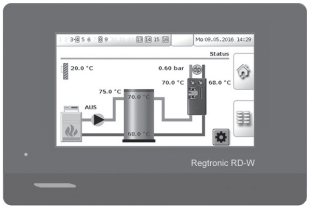
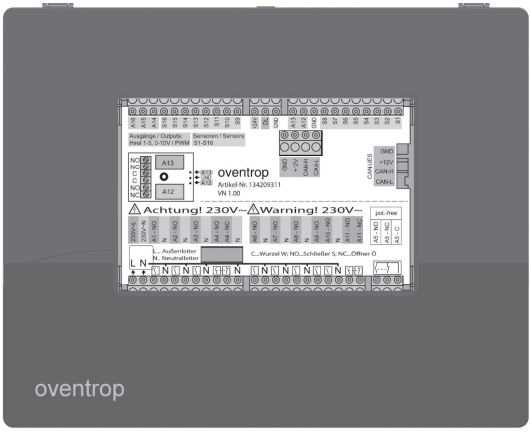
oventrop Valves, controls + systems

EN

"Regtronic RD-W" System controller

Operating instructions





Read these operating instructions in their entirety before initial operation!

Read separate installation instructions for installation and electrical connection!

The installation instructions of all other system components must be observed!

All safety notes must be observed!

Hand the operating instructions over to the user of the system!

The operating instructions have to be kept for later reference!

1. General information

1.1 Supply an contact

- Controller with console an terminal board
- SD card with software
- 4 x Cover strip
- 16 x Strain relief
- Wall fixing material
- 2 x Manual (installation & operation)

Contact address

OVENTROP GmbH & Co. KG
Paul-Oventrop-Straße 1
D-59939 Olsberg

Technical service

Phone: +49 2962 82 234
(Mo.-Fr. 7:30-16:30 h)

1.2 Important information regarding operating instructions

These operating instructions have to be read, understood and applied by any person working on the controller and using it.

Commissioning has to be carried out by a heating, gas and water specialist.

The **separate installation instructions (doc. no. 134209380)** have to be taken into account for the **installation** and necessary electrical connections of the controller.

Installation must only be carried out by a qualified electrician.

1.3 Note regarding declaration of conformity

Oventrop GmbH & Co. KG hereby declares that the system controller “Regtronic RD-W” complies with the basic requirements and the other relevant provisions of the relevant EC Directives.

The declaration of conformity can be obtained from the manufacturer.

1.4 Storage

The product must only be stored under the following conditions:

- Storage temperature: +5°C up to +45°C.
- Do not store in open air, keep dry and free from dust.
- Do not expose to aggressive fluids or heat sources and protect from UV rays.
- Protect from mechanical agitation during transport.

Packing material is to be disposed of in an environmentally friendly manner.

1.5 General conditions of sales an delivery

Oventrops general conditions of sales and delivery valid at the time of supply are applicable.

1.6 Copyright an protective rights

These installation and operating instructions are copyrighted and are exclusively designed for persons involved with the product.

2. Safety notes

2.1 Correct use

The Oventrop system controller "Regtronic RD-W" serves the control engineered integration of "Regudis W" dwelling stations into the heat supply. It provides for a heating water temperature according to requirements in the buffer storage cylinder (storage cylinder loading control) and the supply pipe of the riser for the connected "Regudis" dwelling stations (heating circuit control). The system-specific parameters for an adaptation of the control to the requirements can be entered via a user interface.

Any use with dwelling stations of other manufacturers is not allowed.

On principle, the controller must only be used in a technically perfect condition, according to its intended use and in compliance with these operating instructions.

2.2 Definition of the warning notices

These installation and operating instructions show warnings which are displayed by symbols. The symbols are linked to signal words which define the seriousness of the danger which arises from a situation.

WARNING

Warning symbol and signal are indicating a dangerous situation with moderate risk which may lead to death or serious injury if not avoided.

CAUTION

Warning symbol and signal are indicating a dangerous situation with low risk which may lead to minor or moderate injury or damage to property if not avoided.

NOTICE

Signal word (without warning symbol) indicating a possible danger to property.

2.3 Residual dangers

The following **residual dangers** for persons and property exist during installation and operation:

⚠ WARNING

Danger to life due to electric shock!

- Opening of the controller casing and all electrical connections must only be carried out by a **qualified electrician**.
- The following **5 safety regulations** must be observed during installation and cabling:
  - Disconnect
  - Protect against accidental restart
  - Check that no voltage is present
  - Earth and short-circuit
  - Cover adjacent live parts
- Please make sure that the controller can be disconnected from the power supply with an all-pole disconnecting device (plug/ socket or 2-pole circuit breaker)
- The local safety directive must be observed.
- Installation must only be carried out in dry indoor areas.
- The low voltage connections (e.g. sensor connections) must not be mixed up with the 230 V connections.
- Newly installed controllers must only be energized once cabling of all system components has been carried out.
- Completely disconnect the controller from the power supply **before removing** any connected system components (e.g. for maintenance and repair).

⚠ CAUTION

Risk of burns due to hot components and pipework!

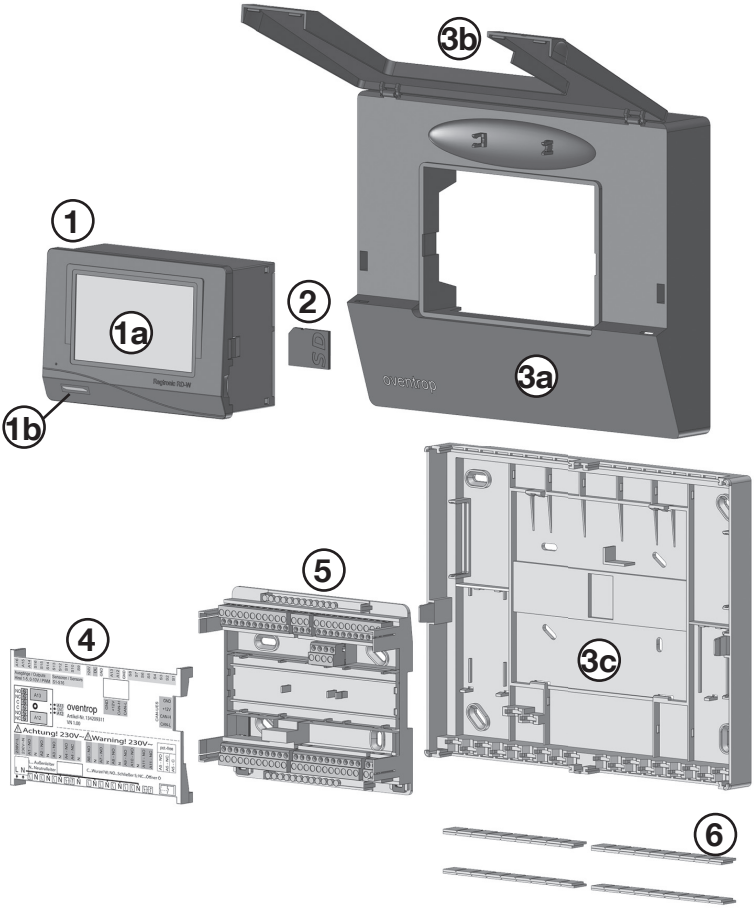
A modification of the parameter settings may lead to very high flow temperatures in the supply riser. There is a risk of burns from hot surfaces.

- Wear safety gloves during installation and maintenance, if required.
- When installing a new heating system, the pipework has to be insulated.

3. Construction and function

3.1 Product components

Illustr. 1



1 System controller "Regtronic RD-W"
1a Touch screen
1b LED
2 SD card
3a Console
3b Flap
3c Back plate
4 Terminal assignment plate
5 Terminal block
6 Cover strips

3.2 Control of "Regudis" dwelling stations

The Oventrop **system controller** "Regtronic RD-W" **(1)** serves the control engineered integration of dwelling stations "Regudis W" into the heat supply.

The controller provides for a heating water temperature according to requirements in the **buffer storage cylinder (6)** and the **supply pipe of the riser** supplying the connected "Regudis" dwelling stations. The stations require a permanent differential pressure of at least 300 mbar and a minimum temperature in the supply pipe.

