

Fresh Water Controller SFWC

Installation and instruction manual



Read carefully before installation, commissioning and operation

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EU-Conformity

By affixing the CE mark to the unit the manufacturer declares that the SFWC conforms to the following relevant safety regulations:

- EU low voltage directive 2014/35/EU
- EU electromagnetic compatibility directive 2014/30/EU

conforms. Conformity has been verified and the corresponding documentation and the EU declaration of conformity are kept on file by the manufacturer.

General instructions

Please read carefully!

These installation and operating instructions contain basic instructions and important information regarding safety, installation, commissioning, maintenance and the optimal use of the unit. Therefore these instructions must be read and understood completely by the installation technician/specialist and by the system user before installation, commissioning and operation of the unit.

This unit is an automatic, electrical xxx. Install the unit only in dry areas and under the ambient conditions described in "Specifications".

The valid accident prevention regulations, VDE regulations, the regulations of the local power utility, the applicable DIN-EN standards and the installation and operating instruction of the additional system components must also be observed.

Under no circumstances does the unit replace any safety devices to be provided by the customer!

Installation, electrical connection, commissioning and maintenance of the device may only be carried out by an appropriately trained specialist. Users: Make sure that the specialist gives you detailed information on the function and operation of the unit. Always keep these instructions in the vicinity of the unit.

The manufacturer does not take over any liability for damage caused through improper usage or non-compliance of this manual!

Explanation of Symbols



Danger

Failure to observe these instructions can result in electrocution.



Danger

Failure to observe these instructions can result in serious damage to health such as scalding or life-threatening injuries.



Caution

Failure to observe these instructions can result in destruction of the unit or the system, or environmental damage.



Caution

Information which is especially important for the function and optimal use of the unit and the system.

Changes to the Unit

- Changes, additions to or conversion of the unit are not permitted without written permission from the manufacturer.
- It is likewise forbidden to install additional components that have not been tested together with the unit.
- If it becomes clear that safe operation of the unit is no longer possible, for example because of damage to the housing, turn the Unit off immediately.
- Any parts of the unit or accessories that are not in perfect condition must be exchanged immediately.
- Use only original spare parts and accessories from the manufacturer.
- Markings made on the unit at the factory must not be altered, removed or made illegible.
- Only the settings described in these instructions may be set using the Unit.



Changes to the unit can compromise the safety and function of the unit or the entire system.

Warranty and Liability

The Unit has been manufactured and tested with regard to high quality and safety requirements. The warranty and liability shall not include, however, any injury to persons or material damage that is attributable to one or more of the following causes:

- Failure to observe these installation and operating instructions.
- Improper installation, commissioning, maintenance and operation.
- Improperly executed repairs.
- Unauthorised structural changes to the unit.
- Use of the device for other than its intended purpose.
- Operation above or below the limit values listed in the ‚Specifications‘ section.
- Force majeure.

Disposal and Pollutants

The unit conforms to the European RoHS 2011/65/EU for 2011/65/EUthe restriction of the use of certain hazardous substances in electrical and electronic equipment.



Under no circumstances may the device be disposed of with the normal household waste. Dispose of the unit only at appropriate collection points or ship it back to the seller or manufacturer.

Specifications

Electrical specifications:			
Power supply		230 VAC +/-10 %, 50...60 Hz	
Power consumption / standby		0,5 W - 2,3 W/ 0,5/ X	
Internal fuse	1	2 A slow 250V	
Protection Class		IP40	
Protection Class		II	
Overvoltage category		II	
Degree of pollution category		II	
Inputs/Outputs			
Sensor inputs	3	Pt1000	-40 °C ... 300 °C
Sensor inputs	1	VTY Sensor	1...30 l/min 1...60 l/min
Flow sensors	VTY10	1...30 l/min	495 pulse/l (brass)
	VTY20	1...60 l/min	119 pulse/l (brass or plastic)
Sensor inputs VFS	1		
mechanical relay	R1	460VA for AC1 / 460VA for AC3	
0-10V/PWM output	V1	for 10 k Ω working resistance 1 kHz, level 10 V	
Max. cable length			
mechanical relay		< 10 m	
Permissible Ambient Conditions			
for controller operation		0 °C - 40 °C, max. 85 % rel. humidity at 25 °C	
for transport/storage		0 °C - 60 °C, no moisture condensation permitted	
Other Specifications and Dimensions			
Housing Design		2-part, ABS plastic	
Installation Methods		Wall installation, optionally panel installation	
Overall dimensions		115 mm x 86 mm x 45 mm	
Aperture installation dimensions		108 mm x 82 mm x 25,2 mm	
Display		Fully graphical display, 128 x 64 pixel	
Real Time Clock		RTC with 24 hour power reserve	
Operation		4 entry keys	

