INSTALLATION AND CONFIGURATION MANUAL

OUMAN® C203

Regulation for three circuits

Types of heating systems:

- Radiator heating
- Floor heating
- Preregulation of air conditioning
- Hot water regulation

www.ouman.fi

Ouman C203 overview

This is the installation and configuration for C203. It describes configuration and set-up of the regulator, customer-specific configuration as well as value settings.

The C203 is a heat regulator for three circuits that can be used to control two heating circuits and one hot water circuit. Regulator can show in the display various usage modes depending on the connections and configuration. You can navigate between functions by turning the C203's selection knob. When you press the selection knob (OK), you can view the details of specific functions.

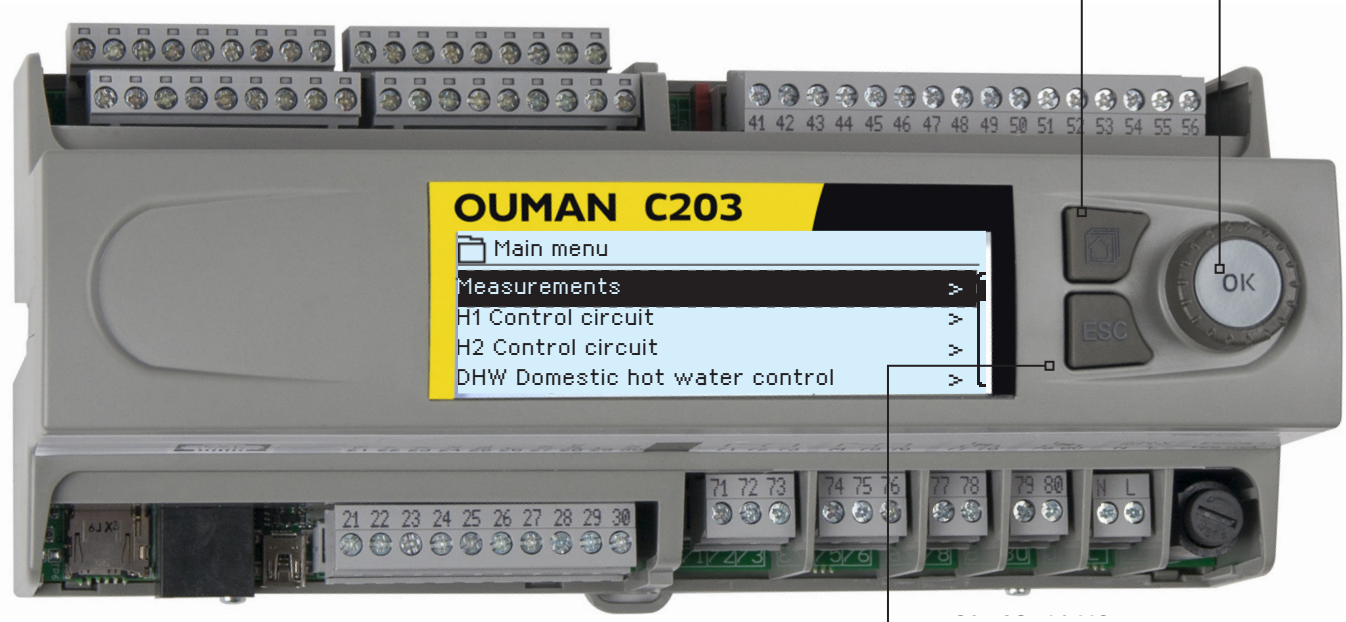
Turn the control knob to navigate in the menu.

Press the control button to enter the menu.

Control knob and OK

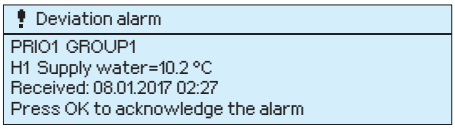
Navigating between favourite views or returning to basic view

- The regulator has the Basic view for H1 circuit as default
- Users can save their views if they want.



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

How to acknowledge alarms: Press OK and the alarm sound will stop. If the reason for the alarm has not been corrected, the exclamation point in the top right will continue to blink.



Alarm notice

Ouman C203 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.

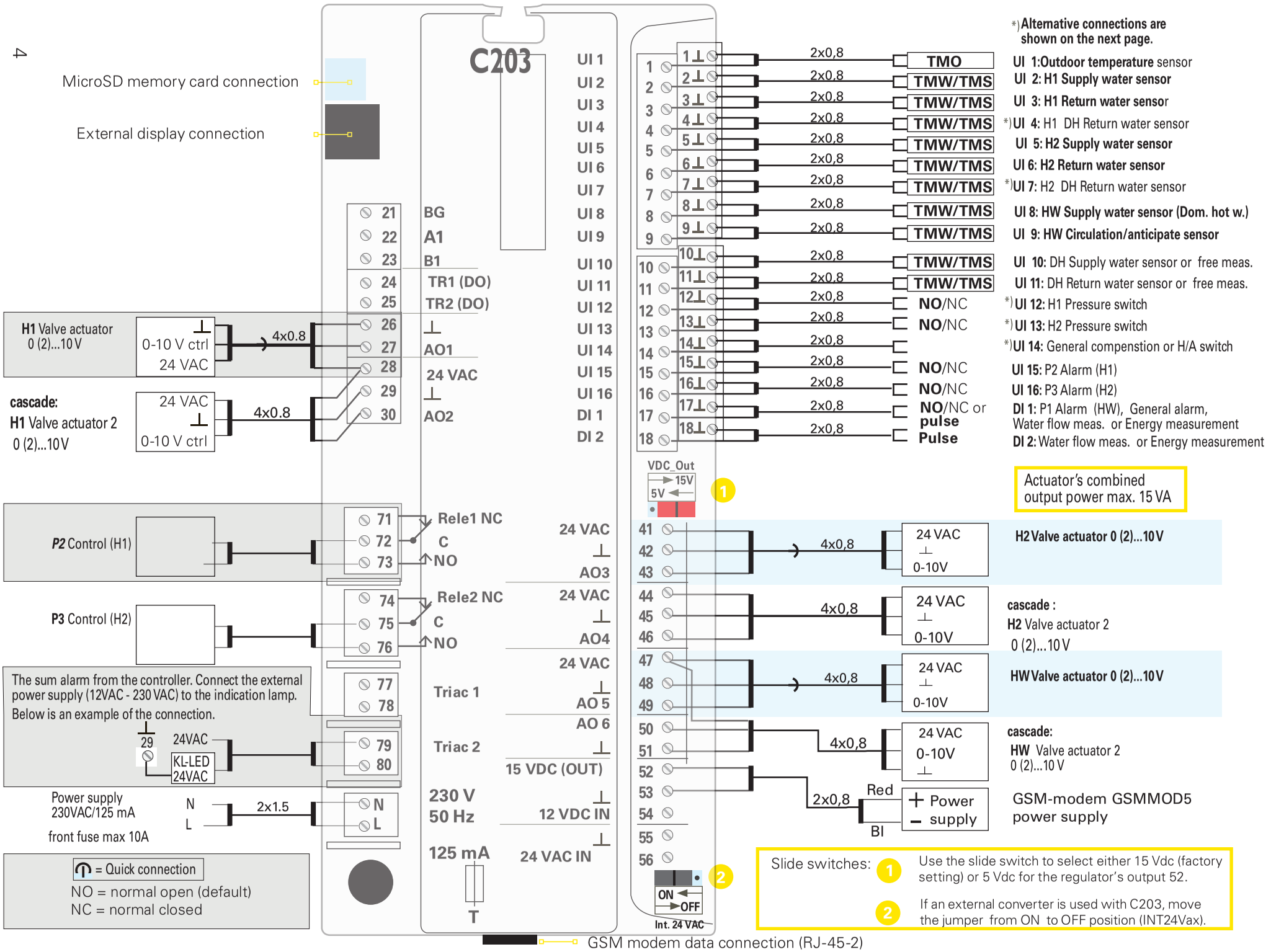
If there are several unacknowledged alarms, the latest activated alarm is always shown in the display. As soon as all active alarms have been acknowledged, the alarm window disappears and the alarm signal goes off.

