure remote connection to the S203-device. With this setting you can activate the ACCESS-service in order to be able to use it.

OUMAN ACCESS- service is "off" by default in S203. OUMAN ACCESS- service is taken in use in following way: Ouman salesperson feeds in the target and billing information to the Ouman system and activates the service based on the serial number of the Oulink. After that, you have to activate the ACCESS service from the device. OUMAN ACCESS- device can be connected to LAN if following conditions are fulfilled:

1. LAN is routed to internet

2. The VPN ports used by ACCESS are not blocked

1. LAN is routed to internet

Access –service requires internet connection. Therefore it is available only if the local LAN has connection to internet. ACCESS-device examines the availability internet connection once per minute by sending a ping-package to a server in internet.

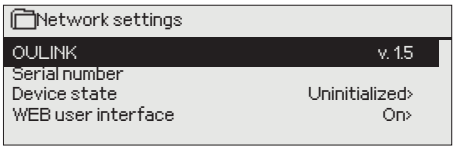
Network has to allow ICMP towards internet and also allow the response message to come back to S203.

2. The VPN ports used by ACCESS are not blocked

ACCESS-service is using VPN to the internet connection.
Network has to allow UDP communication from any port towards port 1194 in internet and the responces from that port back to S203 device.

System settings > Network settings-> OULINK

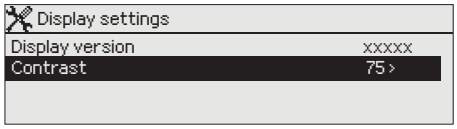
OULINK



From network settings you can see OULINK ETH-device serial number and version number. If all the settings are correct, the status of the device is "OK".

8.4 Display settings

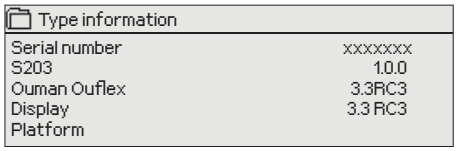
System settings > Display settings



You can adjust the contrast of the display. If you wish the display to be brighter, set a smaller numerical value. The setting range is 50... 100. New setting is taken in use after confirmation is done.

8.5 Type information

System settings > Type information



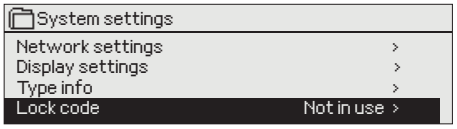
Type information shows the hardware and software versions. This information is useful especially in case of maintenance or upgrade.

TYPE INFORMATION

Send message: Type information.
The reply message will show information about the device and software.

8.6 Lock code

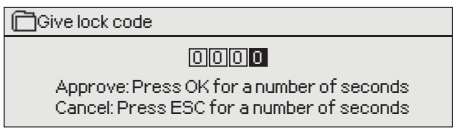
System settings > Lock code



When lock code is taken in use, it's not possibel to change any settings without entering lock code. It is recommended that you take lock code into use if the device is located so that anyone could reach it and change settings (e.g. deactivate burglar monitoring). Locking the device and changing the lock code prevents unauthorized use of the device.

Lock code function	Description
Not in use	You can read S203 device information and change settings.
In use	You can read S203 device information but you can not change settings without entering the lock code. The factory setting of lock code is 0000. If you take lock code into use, change the code for security reasons.

System settings > Change lock code



NOTE! When you enter a locking code when changing the default, the code will not be required again until the unit has been untouched for 10 minutes, when the display goes into idle state. You can also set the display in idle state by pressing the ESC button for a long period of time.

If you have taken lock code into use, you may change the code. The factory setting of lock code is 0000.

1. S203 device asks you to enter the current code. The factory setting of lock code is 0000.
2. Turn the control knob and press OK to accept each number. Press ESC to return to the previous square.
3. Press OK for a number of seconds to accept the code. Press ESC for a number of seconds to cancel.

9. Connection guide

M1-M16 and DI1-DI2

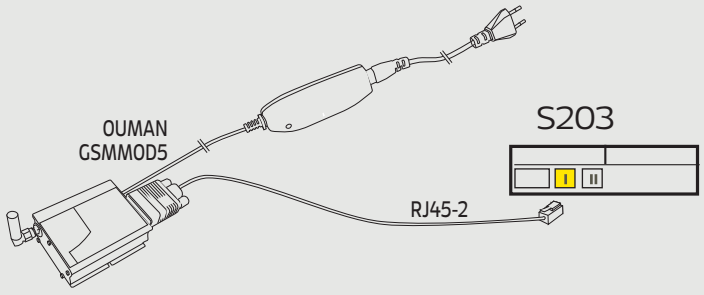
		cable	S203 regulator	
Pressure transmitter or GSM-modem power supply (GSMMOD5)	15 Vdc output Ground	2x0,8	1 4	15V ⊥
RS-485 -bus	**Isolated bus ground** **Signal A** **Signal B**	DATAJAMAK 2x(2+1) x 0.24	2 5 3 6	NC BG A B
M1: Outdoor temperature sensor	**TMO**	2x0,8	11 31	**M1**
M2: H1 Supply water sensor	**TMW/TMS**	2x0,8	12 32	**M2**
M3: H1 Return water sensor	**TMW/TMS**	2x0,8	13 33	**M3**
M4: H1 Room meas. (NTC10, 0-10V) or Free meas. (H1 DH Return water sensor)	see page 30	2x0,8	14 34	**M4**
M5: H2 Supply water sensor	**TMW/TMS**	2x0,8	15 35	**M5**
M6: H2 Return water sensor	**TMW/TMS**	2x0,8	16 36	**M6**
M7: H2 Room meas. (NTC10 or 0-10V) or Free meas. (H2 DH Return water sensor)	see page 30	2x0,8	17 37	**M7**
M8: HW Supply water sensor (Dom. hot w.)	**TMW/TMS**	2x0,8	18 38	**M8**
M9: HW Circulation/anticipate sensor	**TMW/TMS**	2x0,8	19 39	**M9**
M10: DH Supply water sensor or free meas. or switch alarm	**TMW/TMS**	2x0,8	20 40	**M10**
M11: : DH Return water sensor or free meas. or switch alarm	**TMW/TMS**	2x0,8	21 41	**M11**
M12: General meas. (Nameable NTC10-meas.) H1 Pressure switch or pressure transmitter (V or mA)	see page 30	2x0,8	22 42	**M12**
M13: General meas. (Nameable NTC10-meas.) H2 Pressure switch or pressure transmitter (V or mA) or moisture sensor	see page 30	2x0,8	23 43	**M13**
M14: General compensation (0-10V, 0-20 mA) or H/A switch	see page 30	2x0,8	24 44	**M14**
M15: Indication or alarm Default: P2 Indication or P2 Alarm (H1)	**NO/NC**	2x0,8	25 45	**M15**
M16: Indication or alarm Default: P3 Indication or P3 Alarm (H2)	**NO/NC**	2x0,8	26 46	**M16**
DI1: P1 Alarm (DHW) or general alarm (NO or NC) or Water flow meas. or Energy measurement	**NO/NC or pulse**	2x0,8	27 47	**DI 1**
DI2: Water flow meas. or energy measurement	**NO/NC or-pulse**	2x0,8	28 48	**DI 2**
GSM-modem connect and power supply	+ - Red Bl	2x0,8	1 4	**15V** ⊥

RS-485 bus

INPUTS

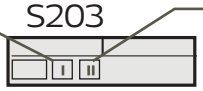
Operating voltage for the GSM modem can be taken from the external power supply or from S203 (15VDC output, connectors 1 and 4).

The GSM modem is connected to S203 to RJ45 Port I. If OULINK-ETH is connected to S203 RJ45 port 1, the modem should be connected to OULINK-ETH adapter's RJ45 Port I instead.



OULINK ETH adapter:

OULINK ETH-adapter is connected to S203 to RJ-45 port I.