About the Controller

The xxx SFWC facilitates efficient use and function control of your Fresh water system possible while its handling is intuitive. After every input step the suitable functions are matched to the keys and explained in a text above. In the menu 'measurement values and settings' are help text and graphics in addition to key words.

The SFWC can be used for the various system variants.

Important characteristics of the SFWC are:

- Depiction of graphics and texts using a lit display.
- Simple viewing of the current measurement values.
- Statistics and system monitoring by means of statistical graphics
- Extensive setting menus with explanations.
- Menu block can be activated to prevent unintentional setting changes.
- Resetting to previously selected values or factory settings.

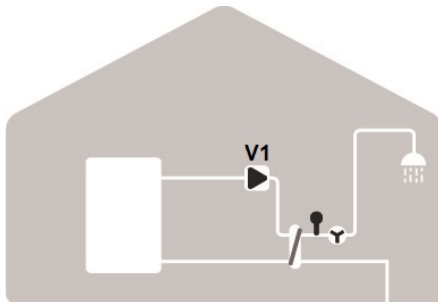
Scope of Supply

- Fresh water controller
- SFWC Installation and operating instructions

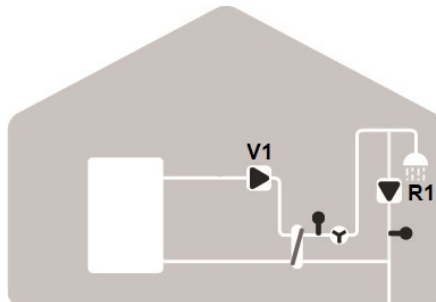
Hydraulic Variants



The following illustrations should be regarded only as schematic representations of the respective hydraulic systems and do not claim to be complete. Under no circumstances should the controller replace any safety devices. Depending on the specific application, additional system and safety components such as check valves, non-return valves, safety temperature limiters, scalding protectors, etc., may be required.

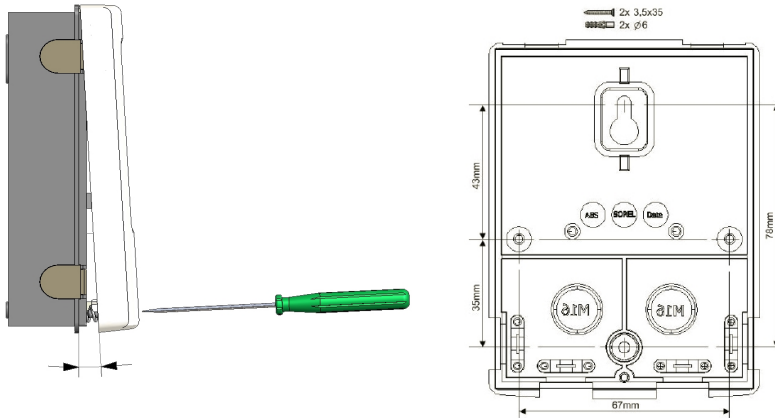


Basic scheme



Additional function circulation

Wall Installation



1. Unscrew cover screw completely.
2. Carefully pull upper part of housing from lower part.
3. Set upper part of housing aside. Do not touch the electronics.
4. Hold the lower part of the housing up to the selected position and mark the two mounting holes. Make sure that the wall surface is as even as possible so that the housing does not become distorted when screwed on.
5. Using a drill and size 6 bit, drill three holes at the points marked on the wall and push in the plugs. Optionally the housing can be mounted with 4 mounting holes.
6. Insert the upper screw and screw it in slightly.
7. Fit the upper part of the housing and insert the other two screws.
8. Align the housing and tighten the three screws.