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.

Content

1 Connection instructions



*) Alternative connections are shown on the next page.

- UI 1: Outdoor temperature sensor
- UI 2: H1 Supply water sensor
- UI 3: H1 Return water sensor
- *) UI 4: H1 DH Return water sensor
- UI 5: H2 Supply water sensor
- UI 6: H2 Return water sensor
- *) UI 7: H2 DH Return water sensor
- UI 8: HW Supply water sensor (Dom. hot w.)
- UI 9: HW Circulation/anticipate sensor
- UI 10: DH Supply water sensor or free meas.
- UI 11: DH Return water sensor or free meas.
- *) UI 12: H1 Pressure switch
- *) UI 13: H2 Pressure switch
- *) UI 14: General compenstion or H/A switch
- UI 15: P2 Alarm (H1)
- UI 16: P3 Alarm (H2)
- DI 1: P1 Alarm (HW), General alarm, Water flow meas. or Energy measurement
- DI 2: Water flow meas. or Energy measurement

Actuator's combined output power max. 15 VA

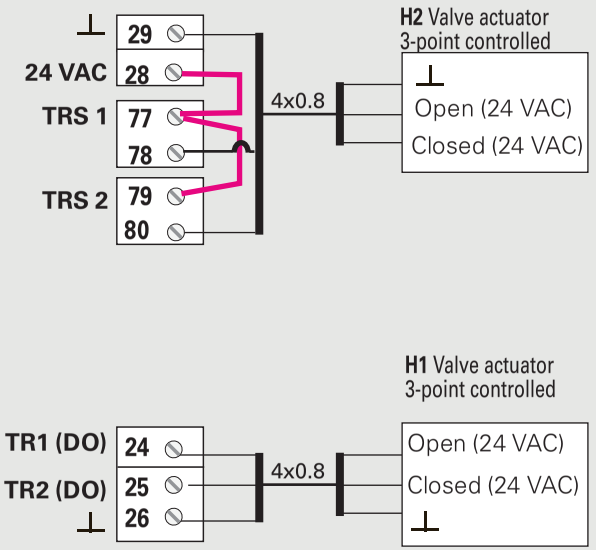
Slide switches:

1. Use the slide switch to select either 15 Vdc (factory setting) or 5 Vdc for the regulator's output 52.
2. If an external converter is used with C203, move the jumper from ON to OFF position (INT24Vax).

Alternative connections

Primary connection	Alternative connection	C203
UI 4 **H1 Heat exchanger DH Return water sensor**	**H1 Room temperature sensor** (more information p.9)	TMR (or 0-10V transmitter) — 2x0,8 — 4 ⊥
UI 7 **H2 Heat exchanger DH Return water sensor**	**H2 Room temperature sensor** (more information p. 9)	TMR (or 0-10V transmitter) — 2x0,8 — 7 ⊥
UI 10 **DH Supply water sensor** (Freely labelled)	**General measurement** Freely labelled	NTC-10 — 2x0,8 — 10 ⊥
UI 11 **DH Return water sensor** Freely labelled	**General measurement** Freely labelled	NTC-10 — 2x0,8 — 11 ⊥
UI 12 **H1 Pressure switch** (more information p. 10)	**H1 Pressure transmitter,** 0-20 mA or 0...10 V	⊥ 0-20mA/0-10V 24 VAC — 4x0,8 — 12 ⊥ (24 VAC e.g strip conn. 44)
	H1 Pressure switch, 2-wire connection	0-20mA 15 VDC — 2x0,8 — 12 (strip connector 52)
	General measurement Freely labelled	NTC-10 — 2x0,8 — 12 ⊥
UI 13 **H2 Pressure switch** (more information p. 10)	**H2 Pressure transmitter,** 0-20 mA or 0...10 V	⊥ 0-20mA/0-10V 24 VAC — 4x0,8 — 13 ⊥ (24 VAC, e.g strip conn. 44)
	H1 Pressure transmitter, 2-wire connection	0-20mA 15 VDC — 2x0,8 — 13 (strip connector 52)
	General measurement Freely labelled	NTC-10 — 2x0,8 — 13 ⊥
UI 14 **General compensation** (can be labelled, more information p. 10)	**Home/Away-switch** NO = normal open (default)	**NO**/NC — 2x0,8 — 14 ⊥
	General compensation, transmitter measure	⊥ 0-10V 24 VAC — 4x0,8 — 14 ⊥ (24 VAC, e.g strip conn. 44)
	General compensation, Transmitter measurement from separate control unit.	⊥ 0-10V — 2x0,8 — 14 ⊥

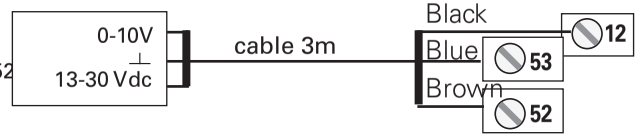
3-point controlled actuator



PX2.100P Pressure transducer

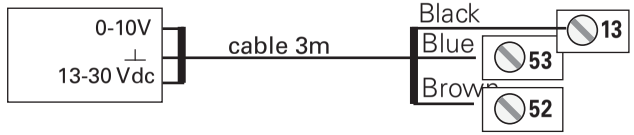
UI 12

H1 Pressure transducer, PX2.100P

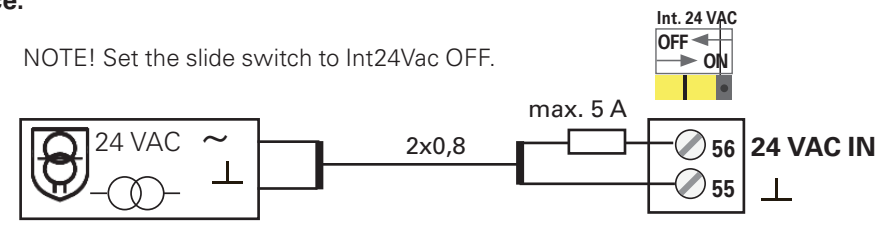


UI 13

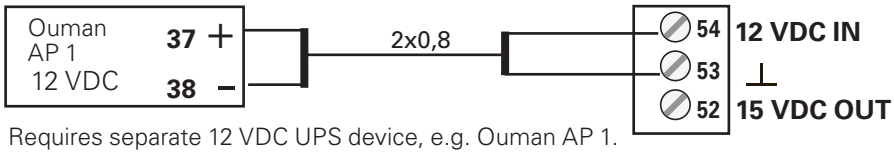
H2 Pressure transducer, PX2.100P



Connection of external power source:



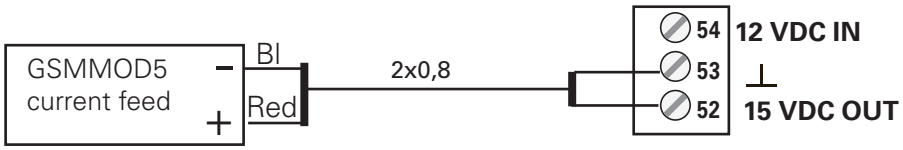
Battery backup:

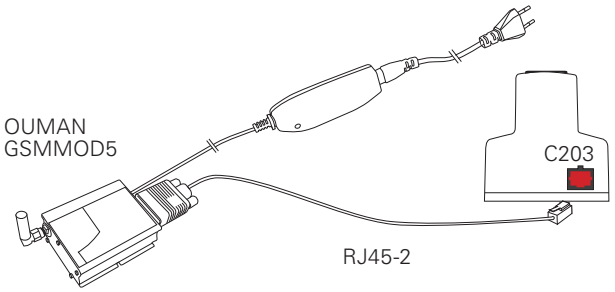


Requires separate 12 VDC UPS device, e.g. Ouman AP 1.