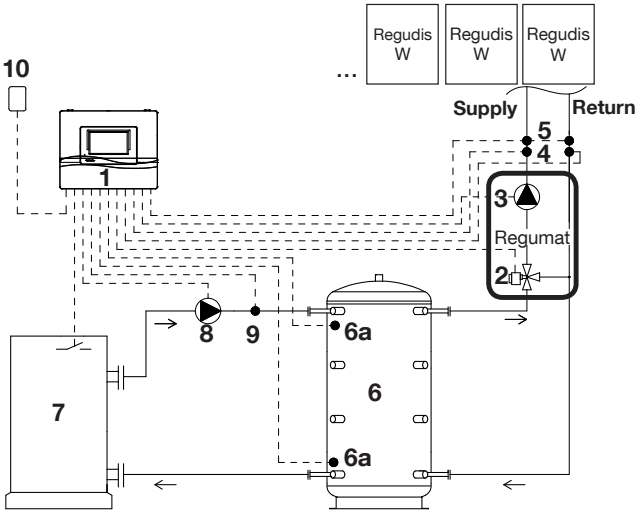
The controller activates the **heat generator (7)** and the **loading pump (8)** in such a way that the **buffer storage cylinder (6)** is loaded with as constant a temperature as possible. Depending on the heating water temperature in the buffer storage cylinder, loading is started or interrupted.

The **differential pressure (5)** and the **flow and return temperatures (4)** are detected by **sensors** in the heating circuit riser. Based on the detected values, the **riser pump** (**3**, differential pressure) and the **mixing valve** (**2**, flow temperature) are activated by the **controller (1)**.

Graphical overview controller controlled heating installation:

This system illustration shows all possible control tasks. Control engineered subtasks may, however, also be carried out by the system controller (1). Loading of the buffer storage cylinder can, for instance, also be carried out by a control integrated in the heat generator. In- and outputs at the system controller (1) which are not in use remain free!

Illustr. 2



1 System controller "Regtronic RD-W"
2 Actuator/mixing valve
3 Riser pump[1]
4 Flow/return (PT1000)
5 Differential pressure sensor[1]
6 Buffer storage cylinder
6a Buffer storage cylinder sensors (PT1000)
7 Heat generator
8 Loading pump
9 Sensor flow temperature control (PT1000)
10 Outside temperature sensor (PT1000)

[1] If differential pressure control is carried out by the riser pump (3), a differential pressure sensor (5) is not required.

3.2.1 Buffer storage cylinder loading

Loading of the **buffer storage cylinder** with as constant a loading temperature as possible results in the following advantages:

- optimised storage cylinder loading
- low return temperature to the heat generator
- fewer burner starts

Depending on the system constellation, distinction is made between the following to variants of **storage cylinder loading**:

- 0-10 V activation
- Two point activation (volt free)

3.2.2 Riser control

The supply of heat to the connected dwelling stations according to requirements is guaranteed by the **riser control**. The actual temperatures in the supply and return pipe are constantly detected by two **sensors (4)** and are transmitted to the **controller (1)** which activates the **motor-operated mixing valve (2)** on this basis.

If, for instance, the temperature in the return pipe of the riser drops significantly as water is drawn off at several draw off points in parallel, the **mixing valve (2)** will be fully opened temporarily, i.e. colder return water will no longer be added to the supply pipe in order not to undercut its required minimum temperature. An excessive flow temperature is avoided by adding return water to the supply pipe.

The current **differential pressure** is detected by another **sensor (5)**. If the differential pressure in the return pipe drops quickly, an immediate correction leading to a short-term increase of the flow pressure during an adjustable period will be carried out by the **riser pump (3)**.

4. Operation fundamentals

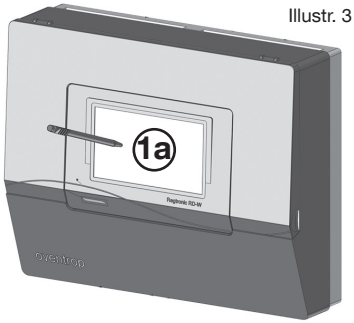
4.1 Display

The display of the controller has two basic functions:

- **Retrieval of system-specific information,** especially regarding **temperatures** and **pressure conditions**.
- **Entry of system-specific parameters** for the control of storage cylinder loading and of the heating temperature in the supply pipe of the riser supplying the connected "Regudis" dwelling stations.

The display is designed as a **touch screen (1a)**, i.e. the icons and menu buttons can be selected directly.

Illustr. 3



4.2 Starting sequence, status page, navigation elements

As soon as the controller is energized, the LED will glow successively in the following sequence:

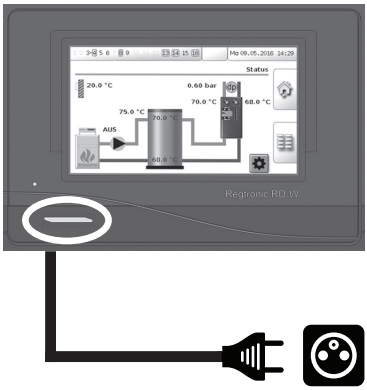
1. **red** (boot sequence)
2. **yellow** (hardware initialisation)
3. **flashing green** (detection of sensor values)
4. **green continuously** (= service)

You will also hear a beep.

The controller is be ready for operation after about one minute.

The following display, hereafter referred to as "status page", will appear first (illustr. 5).

Illustr. 4

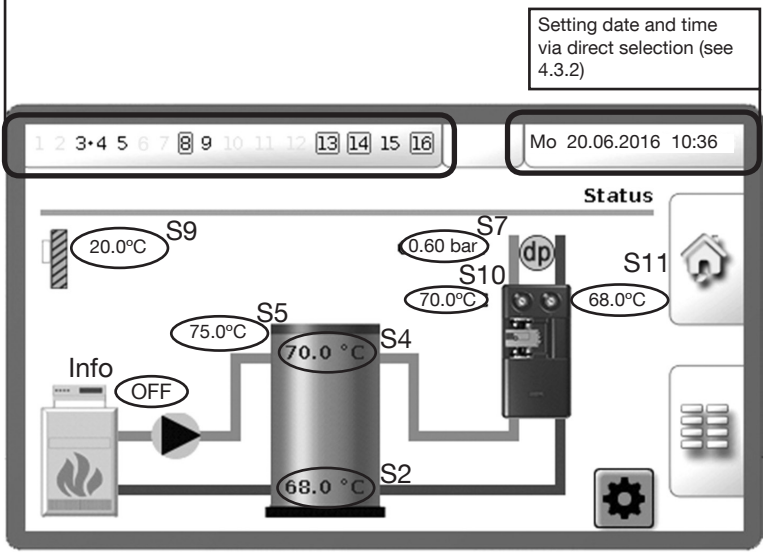


Status page

Outputs (A1...16) (see installation instructions doc. no. 134209380) used by the controller software are displayed here; outputs which are currently switched (for instance for the pump) are highlighted in green.

A3 **Mixing valve opens** (see installation instructions 5.1.1)
A4 **Mixing valve closes** (see installation instructions 5.1.1)
A5 **Heat generator / Loading pump volt free** (see installations instructions 5.3.2 and 5.4.3)
A8 **Riser pump 230 V** (see installation instructions 5.1.2)
A9 **Loading pump 230 V** (see installation instructions 5.4.1, 5.4.2 and 5.4.3)
A13 **Heat generator 0-10 V** (see installation instructions 5.3.1)
A14 **Riser pump 0-10 V** (see installation instructions 5.1.2)
A15 **Loading pump 0-10 V** (see installation instructions 5.4.2 and 5.4.3)
A16 **Supply voltage 5 V for differential pressure sensor** (see installation instructions 5.1.4)

