

DeltaSol Fresh[®] 20

RESOL[®]

Manual for the
specialised craftsman

Installation
Operation
Commissioning



11210905

Thank you for buying this product.
Please read this manual carefully to get the best performance from this unit.
Please keep this manual safe.

en

Manual

www.resol.de

Safety advice

Please pay attention to the following safety advice in order to avoid danger and damage to people and property.

Instructions

Attention must be paid to the valid local standards, regulations and directives!

Information about the product

Proper usage

The controller may only be used in technically suitable systems in compliance with the technical data specified in these instructions. Due to its design the controller must be mounted and operated as described in these instructions!

Improper use excludes all liability claims.

CE Declaration of conformity

The product complies with the relevant directives and is therefore labelled with the CE mark. The Declaration of Conformity is available upon request, please contact the manufacturer.



Target group

These instructions are exclusively addressed to authorised skilled personnel. Only qualified electricians should carry out electrical works. Initial installation must be effected by the system owner or qualified personnel named by the system owner.

Description of symbols

WARNING! Warnings are indicated with a warning triangle!
→ **They contain information on how to avoid the danger described.**



Signal words describe the danger that may occur, when it is not avoided.

- **WARNING** means that injury, possibly life-threatening injury, can occur.
- **ATTENTION** means that damage to the appliance can occur.



Note

Notes are indicated with an information symbol.

→ Arrows indicate instruction steps that should be carried out.

Subject to technical change. Errors excepted.

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For commissioning the controller after the installation, see page 6.

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For making adjustments, see page 11.

1 Overview

- Pre-assembled with all electrical components and ready to plug in for easy commissioning
- DHW heating to a set temperature
- Digital VFD 2 - 40 Fast Grundfos Direct Sensor™
- Quick reaction to changes in the draw-off flow rate
- Circulation function (temperature-, time- and demand-controlled)

Technical data

Inputs: 3 inputs for Pt1000, 2 digital Grundfos Direct Sensor™ (VFD 2 - 40 Fast)

Outputs: 2 semiconductor relays, 1 PWM output

Switching capacity: 1 (1) A (100 ... 240 V~) (semiconductor relay)

Total switching capacity: 2 A 240 V~

Power supply: 100 ... 240 V~ (50 ... 60 Hz)

Supply connection: type Y attachment

Power consumption: < 1 W (standby)

Mode of operation: type 1.Y

Rated impulse voltage: 2.5 kV

Data interface: RESOL VBus®

VBus® current supply: 35 mA

Housing: plastic, PC-ABS and PMMA

Mounting: wall mounting, mounting into patch panels is possible

Indication / Display: System-Monitoring-Display

Operation: 3 push buttons

Ingress protection: IP 20/EN 60529

Protection class: I

Ambient temperature: 0 ... 40 °C

Pollution degree: 2

Dimensions: 172 x 110 x 46 mm

2 Installation of the controller

2.1 Overview

WARNING! Electric shock!



Upon opening the housing, live parts are exposed!

→ **Always disconnect the device from power supply before opening the housing!**

ATTENTION! ESD damage!



Electrostatic discharge can lead to damage to electronic components!

→ **Take care to discharge properly before touching the inside of the device! To do so, touch a grounded surface such as a radiator or tap!**



Note

Connecting the device to the power supply must always be the last step of the installation!



Note

It must be possible to disconnect the device from the mains at any time.

→ Install the mains plug such that it is accessible at any time.

→ If this is not possible, install a switch that can be accessed.

Do not use the device if it is visibly damaged!

Mains connection (100 ... 240 V~) is to be carried out by means of the pre-connected mains cable. Only qualified electricians may carry out electrical works. Attention must be paid to the valid local standards, regulations and directives!

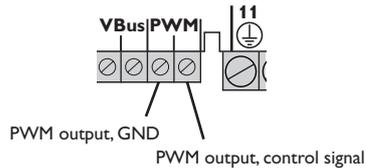
Make sure the hydraulic system is properly grounded!

2.2 Outputs

The controller is equipped with 2 semi-conductor relays:

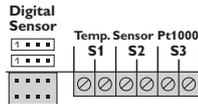
- Relay 1 (primary pump) is used for power supply of the primary pump:
R1 = Output R1
N = Neutral conductor N
PE = Protective conductor PE (⊕)
- Relay 2 (secondary pump) is used without speed control:
R2 = Output R2
N = Neutral conductor N
PE = Protective conductor PE (⊕)

The controller is additionally equipped with a PWM output for connecting high-efficiency pumps:



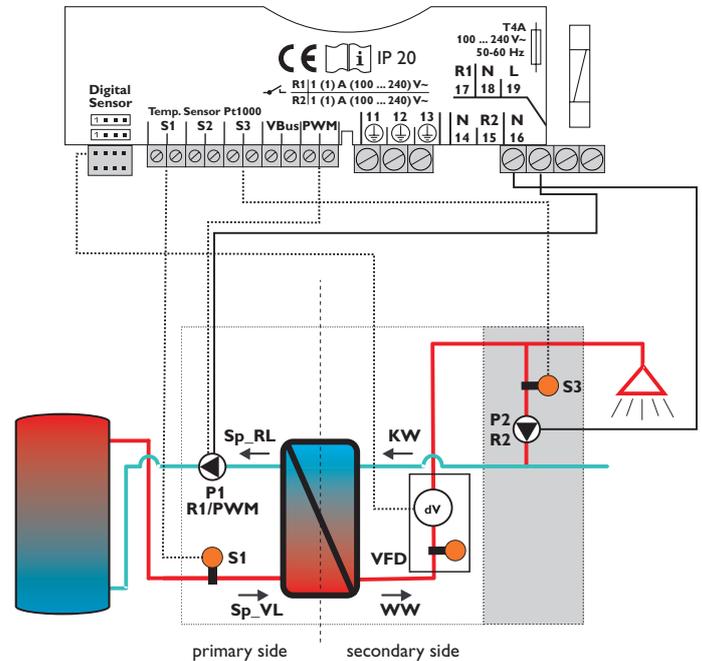
The PWM output is used for speed control of the primary pump

2.3 Sensors

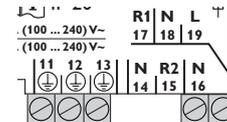


The controller is equipped with 4 sensor inputs in total.

- Temperature sensors have to be connected to the terminals **S1 ... S3** (either polarity).
- Connect the Grundfos Direct Sensor™ to the upper **Digital Sensor** input.



2.4 Mains connection



The power supply of the device must be carried out via an external switch and has to be 100 ... 240 V~ (50 ... 60 Hz). Flexible cables are pre-connected with strain reliefs and the corresponding screws.

- Connect the mains cable to the following terminals:
18 = Neutral conductor N
19 = Conductor L
13 = Protective conductor PE (⊕)

2.5 Data communication/Bus

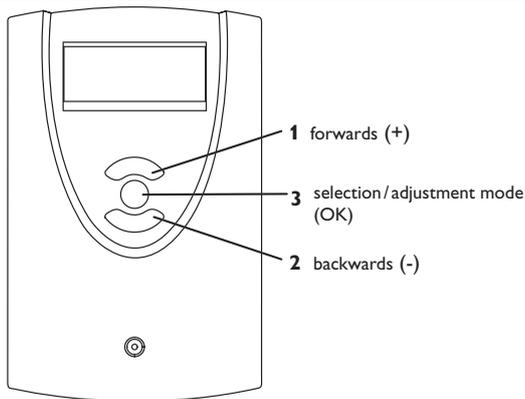


VBus® terminals

The controller is equipped with a VBus® for data transfer with and energy supply to external modules. The connection is to be carried out at the two terminals marked **VBus** (any polarity).

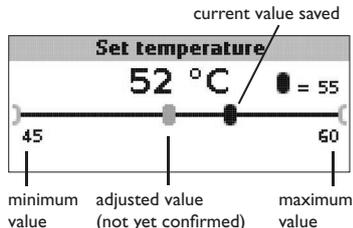
3 Commissioning of the controller

3.1 Operation



The controller is operated via the 3 buttons below the display. **Button 1 (+)** is used for scrolling forwards through the menu and increasing adjustment values. **Button 2 (-)** is used for the opposite direction. **Button 3 (OK)** is used for selecting channels and confirming adjustments.

Adjusting values



→ Adjust the value with buttons 1 or 2, briefly press the button 3; the adjustment range is displayed as a slide bar.

→ Adjust the desired value with buttons 1 and 2.

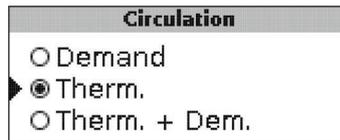
The value is displayed with the handle of the slide bar. Until the new value is saved, the previously stored value is displayed on the upper right-hand side of the display.

→ Briefly press button 3 to confirm the adjustment.

→ Press button 3 again in order to store the adjustment and to get back to the adjustment menu.

If button 3 is not pressed after an adjustment has been made, the display switches back to the menu after a few seconds. The adjusted value will not be stored.

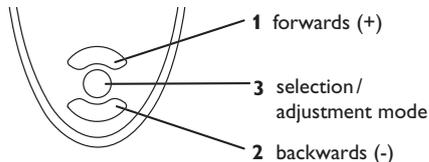
Selecting a function or option



→ Select the function or option with buttons 1 or 2, then briefly press button 3.