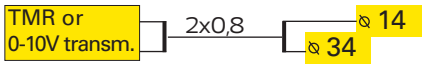


External display:

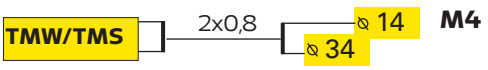
External display is connected to S203 to RJ-45 port II. Cable max length 10 m.

Alternative connections M4, M7, M12, M13 and M14

M 4: H1 Room temperature measurement

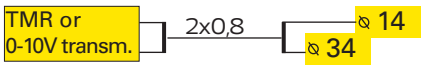


M 4: Free meas. (H1 Heat exchanger DH Return water sensor)

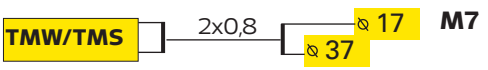


MEAS. 4

M 7: H2 Room temperature measurement

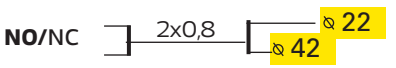


M 7: Free meas. (H2 Heat exchanger DH Return water sensor)

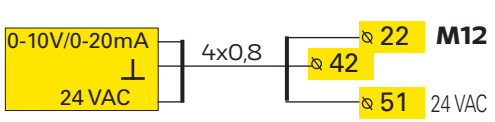


MEAS. 7

M 12: Pressure switch

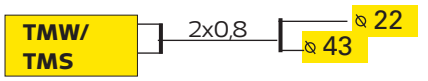


M 12: H1 Pressure transmitter, 0-20 mA or 0...10 V

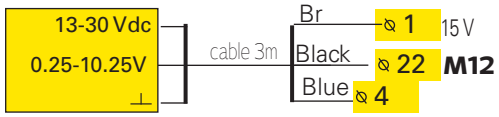


MEAS. 12

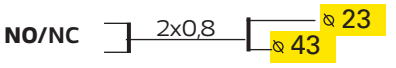
M 12: General measurement NTC-10



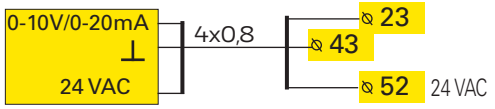
M 12: Pressure meas. with 2 PX2.100P-transmitter



M 13: Pressure switch

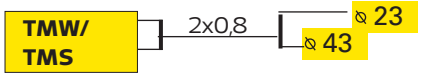


M 13:H1 Pressure transmitter, 0-20 mA or 0...10 V

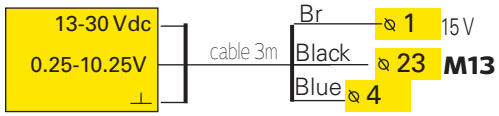


MEAS. 13

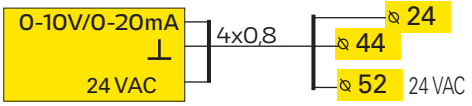
M 13: General measurement NTC-10



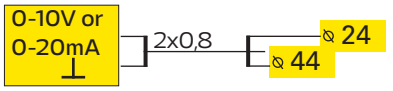
M 13: Pressure meas. with 2 PX2.100P-transmitter



M 14: General compensation(0-10V, 0-20 mA)



M 14: General compensation, Transmitter measurement from external control unit.



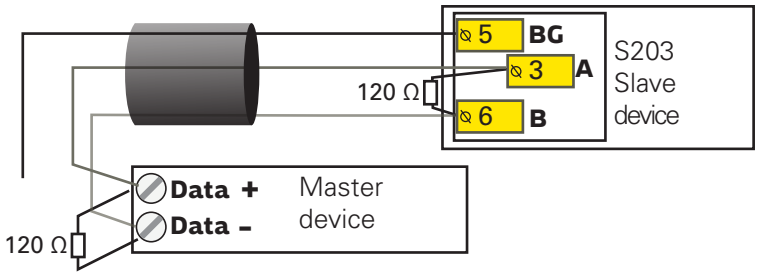
M 14: Home-Away switch

MEAS. 14

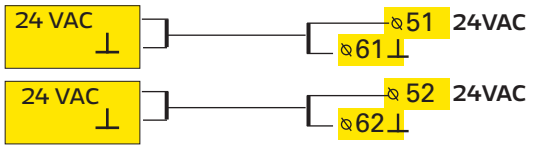
Modbus RTU connection:

Twisted pair cable is used to connect RTU devices, e.g. DATAJAMAK 2 x (2 + 1) x 0.24.
The bus cable's shield (FE) is connected to the BG connector of the S203. In the master device the shield can be left disconnected or be connected to a potential free contact. A 120 Ω terminating resistor is connected to both ends of the bus.

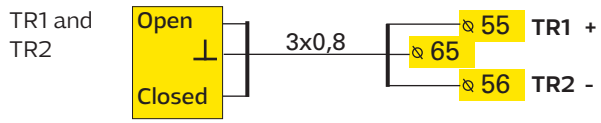
The factory default for the device's slave address is 10 and the bus speed is 9600 bauds. If necessary, make changes in the "System settings".



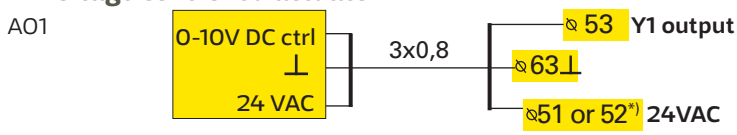
Analog outputs and triacs:



H1 Valve actuator 3-point controlled

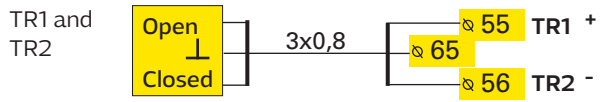


H1 Voltage controlled actuator



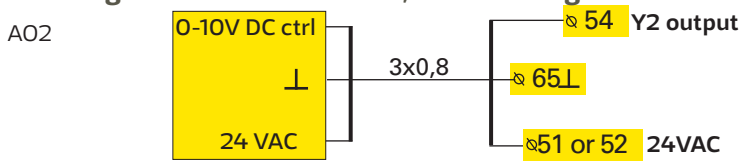
*) Connect 24 VAC to strip connector 55, if it is selected that Manual mechanical control is "available" (see Service -> Connections and configuration -> H1 Actuator control)

Magnetic valve control

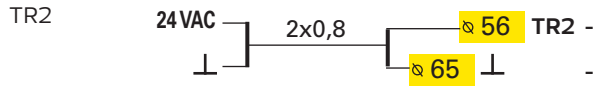


Function: If the moisture measurement (M13) is in use and the controller detects that the moisture sensor is wet, the controller automatically closes the solenoid valve. The function is not available, if in H1 circuit is selected controlled voltage actuator and it is selected Manual mechanical control is "available".

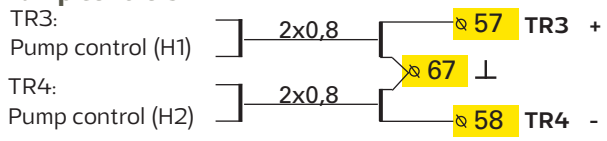
H1 Voltage controlled actuator 2, serial driving



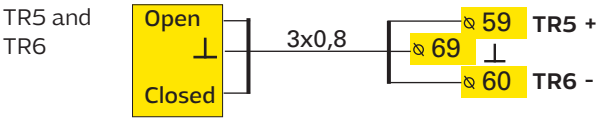
Sum larm



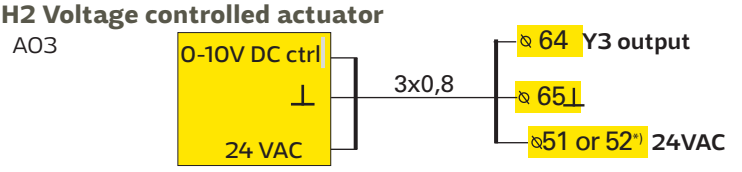
Pump controls



H2 Valve actuator 3-point controlled

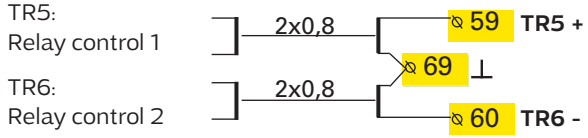


H2 Voltage controlled actuator

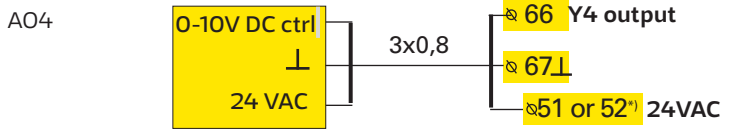


*) Connect 24 VAC to strip connector 59, if it is selected that Manual mechanical control is "available" (see Service -> Connections and configuration -> H2 Actuator control)