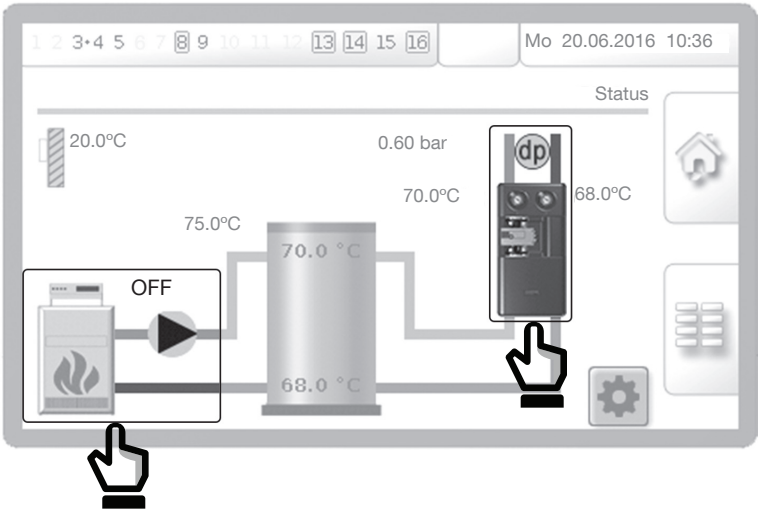
Illustr. 5



S9 **Outside temperature sensor** (see installation instructions 5.5)
S5 **Flow temperature sensor (from heat generator)** (see installation instructions 5.4.2 and 5.4.3)
S4 **Storage cylinder temperature sensor (upper)** (see installation instructions 5.2)
S2 **Storage cylinder temperature sensor (lower)** (see installation instructions 5.2)
S7 **Differential pressure sensor (in the riser)** (see installation instructions 5.1.4)
S10 **Riser temperature sensor (supply)** (see installation instructions 5.1.3)
S11 **Riser temperature sensor (return)** (see installation instructions 5.1.3)
Info **Heat generator or loading pump (ON/OFF)** (see installation instructions 5.3.2 or 5.4.3)

The touch screen display allows for the direct access to the settings for **storage cylinder loading** and **riser control** with a click on the following fields:

Illustr. 6



Navigation elements

Link to settings for system control

Link to summary of controller settings

Link back to status page (overview)

Networking of several controllers (here without function!)

Back to summary of controller settings

Storage and completion of entry

Discard entry

Increase input values in small steps

Increase input values in large steps

Reduce input values in small steps

Reduce input values in large steps

4.3 Commissioning

4.3.1 Password entry for "professional"

Values can only be entered and modified after entry of a password. Without password entry, the values can only be viewed.

Before starting commissioning, the qualified installer has to log in as **"professional"**.

To do so, click on the following symbol on the status page:

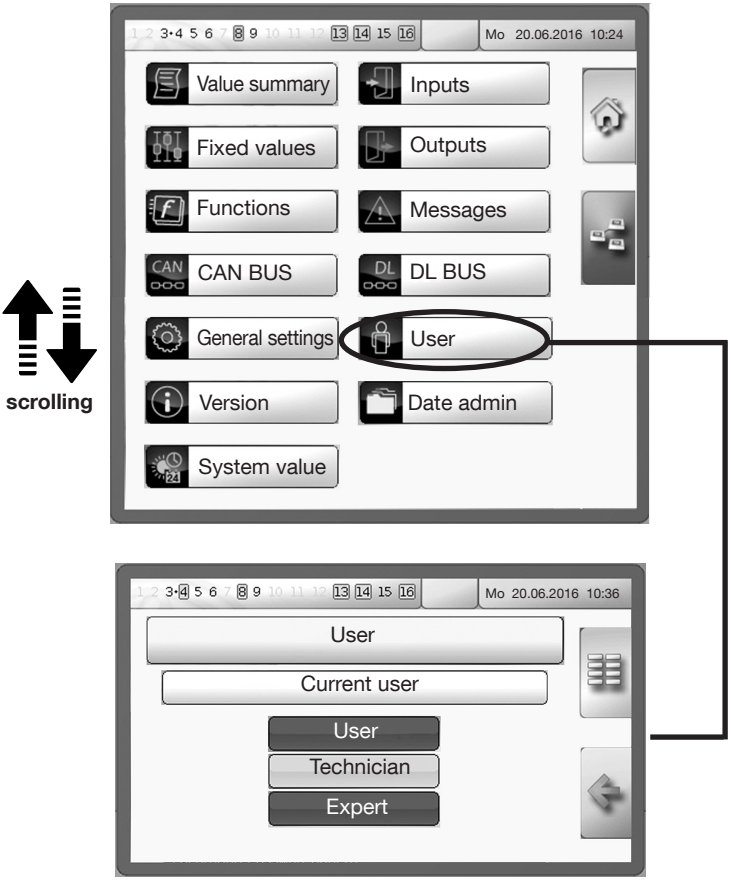
The entry field for the password will open. Activate the numerical keypad.

Illustr. 7

Enter the numeric code **2 9 6 2** and confirm the entry. This is a factory setting and should be modified when starting commissioning (see "Modification of the password").

Illustr. 8

Illustr. 9



Authorizations of the 3 user profiles

User: No password entry; only viewing of system values; no modification of the values

Professional: Password required; viewing of system values and modification of parameters and controller settings

Expert: only for programming purposes by manufacturer

Modification of the password

Illustr. 10

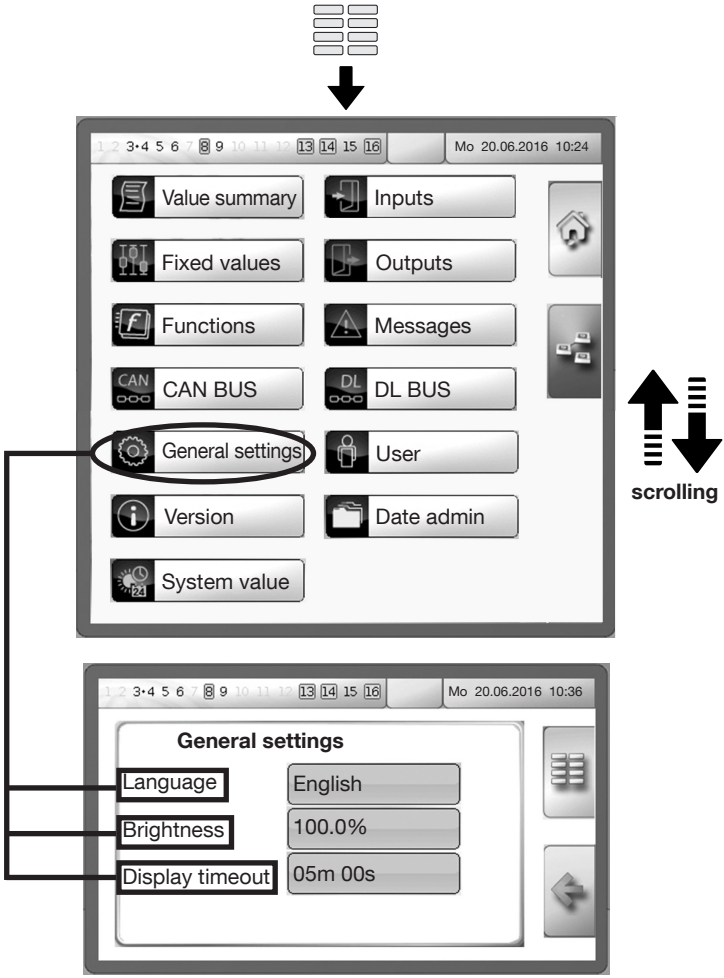
Illustr. 11

Illustr. 12

The new password should be noted.
If it has been forgotten, please contact the Oventrop telephone hotline +49 2962 82 234 (Mo.-Fr. 7:30-16:30 h)

4.3.2 Basic settings, date/time

Illustr. 13



Languages: Selection of different languages

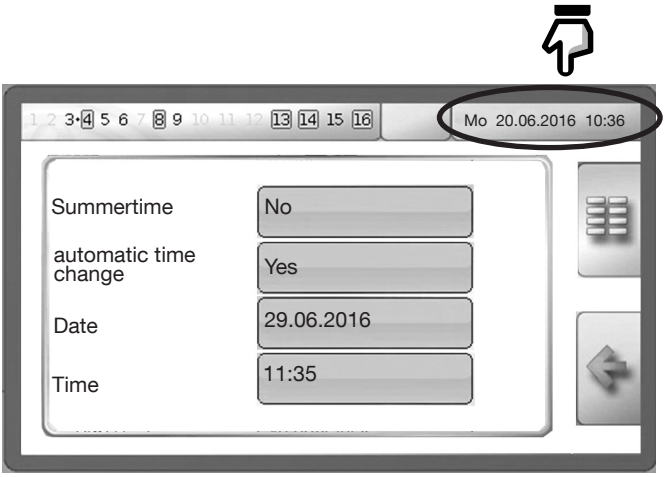
Brightness: Brightness of the display can be dimmed from 100% to 5%

Display time out: Set to 5 minutes by default, max. setting: 30:59 minutes

Setting of date and time

The date and time can be set in the status line (click on it).