→ Select **Yes** to activate, or **No** to deactivate the function. Briefly press button 3 to confirm the selection.

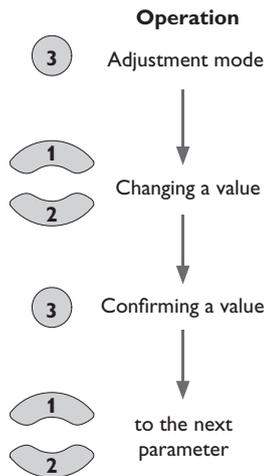
3.2 Commissioning menu



→ Connect the device to the mains

The controller runs an initialisation phase.

When the controller is commissioned or when it is reset, it will run a commissioning menu. The commissioning menu leads the user through the most important adjustment channels needed for operating the system.



Commissioning	
Date	17.02.2016
Time	13:13
HW set temp.	50 °C

The commissioning menu consists of the channels described in the following.

Language

→ Adjust the desired menu language.

Date

→ Adjust the date. First of all adjust the year, then the month and then the day.

Time

→ Adjust the clock time. First of all adjust the hours, then the minutes.

HW set temp.

→ Adjust the hot water set temperature.



Note

In order to use the circulation function, a circulation unit is required!

Circulation

→ Adjust the circulation mode.

No = no circulation

Thermal = temperature-controlled circulation, with timer (optional)

Demand = Circulation with draw-off detection

Therm.+Dem. = temperature-controlled circulation with additional draw-off detection, with timer (optional)

3.3 Menu structure

Depending on the circulation mode selected, further adjustment channels will appear:

Calibration

Automatic secondary circuit flow rate detection and measurement while the secondary pump is active (for further information about the offset see page 13)

→ In order to carry out the calibration press button 3.



Note

If a circulation is implemented, make sure to run a calibration! Until the calibration has been carried out, the secondary pump is blocked!

In this case, the acknowledgeable message **Run calibr. circ. pump** is displayed.

Ton circ.

→ Adjust the switch-on temperature for the circulation (only if circulation mode = Thermal or Therm.+Dem.).

Toff circ.

→ Adjust the switch-off temperature for the circulation.

Circ. run.

→ Adjust the runtime for the secondary pump (only if circulation mode = Demand or Therm.+Dem.).

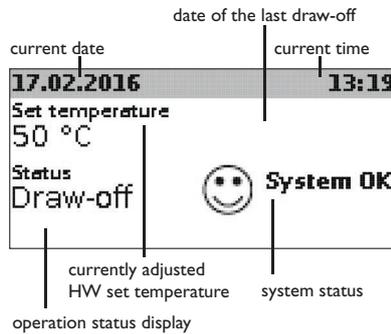
OK

→ Select the menu item **OK**



Note

In order to ensure DHW heating also in the case of a sensor fault, please see chap. 4.2.



During normal operation, the main display is shown.

Main display

The main display shows the current date and time, the set temperature, date and time of the last draw-off, operation status and system status.

Operation status display

The operation status display always shows one of the following status:

Ready: Water heating possible upon draw-off

Draw-off: Draw-off in process

BP: Blocking protection active (non-adjustable: daily at 12:00 o'clock, runtime: 6 s)

0 DHW: No DHW heating possible

!Tmax off: Maximum temperature limitation active

Circ. active: Circulation active

Emergency operation: Emergency operation active

System status

The system status is displayed graphically as a smiley. The different smiley faces have the following meanings:

 = System OK

 = Warning

 = Error

If the circulation flow rate calibration has not yet been carried out, the message **No Calibration** will be displayed as a system status **warning**:

The type of warning or error that has occurred will be displayed as a status in the operating status display.

Warning and error messages are marked by a triangle in the status menu .

3.4 Selection menu

Selection menu
back
▶ Status
Balances
DHW heating
Emergency operation
Circulation
Misc.
Manual mode
User code

In the selection menu, different submenus can be selected and several values can be adjusted.

- In order to get from the main display to the selection menu, briefly press a button.
- Select the desired submenu by pressing buttons 1 and 2, and confirm with button 3.

3.5 Status menu

In this menu, status and error messages as well as current measured values are displayed.

Status
back
▶ T-St. flow 57 °C
T-HW 50 °C

Possible warnings and error messages

Sensor defective

This message indicates a sensor fault. The name of the defective sensor or sensors is displayed below:

VFD secondary circuit

The VFD sensor in the secondary circuit is defective.

T-St flow

The temperature sensor in the store flow is defective.

T-Circ.

The temperature sensor in the secondary circuit is defective.