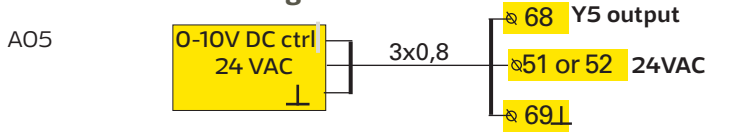
Relay controls



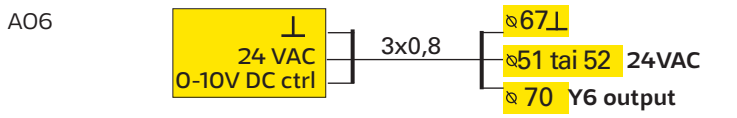
H2 Voltage controlled actuator 2, serial-driving



HW Voltage controlled actuator



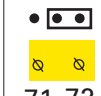
DHW Voltage controlled actuator 2, serial-driving



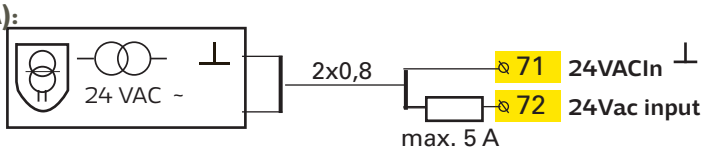
*) Connect 24 VAC to strip connector 58, if it is selected that Manual mechanical control is "available" (see Service -> Connections and configuration -> DHW Actuator control)

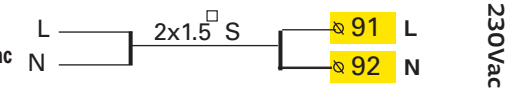
Connection of external power source (max. 150VA):

If the external 24 Vac transformer is used in, move the jumper from right to left. Jumper is above the terminals 71 and 72.

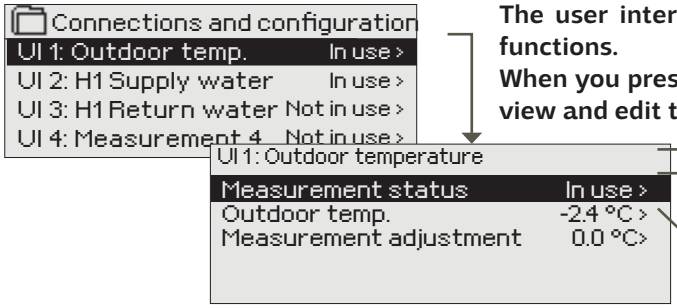


Jumper	Explanation
• ▣	Internal 24 Vac transformer is in use.
▣ •	External 24 Vac transformer is in use.





9.1 Connections and configuration



The user interface is grouped according to the control circuits and the functions.
When you press OK on the input/output, opens a menu, where you can review and edit the settings.

- you can take in use the input/output
- you can read the measurement. When you press OK you can set the meas. to manual mode and give the constant temperature. If the measurement is on manual mode, the hand symbol is shown in the beginning of the line.
- If the measurement shows 0.5 °C too much, set the offset to -0.5 °C
- In addition you can rename inputs and outputs, see p. 10.

If the sensor is defective, the measurement value shown will be -50°C or 130 °C.

Tip: If you want to take the inputs into use before the sensors are connected, you can avoid unnecessary sensor fault alarms by disabling alarms from Service mode → Alarm settings→ Sensor fault alarms: "Disabled".

☒ Check the functions which have been taken in use in the controller.

Inputs/Outputs		Alternative measurement options
M 1	**Outdoor temp**.	☐ In use
M 2	**H1 Supply water**	☐ In use
M 3	**H1 Return water**	☐ In use → ☐ H1 Return water compensation
M 4	Meas. 4	☐ Free measurement → Name: **H1 DH Return,** other specify _____ ☐ H1 Room temp. NTC10 / ☐ H1 Room temp. 0-10 V → **Message scaling** (Room temp. 0-10 V) Temperature minimum ___(0.0 °C) Temperature max ___(50.0 °C)
M 5	**H2 Supply water**	☐ In use
M 6	**H2 Return water**	☐ In use → ☐ L2 Return water compensation
M 7	Meas. 7	☐ Free measurement →Name: **H2 DH Return,** other specify _____ ☐ H2 Room temp. NTC10 / ☐ H2 Room temp. 0-10 V → **Message scaling** (Room temp. 0-10 V) Temperature minimum ___(0.0 °C) Temperature max ___(50.0 °C)
M 8	**HW Domestic hot water**	☐ In use
M 9	**HW Circulation water**	☐ In use
M10	Meas. 10	☐ General meas. NTC-10 ☐ Switch alarm **Switch alarm:** Digital input type: ☐ **normally open** ☐ normally closed Alarm entry delay ____(30s) **General meas. NTC 10:** M 10 Alarm entry delay ___(60 s) M 10 Alarm max limit ___(131 °C) M 10 Alarm min limit ___(-51 °C) Name of meas.: **DH Supply,** other specify _____
M 11	Meas. 11	☐ General meas. NTC-10 ☐ Switch alarm **Switch alarm:** Digital input type: ☐ **normally open** ☐ normally closed Alarm entry delay ____(30s) **General meas. NTC 10:** M 11 Alarm entry delay ___(60 s) M 11 Alarm max limit ___(131 °C) M 11 Alarm min limit ___(-51 °C) Name of meas.: **DH Return temp,** other specify _____
M 12	Meas. 12	☐ General meas. NTC-10 → Name: Meas. UI 12; other specify _____ ☐ Pressure switch ☐ Pressure transmitter V ☐ Pressure transmitter mA **Pressure switch:** Digital input type: ☐ **normally open** ☐ normally closed **Pressure transmitter:** Measuring area ___(16.0 bar) Measurement adjustment _____ (0.0) Name: (Pressure measurement 1) , other specify _____ Pressure alarm limits : see Service → Alarm settings →Pressure measurement settings
M 13	Meas. 13	☐ General meas. NTC-10 → Name: Meas. UI 13; other specify _____ ☐ Pressure switch ☐ Pressure transmitter V ☐ Pressure transmitter mA ☐ Fuct sensor **Pressure switch:** Digital input type: ☐ **normally open** ☐ normally closed **Pressure transmitter:** Measuring area ___(16.0 bar) Measurement adjustment _____ (0.0) Name: (Pressure measurement 2) , other specify _____ Pressure alarm limits : see Service → Alarm settings →Pressure measurement settings

Connection place	Alternative measurement options	Attention
M 14 Meas. 14	☐ General compens. 0-10 V, ☐ General compens. 0-20 mA, ☐ Home/Away switch	**General compensation:** You can define with circuit-specific set. You can assign names to general compensation (e.g. solar compensation, wind compensation or pressure compensation). _____ **Home/Away control:** The control will be taken separately in use (see Service → Temperature drops). You can also do Home/Away control in "Inputs and Outputs"-menu or by SMS message /"Home"/"Away", requires GSM-modedm).