If problems occur with the operation of the terminals, our video on our YouTube page can help you:

YouTube



<http://www.sorel.de/youtube>

Electrical Connection



Before working on the unit, switch off the power supply and secure it against being switched on again! Check that there is no power flowing! Electrical connections may only be made by a specialist and in compliance with the applicable regulations. The unit may not be put into operation if there is visible damage to the housing, e.g. cracks.



The unit may not be accessible from behind.



Low-voltage cables such as temperature sensor cables must be routed separately from mains voltage cables. Feed temperature sensor cables only into the left-hand side of the unit, and mains voltage cables only into the right-hand side.




The customer must provide an all-pole disconnecting device, e.g. an emergency heating switch.



The cables being connected to the unit must not be stripped by more than 55 mm, and the cable jacket must reach into the housing just to the other side of the strain relief.

Installing the Temperature Sensors

The controller operates with Pt1000 temperature sensors which are accurate to 1 °C, ensuring optimal control of system functions.





If desired, the sensor cables can be extended to a maximum of 30 m using a cable with a cross-section of at least 0.75 mm². Ensure there is no contact resistance! Position the sensor precisely in the area to be measured! Only use immersion, pipe-mounted or flat-mounted sensors suitable for the specific area of application with the appropriate permissible temperature range.

Temperature Resistance Table for Pt1000 Sensors

°C	-20	-10	0	10	20	30	40	50	60	70	80	90	100
Ω	922	961	1000	1039	1077	1116	1155	1194	1232	1270	1308	1347	1385

Electrical Terminals

**Mains voltages**
230 VAC 50 - 60 Hz

**Low voltages**
max. 24 VAC / DC

L

N

L'

N

R1

N

V1

V1

S1

S1

S2

S2

S3

S3

GND

GND

GND

GND

1

2

3

VTY

Terminal:	Connection for:	Terminal:	Connection for:
L	Network outer conductor L	V1	0-10 V / PWM signal primary pump
N	Network neutral conductor N	V1	GND
L'	Outer conductor L' (internal fuse)	S1	Circulation (opt.)
N	Neutral conductor N	S1	GND
R1	Relays 1	S2	Storage sensor (optionally)
N	Neutral conductor N	S2	GND
The PE protective conductor is connected using the enclosed 3-pole connection terminal.		S3	Hot Water
		S3	GND

The polarity of the Pt1000 sensors is freely selectable.

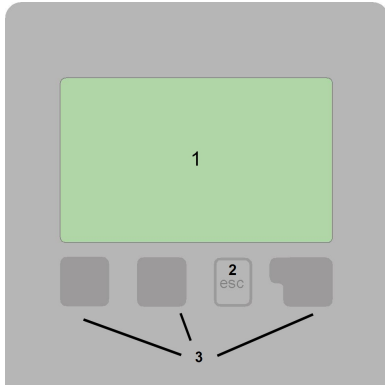
VTY
1= Signal input
2= GND
3= +12V

Relay assignment depends on the selected additional functions. The VTY sensor is plugged directly into the socket on the PCB in the sensor terminal area.



*Bridge from sensor ground to PE protective conductor required (PELV connection).

Display and Input



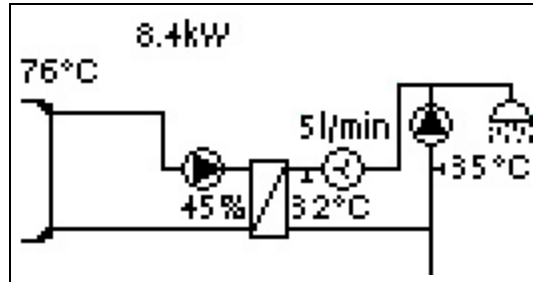
Further symbols can be found in the special functions

Examples for key settings:

+/-	Increase / decrease values
▼/▲	Scroll menu down / up
Yes/No	agree / reject
About	further information
Back	to the previous display
Ok	Confirm selection
Confirm	Confirm setting

The display's (1), extensive text and graphical mode, enables simple, almost self-explanatory, operation of the controller.