GSM-modem connection:

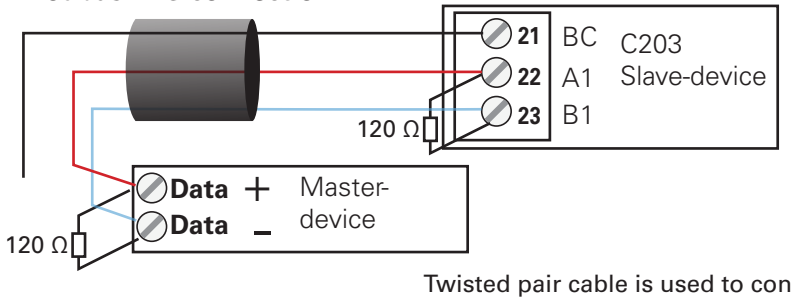
GSMMOD5





Current supply for the GSM modem can come from the network via a network device or from C203. The modem is connected to C203's RJ45 Port 2. If OULINK is connected to C203, the modem is connected to OULINK device's RJ45 Port 2.

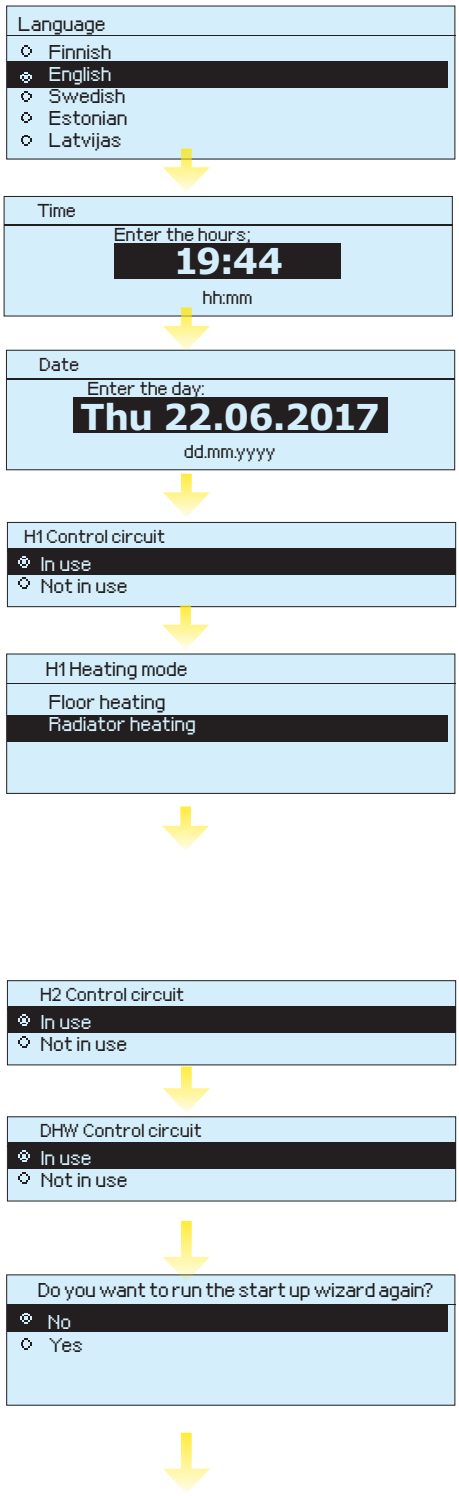
Modbus RTU connection:



Twisted pair cable is used to connect RTU devices, e.g. DATAJAMAK 2 x (2 + 1) x 0.24.
The bus cable's fault detector (FE) is connected to the BG connector of the C203. In the master device the fault detector 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 to the regulator's system settings.

2 Start up wizard



Start-up wizard allows you to specify the regulator's basic settings. Accept the selection by pressing the selection knob (OK). Change the selection by rotating the selection knob.

Time

Next, set the time. Hours and minutes can be set separately.
Set hours and press OK to accept.
Set minutes and press OK to accept.

Date

Set the date and press OK (the day of the week is updated automatically).
Set the month and accept by pressing OK.
As final point set the year and accept by pressing OK.

H1 Circuit configuration

When the circuit is taken into use, you must also select a heating method. Regulation curves and settings for various heating methods have been pre-set at the factory and usually do not need to be changed.
Select a circuit-specific heating method:
Floor heating is intended for normal floor heating
Radiator heating: suited for a number of new radiator-heated locations such as passive or energy efficient houses.

Select the type of actuator.

H2 Circuit configuration

H2 circuit configuration follows the same steps as H1 circuit configuration.

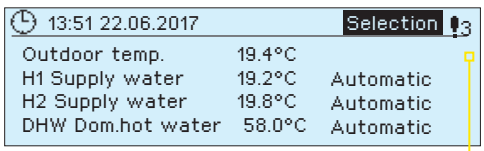
DHW Circuit configuration

When you take the circuit into use, you can select a voltage-controlled motor type.

Perform start-up sequence again?

If you select "Yes", the regulator will display the start-up sequence when it is powered on. If you select "No", the regulator will display the basic view when it is powered on. The heating method can then be set in the circuit settings and service mode settings. Time and language settings are found under system settings.

NOTE! If you later want to implement controlled start-up again, select in the service mode "Activate startup wizard."



Regulator basic mode

Heating control of the main factors has been gathered to the home screen of the controller. When the device is in sleep mode (button has not been pressed for 10 minutes), the display shows the basic display.

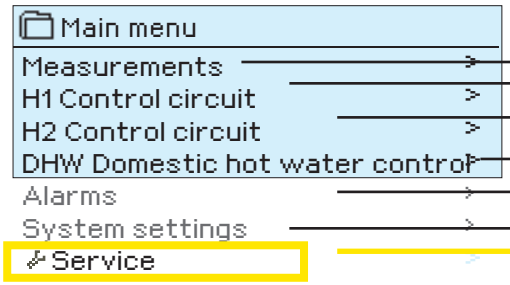
Alarm notice

- A blinking exclamation mark indicates that the device is active alarms.
- This number shows the number of active alarms.

3 Service

Here is the C203 controller menu structure. Press the control button (OK) to enter the menu.

Turn the control knob to navigate in the menu.
Press OK at the "Service" row.