ALARMS, INDICATIONS AND PULSE MEASUREMENTS

Connection place	Alternative measurement options		Attention
M 15 Alarm 15	☐ P2 Indication → Name: P2 Pump ☐ P2 Alarm→ Name: P2 Pump	**Digital input type:** ☐ **normally open** ☐ normally closed Name_____	**Pump indication** can be selected only if the pump control is taken in use. A contradiction alarm will be activated if the controller sets pump on but it's not started. The alarm has a 5 s delay. **Pump alarm:** Nameable alarm.
M 16 Alarm 16	☐ P3 Indication → Name: P3 Pump ☐ P3 Alarm → Name: P3 Pump	**Digital input type:** ☐ **normally open** ☐ normally closed Name_____	
DI 1 Digital input 17	☐ P1 Alarm→ Name: P1 Pump ☐ General alarm → Name: General alarm status ☐ Water flow meas. ☐ Energy measurement	**Digital input type:** ☐ **normally open** ☐ normally closed Name_____	**Pulse measurement settings:** **Water volume** Pulse input scaling: ____ 10 l/pulse Counter initial value: _____0.0 m3 Name of meas. DI1(2) Water volume _____ **Energy measurement** Pulse input scaling: ____ 10 kWh/pulse Counter initial value: _____0.0 Mwh Name of meas. DI1(2) Energy measurement _____ **When the counter initial value is set, go to the line "Save initial value into the counter" and click "OK".**
DI 2 Digitalinput 18	☐ Water flow meas. ☐ Energy measurement	Name_____	

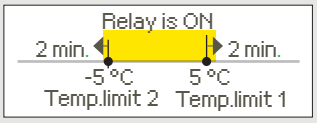
ACTUATOR CONTROLS

Name	Output	Actuator selection	Running time/ factory setting (setting range)
H1 Actuator control	A01 A01 TR1, TR2	☐ 0-10 V / ☐ 2-10 V / ☐ 10-0 V / ☐ 10-2 V ☐ 3-point (TR1, TR 2)	Running time open ___ 150 s (10...500 s) Running time close ___ 150 s (10...500 s) ☐ Manual mech. control available → The TR1 (connector 55) is reserved for voltage controlled actuator (24 VAC).
H2 Actuator control	A03 A03 TR3, TR4	☐ 0-10 V / ☐ 2-10 V / ☐ 10-0 V / ☐ 10-2 V ☐ 3-point (TR3, TR 4)	Running time open ___ 150 s (10...500 s) Running time close ___ 150 s (10...500 s) ☐ Manual mech. control available → The TR5 (connector 59) is reserved for voltage controlled actuator (24 VAC).
DHW Actuator control	A05 A05	☐ 0-10 V / ☐ 2-10 V ☐ 10-0 V / ☐ 10-2 V	Running time open ___ 150 s (10...500 s) Running time close ___ 150 s (10...500 s) ☐ Manual mech. control available → The TR4 (connector 58) is reserved for voltage controlled actuator (24 VAC).
H1 Actuator control 2 (serial driving)	A02 A02	☐ 0-10 V / ☐ 2-10 V ☐ 10-0 V / ☐ 10-2 V	Running time ___ 150 s (10...500 s)
H2 Actuator control 2 (serial driving)	A04 A04	☐ 0-10 V / ☐ 2-10 V ☐ 10-0 V / ☐ 10-2 V	Running time ___ 150 s (10...500 s)
DHW Actuator control 2 (serial driving)	A06 A06	☐ 0-10 V / ☐ 2-10 V/ ☐ 10-0 V / ☐ 10-2 V	Running time ___ 150 s (10...500 s)

PUMP CONTROLS

Name	Output	Control mode	Manual control
P2 Pump control (H1)	TR3	☐ Automatic ☐ Manual →	☐ Stop ☐ Run
P3 Pump control (H2)	TR4	☐ Automatic ☐ Manual →	☐ Stop ☐ Run

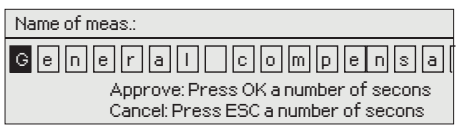
RELAY CONTROL

Output	Control mode	Setting values (default)	Meas.controlling the relay/Name of control
TR3 Relay control 1	☐ Heating thermostat (TR3) ☐ Cooling thermostat (TR3) ☐ Defrost thermostat (TR3) ☐ Heat. therm.& time ctrl (TR3) ☐ Cool. therm.& time ctrl (TR3) ☐ Defr. therm.& time ctrl (TR3) ☐ Time control (TR3) ☐ H2 Actuator control (3-point), See H2 Actuator control	**Heating/ Cooling thermostat:** Setting value ____(21.0°C) Hysteresis ____(1.0 °C) **Defrost thermostat:** Temperature limit 1 ____ (5°C) Temperature limit 2 ___(-5.0 °C) 	☐ Outdoor temperature ☐ Measurement 10 **Name of control** (TR3 control) other, specify _____ **Time control: Weekly schedule** Time Mode M T W T F S S ☐ ON ☐☐☐☐☐☐☐ ☐ OFF ☐☐☐☐☐☐☐ ☐ ON ☐☐☐☐☐☐☐ ☐ OFF ☐☐☐☐☐☐☐
TR4 Relay control 2	☐ Heating thermostat (TR4) ☐ Cooling thermostat (TR4) ☐ Defrost thermostat (TR4) ☐ Heat. therm.& time ctrl (TR3) ☐ Cool. therm.& time ctrl (TR3) ☐ Defr. therm.& time ctrl (TR3) ☐ Time control (TR4)	**Heating/ Cooling thermostat:** Setting value ____(21.0°C) Hysteresis ____(1.0 °C) **Sulatustermostaatti:** Lämpöraja 1 ____ (5°C) Lämpöraja 2 ___(-5.0 °C)	☐ Outdoor temperature ☐ Measurement 11 **Name of control** (TR4 control) other, specify _____ **Time control: Weekly schedule** Time Mode M T W T F S S ☐ ON ☐☐☐☐☐☐☐ ☐ OFF ☐☐☐☐☐☐☐ ☐ ON ☐☐☐☐☐☐☐ ☐ OFF ☐☐☐☐☐☐☐

SUM ALARM

Output	Name	Selection	Information about alarm classes
TR 2	Sum alarm (Triac 2) Note! If a 3-point actuator is in use in H2 control circuit, the sum alarm is not in use.	☐ 1-class ☐ 2-class ☐ 3-class ☐ 1-, 2- or 3class ☐ 1- or 2-class ☐ 2 -or 3-class ☐ 1- or 3-class	Class 1 is for alarms classified as urgent that should always be immediately forwarded. These include freezing risk alarms, pump alarms or sensor fault in supply water. Class 2 includes e.g. room and outdoor temperature sensor fault alarms. When a sum alarm is activated, the connector 65-56 is closed. When a sum alarm is acknowledged, the connector 65-66 is opened.

Renaming

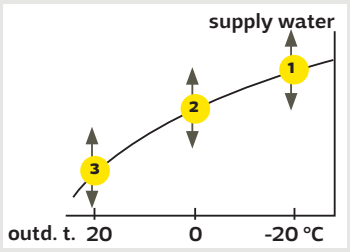
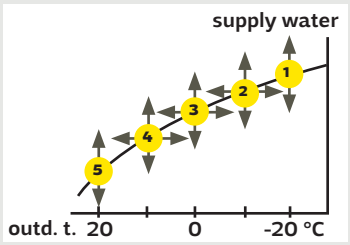
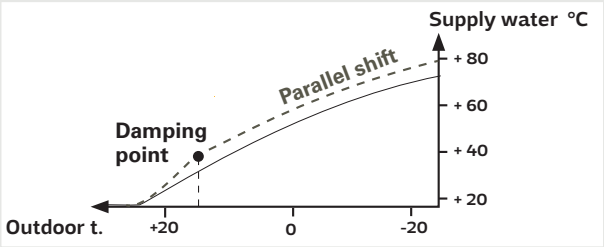


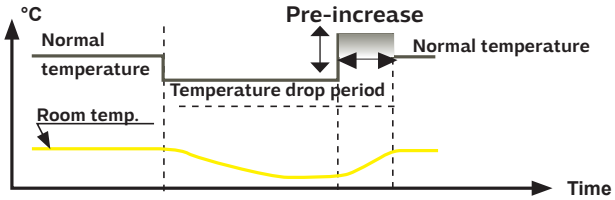
Navigate to "Name of measurement" and press OK. A naming dialogue will open. Turn the selection knob and accept a letter by pressing OK.