The function of the other 3 keys (4) is shown in the display right above the keys. The right-hand key generally has a confirmation and selection function.



The graphics mode appears if not key is pressed for 2 minutes or after exiting the main menu with 'esc'.

Hitting the "esc" key in the graphics mode takes you directly to the main menu.

Commissioning help



1. Set language and time

2. Commissioning help / setup wizard

- select or
- skip.

The setup wizard guides through the necessary basic settings in the correct order. Every parameter is explained on the display of the controller. Pressing the „esc“ key takes you back to the previous setting.

b) With free commissioning the settings should be made in the following order:

- Menu 9. Language
- menu 3. Operating hours
- menu 4. Settings, all values
- menu 5. Protection Functions (if any adjustments necessary).
- menu 6. Special Functions (if any adjustments necessary).

3. In menu operating mode "3.2. Manual", test the switch outputs with the consumers connected and check the sensor values for plausibility. Then set to automatic mode. See "Manual" on page 10



The setup wizard can be accessed in menu 6.5. at any time.



Consider the explanations for the individual parameters on the following pages and check if further settings are necessary for your application.

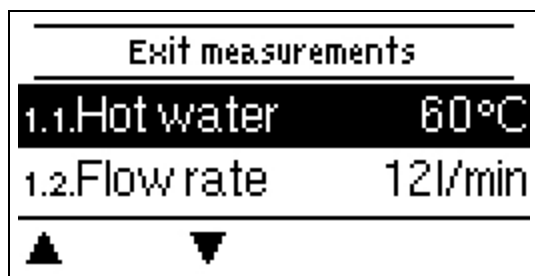
Calibration of Tap Support

If the tap support is switched on in the circulation menu or in the commissioning assistant, a calibration is automatically started after the commissioning help, which is repeated once a week (Sunday at 03:00 o' clock) if not tapped. If the weekly calibration is not completed successfully after 10 minutes, it will be cancelled automatically and the controller continues to work with the "old" values. During commissioning, the calibration must not be interrupted.

Calibration procedure:

During the calibration process a text is shown that the flow rate is measured and no tapping is allowed. After confirmation the circulation pump is switched off and the controller is waiting until the flow rate has dropped to 0 L/min. Afterwards only the circulation pump is switched on and after another 60 seconds the flow rate is measured. The display shows a "Please wait" sign. After another minute, the flow rate is measured again, and the two flow rates are compared. Then the controller waits another 60 seconds and then compares the measured values. If the results are identical (+/- 1L/min), the result is saved. This repeats itself until the values match or the process is interrupted by the maximum runtime of 10 minutes.

1. Measurement values

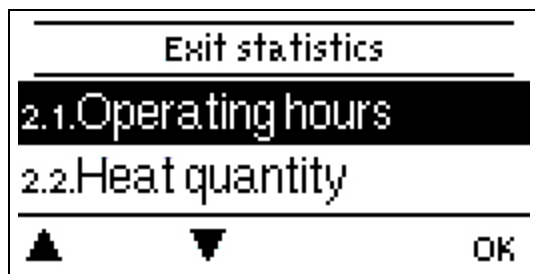


Serve to display the current measured temperatures.



If 'error' appears on the display instead of the measurement value, there may be a defective or incorrect temperature sensor.

2. Statistics



Serve for function control and long-term monitoring of the system.



For time-dependent functions such as circulation and anti-legionella and the evaluation of system data, it is essential that the time is accurately set on the controller. Please note that the clock continues to run for about 24 hours if the mains voltage is interrupted, and afterward must be reset. Improper operation or an incorrect time may result in data being cleared, recorded incorrectly or overwritten. The manufacturer accepts no liability for the recorded data!

Operating hours

Display of the operating hours of the consumers connected to the controller (for example, solar pumps, valves etc.) whereby different time ranges (day-years) are available!

Heat quantity

Display of the consumed heat quantity from the system in kWh.



This is an indicative value.

Graphic overview

This results in a clear illustration of the data as a bar graph. Different time ranges are available for comparison. You can page through with the two left keys.