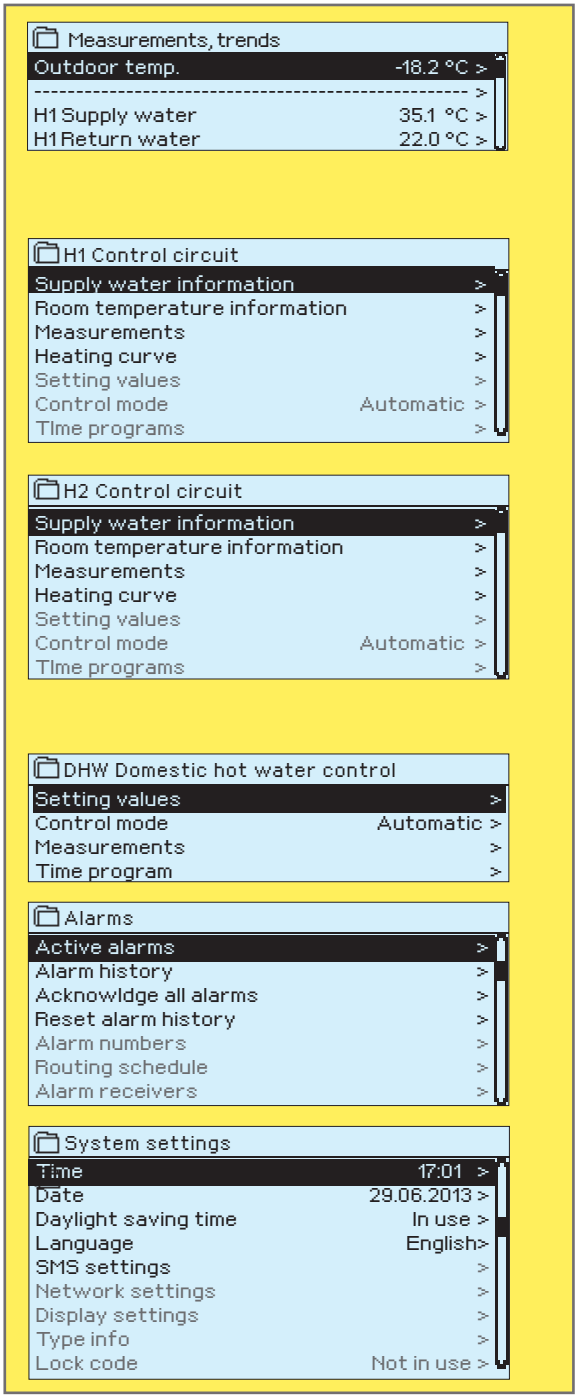


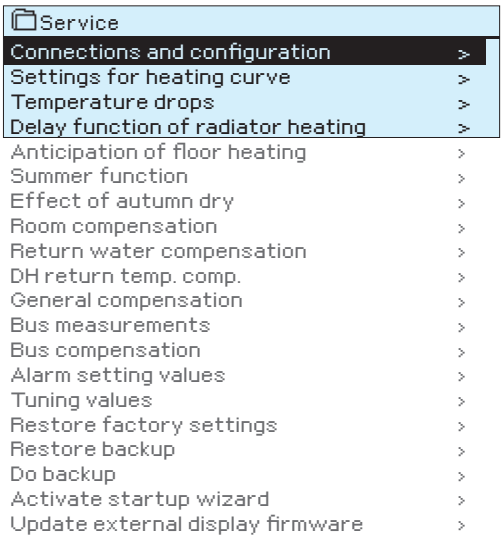
Service mode can be accessed with a service code.

Enter the service code and press OK.

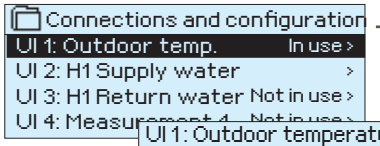
Service mode shows the regulator's connections and is used to service functions.

Regulator tuning is also done in service mode and it includes all of the regulator's value settings.

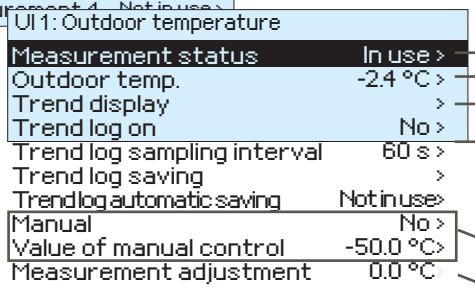




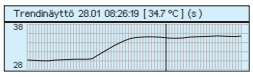
3.1 Connections and configuration



Usage connections are grouped according to connection points and functions. When you press OK, a menu will open by the measurement/ connection point that you can use to:



- You can take inputs/outputs into use
- read measurement information
- inspect connection point trends
- change trend log settings
  - The trend log can hold 2,000 measurement samples. (if the sample interval is 60 seconds → log for 33 hours)
  - The regulator produces a separate trend log for each measurement.
  - The trend log is saved in a file (for example UI1.csv).
- operate a connection point manually
- If for example the measurement reads 0.5°C too much, set the temperature correction to -0.5°C.
- rename some of the connection points, see page 11.



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

☒ Check the functions on the screen that have been initialised.

Connection place	Measurement	Alternative measurement options	More info
UI1	**Outdoor temp.**	☐ In use	Note! Outdoor temperature can also read from bus.
UI 2	**H1 Supply water**	☐ In use	
UI 3	**H1 Return water**	☐ In use	
UI 4	Meas. 4	☐ Free measurement ☐ H1 Room meas. NTC-10 ☐ H1 Room meas. 0-10 V ☐ H1 DH Return	Note! H1 Room temperature can also read from bus. **Message scaling** (Room meas. 0...10 V) Temperature minimum ___(0.0 °C) Temperature max ___(50.0 °C)
UI 5	**H2 Supply water**	☐ In use	
UI 6	**H2 Return water**	☐ In use	
UI 7	Meas. 7	☐ Free measurement ☐ H2 Room meas. NTC-10 ☐ H2 Room meas. 0-10 V ☐ H2 DH Return	Note! H2 Room temperature can also read from bus. **Message scaling** (Room meas. 0...10 V) Temperature minimum ___(0.0 °C) Temperature max ___(50.0 °C)
UI 8	**DHW Domestic hot water**	☐ In use	
UI 9	**DHW Circulation water**	☐ In use	
UI 10	Meas. 10	☐ General meas. NTC-10	→ Name: **DH Supply temperature),** other specify _____ **General measurement settings** UI 10 Alarm entry delay ___(60 s) UI 10 Alarm priority ___ (1 = Emergency) UI 10 Alarm min limit ___(-51 °C) UI 10 Alarm max limit ___(131 °C)
		☐ Switch alarm	→ Name: **Switch alarm (UI10),** other specify _____ Digital input type: ☐ Normally open ☐ Normally closed **Switch alarm setting:** UI 10 Alarm entry delay ___(30 s) UI 10 Alarm priority ___ (1 = Emergency)
UI 11	Meas. 11	☐ General meas. NTC-10	→ Name: **DH Return water temp.),** other specify _____ **General measurement settings** UI 11 Alarm entry delay ___(60 s) UI 11 Alarm priority ___ (1 = Emergency) UI 11 Alarm min limit ___(-51 °C) UI 11 Alarm max limit ___(131 °C)
		☐ Switch alarm	→ Name: **Switch alarm (UI10),** other specify _____ Digital input type: ☐ Normally open ☐ Normally closed **Switch alarm setting:** UI 11 Alarm entry delay ___(30 s) UI 11 Alarm priority ___ (1 = Emergency)