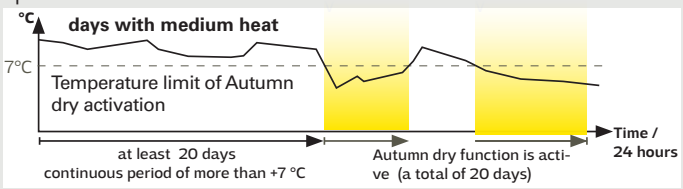
Continue to the next input field by pressing OK.
Return to the previous input field by pressing ESC.
Press OK for extended period of time to accept.
Press Esc for extended period of time to exit without saving any changes.

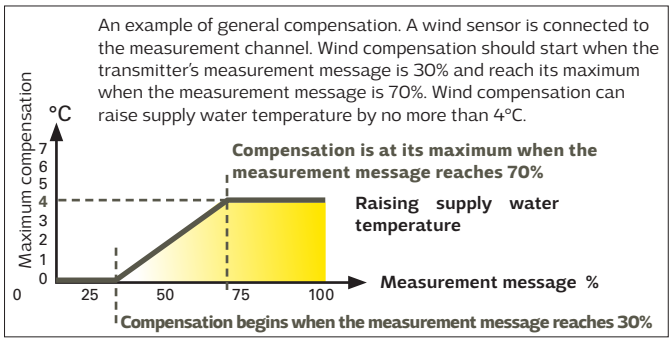
10 Service settings

Service mode includes all settings of the controller. Some of the settings can be found also from "setting" menus of the heating circuits (H1, H2, DHW).

Setting	Factory setting	Range	Explanation
Control circuit settings			
Control circuit	H1 In use	In use/ Not in use	Control circuits are already taken into use in start-up wizard. If you want to have the control disabled, select " Not in use".
Heating circuit	Radiator heating	Radiator heating/ Floor heating	If the radiator heating is chosen as a heating mode, the controller uses the outdoor temperature delay in supply water control (see. Radiator heating delay). If you have selected the floor heating, the controller uses the outdoor temperature anticipation in supply water control (see. Floor heating anticipation).
Curve type	3-point curve	3-point curve/ 5-point curve	  With the 3-point curve you can change supply water temperatures with the outdoor temperature values -20°C, 0°C and +20°C. With the 5-point curve you can change the supply water settings at fixed outdoor temperature -20°C and +20°C and at three adjustable outdoor temperatures (between -20 and +20). To change the adjustable outdoor temperatures press OK for a long period of time.
Parallel shift	0.0	-15 ... +15 °C	If room temperature is continuously above or below the setting value despite the outdoor temperature, you can add a permanent compensation value to the supply water setting value.
Parallel shift damping point	7.0	(-20 ... +20 °C)	Outdoor temperature set by the user at which the effect of parallel shift begins to dampen. When the outdoor temperature reaches +20°C, the effect of parallel shift has already completely stopped. The factory default setting for the damping point is 7°C. At a value setting of more than 17°C parallel shift damping is not enabled (the function is not available if room temperature measurement is connected). 
Min.limit	18.0 °C	(0 ... 99 °C)	The low limit for supply water. For comfort reasons, the higher low limit is used in bath rooms than e.g. in rooms with parquet floor.This also removes the moisture from path rooms at summer time.
Max.limit	75 °C	(0 ... 99 °C)	High limit of supply water. With high limit settings it's prevented that there will not be too hot water in the circulation which might damages the floor material of the heating pipes.
DHW Control circuit	Not in use	In use/ Not in use	The control circuits will be taken into use already in start up wizard.
DHW Domestic hot water setting value	58.0 °C	(20 ... 90 °C)	DHW Supply water temperature setting.

Setting	Factory setting	Range	Explanation
Temperature drops			
Temperature drop	3.0	0... 40 °C	Temperature drop of supply water, which be triggered from time program or a Home/Away text message command or when selecting continous temperature drop as circuit's control mode. If room temperature measurement has been taken into use, the temperature drop is given as a room temperature drop.
Pre-increase	4.0	0... 25 °C	The amount of the automatic supply water pre-increase occurring at the end of the temperature drop (time program) The pre-increase helps raise the room temperature more quickly back to a nominal room temperature after a temperature drop.
	In use	In use/ Not in use	Room temperature can be increased to normal more quickly after temperature drop by using the preliminary increase function. 
Pre-increase time	1	(0... 10 h)	The pre-increase time defines the time, when the pre-increase is started. If pre-increase time is one hour, the pre-increase will start one hour before the time program ends the temperature drop (returning to normal temperature).
Home/Away control	Not in use	In use/ Not in use	The Home/Away control changes the temperature levels. If transmitter for general compensation is connected to controller, it's not possibe to connect Home/Away switch. In this case Home/Away mode can be switched with SMS or from "Inputs and Outputs" menu.
Delay function of radiator heating			
Outd.temp.delay on temp.drop	0.0	0... 15 h	**Outdoor temperature delay is in use, if the radiator heating is selected as a heating mode in the control circuit settings.** The amount of the outdoor temperature delay is defined with "Outd.temp.delay on temp.drop" setting. The delayed outdoor temperature is used for regulating the supply water temperature. The typical outdoor temperature delay for radiator heating is 2 hours. If the room temperature rises too much when temperatures lowers, increase the "Outd.temp.delay on temp. drop" If the opposite occurs, lower the delay time.
Outd.temp.delay on temp.increase	0.0	0... 15 h	Typically 2 hours delay time is used in radiator heating. If room temperature decreases too much when outdoor temperatures increase below the freezing point, increase the setting value "Outd.temp.delay on temp.increase."
Anticipation of floor heating			
Floor heat. anticipate on temp.drop	0.0	0... 15 h	**The anticipation drop of floor heating is in use, if the the floor heating is selected as a heating mode in the control circuit settings.** Typically 2 hours delay time is used in floor heating. If room temperature falls too much when freezing temperatures fall further, increase anticipation. If the opposite occurs, lower anticipation.
Floor heat. anticipate on temp.incr.	0.0	0... 15 h	Anticipation of floor heating is used for stabilizing room temperature when outdoor temperature changes. In floor heating, the concrete mass of the floor slows transmission of heat from floor to room air temperature. If room temperature rises too much when temperatures rises in winter, increase anticipation.

Setting	Factory setting	Range	Explanation
Summer function			
Pump summer stop	In use	In use/ Not in use	If S203 controls also the pump, the pump can be stopped while the summer function mode is active.
Summer function outd. temp. limit	19.0	10 ... 35 °C	Summer function outdoor temperature limit. When the measured or forecast outdoor temperature exceeds the outdoor temperature limit of the summer function, the regulation valve closes and the circulation water pump stops (if valve summer shut-down is in use).
Summer function inhibition limit	6.0	-10...20	The summer function is turned off immediately if the real-time outdoor temperature falls to the "Summer function inhibition limit." The summer function is also turned off if room temperature falls at least 0.5°C below the value setting or when the S203 restarts.
Outdoor temp. forecast	In use	In use/ Not in use	S203 uses temperature forecasts from bus for continousing.
Valve summer shut-down	In use	In use/ Not in use	The setting is used to select whether or not the regulation valve is closed when the summer function is in use.
Valve summer flushing	In use	In use/ Not in use	The flushing operation is done in connection with inspection of the valve's position when the regulator is in summer function mode. During the flushing operation the controller opens the valve to 20% and then closes it. If the controller has stopped the pump, the controller runs the pump during flushing of the valve. Valve flushing is done at 8:00 a.m. on Mondays.
Autumn drying			
Autumn dry	In use	In use/ Not in use	In autumn dry mode, supply water temperature is automatically raised for 20 days. The function is turned on automatically when the average daytime temperature has been more than 7°C for a minimum of 20 days and then falls below +7°C. The function remains on for the following 20 days if the outdoor temperature is below 7°C. 
Effect of autumn dry Autumn dry effect on supply water Autumn dry effect on room temp.	 4.0 1.0	 0... 25 °C 0.0... 1.5 °C	The setting value shows how much the autumn dry function raises supply water temperature. If room temperature is in use, the user sets how much the room temperature's setting value is increased.
Room compensation			
Room compensation	In use	In use/ Not in use	It can defined whether room temperature affects to the control of supply water. If the measured room temperature differs from its setting value, room compensation corrects the temperature of the supply water.
Room temperature setting	21.5	5... 50 °C	Basic room temperature setting for the controller set by the user. This setting value is not visible unless room compensation is in use.
Room temp.measurement delay	2.0	0...2 h	Amount of room temperature measurement delay. Different buildings react to temperature changes at different rates. This setting value can reduce the effect of the building on the room temperature control.
Room compensation ratio	4.0	0...7	Coefficient used in applying the difference between room measurement and the room setting value to the supply water setting value. For example, if room temperature in radiator heating is one degree below the setting value, supply water is raised by four degrees.
Comp. max.effect on supply water	16.0	0...25 °C	Room compensation's maximum effect on the supply water.
Room comp.adjustm. time (I-time)	1.0	0.5 ... 7 h	Time correction improves the room compensation function (I-regulation). In massive houses or houses where floor heating has been installed on a concrete floor, longer room compensation correction times are used.
I control's max effect on sup wat	3.0	0 ... 15 °C	Room compensation time correction can change supply water temperature to no more than this setting value. If room temperature continuously fluctuates, check whether the problem is resolved by lowering the setting value.