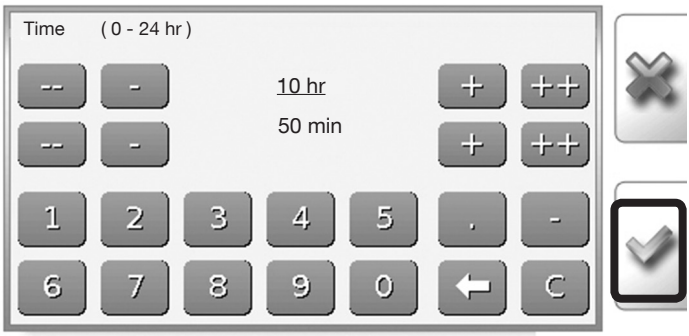
Illustr. 14



The date and time always have to be set to allow for the correct sequence of programmed time profiles.

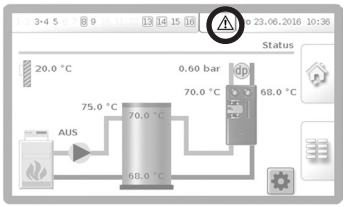
Confirm all entries with a click on the tick.

Illustr. 15



4.3.3 Sensor error in case of incomplete installation

Illustr. 16



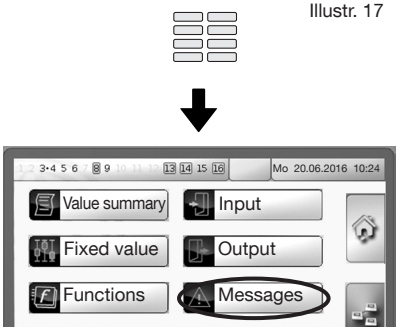
The following warning symbol may, amongst others, appear in the status line during commissioning:

This message indicates that the connection to one or several sensors is interrupted, has a short circuit or does not exist.

It must be observed that this message does not necessarily indicate an error. It is also displayed in case of an incomplete installation (see installation instructions doc. no. 134209380). This might be intentional if the controller is, for instance used for the control of only sections of the heating system.

The sensor which does not provide values or is not connected can be detected via **Controller settings ▶ Messages**. Illustr. 17 shows an exemplary error message for the sensor respectively input S2 (lower storage cylinder temperature).

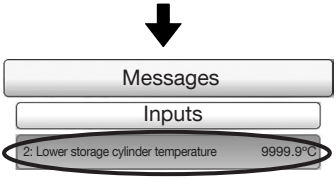
Illustr. 17



If the connection to one or several sensors is damaged, it has to be checked and be restored if required.

The warning message will disappear once the malfunction has been eliminated.

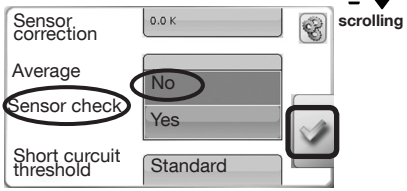
In case of an incomplete system installation, the error messages must be deactivated individually. To do so, select the sensor which shall be deactivated in the **menu Messages** (in the example on the right hand side S2).



The submenu **Inputs** (for the concerned sensor) will open.

1. Scroll down to **sensor check** with the help of the programming stylus.
2. Select the button and set it to **No**.
3. Confirm the entry.

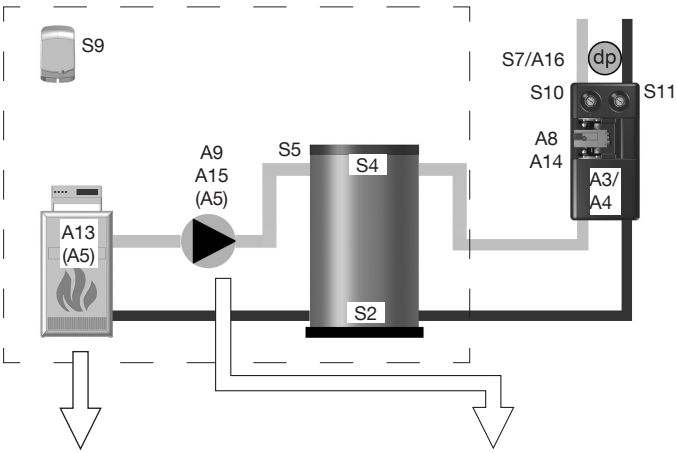
▶ The function "sensor check" for the sensor which is not connected is deactivated now and the a.m. warning message will disappear.



5. Setting of system parameters

5.1 Sitemap storage cylinder loading and riser control

Illustr. 18



STORAGE CYLINDER LOADING

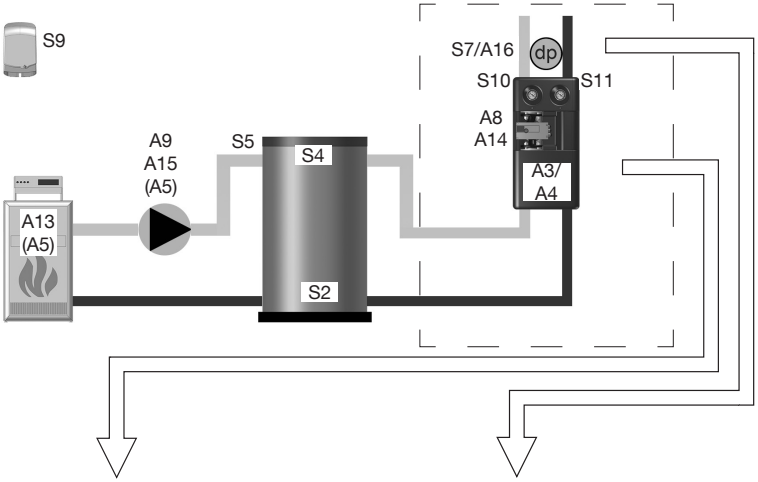
Demand heat generator

- Help
- **SELECT**
  - Nominal storage cylinder temperature — *Value entry*
  - Offset heat generator — *Value entry*
  - Timed programme — Setback periods of the nominal temperature in the storage cylinder
    - Mo - Fr
    - Sa-Su
    - *Value entry*
  - 0-10V characteristic line — Heat generator: Scaling of the 0-10V characteristic line
    - *Value entry*
  - Help

Demand loading pump

- **SELECT**
  - Nominal storage cylinder temperature — *Value entry*
  - Offset for S5 — *Value entry*
  - Timed programme — Setback periods of the nominal temperature in the storage cylinder
    - Mo - Fr
    - Sa-Su
    - *Value entry*
  - Help

Illustr. 19



RISER CONTROL

Mixing valve control

SELECT

- Riser temp. S10 (min.) — *Value entry*
- Slope of the heating curve — *Value entry*
- Parallel displacement — *Value entry*
- Gradient recognition S11 — *Value entry*
- Holding time (mixing valve opens) — *Value entry*
- Timed programme — Setback periods of riser temperature S10 — Mo - Fr / Sa-Su — *Value entry*
- Help

Pressure control

SELECT

- Differential pressure S7 — *Value entry*
- Gradient recognition S7 — *Value entry*
- Differential pressure increase by — *Value entry*
- Holding time for pressure increase — *Value entry*
- Timed programme — Setback periods of differential pressure S7 — Mo - Fr / Sa-Su — *Value entry*
- Help

5.2 Modification of presettings and control parameters

The system controller "Regtronic RD-W" has to be programmed in such a way that a supply of heating water according to requirements to the dwelling stations "Regudis" is guaranteed at any time. **To achieve this, the controller is preloaded with parameters for the control of the heating system** covering many applications.