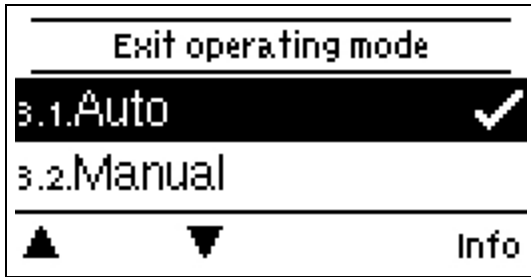
Notifications

Display of the last 20 errors in the system with indication of date and time.

Reset / Clear

Resetting and clearing the selected statistics. Selecting 'all statistics' clears everything except the messages.

3. Operating mode



Auto

The automatic mode is the normal mode of the controller. A correct controller function under consideration of the current temperatures and the set parameters is only present in automatic mode! After an interruption of the mains voltage, the controller automatically returns to the last operating mode selected.

Manual

The individual relay outputs, v outputs and the connected consumers can be checked for proper functioning and correct assignment.



The operating mode 'Manual' may only be used by specialists for brief function tests, e.g. during commissioning! Function in manual mode: The relays and thus the connected consumers are switched on and off by pressing a key, with no regard to the current temperatures and set parameters. At the same time, the current measurement values of temperature sensors are also shown in the display for the purposes of function control.

Off



If the operating mode "off" is enabled, all control functions are turned off. The measured temperatures are displayed for the overview.

4. Settings

Exit settings	
4.1.Tset	55°C
4.2.Tmax	65°C
▲	▼
Info	



By no means does the controller replace the safety appliances on site!

Tset

Setpoint temperature at the flow sensor.

The SFWC controller operates on the condition that the hot water temperature/tap temperature measured at the flow sensor is adjusted as quickly as possible and kept constant.



Temperature values which are set too high can lead to scalding or damage to the system. Scalding protection must be provided by the customer!

Tmax

Maximum hot water tap temperature measured at the flow sensor. Exceeding this limit will cause the pump to be switched off. If the temperature falls below the set temperature, the pump is released again.



Temperature values which are set too high can lead to scalding or damage to the system. Scalding protection must be provided by the customer!

Flow sensor

Selection of the flow sensor.

Here you can set the type of flow sensor.

Circulation

If the circulation has been selected and activated in the menu Special functions/Signal V2, the following settings can be made: See "Circulation " on page 14

Comfort

If the comfort function is activated, the primary pump rinses through the heat exchanger every 15 minutes for 5 seconds, so that hot water is available as fast as possible during the tapping process.

5. Protective Functions



The 'Protective functions' can be used by specialists to activate and set various protective functions.



By no means does the controller replace the safety appliances on site!

Anti Legionella



The anti-legionella function is an additional function for certain relay functions such as: electric heating rod, burner, circulation, compressor.

With the help of the anti legionella function (hereinafter referred to as: AL), the system can be heated up at selected times in order to free it of legionella.



In the delivery state, the anti legionella function is switched off.



As soon as it has heated up with "AL" turned on, information with the date will be shown in the display.



This anti legionella function does not offer any secure protection against legionella, because the controller requires an adequate added amount of energy and the temperatures cannot be monitored in the entire storage area and the connected pipe system.



During the operation of the anti legionella function, if applicable, the storage is heated above the set value "Tmax", which may lead to scalding and system damage.

AL Tset

For a successful heating, this temperature has to be reached at the AL sensor(s) for the exposure time period.

AL residence time

For this period of time the AL Tset temperatures at the activated AL-sensors have to be reached for a successful heating.

Last AL heat

This displays when the last successful heating has occurred.

AL-times

During this periods the AL heat up is attempted. If within the defined period, the AL-condition is met (Tset at the defined sensors for the exposure time period), the heating is completed and logged as "Last AL heating".

Start manually

The anti-Legionella heating can be started manually at any time.

Limescale Protection

To prevent the accumulation of limescale, the circulation pump can continue to rinse the heat exchanger after a tapping for max. 30 seconds or till the hot water sensor drops below Tset.