Calibration circ. pump

The circulation flow rate offset has not yet been carried out. The secondary pump is blocked.

Status
▶ back
▶  Calibration circ. pump
T-St. flow 57 °C

Measured and display values

Emergency operation

Primary pump emergency operation is active.

T-St. flow

Display range: 0 ... 100 °C, defective
Indication of the store flow temperature in °C.

Disinfection active

Thermal disinfection is active.

Overrun active

Overrun is active.

T-HW

Display range: 0... 100 °C, defective

Indication of the hot water temperature in °C.

Hygiene rem.

Display range: 0... 60 min

Indication of the remaining time of the hygiene disinfection mode in min.

Decontamin. rem.

Display range: 0... 240 min

Indication of the remaining time of the decontamination disinfection mode in min.

Overrun rem.

Display range: 0... 60 min

Indication of the remaining overrun time of the decontamination disinfection mode in min.

Draw-off

Display range: 0... 45 l/min, defective

Indication of the flow rate at the VFD in the secondary circuit.

Circulation

Display range: Active, Inactive

Indication of the circulation status.



Note

In order to use the circulation, a circulation unit is required!

T-Circ.

Display range: 0... 100 °C, defective

Indication of the temperature in the secondary circuit.

Time

Display range: 00:00... 23:59

Indication of the current clock time.

Date

Display range: 01.01.2001... 31.12.2099

Indication of the current date.

SW version

Indication of the software version number.

Hydraulic

Indication of the hydraulic variant adjusted.

3.6 Balance values

In this menu, balance values are displayed. Values that are not measured will not be displayed.

Balances	
back	
▶ Operation	0 d
Draw-off qty	0.0 m ³

Resetting balance values

Setting the balance values back to 0 is only possible in the expert level.

In order to set a balance value back to 0, proceed as follows:

→ Scroll to the desired value.

→ Select the value by pressing button 3.

A security enquiry appears.

→ Confirm the security enquiry by selecting **Yes**.

The balance value has been set back to 0.

In order to set all balance values back to 0, select the menu item **Reset all**.

A security enquiry appears.

→ Confirm the security enquiry by selecting **Yes**.

All balance values have been set back to 0.

Operation

Indication of the operating days since controller connection.

Draw-off qty

Indication of the draw-off quantity since commissioning in m³. Only values higher than the adjusted draw-off threshold will be displayed.

T-St._fl min

Indication of the store flow minimum temperature in °C.

T-St._fl max

Indication of the store flow maximum temperature in °C.

T-HW min

Indication of the hot water minimum temperature in °C.

T-HW max

Indication of the hot water maximum temperature in °C.

T-Circ. min

Indication of the minimum temperature at the circulation sensor in °C.

T-Circ. max

Indication of the maximum temperature at the circulation sensor in °C.

Primary pump

Indication of the primary pump operating time in h.

Circulation pump

Indication of the secondary pump operating time in h.

P1 swp

Indication of the switching processes at P1.

P2 swp

Indication of the switching processes at P2.

P1 1-10 ... P1 91-100

Indication of the primary pump operating time at the corresponding speed in h.

Reset all

Set all balance values back to 0.

4 Settings

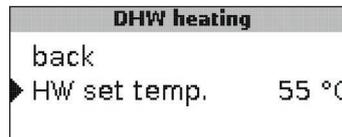


Note

The displayed values and options depend on the functions and only appear if these are available for the adjusted system parameters.

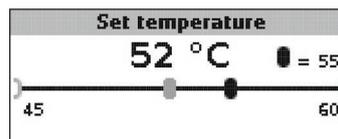
4.1 DHW heating menu

In the **DHW heating** menu, all adjustments for the DHW heating can be made.



HW set temperature

Hot water set temperature adjustment.



HW set temp.

Adjustment range: 45 ... 60 °C

Factory setting: 50 °C



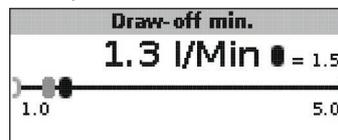
Note

In order to use the circulation, a circulation unit is required!

Draw-off detection

Flow rate adjustment for the draw-off detection. A flow rate equal to or higher than the adjusted value will be detected as a draw-off.

This adjustment value is visible and adjustable in the expert level only.



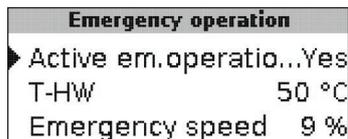
Draw-off min.

Adjustment range: 1.0 ... 5.0 l/min

Factory setting: 1.5 l/min

4.2 Emergency operation menu

The Emergency operation can be used for ensuring the hot water supply in the case of a sensor fault. In this case, the primary pump will permanently run at the adjustable **Emergency speed**. For this function, the emergency speed must be aligned with the resulting hot water temperature. The display channel **T-HW** enables this alignment directly in the Emergency operation menu. If a sensor fault inhibiting DHW heating has occurred, activate the emergency operation in the **Emergency operation** channel.