The system constellation may, however, call for an adaptation of the controller programming. This may concern the following sections of the heating system:

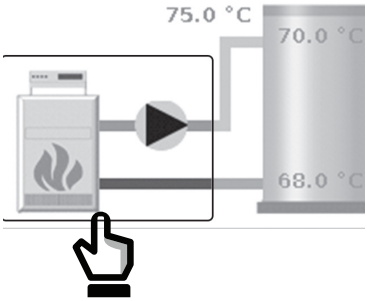
- **Buffer storage cylinder loading**
  - Demand heat generator
  - Demand loading pump
- **Riser control for connected "Regudis" dwelling stations**
  - Mixing valve control
  - Pressure control

Illustr. 20

5.2.1 Buffer storage cylinder loading

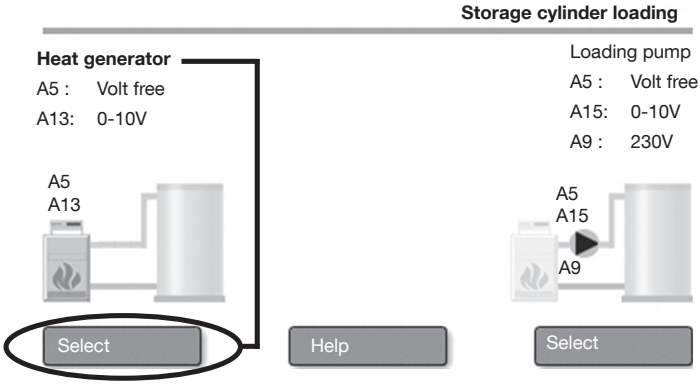
Supply of the heat required by the buffer storage cylinder is carried out by the **activation** of a **heat generator** or a **loading pump** through the controller. Alternatively, loading of the buffer storage cylinder can be carried out by a control integrated in the heat generator.

This specification already has to be made during installation (see installation instructions doc. no. 134209380). A corresponding cabling is required.



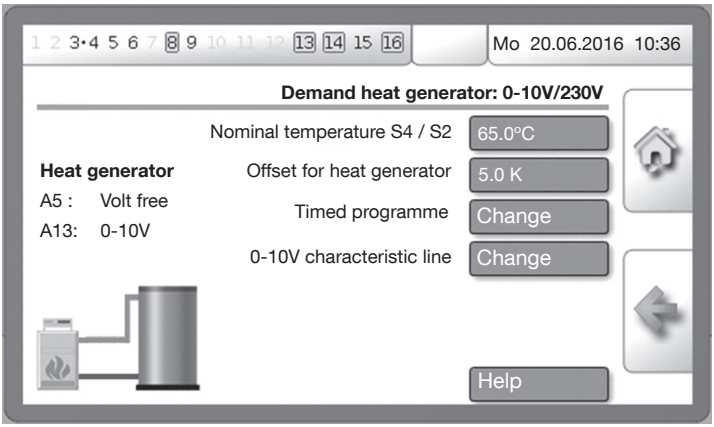
The **main menu for storage cylinder loading** can be accessed from the status page by selecting the **heat generator/loading pump icon** (see illustr. 20). Alternatively, it can be accessed via the **cogwheel symbol** and the button **STORAGE CYLINDER LOADING**.

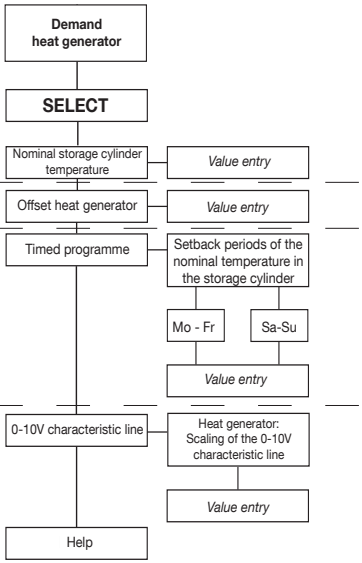
Illustr. 21



Activation of a modulating heat generator:

Illustr. 22





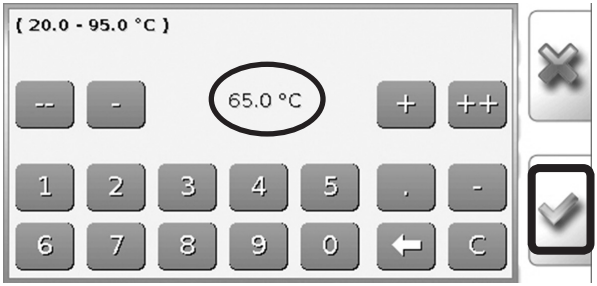
Control range	Factory setting	Remark
20.0° - 95.0°C	**65.0°C**	Detection of current values via S4/S2
-20.0K - 20.0K	**5.0K**	Heat loss compensation
see illustr. 24	**Mo-Fr / Sa-Su** 00:00-05:30 -5.0°C 05:30-22:00 0.0°C 22:00-24:00 -5.0°C	Different settings for workdays and weekends are possible
see illustr. 25	20,0°C ≙ 200 ▶ 2.0V 95,0°C ≙ 950 ▶ 9.5V	Communication between controller and modulating heat generator

Storage cylinder loading will start once the temperature detected by the upper temperature sensor S4 in the buffer storage cylinder drops below the **nominal temperature**. Storage cylinder loading will end once the temperature detected by the lower temperature sensor S2 reaches the **nominal temperature** again.
The flow temperature is defined by the request signal (A13: 0-10 V) of the controller. The flow temperature for storage cylinder loading is regulated by the heat generator accordingly. The volt free relay (A5) is also switched by the heat demand.

Flow temperature of the heat generator = Nominal storage cylinder temperature + offset

Setting of the nominal temperature S4 / S2 in the buffer storage cylinder

Illustr. 23

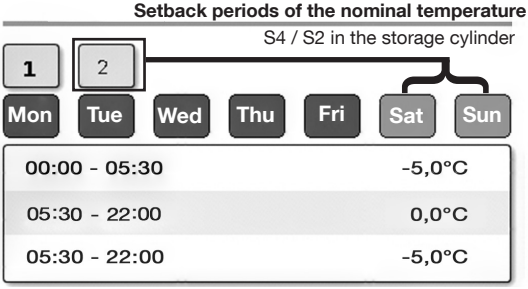


Values can only be entered and modified after entry of a password.

A login as **"professional"** in the controller menu is required (see paragraph 4.3.1).

Timed programme: Setback periods of the nominal temperature in the storage cylinder

Illustr. 24

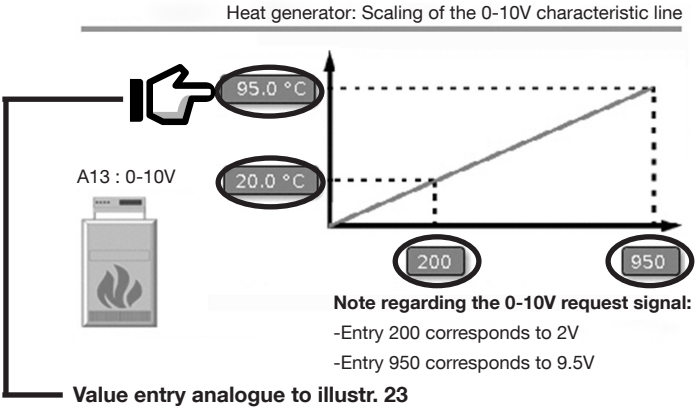


Savings of energy can be achieved by setting individual timed programmes. The buffer storage cylinder temperature can be reduced by the controller during three freely definable periods per day. This temperature reduction should preferably take place during periods in which less heat is required by the connected dwelling stations "Regudis" (e.g. at night). A setting of 0.0 °C corresponds to the nominal temperature S4 / S2 set before. Different settings for the five workdays **Monday - Friday (control panel 1)** and for the days of the weekend **Saturday and Sunday (control panel 2)** are possible.

When setting the timed programmes for storage cylinder loading and riser control, the reheating time of the storage cylinder has to be taken into account.

Heat generator (modulating): Scaling of the 0-10 V characteristic line

Illustr. 25



The temperature to which the heating water for storage cylinder loading shall be heated by the modulating heat generator is specified by the controller via the nominal temperature + offset (see above).

The 0-10 V/temperature characteristic line of the heat generator and the 0-10 V output signal of the controller have to be adapted for this purpose. The different output voltages of the controller correlate with a specific water temperature provided by the heat generator.