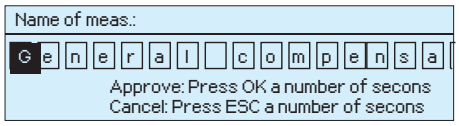
Input	Name	Alternative selections	Note
UI12	Measurement 12	☐ General meas. NTC10→ Name: Meas. UI12; other _____ ☐ Pressure switch ☐ Pressure transmitter V ☐ Pressure transmitter mA **Pressure switch:** Type of digital input: ☐ Normally open ☐ Normally closed	**Pressure transmitter measurement:** Pressure measurement: Automatic/Manual Measuring area ___(16.0 bar, setting range 0.0...25.0) Name of meas.: (Pressure measurement 1) , other, _____, Measurement adjustment:___0.00V, (-5.00...5.00) **Pressure measurement settings:** Pressure 1 min limit ____ (0.5 bar (0.0...20.0) Pressure 1 max limit ____ (15.0 bar (0.0...20.0)
UI 13	Measurement 13	☐ General meas. NTC10→Name: Meas. UI13; other _____ ☐ Pressure switch ☐ Pressure transmitter V ☐ Pressure transmitter mA **Pressure switch:** Type of digital input: ☐ Normally open ☐ Normally closed	**Pressure transmitter measurement:** Pressure measurement: Automatic/Manual Measuring area ___(7.0 bar, setting range 0.0...25.0) Name of meas.: (Pressure measurement 2) , other, _____, Measurement adjustment:___0.00V, (-5.00...5.00) **Pressure measurement settings:** Pressure 2 min limit ____ (0.5 bar (0.0...20.0) Pressure 2 max limit ____ (15.0 bar (0.0...20.0)
UI14	Measurement 14	☐ General compensation, 0-10 V ☐ General compensation, 0-20 mA ☐ Home/ Away switch	**General compensation:** In circuit-specific value settings you can specify the measurement message range in which compensation is used, as well as the maximum correction to supply water temperature that can be made using compensation. 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 into use (see Service mode→ Temperature drops).** You can also do Home/Away control in "Measurements"-menu or by SMS message ("Home"/"Away"), if a GSM-modem is connected to the controller.

ALARMS, INDICATIONS AND PULSE MEASUREMENTS

UI 15	Alarm/ Indication 15	☐ P2 Indication → Name: P2 Pump ☐ P2 Alarm → Alarm priority ___ (1 = Emergency) **Type of digital input:** ☐ Normally open ☐ Normally closed Nimi_____	**Pump indication** can be selected when pump control is also connected. The regulator emits a conflict alarm if the regulator switches the pump on but it does not activate. The alarm has a 5 s delay. **Pump alarm:** Pump indication data is supplied by the frequency converter unit. The regulator emits a pump alarm when a conflict state occurs.
UI 16	Alarm/ Indication 16	☐ P3 Indication → Name: P3 Pump ☐ P3 Alarm → Alarm priority ___ (1 = Emergency) **Type of digital input:** ☐ Normally open ☐ Normally closed Name_____	
DI 1	Digital input 17	☐ P1 Alarm→ Name: Pump 1 alarm ☐ General alarm → General alarm status Alarm priority ___ (1 = Emergency) ☐ Water flow measurement ☐ Energy measurement **Type of digital input:** ☐ Normally open ☐ Normally closed Name_____	**Pulse measurement settings:** **Water flow measurement** Pulse input scaling: ____ 10 l/pulse (1...100l/pulse) Counter initial value _____0.0 m3 Name of meas.: DI1(2) Water flow measurement **Energy measurement** Pulse input scaling: ____ 10 kWh/pulse (1...100 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	Digital input 18	☐ Water flow measurement ☐ Energy measurement Name_____	

Input	Name	Alternative selections		Note
Actuator control				
	H1 Actuator control	A01	☐ 0-10 V / ☐ 2-10 V /	Actuator running time open___ 150 s (10...500 s)
		A01	☐ 10-0 V / ☐ 10-2 V	Actuator running time close___ 150 s (10...500 s)
		TR1, TR2	☐ 3-point	
	H2 Actuator control	A03	☐ 0-10 V / ☐ 2-10 V /	Actuator running time open___ 150 s (10...500 s)
		A03	☐ 10-0 V / ☐ 10-2 V	Actuator running time close___ 150 s (10...500 s)
		TRS 1, TRS2	☐ 3-point	
	DHW Actuator control	A05	☐ 0-10 V / ☐ 2-10 V	Actuator running time ___ 15 s (10...500 s)
		A05	☐ 10-0 V / ☐ 10-2 V	
	H1 Actuator control 2 (cascade)	A02	☐ 0-10 V / ☐ 2-10 V	Actuator running time ___ 150 s (10...500 s)
		A02	☐ 10-0 V / ☐ 10-2 V	
	H2 Actuator control 2 (cascade)	A04	☐ 0-10 V / ☐ 2-10 V	Actuator running time ___ 150 s (10...500 s)
		A04	☐ 10-0 V / ☐ 10-2 V	
	DHW Actuator control 2 (cascade)	A06	☐ 0-10 V / ☐ 2-10 V/	Actuator running time ___ 15 s (10...500 s)
		A06	☐ 10-0 V / ☐ 10-2 V	
PUMP CONTROLS				
	P2 Pump control (H1)	Relay 1 (connectors 71-73)	☐ Automatic ☐ Manual →	☐ Stop ☐ Run
	P3 Pump control (H2)	Relay 1 (connectors 74-76)	☐ Automatic ☐ Manual →	☐ Stop ☐ Run
SUM ALARM				
	TR 2 (connectors 79-80)	Sum alarm (TRS 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 ☐ 1- or 2-lclass	**An aggregate alarm is emitted if an alarm in a selected alarm class (priority) is activated.** Class 1 is for alarms classified as urgent that should always be immediately forwarded. These include freezing risk alarms, pump alarms or malfunctions in supply water sensors. Class 2 includes room and outdoor temperature sensor alarms. **When a sum alarm is activated, the connector 79-80 is closed. When a sum alarm is acknowledged, the connector 79-80 is opened.**

Renaming:

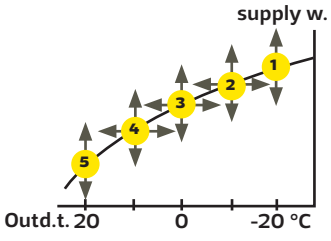
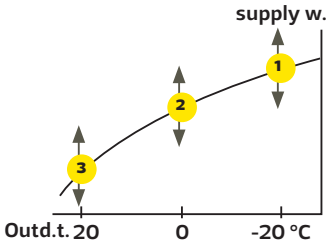
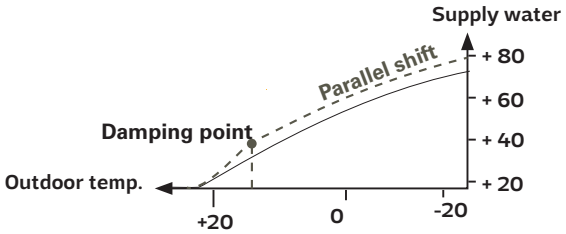


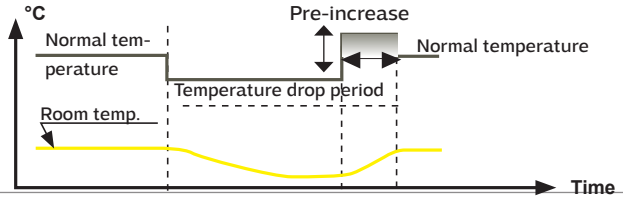
Navigate to "Measurement name" and press OK. A naming dialogue box will open. Turn the selection knob and accept a letter by pressing OK.
Continue to the next screen by pressing OK.
Return to the previous screen by pressing ESC.
Accept the name by pressing OK for an extended period of time.