Discharge protection

This protection function is for the case that the necessary primary temperature cannot be guaranteed at all times.

When no storage sensor is connected:

If the setpoint temperature is not reached after 60 seconds, the currently measured temperature -3°C is used as new setpoint temperature. Once the pump in the primary circuit stops, the setpoint temperature is raised to the set Tset again.

When the storage sensor is connected:

If the temperature at the storage sensor is smaller than Tset -5°C, the target temperature is lowered to the currently measured storage temperature -5°C.

In both cases, Circ. Tmin is set to the new setpoint - Circ. Hysteresis -5 K. Here too, the newly calculated value for Circ. Tmin will not be lower than 0 °C, and not higher than the set circ. Tmin.

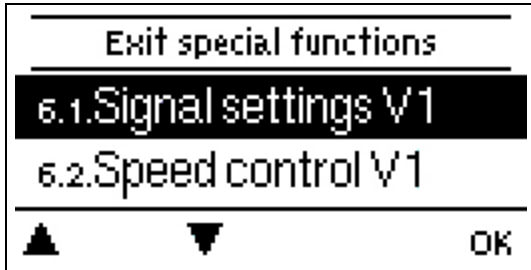
Seizing Protection

If the anti-seizing protection is activated (daily, weekly, off), the controller switches the outputs on/off at 12:00 noon for 5 seconds to prevent seizing of the pump/valve after long periods of inactivity.

ABS R/V (X)

Activation (daily, weekly) of the anti-lock protection to a relay/signal output (X) at 12:00 for 5 seconds.

6. Special Functions



Used to set basic items and expanded functions.



The settings in this menu should only be changed by a specialist.

Pump settings / Signal V1

In this menu, the settings for the speed controlled output V1 are executed.

Type of pump/ Type of signal

The type of speed controlled pump used can be set here.

0-10V: Control of special pumps (e.g. high efficiency pumps) through a 0-10V signal.

PWM: Control of special pumps (e.g. high efficiency pumps) through a PWM signal.

Pump/ Profile

In this menu, the preset profiles for the pump can be selected or under “manual” all settings can be done personally. The settings can still be changed after a profile has been selected.

Output Signal

In this menu the type of actors are set: heating pumps have the greatest output with a small input signal, solar pumps in contrast have very little output with a small input signal. Solar = normal, heating = inverted.

PWM / 0-10V off

This signal / this voltage is emitted if the actor is turned off (actor with cable break detection require a minimum voltage / a minimum signal).

PWM / 0-10V on

This voltage / this signal requires the pump in order to turn on and to run at a minimum speed.

PWM / 0-10V max.

With this value, the maximum signal / maximum voltage level can be specified for the highest speed of the energy saving valve, which is used, for example, during the flushing or manual operation.

Show signal

Represents the set signal in a graphic and text overview.

Speed control

If the speed control is activated, itSFWC offers the possibility through a special internal electronic system to change the speed of pumps depending on the process.



This function should only be activated by a technician. Depending on the pump being used and the pump level, the minimum speed may not be set too small, because the pump or the system may be damaged. The specifications from the affected manufacturer must be observed for this! When in doubt, the min. speed and the pump level should be set too high instead of too low.

Max. Speed

The maximum speed of the pump is determined here in %. During the setting, the pump runs in the respective speed and the flow can be determined.



The specified percentages are variables, which may deviate more or less strongly depending on the system, pump and pump level. 100% is the maximum possible power of the controller.

Min. Speed

The minimum speed of the pump is determined here. During the setting, the pump runs in the respective speed and the flow can be determined.



The specified percentages are variables, which may deviate more or less strongly depending on the system, pump and pump level. 100% is the maximum possible power of the controller.

Relay functions for free relays

Free, i.e. in the hydraulic variant unused relays, can be assigned to various additional functions. Every additional function can only be assigned once. All special functions, which function values can be preset and changed also appear in the menu "4. settings" as soon as they have been activated or assigned.

In order to change the assignment of a relay, the previously assigned additional function must be switched off.

Please pay attention to the technical information of the relays.

Circulation



All required settings for the circulation are done here.
Activate function.