Please proceed as follows:

1. Determine the 0-10 V characteristic line of the heat generator **(The instructions of the manufacturer of heat generator must be observed!)**
2. Select the lowest possible reference point in the chart (instructions of the manufacturer of the heat generator).
3. Enter the values of the low reference point in the controller menu and confirm you entries.
4. Select the highest possible reference point in the chart (manufacturer's instructions).
5. Enter the values of the high reference point in the controller menu and confirm your entries.

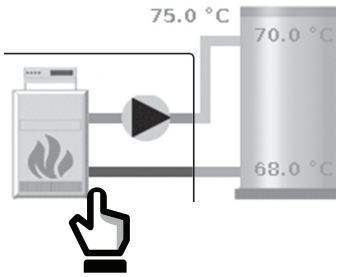
The output voltages entered in the controller menu have to be multiplied by 100.

Activation of a 0-10 V loading pump

Illustr. 26

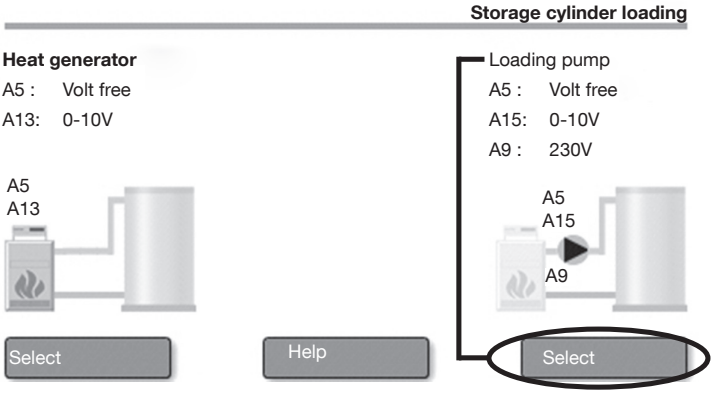
A 0-10 V loading pump is used if flow temperature control cannot be carried out via the heat generator and the latter can only be activated via a two point control (ON/OFF).

In this case, temperature control is carried out by the speed controlled 0-10 V loading pump by loading the buffer storage cylinder with different volume flows.



The **main menu for storage cylinder loading** can be accessed from the status page by selecting the **heat generator/loading pump icon** (see illustr. 26). Alternatively, it can be accessed via the **cogwheel symbol** and the button **STORAGE CYLINDER LOADING**.

Illustr. 27



Illustr. 28

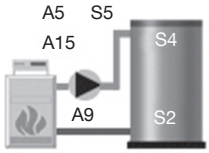
Demand loading pump: 0-10V /volt free / 230 V

Nominal temperature S4 / S2 — 65.0°C

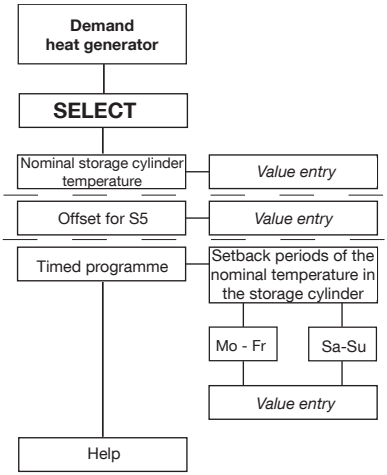
Offset for S5 — 5.0 K

Timed programme — Change

Loading pump
A5 : Volt free
A15: 0-10V
A9 : 230V



Help



Control range	Factory setting	Remark
20.0° - 95.0°C	**65.0°C**	Detection of current values via S4/S2
-20.0K - 20.0K	**5.0K**	Heat loss compensation
see illustr. 24	**Mo-Fr / Sa-Su** 00:00-05:30 -5.0°C 05:30-22:00 0.0°C 22:00-24:00 -5.0°C	Different settings for workdays and weekends are possible

Storage cylinder loading will start once the temperature detected by the upper temperature sensor S4 drops below the **nominal temperature**. Storage cylinder loading will end once the temperature detected by the lower temperature sensor S2 reaches the **nominal temperature** again.

The flow temperature from the heat generator to the storage cylinder is measured at the **sensor S5** and is regulated to the flow temperature by the speed control of the loading pump (A15: 0-10 V) **The volt free relay (A5) and the 230 V relay (A9)** are also switched by the heat demand.

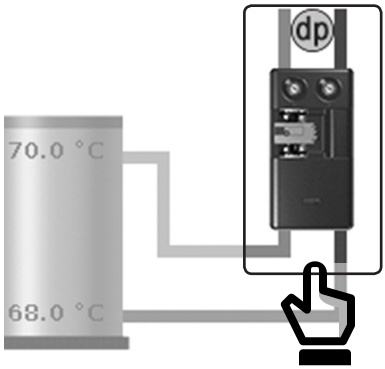
Flow temperature = Nominal storage cylinder temperature + offset

5.2.2 Riser control

Supply of the required heating water temperature and differential pressure to the connected dwelling stations "Regudis" is carried out via the riser.

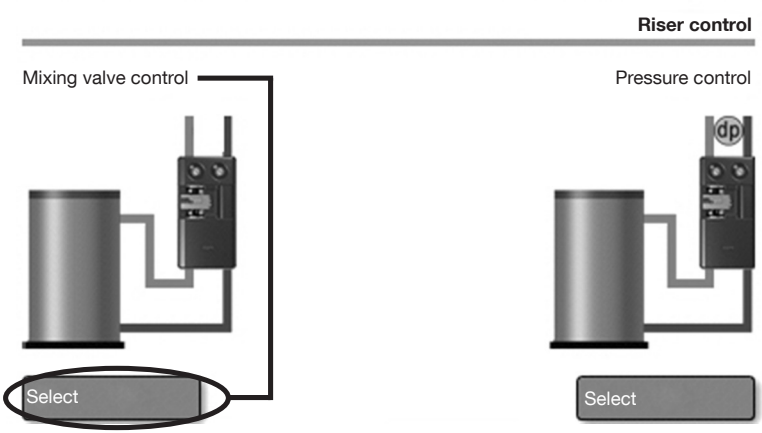
The controller "Regtronic RD-W" registers the flow and return temperature as well as the differential pressure in the riser detected by the sensors and regulates these parameters by comparing the nominal and actual values. Depending on the system constellation, a modification of the preset nominal values for the mixing valve an pressure control might become necessary .

Illustr. 29



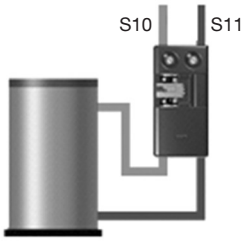
The **main menu for riser control** can be accessed from the status page by selecting the **transmission station icon** (see illustr. 29). Alternatively, it can be accessed via the **cogwheel symbol** and the button **RISER CONTROL**.

Illustr. 30



Illustr. 31

Mixing valve control in the riser



Riser temperature S10 (min.)	60.0°C
Slope of the heating curve	1.50
Parallel displacement	0.0 K
Gradient recognition S11	-0.8 K/s
Holding time (mixing valve opens)	20.0s
Timed programme	Change
	Help

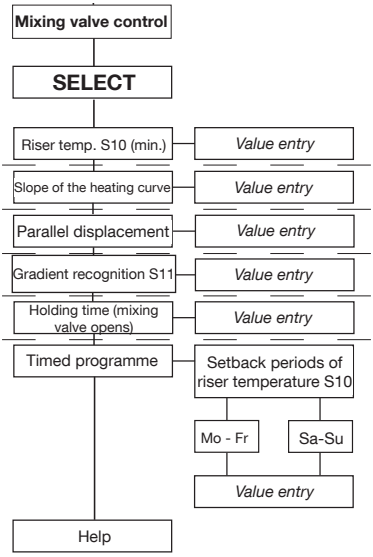
⚠ CAUTION

Risk of burns due to hot components and pipework!

A modification of the parameter settings:
- **Riser temperature S10 (min.)**
- **Slope of the heating curve**
- **Parallel displacement**
- **Holding time (mixing valve opens)**

may lead to very high flow temperatures in the supply riser. There is a risk of burns from hot surfaces.

- Plausibility of the entries and sensor values S10/S11 must be ensured.