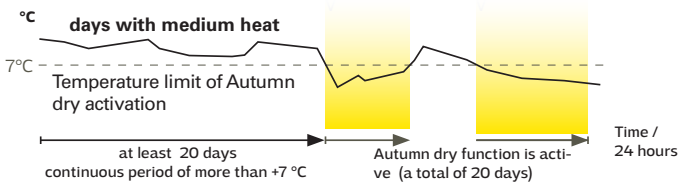
3.2 Heating curve settings

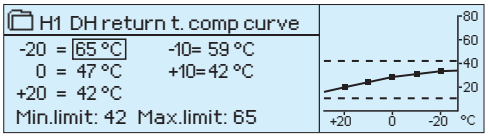
Service mode includes all value settings for the regulator. Some of the value settings can also be found in the circuit's "Value settings" menu. Value settings preceded by a -symbol are found only in service mode.
Changing a value setting: Select the desired value setting by turning the selection knob. Press OK. A new window will open where changes can be made. Accept the changes by pressing OK. Exit change mode by pressing ESC.

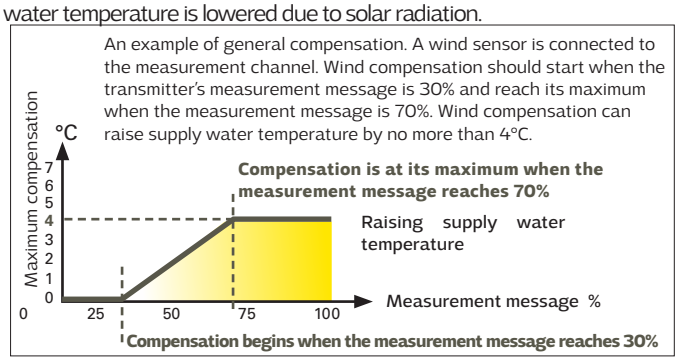
The regulator shows H1 circuit regulation curve settings first and then H2 circuit settings.
Both circuits have the same factory settings and setting ranges.

Setting	Factory setting	Range	Explanation
Control circuit		Lietot/Nelie-tot	Control circuits are already taken into use in start-up wizard. If you want to have the control disabled, select " Not in use".
Heating mode		Radiator heating/ Floor heating	In the controller there are preset the typical heating curves for floor heating and radiator heating. Also the factory settings are determined by the heating type. If the radiator heating is selected, the controller uses the outdoor temperature delay in supply water control (see Radiator heating delay). If the floor heating is selected, the controller uses outdoor temperature anticipate (see Floor heating anticipate).
Heating curve	5-point curve	3-point curve/ 5-point curve	 Using the 5-point curve you can change the regulation 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.  Using the 3-point curve you can change supply water temperatures with the outdoor temperature values -20°C, 0°C and +20°C.
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	Supply water minimum limit. Can be specified in the regulation curve settings.
Max.limit Radiator heating Floor heating, norm.	 70 °C 45 °C	0 ... 99 °C	Supply water maximum limit. Can be specified in the regulation curve settings.

Setting	Factory setting	Range	Explanation
DHW Control circuit	Not in use	In use/ Not in use	The control circuits will be taken into use already in start up wizard. If you want to have the control disabled, select " Not in use".
DHW Domestic hot water setting value	58.0 °C	20 ... 90 °C	DHW Supply water temperature setting.
DHW increase/drop time prog.	Not in use	In use/ Not in use	Domestic hot water increases and drops can be made by DHW time program. The change of temperature setting value is made either by the week calendar or exception calendar.
Domestic hot water drop	10.0 °C	0 ... 30 °C	The amount of drop in domestic hot water drop/increase time programs.
Domestic hot water increase	10.0 °C	0 ... 30 °C	The amount of increase in domestic hot water drop/increase time programs.
Temperature drops			
Temperature drop Supply water, radiator heating Supply water, floor heating Room temperature	 3 1.5 3	 0... 40 °C 0... 40 °C 0... 40 °C	Temperature drop in supply water, which can start due to scheduling software or a Home/Away text message command or when selecting constant big temperature drop as the circuit's mode. If room temperature measurement has been taken into use, the temperature drop is given directly as a room temperature drop.
Big temperature drop Supply water, radiator heating Supply water, floor heating Room temperature	 5 2 5	 0...40 °C 0...40 °C 0...40 °C	A big temperature drop in supply water temperature can be initiated by the scheduling programme or a command from the home/away switch, or when the continuous big temperature mode mode is selected. If room temperature measurement has been taken into use, the big temperat. drop is given directly as a room temperature drop.
Pre-increase Radiator heating Floor heating	 4.0 1.5	 0... 25 °C 0... 25 °C	The amount, in degrees, of the automatic supply water pre-increase occurring at the end of the temperature drop (week clock or exception calendar). The preincrease helps raise the room temperature more quickly back to a nominal room temperature after a temperature drop. value.
Pre-increase	In use	n 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	A preliminary increase takes effect earlier than a schedule programme for returning to normal temperature, corresponding to the length of the preliminary increase time period. The amount of a preliminary increase is added to the value setting for normal temperature.
Home/Away control	Not in use	In use/ Not in use	The Home/Away mode makes transitions between temperature levels. If transmission measurement is connected to the regulator for general compensation, you cannot connect the Home/Away switch but you can use the Home/Away mode via SMS or from the regulator's "Measurements" menu.
Temp.lev. of Away status	Temp.drop	Temp. drop/ Big temp.drop	If the Home/Away mode is in use, you can select the desired temperature in the "Away" mode. The selections are temperature drop or big temperature drop. The default is temperature drop.
Delay function of radiator heating			
Outd.temp.delay on temp.drop Radiator heating	2	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 Radiator heating	2	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.""Outd.temp.delay on temp. increase."

Setting	Factory setting	Range	Explanation
Anticipating of floor heating			
Floor heat. anticipate on temp.drop Floor heating	2	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. Floor heating	2	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.
Summer function			
Pump summer stop	In use	In use/ Not in use	If the regulator is connected to control the pump, the pump can be stopped while the summer function is in use.
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 as selected.
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 prevention limit." The summer function is also turned off if room temperature falls at least 0.5°C below the value setting or when the regulator restarts.
Summer function off delay max **Summer function off delay factor**	10 2	0...20 h 1...3	The summer function switch off delay determines the starting time for heating. This helps avoid unnecessary heating during summer in case the outdoor temperature falls momentarily. The switch off delay is calculated as follows: [the duration of the summer function] x [summer function off delayfactor] (limited to the set max delay value). The switch off delay is reset if the room sensor is active and the room temperature drops more than 0.5 °C below the set value, or in the event of a power cut.
Outdoor temp. forecast	Not in use	In use/ Not in use	In addition to measured outdoor temperature, temperature forecasts from Foreca can be used with the summer function (requires Ounet connectivity). If the regulator has not received outdoor temperature forecasts via the data channel for 2 hours, the forecast is not used in the summer function.
Valve summer shut down	In use	In use/ Not in use	The value 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 regulator opens the vent to 20% and then closes it. If the regulator has stopped the pump, the regulator uses 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 (10 hour time constant for measurement). 
Autumn dry effect on supply water Supply water (Radiator heating) Supply water (Floor heating) **Autumn dry effect on room temp.**	 4.0 1.5 1.0	 0... 25 °C 0... 15 °C 0.0... 1.5 °C	The value setting shows how much the autumn dry function raises supply water temperature. If room temperature regulation is in use, the user sets how much the room temperature is raised.