Circulation settings are only available if the "Circulation" function is set under Special functions for relays. (Correctly set by the controller by automatic detection.)

Circulation mode of circulation

Continuous operation: The circulation pump is continuously switched on.

Requirement: The circulation pump is switched on as soon as a tapping process is started and remains switched on until the circulation temperature (circulation T_{min} + hysteresis) is reached at the circulation sensor.

Time: The circulation pump is switched on when it is released and the circulation temperature falls below the set minimum temperature and remains switched on until the circulation target temperature (circulation T_{min} + hysteresis) is reached at the circulation sensor.

Requirement + time: The circulation pump is switched on when it is released and the set minimum circulation temperature is undershot or as soon as a tapping process is started. It remains switched on until the circulation target temperature (circulation T_{min} + hysteresis) is reached at the circulation sensor.

Circ. T_{min} .

Minimum temperature

If this value is undershot and the circulation is approved or there is a request through a tapping process, the circulation pump is started.

Circ. Hysteresis

Switch-off hysteresis of the circulation pump. If the Circ. T_{min} value is exceeded by the value set here, the circulation pump will be shut down.

Circ. max. Flow rate

Maximum flow rate of the circulation pump. The circulation pump is switched off if the flow sensor detects more than the value set here during a tapping process.



This value is set by the calibration.

Times

Here the desired periods are set in which the circulation is approved. For each weekday, three times can be specified, furthermore, you can copy individual day to other days. The circulation is shut down outside of the set times.

Tap support

To ensure a constant temperature even with small amount of tap water, the circulation pump can be used as support pump. Not only does the circulation pump switch on under normal conditions, but also when a small tapping occurs. When a storage sensor is connected, tap support is only switched on when the min. storagetemp is reached at the storage sensor.

Min. Storagetemp


Tap support is deactivated when the storage temperature drops below „Min. Storagetemp“.

Tap support calibration

For information about the function and calibration procedure, See " Calibration of Tap Support " on page 8.


Sensor Calibration

Deviations in the temperature values displayed, for example. due to cables which are too long or sensors which are not positioned optimally can be compensated for manually here. The settings can be made for each individual sensor in steps of 0.5 °C.

 Settings are only necessary in special cases at the time of initial commissioning by the specialist. Incorrect measurement values can lead to unpredictable errors.


Commissioning

Starting commissioning help guides you in the correct order through the basic settings necessary for commissioning, and provides brief descriptions of each parameter in the display. Pressing the ‚esc‘ key takes you back to the previous value so you can look at the selected setting again or adjust it if desired. Pressing ‚esc‘ more than once takes you back to the selection mode, thus cancelling the commissioning help (See " Commissioning help " on page 8).

 May only be started by a specialist during commissioning! Observe the explanations for the individual parameters in these instructions, and check whether further settings are necessary for your application.


Factory Settings

All settings can be reset, returning the controller to its delivery state.

 All of the controller's parametrization, statistics, etc. will be lost irrevocably. The controller must then be commissioned once again.

Time & Date

Serve to set the current time and date.

 For time-dependent functions such as circulation and anti-legionella and the evaluation of system data, it is essential that the time is accurately set on the controller. Please note that the clock continues to run for about 24 hours if the mains voltage is interrupted, and afterward must be reset. Improper operation or an incorrect time may result in data being cleared, recorded incorrectly or overwritten. The manufacturer accepts no liability for the recorded data!

Daylight saving time

If this function is activated, the controller automatically changes to winter time or summer time (DST, Daylight Savings Time).

Eco Display Mode

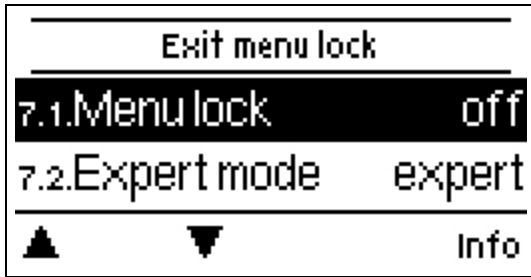
In Eco Display Mode the backlight of the display is switched off if no buttons are pushed for 2 minutes.