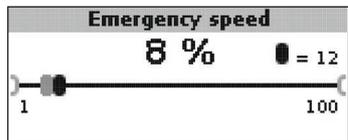
Activ. Emergency operation

Selection: Yes, No

Factory setting: No

T-HW

Display range: 0 ... 100 °C



Emergency speed

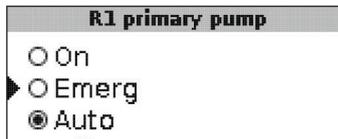
Adjustment range: 1 ... 100%

Factory setting: 12%



Note

In order to ensure a quick entry to emergency operation in the case of an emergency, perform the alignment of the **emergency speed** as early as possible.



The **Emergency speed** is also available as the selection **Emerg** in the **Primary pump** channel of the **Manual mode** menu. Thus, the primary pump speed can also be limited in manual mode in order to ensure scald protection.



Note

When emergency operation is active, the adjustment channel Primary pump is not available in the Manual mode menu!

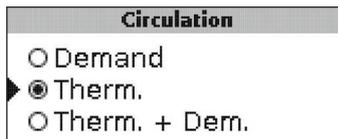
4.3 Circulation menu



Note

In order to use the circulation, a circulation unit is required!

In the **Circulation** menu, all adjustments for the circulation can be made.



Circulation

In the Circulation channel, the circulation mode can be adjusted. The following circulation modes are available:

No = no circulation

Thermal = temperature-controlled circulation

Demand = circulation with draw-off detection

Therm.+Dem. = temperature-controlled circulation with additional draw-off detection



Note

If a circulation is implemented, make sure to run a calibration! Until the calibration has been carried out, the secondary pump is blocked!

In this case, the acknowledgeable message **Run calibr. circ. pump** is displayed.

Demand

In the Demand circulation mode, the secondary pump will be activated for the adjustable runtime **Circ. run**, when a draw-off has been detected. The **Toff circ.** switch-off temperature serves as the switch-off condition.

Thermal

In the **Thermal** circulation mode, the secondary pump is activated and deactivated depending on the adjustable temperatures **Ton circ.** and **Toff circ.** Additionally, three time frames can be adjusted for each day of the week. Outside these time frames, the circulation remains inactive.

Therm.+Dem.

In the Therm.+Dem. circulation mode, both switching conditions are valid. Demand takes priority: the secondary pump will be activated upon a draw-off, even if the switch-on conditions for the **Thermal** circulation mode are not fulfilled. The **Toff circ.** switch-off temperature serves as the switch-off condition.

Depending on the circulation mode selected, further adjustment channels will appear:

Circulation flow rate calibration

The circulation flow rate calibration enables the controller to detect a DHW draw-off even while the secondary pump is running.

The circulation flow rate calibration can be carried out in the **Circ. flow rate** submenu.

Circulation	
Circulation	Therm.
▶ Circ.flow rate	
Ton circ.	40 °C

The calibrated value for the circulation flow rate and the date of the last calibration are available.

Circ.flow rate	
back	
▶ Calibration	Abort

If the **Calibration** menu item is selected, the secondary pump is activated at 100% speed and the flow rate is measured at the VFD. The value measured is stored as the circulation flow rate and will be displayed in the **Circ. flow rate** channel. This value then serves as the reference value for the draw-off detection.

In the "last" display channel, the date of the **last** calibration is indicated.

Circ.flow rate	
Calibration	Start
▶ last	17.02.2016
Circ.vol.flow	3 l/Min



Note

If a circulation is implemented, make sure to run a calibration! Until the calibration has been carried out, the secondary pump is blocked! In this case, the acknowledgeable message **Run calibr. circ. pump** is displayed when leaving the menu.



Note

In order to run the calibration, all draw-off points must be closed.

If the flow rate exceeds the reference value while the secondary pump is active, the controller detects a draw-off and the circulation pump will be deactivated.

Circulation switch-on temperature

Ton circ.

Adjustment range: 30 ... 59 °C

Factory setting: 40 °C

Circulation switch-off temperature

Toff circ.

Adjustment range: 31 ... 60 °C

Factory setting: 45 °C

Circulation	
▶ Ton circ.	40 °C
Toff circ.	45 °C
Circ.run	5.0Min

If the **Thermal** or **Therm.+Dem.** circulation mode has been selected, a switch-on temperature **Ton circ.** can be adjusted for the circulation. The switch-off temperature **Toff circ.** can be adjusted in all circulation modes (except for none).