Control range	Factory setting	Remark
40.0 - 95.0°C	**60,0°C**	Detection of current values via S10
0.05 - 2.50	**1,50**	Dependence Flow/outside temperature
-100.0 - 100.0K	**0,0K**	Dependence Flow temperature/ heat demand
-2.0 - 0.0°C	**-0.8K/sec.**	Return temperature recognition for mixing valve control
0.0 sec - 366d 23h 59m 59.9s	**20.0 sec.**	Period for valve opening
see illustr. 24	**Mo-Fr / Sa-Su** 00:00-06:00 -5.0°C 06:00-22:00 0.0°C 22:00-24:00 -5.0°C	Different settings for workdays and weekends are possible

Riser temperature S10 (min.)

The minimum temperature in the riser is set via a control panel analogue to illustr. 23. The current values in the supply are measured by the temperature sensor **S10.**

The sensors for measuring the riser temperatures are part of the "Sensor connection set Regumat" (item no. 1357291). This set has to be ordered separately as accessory.

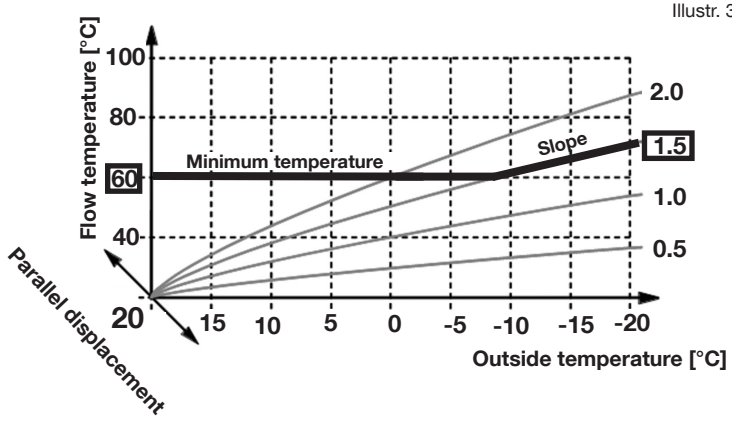
Slope of the heating curve, parallel displacement, gradient recognition, holding time, timed programme

The mixing valve (outputs: A3/A4) regulates the flow temperature in the supply riser according to the set riser temperature S10 to at least **60°C (for hot potable water preparation)** according to the factory setting. If this threshold is exceeded, a **heating curve** calculating the flow temperature depending on the **outside temperature** and the set **parameters "slope" and "parallel displacement"** will be effective.

The **"slope"** of the heating curve determines how strongly the flow temperature will be increased if the outside temperature measured by sensor S9 changes. The preset value of 1.5 means that an outside temperature change of 1° C will provoke a flow temperature change of 1.5 °C. The **"parallel displacement"** allows to influence the flow temperature level via the course of the heating curve.

If the temperature at the sensor S11 (return) changes by the set **gradient** (-K/1s), the mixing valve will open fully during an adjustable holding time so that the flow temperature will be increased considerably. **Timed programmes** allow for an adaptation or reduction of the riser temperature during freely adjustable periods.

Illustr. 32



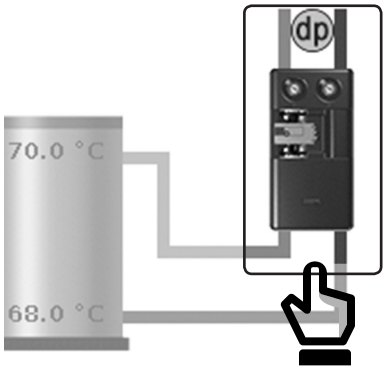
Differential pressure control in the riser

A minimum differential pressure of 300 mbar must be guaranteed at each connected dwelling station "Regudis" in any operating status. The differential pressure is constantly detected by the controller via a differential pressure sensor (dp) in the supply and return of the riser between the mixing valve and the dwelling station.

The speed of the riser pump is controlled by a 0-10 V activation in such a way that the specified nominal differential pressure between the supply and return of the heating circuit is always guaranteed.

If a differential pressure controlled pump is used, this setting is not required.

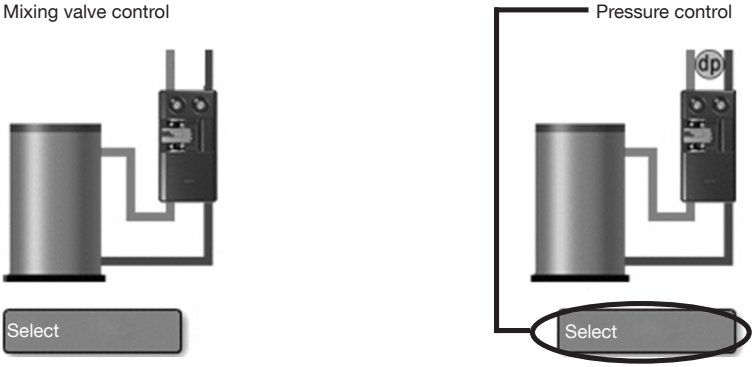
Illustr. 33



The **main menu for riser control** can be accessed from the status page by selecting the **transmission station icon** (see illustr. 33). Alternatively, it can be accessed via the **cogwheel symbol** and the button **RISER CONTROL**.

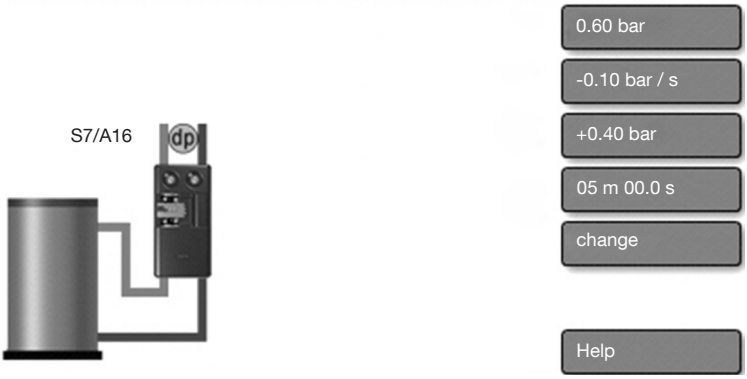
Illustr. 34

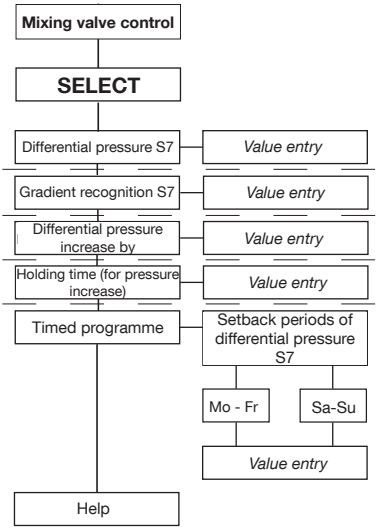
Riser control



Illustr. 35

Differential pressure control in the riser





Control range	Factory setting	Remark
0,00 - 1,00 bar	**0.6 bar**	Entry of nominal differential pressure
-1.00 - -0.02 bar	**-0.10 bar**	Pressure drop monitoring
0,10 - 1,50 bar	**0.40 bar**	Pressure increase in case of pressure drop
0,0 sec. - 366d 23h 59m 59,9s	**5:00 min**	Period for pressure increase in the riser
see illustr. 24	**Mo-Fr / Sa-Su** 00:00-06:00 -0.10 bar 06:00-22:00 0.00 bar 22:00-24:00 -0.10 bar	Different settings for workdays and weekends are possible