Setting	Factory setting	Range	Explanation
Return water compensation			
Return water compensation	2.0	0 ... 7.0	If the return water temperature decreases below the low limit (freeze risk), the supply water temperature will be increased. The amount of increase is the amount of undershoot (low limit - return water temperature) multiplied by the compensation ratio.
Bus measurements			
Outdoor temperature from bus	Not in use	Not in use/ In use	A outdoor temperature measurement can be read either from bus or through UI1.
H1 Room temperature from bus	Not in use	Not in use/ In use	A room temperature measurement specific to H1 control circuit can be read either from bus or through UI4.
H2 Room temperature from bus	Not in use	Not in use/ In use	A room temperature measurement specific to H2 control circuit can be read either from bus or through UI7.
General compensation			
General compensation	Not in use	Not in use/ In use	**General compensation can increase or decrease the temperature of supply water. Transmitter measurement allows to utilize wind or solar measurement or pressure differential measurement over the heating network.**
Compensation min	0	0 ...100 %	Setting limit values for a compensation area. Set the transmitter measurement message value at which compensation begins and the value at which it reaches its maximum level. The amount of compensation is linear between the limit values. (The transmitter is taken in use and setting values for the measurement area defined in the configuration of the particular measurement channel.)
Comp.reaches max on meas.signal	100	0 ...100 %	
Compensation min effect	0	-20 ... 20 °C	Minimum compensation defines how much the supply water temperature is changed when compensation begins.
Compensation max effect	0	-20 ... 20 °C	Maximum compensation defines the maximum amount that compensation can raise or lower supply water temperature. If wind measurement is used in transmitter measurement the setting value is positive, i.e. supply water temperature is raised due to the wind. If solar measurement is used in transmitter measurement the setting value is negative, i.e. supply water temperature is lowered due to solar radiation. 
Compensation filtering	5	0...300 s	Output signal filtering. The filtering attenuates the effect of rapid changes.
Bus compensation			
Bus compensation	**Not in use**	**In use/ Not in use**	**The need for compensation can be specified by an external device to S203 through bus (e.g. Ounet S-compensation).**
Supply water max. increase	8	-30.0 ... 0 °C	Channel compensation cannot increase supply water temperature more than allowed by the setting value.
Supply water max. drop	8	0 ... 30.0 °C	Channel compensation cannot drop supply water temperature more than allowed by the setting value.

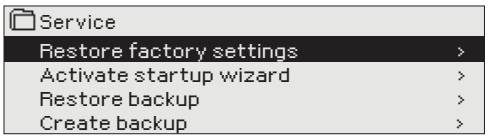
Setting	Factory setting	Range	Explanation
Alarm setting values			
Alarms	Disable	DIsable/ Enable	It's possible to disable all alarms of S203. This can be done e.g. in the cases when the measurements are configured before any sensors are linked to controller. When alarms are disabled, a symbol is shown in the start menu.
H1 (H2) Alarm settings values			
Supply water deviation alarm	10.0	1...50 °C	Amount of difference between measured supply water temperature and the supply water temperature set by the controller that causes an alarm when the deviation has continued for the entry delay time. A deviation alarm is not activated when the controller is in summer function mode, when the controller is not on automatic or when outdoor temperature is more than 10°C and supply water temperature is less than 35°C. The alarm allows for a 5 s delay.
Deviation alarm delay	60	1...120 min	The deviation alarm will be activated once the deviation has lasted for the defined time delay.
Supply water high limit alarm	80.0	40...100 °C	Supply water high limit alarm
High limit alarm delay	5	0...120 min	The high limit alarm is activated when the supply water temperature has exceed the high limit longer than the defined delay time.
Return water freezing risk limit	8.0	5...25 °C	The return water freezing risk alarm is activated when return water temperature has remained below the freezing risk limit for longer than the allowed delay time. The exit delay for freezing risk alarm is 5 seconds.
Return water alarm delay	5	1...120 min	
DHW alarm settings			
DHW Over heating alarm limit	68.0	65...120 °C	An overheating alarm is activated when supply water temperature exceeds the specified alarm limit and remains above the limit for longer than the specified delay. The exit delay for freezing risk alarm is 5 seconds.
DHW Over heating alarm delay	10	0 ... 15 min	
Pressure measurements 1 and 2 have their own value settings.			
Pressure 1(2) low limit alarm	0.5	(0...20 bar)	A lower limit alarm is activated when the pressure measurement decreases below the lower limit of the pressure measurement set value. Alarm is deactivated when the pressure is 0.1 bar over the limit.
Pressure 1(2) high limit alarm	15	(0 ... 20 bar)	The controller gives the upper limit alarm when the pressure measurement is greater than the upper limit of the pressure set value. Alarm goes off when the pressure is 0.1 bar below the limit.
Alarm limits of temperature measurements UI 10 and UI11			
M 10 (11) Entry delay	60	(0...300 s)	An alarm is activated, when the measured temperature has been under defined low limit or over high limit for longer than entry delay.
M 10 (11) ALarm min limit	-51	(-51...131 °C)	Low limit alarm is activated, when the temperature drops below the defined low limit. The alarm is deactivated, when the temperature is 1.0 °C over the lower limit.
M 10 (11) Alarm max limit	131	(-51...131 °C)	High limit alarm is activated, when the temperature increases above the defined high limit. The alarm is deactivated when the temperature is 1.0°C below the high limit.
Contact alarm of free measurements UI 10 and UI11			
M 10 (11) Alarm delay	30	(0...300 s)	Contact alarm is activated, when the entry delay has passed after an alarm activation.