If the temperature at sensor S3 in the secondary circuit falls below the switch-on temperature, the controller activates the secondary pump.

If the temperature at sensor S3 in the secondary circuit exceeds the switch-off temperature, the controller deactivates the secondary pump.

This switch-off condition is valid for all circulation modes and also during the runtime **Circ. run.** after a draw-off detection.



Note

The switch-off temperature must be adjusted at least 1 °C higher than the switch-on temperature.

Circulation runtime

Circ. run.

Adjustment range: 10... 990 s

Factory setting: 300 s

If the **Demand** or **Therm.+Dem.** circulation mode has been selected, the circulation runtime **Circ. run.** can be adjusted for the circulation.

The runtime determines how long the secondary pump will remain active after the detected draw-off. The **Toff circ.** switch-off condition is also valid during the circulation runtime.

Thermal circulation timer

Circulation	
Toff circ.	45 °C
Circ.run	5.0Min
▶ Timer	

Timer/daily, Mo... Su/t1_(2,3) on

Adjustment range: 00:00... 23:45

Factory setting: 07:00 (t1_on)

07:00 (t2_on, t3_on)

If the **Thermal** or **Therm.+Dem.** circulation mode has been selected, the **Timer** menu item appears.

Timer therm. circ	
back	
▶ daily	
Monday	

When **Timer** is selected, the days of the week (**Mo... Su**) can be selected individually. For each day of the week, 3 time frames can be adjusted. When **daily** is selected, 3 time frames can be adjusted which will be valid on all days of the week.

Timer therm. circ. all	
back	
t1 on	07:00
▶ t1 off	22:00

Timer/daily, Mo... Su/t1_(2,3) off

Adjustment range: 00:00... 23:45

Factory setting: 22:00 (t1_off)

07:00 (t2_off, t3_off)



Note

Adjustments made for individual days will not overwrite the adjustments made in **daily**!

If **tx_on** = **tx_off**, the corresponding time frame is inactive.

Outside these time frames, the thermal circulation remains inactive. In the **Therm.+Dem.** circulation mode, the Demand switch-on conditions are valid outside the time frames.

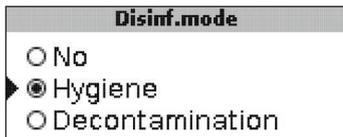
4.4 Disinfection



Note

In order to use the thermal disinfection, a circulation unit is required! The circulation pump has to be connected to the controller.

The thermal disinfection function offers two possibilities to reduce germ contamination of the water inside the circulation circuit. In the Disinfection mode channel, the disinfection modes **Hygiene** or **Decontamination** can be selected. The Disinfection is deactivated by default (**No**).



The **Hygiene** variant can be used to perform regular potable water hygiene measures in the circulation system.

The **Decontamination** variant can be used to decontaminate systems that are contaminated with Legionella.



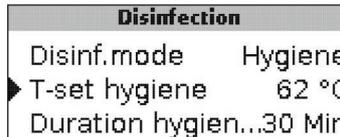
Note

The disinfection modes Hygiene and Decontamination can only be activated when one of the circulation modes is activated.

Hygiene:

The Hygiene is started automatically at the adjusted **Hygiene** starting time. The primary pump is controlled such that the temperature at the hot water flow sensor (VFD) reaches the **T-set hygiene** temperature. If the temperature at the circulation sensor (S3) reaches a value **2 K** below the T-set hygiene temperature, the hygiene is considered completed. The primary pump will switch off. The circulation pump will remain active for the non-adjustable overrun time of 5 minutes in order to cool down the heat exchanger, thus preventing its calcification.

The **Duration hygiene** can be used to determine the time during which the T-set hygiene temperature must be reached. If the required temperature at the circulation sensor is not reached within this time, hygiene will be stopped even though it has not been completed. The primary pump will be switched off and the circulation pump overrun starts in order to cool down the heat exchanger.



Hygiene disinfection set temperature

T-set hygiene

Adjustment range: 55 ... 65 °C

Factory setting: 62 °C

Hygiene disinfection duration

Duration hygiene

Adjustment range: 3 ... 60 min

Factory setting: 30 min

Hygiene starting time

Start. t. hygiene

Adjustment range: 00:00 ... 23:59

Factory setting: 23:00

Decontamination:

The decontamination can only be started manually by means of the menu item **START** in the **start decontamin.** adjustment channel. Selecting the menu item **STOP** will cancel an active decontamination.

The primary pump is controlled such that the temperature at the hot water flow sensor (VFD) reaches the **T-set decontamin.** temperature.