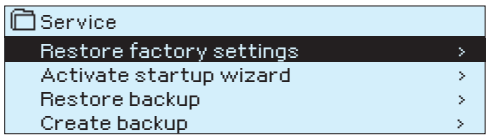
Setting	Factory setting	Range	Explanation
Room compensation			
Room compensation	In use	In use/ Not in use	It will be decided whether room temperature affects regulation of supply water. If the measured room temperature differs from its setting value, room compensation corrects the temperature of the supply water.
Room temperature	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. Taking it into use is done from the room setting values menu.
Room temp. measurement delay	2.0	0...2 h	Amount of room temperature measurement delay (time constant). Different buildings react to temperature changes at different rates. This setting value can reduce the effect of the building on room regulation.
Room compensation ratio Radiator heating Floor heating	 4.0 1.5	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 Radiator heating Floor heating	 16.0 5.0	0...25 °C	Room compensation's maximum effect on the supply water.
Room comp.adjustment time (I-time) Radiator heating Floor heating	 1.0 2.5	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-time max effect on supply water Radiator heating Floor heating	 3.0 2.0	0 ... 15 °C	Room compensation correction time 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.
Return water compensation			
Return water compensation	2.0	0 ... 7.0	If return water temperature falls below the setting value for danger of return water freezing, supply water temperature is raised by the value: amount of the deficit multiplied by the compensation ratio.
DH return water compensation			
H1/H2 DH return temp. comp.	Not in use	In use/ Not in use	The function, which drops the setting value of heating circuit supply water, if the DH return water temperature from the heat exchanger exceeds the value of the compensation curve which is proportional to outdoor temperature.
H1/H2 DH return temp. max comp.	20	0 ... 50 °C	The value by which DH Return compensation can affect in maximum to supply water setting.
H1/H2 DH return t. comp curve			Enabled a 5-point curve, which can be edited. 
Min. limit	42	20... 60 °C	When DH return water temperature from heating exhanger is smaller than min. limit, the effect of DH retur water compensation is zero.
Max.limit	67	50... 70 °C	When DH return water temperature from heating exhanger is higher than max limit, the effect of DH retur water compensation affects always.
H1/H2 DH ret. water comp. P-area	200	2... 500 °C	P-area of DH ret. water comp. in PI-control.
H1/H2 DH ret. water comp. I-time	180	0 ... 300 s	I-time of DH ret. water comp. in PI-control.

Setting	Factory setting	Range	Explanation
General compensation			
			General compensation can increase or decrease the temperature of supply water. Transmitter measurement can utilise for example 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. (Implementation of a transmitter and setting values for the measurement area are done during implementation of measurement.)
Comp.reaches max on meas.signal	100	0 ...100 %	
Compensation min effect	0	-20 ... 20 °C	Minimum compensation shows how much the supply water temperature is changed when compensation begins.
Compensation max effect	0	-20 ... 20 °C	Maximum compensation shows 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.  An example of general compensation. A wind sensor is connected to the measurement channel. Wind compensation should start when the transmitter's measurement message is 30% and reach its maximum when the measurement message is 70%. Wind compensation can raise supply water temperature by no more than 4°C.
Compensation filtering	5	0...300 s	Output signal filtering. The filtering attenuates the effect of rapid changes. I-time of DH ret. water comp. in PI-control.
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 temp. 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 temp. 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.
Bus compensation			
			In channel compensation the need for compensation can be specified by an external device that relays the need for a supply water temperature exception to the C203 through a communication channel (e.g. Ounet S-compensation).
Supply water max. increase	0	0 ... 30.0 °C	Channel compensation cannot increase supply water temperature more than allowed by the setting value.
Supply water max. drop	0	-30.0 ... 0 °C	Channel compensation cannot drop supply water temperature more than allowed by the setting value.
Alarm setting values			
Alarm signal	On	On/ Off	The alarm sound can choose to mute. The alarm is displayed in the active alarms and forwarded even if the alarm sound is turned off.
H1 (H2) Control: Alarm settings **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 regulator that causes an alarm when the deviation has continued for the return delay time. A deviation alarm is not allowed when heating has been turned off for the summer, when the regulator 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	60min	0...120 min	The alarm goes off if the deviation has lasted for the set time.
Supply water high limit alarm Floor heating Radiator heating	 70.0 80.0	40...100 °C	Supply water high limit alarm
High limit alarm delay	5	0...120 min	A deviation alarm occurs when the value defined as the upper limit for supply water alarm is exceeded for more than the delay time specified.

Setting	Factory setting	Range	Explanation
Return water freezing risk limit	8.0	5...25 °C	The regulator will emit a return water freezing risk alarm when return water temperature has remained below the freezing risk limit for longer than the allowed delay time. The freezing risk alarm allows for a 5 s delay.
Return water alarm delay	5	1...120 min	
DHW control alarm settings:			The controller gives a domestic hot water alarm when the temperature of domestic hot water exceeds the preset overheating alarm limit or falls below the low limit alarm limit and the excess/drop has lasted the delay time of overheating/ low limit alarm. The exit delay of the alarms is 5 minutes. If either DHW increase or drop is in use, the alarm limits will change so that in increase/drop mode the alarm limit is always at least 5 degrees above/below the current DHW setting value.
DHW over heating alarm limit	68	65...120 °C	
DHW low limit alarm limit	40.0	20...70 °C	
DHW over heat./low limit alarm delay	10	0 ... 15 min	
Pressure measurements 1 and 2 have their own value settings.			The controller gives a lower limit alarm when the pressure measurement falls below the lower limit of the pressure measurement set value. Alarm goes off when the pressure is 0.1 bar over the limit. 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.
Pressure 1(2) min limit	0.5	0...20 bar	
Pressure 1(2) max limit	15	0 ... 20 bar	
Alarm limits of free temperature measurements UI 10 and UI11			The controller gives an alarm, when the measured temperature has been under minimum limit or over maximum limit for alarm entry delay.
UI 10 (11) Entry delay	60	0...300 s	
UI 10 (11) Alarm min limit	-51	-51...131 °C	The controller gives minimum limit alarm, when the temperature drops below the minimum limit of free measurement. The alarm disappear, when the temperature is 1.0 °C over the minimum limit.
UI 10 (11) Alarm max limit	131	-51...131 °C	The controller gives maximum limit alarm, when the temperature rises above the maximum limit of free measurement. The alarm disappears when the temperature is 1.0°C below the maximum limit.
Contact alarm of free measurements UI 10 and UI11			The controller gives an contact alarm, when the entry delay has passed after an alarm activation.
UI 10 (11) Entry delay	30	0...300 s	
Tuning values			
H1 and H2 Tuning values: P-area	200	2...600 °C	Supply water temperature change at which the actuator runs the valve at 100%. Eg. 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 s	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 motor 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 waver!
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 rate of change (set the setting smaller).
Actuator open running time	150	10 ... 500 s	The open running time indicates how many seconds go by if the actuator runs a valve nonstop from a closed position to an open position. Actuator close running time indicates the running time from open position to close position.
Actuator close running time	150	10 ... 500 s	
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 waver!
Anticipating	120.0	1. ... 250 °C	Uses anticipate sensor measurement information to speed up regulation when HW consumption changes. Increase the anticipate 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 open running time	15	10 ... 500 s	The running time indicates how many seconds go by if the actuator runs a valve nonstop from a closed position to an open position. Actuator close running time indicates the running time from open position to close position.
Actuator close running time	15	10 ... 500 s	

3.3 Restore factory settings and updates

Restore factory settings



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

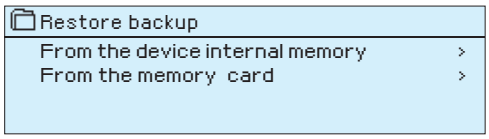
Create backup

Create a backup, when C203 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.

Technical requirements to microSD memory card:

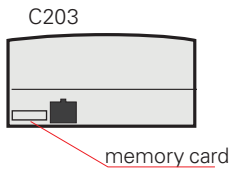
- Standard: micro SDHC, UHS
- Capacity: 4...32 GB,
- File system: FAT 32
- Class: 4...10+

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.