Tuning values

Setting	Factory setting	Range	Explanation
H1 and H2 Tuning values:			
P-area	200	2...600 °C	Supply water temperature change at which the actuator runs the valve at 100%. E. g. If the supply water temperature changes 10 °C and the P area is 200 °C the position of the actuator changes 5 % (10/200 x 100 % = 5 %).
I-time	50	5 ... 300 s	The deviation in the supply water temperature from the set value is corrected by P amount in I time. For example, if deviation is 10°C, P-range is 200°C and I time is 50 s, the actuator will be run at 5 % for 50 seconds.
D-time	0	0 ... 10 s	Regulation reaction speed up in the event of a temperature change. Beware of constant oscillation!
Supply w. max.effect of change	4.0	0.5... 5°C/min	The maximum speed at which the supply water can be raised when switching from a temperature drop to a nominal temperature. If the radiators knock, slow down the change rate (set the setting smaller).
Actuator running time open	150	10 ... 500 s	The running time indicates how many seconds go by when the actuator runs a valve nonstop from a closed position to an open position.
Actuator running time close	150	10 ... 500 s	The running time indicates how many seconds go by when the actuator runs a valve nonstop from a open position to an close position.
DHW Tuning values			
P-area	70	2 ... 500 °C	Supply water temperature change at which the actuator runs the valve at 100%.
I-time	14	5 ... 300 s	The deviation in the supply water temperature from the set value is corrected by P amount in I time.
D-time	0	0 ... 100 s	Regulation reaction speed up in the event of a temperature change. Beware of constant oscillation!
Anticipating	120	1....250 °C	Uses anticipation sensor measurement information to speed up regulation when DHW consumption changes. Increase the anticipation value to decrease reaction to changes in consumption.
Quick run	60	0 ... 100 %	Functions during consumption changes. Decrease this value to decrease reaction to quick temperature changes.
Actuator running time open	15	10 ... 500 s	The running time indicates how many seconds go by when the actuator runs a valve nonstop from a closed position to an open position.
Actuator running time close	15	10 ... 500 s	The running time indicates how many seconds go by when the actuator runs a valve nonstop from an open position to a close position.

11 Restore settings and updates

Restore factory settings

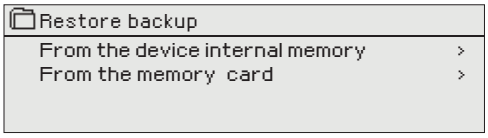


When you reset the system to factory default settings, the regulator will revert to controlled start-up mode.

Create backup

Create a backup, when S203 has been configured and the device-specific settings have been set.
If desired, also the factory settings can be restored to the device. All the parameters which are saved in the non-volatile memory will be included in the backup. Such parameters are e.g. all the setting values and time programs. The backup can be saved to the internal memory or to micro SD memory card. Memory card backups can be copied from one device to another.

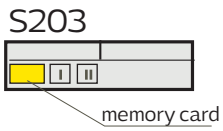
Restore backup



If you created a backup, you can restore the backup by pressing OK. You can restore the backup from the memory card or from the internal memory.

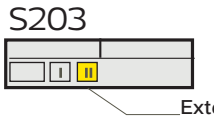
Software updates

It is recommended to create a backup of the system before software update. The software update is done with following steps:



1. Remove microSD memory card from S203.
2. Wait until error message “Memory card error!” is shown in the display
3. Insert new microSD memory card which includes new software to S203.
4. S203 asks if you want to save existing device configuration to be taken in use after the update.
5. S203 requests reboot to start the update of the new software. The updating of the software takes few minutes. The display will flash during the update process.

Update external display firmware

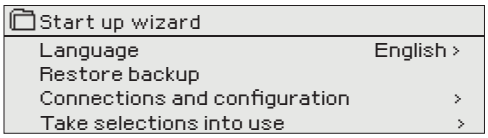


External display is connected to S203 to RJ-45 port II. Cable (CAT5) max length 20 m.

Insert the memory card containing the new firmware for the external display in the controller. Press OK.

Press OK- and ESC –buttons of the external display and connect the display to S203. The software update is started (the display flashes). The update process takes few minutes.

Activate startup wizard



A new uninitialized device will start in startup mode. The inputs and outputs are activated in the configuration. When you have done the selections concerning the inputs and outputs, exit from the menu by pressing ESC. Go to menu “ Take selections into use”. The device will start and selected configuration is taken in use.

12 Text message quick reference

If a GSM modem is connected to the S203 you can communicate with the controller by text messages using command words.

Send the following text message to the controller: KEY WORDS.

If the controller has a device ID in use, always write the device ID in front of the key word (example. Ou01 KEY WORDS or Ou01 ?). Capital and small letters are different characters in the device ID!

The controller sends a list of key words as a text message that gives you information about the controllers' functions and state. The key word is separated by a /. You can write the key word using capital or small letters. Write only one key word per message. Store the key words into your phone's memory.

Key word	Explanation
?	Reply messages show all key words in the language that has been selected for the controller.
Key words	If the controller is set up in English, the regulator sends a list of key words.
Home	S203 goes into "Home" mode.
Away	S203 goes into "Away" mode.
Inputs	The measurement information or state of the input are shown in the reply message.
Outputs	The state of controls is shown in the reply message.
H1 Info **H2 Info**	The reply message shows the calculated setting value of supply water and factors which affect on it. Data are informational.
H1 Setting values **H2 Setting values**	The most important setting values are shown in the reply message. You can change the setting values by modifeing the text message and sending it back to S203. The controller confirms the setting change by replying with new settings.
H1 Control mode **H2 Control mode**	In the reply message, the current control mode will have a star next to it. You can change the mode for the circuit by moving the star and sending a change message to the controller.
H1 Heating curve **H2 Heating curve**	If a 3-point heating curve is in use you can change the supply water temperatures for outdoor temperatures -20, 0 and +20°C, as well as the minimum and maximum setting values for supply water. If a 5-point heating curve is in use you can set temperatures for supply water for 5 outdoor temperatures. Two outdoor temperatures are fixed values (-20 and +20°C). You can change the three outdoor temperature setting values between these. You can also change the minimum and maximum limits of supply water.
DHW Setting values	The reply message will show the setting value for domestic hot water and its control mode. You can also change the setting and control mode.
DHW Info	The measurement information is shown in the reply message. You can also change the setting value of domestic hot water.
Acitve alarms	The reply message will show all active alarms.
Alarm history	The reply message will show information about the latest alarms.
Type info	The reply message will show information about the device and software.

Attention! If the controller has a device ID in use, always write the device ID in front of the key word

Optional accessories

OULINK ETH

Adapter for S203 for networking

OULINK ETH is an S203 adapter that is providing Modbus TCP/IP interface to S203.

- Integrated Ouman Access connection
- Modbus TCP/IP
- Modbus TCP/IP ⟷ RTU Gateway
- SNMP alarm transfer

Additional Control panel

The external display is connected to the RJ45-II port. Use e.g. a CAT-5 cable up to 20 m.

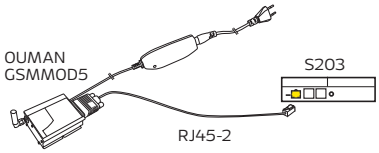
RB-40

The relay module, which allows a 24 VAC Controls can be modified potential-free relay control. The number of relays is 4 pieces. Relay max load of 16 A / relay.

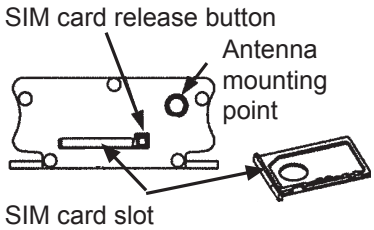
GSMMOD5

By connecting the modem to the S203 you can communicate with SMS's to the controller and have information of activated alarms to GSM phone.

Ouman's GSM modem (GSMMOD5) is connected to the S203 unit or to an Oulink Ethernet adapter. The modem has a fixed antenna that can be changed to an external antenna with a 2,5m cord (optional equipment) if needed. The modem's indicator light shows what mode it is in.



LED indicator light	Modem mode/instructions
LED is not lit:	Modem is not on. Connect network device to modem.
LED is lit:	Modem is on, but it is not ready for use. Make sure that C203 and GSM modem SIM card have the same PIN code, if PIN inquiry is in use.
LED is blinking slowly:	Modem is ready for use.
LED is blinking rapidly:	Modem is either sending or receiving a message.



Inserting the SIM card

Press the small black SIM card release button with, for example, a pen tip. Part of the SIM card slot will stick out of the modem. Pull the slot out of the modem. Do not pull the slot out of the modem without pressing the SIM card release button first!

Insert SIM card into the slot and make sure it settles properly. Push the slot back to its place. Set the SIM card PIN code as S203 device PIN code. Make sure PIN inquiry is in use in the SIM card.