Decontamination is considered completed when the adjusted **Duration decontamin.** has elapsed and the temperature at the circulation sensor (S3) has reached a value **2 K** below the T-set decontamin. temperature. The primary pump will switch off. The circulation pump will remain active for the adjustable **Duration overrun** in order to cool down the heat exchanger, thus preventing its calcification.



Note

For a complete decontamination of a hot water system, water has to be drawn off at each draw-off point for at least 3 min at 70 °C.



Note

When the Disinfection duration has elapsed but the required temperature has not been reached at the circulation sensor, the message **△ End of disinf.** is indicated. The controller will continue to control the primary pump such that T-set decontamin. is reached in order to directly detect the consequences of a system alteration. Thus, by reading out **T-HW**, it is possible to see if, by heating the store to a higher temperature, T-set decontamin. can be reached in the hot water flow.

Disinfection	
Disinf., Decontamination	
▶ T-set decontamin.	72 °C
Duration decont.	60 Min

Decontamination disinfection set temperature

T-set decontamin.

Adjustment range: 60 ... 75 °C

Factory setting: 72 °C

Decontamination disinfection duration

Duration decontamin.

Adjustment range: 30 ... 240 min

Factory setting: 60 min

Manual decontamination start

Start decontamin.

Adjustment range: START, STOP

Factory setting: START

Decontamination overrun duration

Duration overrun

Adjustment range: 10 ... 60 min

Factory setting: 60 min

4.5 Miscellaneous menu

In the **Misc.** menu, all basic parameters for the controller can be adjusted. Normally, these settings have been made during commissioning. They can be subsequently changed in this menu.

Misc.	
Language	english
Date	17.02.2016
▶ Time	13:36

Language

Selection: deutsch (German), english

Factory setting: deutsch (German)

In this adjustment channel, the desired menu language can be selected.

Date

Adjustment range: 01.01.2001 ... 31.12.2099

Factory setting: 01.01.2011

In this adjustment channel, the current date can be adjusted.

First of all adjust the year, then the month and then the day.

Time

Adjustment range: 00:00 ... 23:59

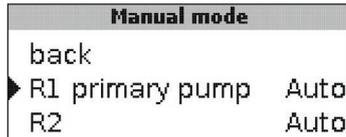
Factory setting: 12:01

In this adjustment channel, the current time can be adjusted.

First of all adjust the hours, then the minutes.

4.6 Manual mode menu

In the **Manual mode** menu, the operating mode of both relays can be adjusted. The adjustment channels are named after the pumps connected.



R1 primary pump

Selection: On, Emerg, Auto, Off
Factory setting: Auto

If the operating mode for **R1 primary pump** respectively is set to **On, Emerg** or **Auto**, this will only affect the speed control signal sent to the primary pump via the PWM output. The 100 % power supply to the pump is kept up via relay 1.

R1 primary pump operation modes:

On = Power supply 100 %, speed control signal via PWM output 100 %

Emerg = Power supply 100 %, speed control signal via PWM output as adjusted in the Emergency operation menu

Auto = Power supply 100 %, flexible pump speed signal via PWM output

Off = Power supply 0 %, speed control signal via PWM output 0 %



Note

When emergency operation is active, the adjustment channel Primary pump is not available in the Manual mode menu!

R2

Selection: On, Auto, Off
Factory setting: Auto

On = Relay active at 100 % speed (manual mode)

Auto = Relay is in automatic mode

Off = Relay is switched off (manual mode)



Note

After service and maintenance work, the operating mode must be set back to **Auto**. Otherwise normal operation will not be possible.

4.7 User code

In the **User code** menu, a user code can be entered. Each number of the 4-digit code must be individually adjusted and confirmed. After the last digit has been confirmed, the controller automatically displays the superior menu level.



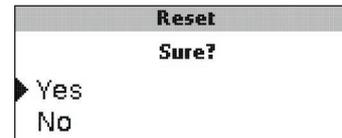
To access the menu areas of the expert level, the expert user code must be entered:

Expert user code: 0262

If no entry is made for 4 min, the controller will automatically block access to the expert level. If further adjustments are to be made in the expert level, the user code has to be entered again.

4.8 Reset

In the **Reset** menu, the controller can be set back to its factory settings. If **Reset** is selected, a security enquiry appears.



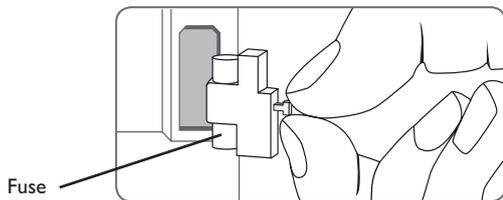
➔ In order to carry out the reset, select **Yes**.

All adjustment values will be set back to their individual factory settings. All balance values have been set back to 0.

➔ In order to abort the reset, select **No**.