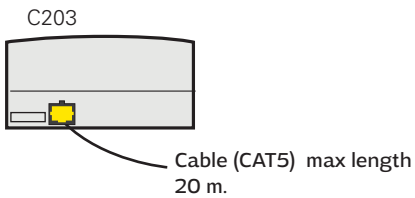
Software updates



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 C203.
2. Wait until error message "Memory card error!" is shown in the display
3. Insert new microSD memory card which includes new software to C203.
4. C203 asks if you want to save existing device configuration to be taken in use after the update.
5. C203 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



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 C203. The software update is started (the display flashes). The update process takes few minutes.

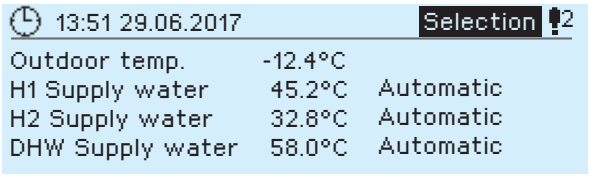
Activate startup wizard

Start-up wizard allows you to specify the regulator's basic settings. Accept the selection by pressing the selection knob (OK) (see page 7).

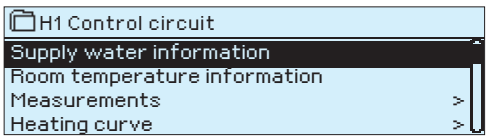
4 Favourite views

You can easily navigate from the basic view to the desired menu using the favourite view function. By tapping the button you can navigate from one favourite view to another. There can be a maximum of five of these views. The pre-installed favourite views show the circuits' main menus. You can also save a particular regulator view as your own favourite view. You can return from favourite views to the basic view by tapping the ESC key until the basic view appears.

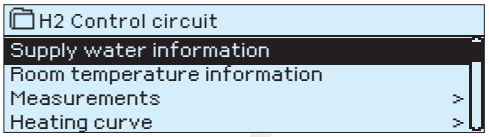
Basic view



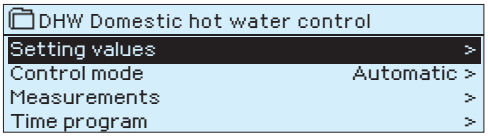
H1 Circuit menu



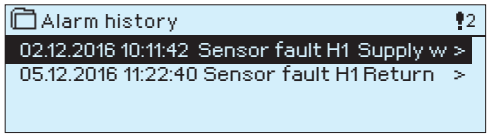
H2 Circuit menu



HW Circuit menu



Your own favourite view



Your own favourite view

Setting a favourite view

Get to set your own favorite displays when you exit the service mode of the controller back to basic mode. If you want to immediately go from the service mode to the basic mode, press and hold the ESC key as long as the control displays the main screen and the backlight is dimmed. (The controller automatically goes to base mode, where the keys of the controller is not touched for 10 minutes.)

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 opens. Use the dial to select the position 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.

Note! Favorite the screens can not be stored in the service mode screens.

Optional equipments and remote control options

OULINK

Adapter for C203 for networking
OULINK is an C203 adapter that is providing Modbus TCP/IP interface to C203 device.

- Integrated Ouman Access connection
- Modbus TCP/IP
- Modbus TCP/IP ↔ RTU Gateway
- SNMP alarm transfer
- Trend file storage and transfer (FTP + HTTP)

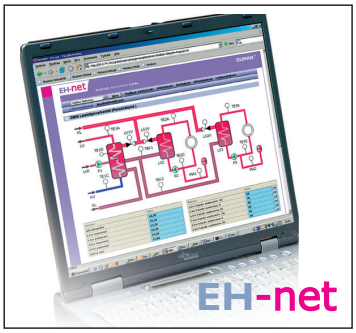
GSMMOD5

By connecting the modem to the C203 regulator, you can communicate with the regulator text messages and pass this information on alarms to your mobile via SMS. When controlling the regulator with using the browser web interfaces, the alarms can still sent to a GSM phone as SMS messages if needed.

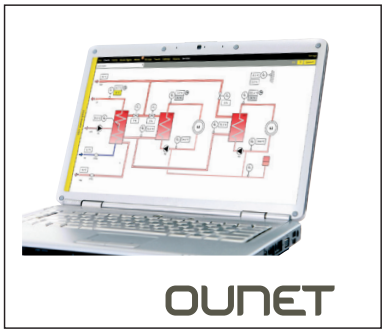
Ouman's GSM modem (GSMMOD5) is connected to the C203 unit or to an Oulink device if the C203's RJ-45 port has been connected to an Oulink device. The modem has a fixed antenna that can be changed to an external antenna with a 2,5m cord (optional equipment) if needed. The modem's indicator light shows what mode it is in.

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.

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Technical information

Protection class	IP 20
Operating temperature	0 °C...+40 °C 0 °C...+50 °C under the following conditions: - 24 Vac outputs the maximum load: a total of 300 mA - 15 Vdc output maximum load: 100 mA - The relay and triac outputs, maximum load: 230V/450 mA individual relay and triac outputs per
Storing temperature	-20 °C...+70 °C
Power supply	
Operating voltage	230 Vac / 125 mA The internal 24 V power source, total load capacity of max. 0.4 A/10 VA continuously, temporary (60 s) 15 VA
Backup input	12 Vdc
Measurement inputs	
Sensor measurements (inputs 1...13)	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 12 ... 14)	0 - 20 mA current message, meas. accuracy 0.1 mA
Voltage measurement (inputs 4, 7, 12-14)	0 -10V voltage message, meas. accuracy 50 mV.
Digital inputs (inputs 12...17)	Contact voltage 15 Vdc (input 17), contact voltage 5 Vdc (input 12-16) Switching current 1.5 mA (input 17), switching current 0.5 mA (input 12-16). Transfer resistance max. 500 Ω (closed), min. 11 k Ω (open).
Counter inputs (17 and 18)	Minimum pulse length 30 ms
Analog outputs (27, 30, 43, 46, 49, 50)	Output voltage range 0...10 V. Output current max 10 mA /output
24 VAC voltage outputs (28, 41, 44, 47)	Output current max. 1A / output Without external power supply outputs current max. a total of 10 VA continuously, temporary (60 s) 15 VA.
Relay outputs	
Change-over contact relays (71...76)	2 pcs, 230 V, 1 A
Triac outputs	
Triac (77...80)	2 pcs, 230 V, max 1 A Potential-free AC switch. DC controls require intermediate relay.
Triac (24, 25)	24 Vac. Output current max. a total of 1 A . Without external power supply the total continuous load capacity of outputs is max. 12VA. The actuators totally max. 15 VA.
Data transfer connections	
RS-485-bus (A1 and B1)	Galvanically isolated, supported protocols Modbus-RTU
MicroSD memory card	Memory card is not included in the delivery. Technical requirements to microSD memory card: Standard micro SDHC, UHS, Capacity 4...32 GB, File system FAT 32, Class: 4...10+
Option	
OULINK	OULINK adapter provides Modbus TCP / IP interface for C203 device.
GSMMOD5	By connecting the modem to the C203 regulator, you can communicate with the regulator text messages and pass this information on alarms to your mobile via SMS. The modem is connected to either the device or the OULINK device RJ-45 connector. GSMMOD5 C203 is powered by the device (terminal 52 and 53).
APPROVALS:	- EMC-directive 2014/30/EU, 93/68/EEC - Interference tolerance EN 61000-6-1 - Interference emissions EN 61000-6-3

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We reserve the right to make changes to our products without a special notice.