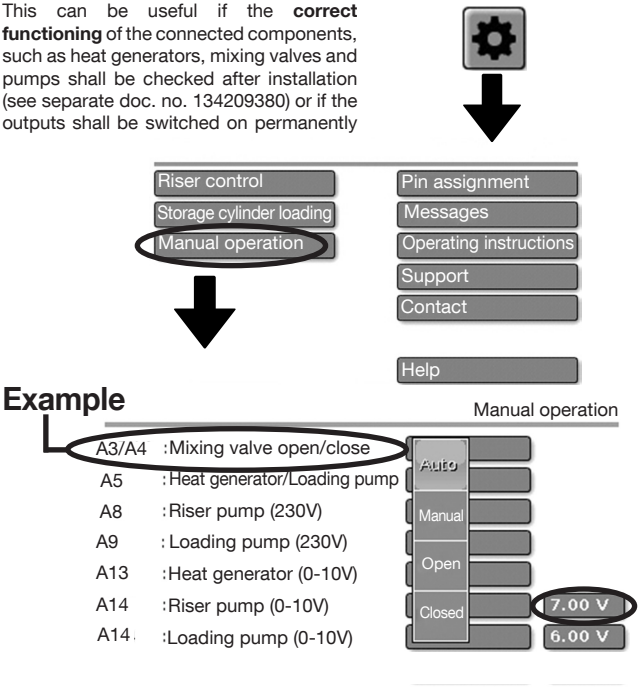
The differential pressure between the supply and return of the riser supplying the dwelling stations "Regudis" is constantly monitored at the differential pressure sensor (dp) and is regulated to the value **"differential pressure"** S7 by **adapting the control signal of the pump (A14: 0-10V).** If the controller detects a sudden drop of differential pressure by an adjustable **gradient [-bar/1s]**, a rapid **differential pressure increase** will be carried out by the riser pump during the set **holding time**. After termination of the holding time, the differential pressure will again be regulated to the differential pressure S7. **Timed programmes** allow for an adaptation of the differential pressure in the riser during freely adjustable periods.

6. Manual operation: Functional test and emergency operation

Outputs can be switched on and off irrespective of the control functions of the controller via the button "Manual operation". The output voltage of the 0-10 V outputs can be selected manually (e.g. for loading pump 7 V = 70 % output, depending on the manufacturer).
This can be useful if the **correct functioning** of the connected components, such as heat generators, mixing valves and pumps shall be checked after installation (see separate doc. no. 134209380) or if the outputs shall be switched on permanently for **emergency operation**.

Example: In case of a defective sensor, the riser pump can be switched on permanently (**Manual >> ON** see below). This way, supply of the heating riser is guaranteed until replacement of the defective sensor.

Illustr. 36



1. Select the **cogwheel symbol** on the status page with the help of the programming stylus.
2. Select the button **Manual operation** in the menu **Settings/Info**.
3. Select **the button Auto of the required output** (in the **example** A3/A4 mixing valve). A drop-down menu will open.
4. Select the required **operating mode**.

Reset all outputs to **Auto** after the functional test**!**

Auto = Automatic controller operation (standard)
Manual = Outputs (A3/A4) set to manual operation
Open = Output A3 switched (mixing valve opens)
Closed = Output A4 switched (mixing valve closes)

Manual/OFF/ON
= Selected output permanently OFF or ON
0-10V = Select "Manual" and enter test voltage (e.g. 7.00 V for A13, see above)

7. Software updates and factory settings

After a revision of the controller software by the manufacturer, the new software can be installed with the help of the SD card inside the controller (illustr. 1, pos. 3).

Furthermore, the controller software can be reset to **factory settings**.

Proceed as follows:

1. Select the following symbol on the status page:

2. The **programmed files** stored on the SD card can be accessed via **Controller settings ▶ Data admin**.

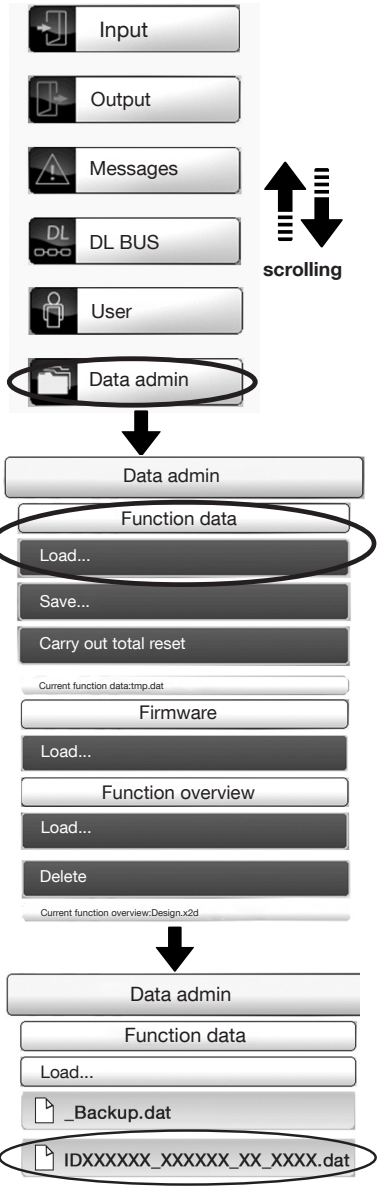
For a reset of the controller software to **factory settings,** the **functional date only has to be loaded** again!

There are 3 types of programme files:

- Functional data (.dat)
- Firmware (.bin)
- Function overview (.x2d)

The functional data is loaded with a click on the file carrying the ID and the version number (**not** _Backup.dat!).

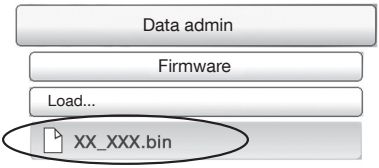
Illustr. 37



All three programmes files should be **loaded** for a **complete software update**.

Apart from the **functional data** (.dat-Datei, see illustr. 37) these are the **firmware** (.bin-Datei, see illustr. 38) and the **function overview** (.x2d-Datei, see illustr. 39).

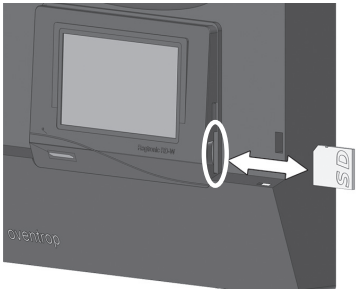
Illustr. 38



Illustr. 39

Illustr. 40

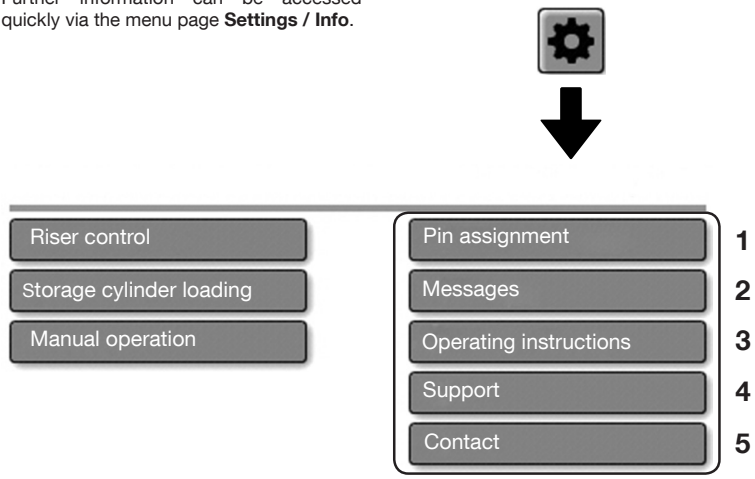
For an external transfer of new programme data or files, the SD card has to be removed from the controller and has to be reinserted into the SD card slot with the new data. Now load the files as described above.



Menu settings / Information

Further information can be accessed quickly via the menu page **Settings / Info**.

Illustr. 41



1 *Summary showing the inputs (sensors), outputs (pumps, mixing valves) and their position in the system.*

2 *Summary of error messages related to the sensors (see paragraph 4.3.3)*

3 *Link to installation and operating instructions as PDF file via QR codes*

4 *Addressed to the support of the manufacturer (not relevant for use)*

5 *Address of manufacturer and contact data*

8. Decommissioning and disposal

WARNING

Danger to life due to electric shock!

Live components inside the controller casing.

- Removal of electrical components must only be carried out by a **qualified electrician**.
- The following **5 safety regulations** must be observed:
  - Disconnect
  - Protect against accidental restart
  - Check that no voltage is present
  - Earth and short-circuit
  - Cover adjacent live parts

After use or in case of irreparable defects, the controller has to be disposed of as electrical waste in an environmentally friendly manner.

Disposal with the standard waste is inadmissible.

WARNING Disconnect the controller from the power supply of the building before opening the casing.

Remove the controller.

To do so, perform the steps described in chapter 4 of the installation instructions (doc. no. 134209380) in the reverse order.

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