5 Troubleshooting

If a malfunction occurs, a message will appear on the display of the controller.



The message **!Sensor fault** instead of a temperature is shown on the sensor display channel.

Sensor fault.

Short circuit or line break.

Disconnected temperature sensors can be checked with an ohmmeter. Please check if the resistance values correspond with the table.

°C	Ω Pt1000	°C	Ω Pt1000
-10	961	55	1213
-5	980	60	1232
0	1000	65	1252
5	1019	70	1271
10	1039	75	1290
15	1058	80	1309
20	1078	85	1328
25	1097	90	1347
30	1117	95	1366
35	1136	100	1385
40	1155	105	1404
45	1175	110	1423
50	1194	115	1442

WARNING! Electric shock!



Upon opening the housing, live parts are exposed!

→ **Always disconnect the device from power supply before opening the housing!**

The controller is protected by a fuse. The fuse holder (which also holds the spare fuse) becomes accessible when the cover is removed. To replace the fuse, pull the fuse holder from the base.

The display is permanently off.

Press any button. Display illuminated?

no

yes

Controller has been in standby, everything o.k.

Check the power supply of the controller. Is it disconnected?

no

yes

The fuse of the controller could be blown. The fuse holder (which holds the spare fuse) becomes accessible when the cover is removed. The fuse can then be replaced.

Check the supply line and reconnect it.

Pump noise can be heard, bubbling in the pipes.

System vented?

no

Vent the system.

Draw-off amount is too small.

Sufficient system pressure in the secondary circuit?

yes

no

Check system pressure in the secondary circuit; if necessary, increase pressure.

Plate heat exchanger calcified?

yes

Clean the secondary side of the plate heat exchanger; if necessary, replace the plate heat exchanger.

Draw-off temperature is too low.

Is the HW set temperature high enough?

yes

no

Increase the adjustment value for the HW set temperature.

Pressure loss in the primary circuit too high?

yes

Check the pipework of the primary circuit; change if necessary.

DHW heating does not work

Controller in operation?

yes

no

Check the controller; Check the fuse of and the power supply to the controller.

System vented?

yes

no

Vent the system.

Has the digital Grundfos Direct Sensor™ in the HW flow been connected and grounded correctly? Does it work faultlessly?

yes

no

Check the digital Grundfos Direct Sensor™ VFD 2-40 Fast including its cable; check the fitting for correct grounding; check the insert integrated in the fitting; if necessary, replace the sensor.

Has the temperature sensor in the store flow been connected correctly? Does it work faultlessly?

yes

no

Check the Pt1000 temperature sensor including the sensor cable; if necessary, replace the sensor.

Does the primary pump work faultlessly?

no

Check the primary pump including its cable; dismantle and replace the pump if necessary.

6 Accessories

6.1 Sensors and measuring instruments



Temperature sensors

The product range includes high-precision platinum temperature sensors, flatscrew sensors, outdoor temperature sensors, indoor temperature sensors, cylindrical clip-on sensors, also as complete sensors with immersion sleeve.

Order information can be found in our catalogue and on our Website.



AM1 Alarm Module

The AM1 Alarm Module is designed to signal system failures. It is to be connected to the VBus® of the controller and issues an optical signal via the red LED if a failure has occurred. The AM1 also has a relay output, which can e. g. be connected to a building management system (BMS). Thus, a collective error message can be issued in the case of a system failure.

The AM1 Alarm module ensures that occurring failures can be immediately recognised and repaired, even if the system and the controller are difficult to access or located in a remote place. Thus, the reliability and the stable yield of the system are ensured.

6.2 Interface adapters



VBus®/USB interface adapter

The VBus®/USB interface adapter is the interface between the controller and a personal computer. With its standard mini USB port it enables a fast transmission of system data for processing, visualising and archiving as well as the parameterisation of the controller via the VBus®. The ServiceCenter software is included.

VBus®/LAN interface adapter

The VBus®/LAN interface adapter is designed for the direct connection of the controller to a PC or router. It enables easy access to the controller via the local network of the owner. Thus, controller access, system parameterisation and data charting can be effected from every workstation of the network. The VBus®/LAN interface adapter is suitable for all controllers equipped with a VBus®. The ServiceCenter software is included.

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Important note

The texts and drawings in this manual are correct to the best of our knowledge. As faults can never be excluded, please note:

Your own calculations and plans, under consideration of the current standards and directions should only be basis for your projects. We do not offer a guarantee for the completeness of the drawings and texts of this manual - they only represent some examples. They can only be used at your own risk. No liability is assumed for incorrect, incomplete or false information and/or the resulting damages.

Note

The design and the specifications can be changed without notice.

The illustrations may differ from the original product.

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