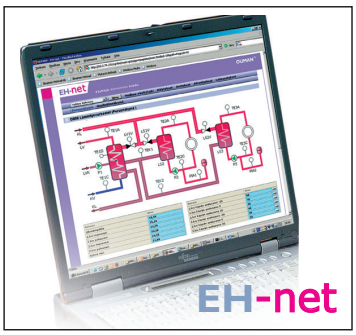
Surface thermostat C01A
AC 250V 15 (2,5) A

C01A

In floor heating solutions it is important to make sure that exessively hot water which could damage structures or surfaces doesn't ever get into the network. A mechanical thermostat should be installed on a supply water pipe which stops the circulation pump in case of overheating. Set the thermostat at 40 ... 45 °C. Set the S203 regulator's maximum limit between +35 ... +40 °C and the minimum limit between +20 ... +25 °C.

Remote control options:

Use a GSM phone requires that the GSM modem (optional) is connected to the controller.



Local Web Server remote control and monitoring (optional).

Internet-based on-line control room for professional remote control and monitoring (optional).

Product disposal

The enclosed marking on the additional material of the product indicates that this product must not be disposed of together with household waste at the end of its life span. The product must be processed separately from other waste to prevent damage caused by uncontrolled waste disposal to the environment and the health of fellow human beings. The users must contact the retailer responsible for having sold the product, the supplier or a local environmental authority, who will provide additional information on safe recycling opportunities of the product. This product must not be disposed of together with other commercial waste.

Index

3-point/5-point curve11-12, 35

Access 27
Active alarms 4, 20
Actuator running time 33, 40
Alarm groups 20-21
Alarm history 21
Alarm priority 20
Alarm recipients 21
Alarm routing 21-22
Alarms 4, 20-22
Alarm setting values 39
Automatic control 4, 14
Autumn dry 37, 13
Away control 7, 8, 36

Backup 41
Basic view 2
Browser use 45
Bus compensation 38
Bus device connections 30

Calculated room temperature 10
Changing language 23
Changing locking code 28
Circulation water temperature 7, 29
Compensation functions 37-38
Connections and configuration 29-34
Continious normal temperatur 14
Continious temperatur drop 14
Contrast 28
Control mode 14, 17
Cooling thermostat 18, 34
Create csv file 19

Date setting 23
Defrostning thermostat 18
Delayed outdoor temp. measurement 10, 36
Delayed room temp. measurement 10, 37
Deviation alarm 39
Device ID 24
Display settings 28
Disposal 45
District heat return temp. 7, 32
District heat supply temp. 7, 32
Domestic hot water anticipation 17, 29
Domestic hot water control 17, 7
Domestic hot water overheat alarm 39

EH-net 45
Energy measurement 7, 29, 33
Exception schedule 16

Favorite views 5
Forced control 14
Free temperature measurement (NTC10) 7, 29
FTP 26

General alarms 32, 33, 39
General compensation 38
General measurements 7, 29, 32
GSM-modem 24, 29, 44

Heating control circuits 16, 35
Heating curves 11-12, 35
Heating mode 35, 12
Heating thermostat 18, 34
Home-Away-control 8, 36
HW Circulation/anticipation 7, 17

Info 9-10
Inputs 7
IP-address 5, 26

Key words 43

Language selection 23
Locking code 28

Magnetic valve control 31
Manual use 32
Measurement adjustment 32
Measurements 7
Measurement labelling 34
ModBus RTU settings 26
ModBus RTU connections 30
Modbus TCP/IP settings 26
Modem connection 29
Modem status 27, 44

Naming 34
Network settings 24-27

Oulink 27, 44
Ounet 35
Outdoor temperature 7, 29
Outdoor temperature delay 36
Outputs 8

Parallel shift 35
PID 40
PIN 24
Pre increase 36
Pressure alarms 32, 39
Pressure measurement 32, 30
Protection class 48
Pump alarm 33
Pump control 34, 8
Pump running info 37, 7

Radiator heating delay function 36
Relay control 18
Remote use 45
Restore backup 41
Restore factory settings 41
Return water compensation 32, 38
Return water freezing risk alarm 39
Return water temperature 7, 29, 32
Room compensation 37
Room I control 37
Room temperature info 11
Room temperatur sensor connection 29, 30
Room temperatur setting 13, 37

Sensor fault alarms 4, 20
Setting values 13, 35-39
Signal strength 24
Software update 41
SIM card 24, 44
SMS settings 24
SMS use 32
SNMP settings 26
Special days 16
Sum alarm 34
Summer function 37, 13
Supply water pre-increase 36
Supply water temperature 7, 10, 12
Supply water temperature info 9
Supply water temp. max limit 11, 12, 35
Supply water temp. min limit 11, 12, 35
System settings 23-28

Technical information 48
Temperature drop 36, 8, 14-16
Temperature measurement adjustment 32
Textmessage kommunication 43
Time programs 15-16, 18
Time setting 26, 7
Transmitter measurement 32, 33
Trend 19
Trend file storage and transfer 19
Trend log sampling interval 19
Tuning values 40

Type information 28, 43

Updating 41

Valve flushing 37

Water volume measrument 7, 29, 33
Weekly schedule 15, 18

Technical information

Dimensions	width 230 mm, height 160 mm, depth 60 mm
Weight	1.3 kg
Protection class	IP 41
Operating temperature	0 °C...+50 °C
Storing temperature	-20 °C...+70 °C
Power supply L(91), N (92)	
Operating voltage /Power requirement	230 Vac / 200 mA
Maximum load for internal 24 VAC power supply	1A/23 VA
Front fuse	max 10A
Measurement inputs	
Sensor measurement (inputs 11-26)	Measurement channel accuracy: - NTC10 element: ±0,1 °C between -50 °C...+100 °C, ±0,25 °C between +100 °C...+130 °C - Also sensor tolerances and the effect of cables must be considered when calculating total accuracy
Milliampere signal (inputs 22- 24)	0 - 20 mA current message, meas. accuracy 0.1 mA
Voltage measurement (inputs 14, 17, 22-24)	0 -10V voltage message, meas. accuracy 50 mV.
Digital inputs (inputs 20-28)	Contact voltage 15 Vdc (inputs 27 and 28), Contact voltage 5 Vdc (inputs 25 and 26) Switching current 1.5 mA (inputs 27 and 28), switching current 0.5 mA (inputs 25 and 26) Transfer resistance max. 500 Ω (closed), min. 11 k Ω (open).
Counter inputs (27, 28)	Minimum pulse length 30 ms.
Analog outputs (53,54,64,66,68,70)	Output voltage range 0...10 V. Output current max 10 mA /output
15V voltage output(1)	15 VDC output maximum load 100 mA
24 VAC voltage outputs (51, 52)	Output current max. 1A / output Without external power supply the total continuous load capacity of triac outputs and 24 Vac outputs is 23 VA
Control outputs Triac (55...60)	24 Vac. Triac-outputs are in pairs (55, 56), (57, 58) and (59, 60). The total current output of each pair is max. 1A. Without external power supply the total continuous load capacity of triac outputs and 24 Vac outputs is 23VA
Data transfer connections	
RS-485-bus (3 and 6) (A and B)	Galvanically isolated, supported protocols Modbus-RTU
Optional eaccessories	
OULINK-ETH	OULINK-ETH OULINK ETH adapter provides Modbus TCP / IP interface for S203 device.
GSMMOD 5	By connecting the GSM modem to the S203, you can communicate with text messages to device and receive alarms to GSM phone. The modem is connected to either the device or the OULINK-ETH adapter RJ-45-I connector. GSMMOD5 can bepowered also by the S203 (connectors 1 and 2).
Additional Control panel	The external display is connected to the RJ45-II port. Use e.g. a CAT-5 cable up to 20 m.
RB-40	The relay module, which allows a 24 VAC Controls can be modified potential-free relay control. The number of relays is 4 pieces. Relay max load of 16 A / relay.
APPROVALS	
EMC-directive	2004/108/EC, 93/68/EEC
Interference tolerance	EN 61000-6-1
Interference emissions	EN 61000-6-3

CE

ISO 9001 DNV SERTIFIOITU ORGANISAATIO

XM315_S203 user manual_ENG_v. 2.0_20150413

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