 If a message exists, the backlight does not switch off until the message has been scanned by the user.

Temperature unit

In this menu you can select between the temperature units °C and °F.

7. Menu Lock



Secure the controller against unintentional changing and compromise of basic functions.

Menu lock active = "On"

Menu lock off = "Off"

In addition, the "Simple" menu view can be used to hide menu items that are not necessary for the daily use of the controller after commissioning. The menu item "Menu lock on/off" is also hidden when the "Simple" menu view is selected!

The menus listed below remain completely accessible despite the menu lock being activated, and can be used to make adjustments if necessary:

1. Measurement values
2. Statistics
4. Settings
6. Special Functions
7. Menu lock
9. Language

8. Service Values



Serve for remote diagnosis by a specialist or the manufacturer in the event of errors, etc.




Enter the values into the table when an error occurs.


9. Language

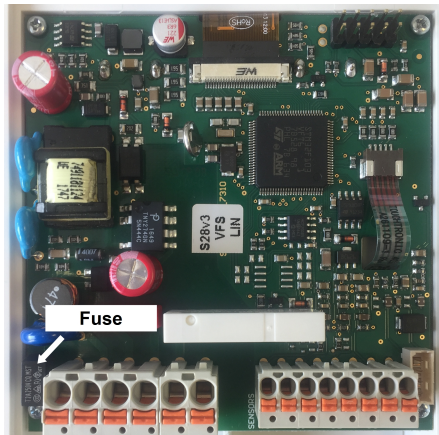


To select the menu language. During initial commissioning and longer power interruptions, the query is made automatically.

Replacing the Fuse

 Repairs and maintenance may only be performed by a specialist. Before working on the unit, switch off the power supply and secure it against being switched on again! Check that there is no power flowing!

 Only use the included safeguard or a similar safeguard with the following specifications: T2A / 250 V.




If the mains voltage is switched on and the controller still does not function or display anything, then the internal device fuse may be defective. First find the external fault source (e.g. pump), replace it and then check the device fuse.

To replace the device fuse, open the device as described under "See " Wall Installation " on page 6", remove the old fuse, check it and replace if necessary.

Then first recommission the controller and check the function of the switch outputs in manual mode as described.

Maintenance

 In the course of the general annual maintenance of your heating system, the functions of the controller should also be checked by a specialist and the settings should be optimized if necessary.

Performing maintenance:

- Check the date and time See " Time & Date " on page 15
- Assess/check plausibility of statistics See " Statistics " on page 9
- Check the error memory See " Notifications " on page 9
- Verify/check plausibility of the current measurement values See " Measurement values " on page 9
- Check the switch outputs/consumers in manual mode See " Manual " on page 10
- Possible optimization of the parameters setting (**only on customers request**)

Possible error messages

Possible error messages	Notes for the specialist
Sensor x defective	Means that either the sensor, sensor entrance on the controller or the connecting wire was defective (See " Temperature Resistance Table for Pt1000 Sensors " on page 7).
Restart	Means that the controller was restarted, for example, due to a power outage. Check date & time!
Time & Date	This display appears automatically after a longer network disruption, because the time & date must be examined and, if applicable, adjusted.
Anti-legionella failed	Anti-legionella failed appears if at least anti-legionella Tsoll -5 °C could not be held at the anti-legionella sensor for the set exposure time.
Primary pump defect	Is displayed if flow is recognized but Tset is not reached and the flow temperature did not rise up 3 K in 3 seconds. This message may also appear if the heat exchanger is calcified.
Anti-legionella error storage temperature	Is displayed if temperature of storage is lower than anti-legionella Tset.
Anti-legionella residence time	Is displayed if anti-legionella Tset - 5K is not present during the whole anti legionella residence time.
Anti-legionella error tapping	Is displayed if during anti legionella heating the measured flow is bigger than the calibrated circulation flow.

Final Declaration

Although these instructions have been created with the greatest possible care, the possibility of incorrect or incomplete information cannot be excluded. Subject as a basic principle to errors and technical changes.

Date and time of installation:

Name of installation company:

Space for notes:

Your specialist dealer:

Manufacturer:

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