RESOL®

Controllers for solar thermal systems

Solar controller

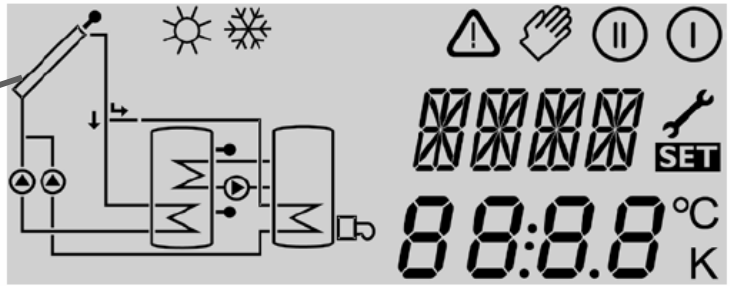
DeltaSol® BS/4 V2

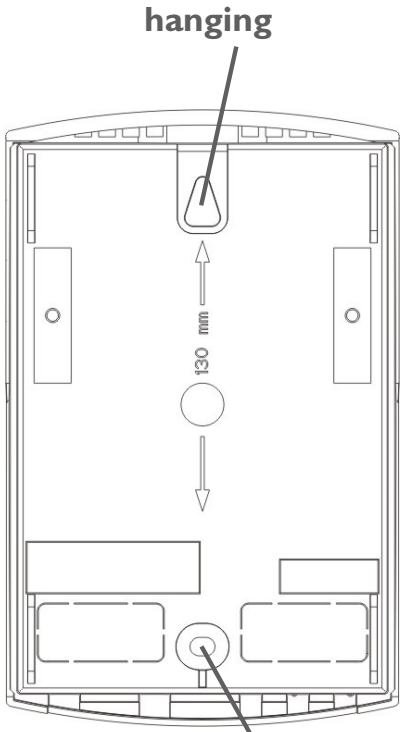
www.resol.com

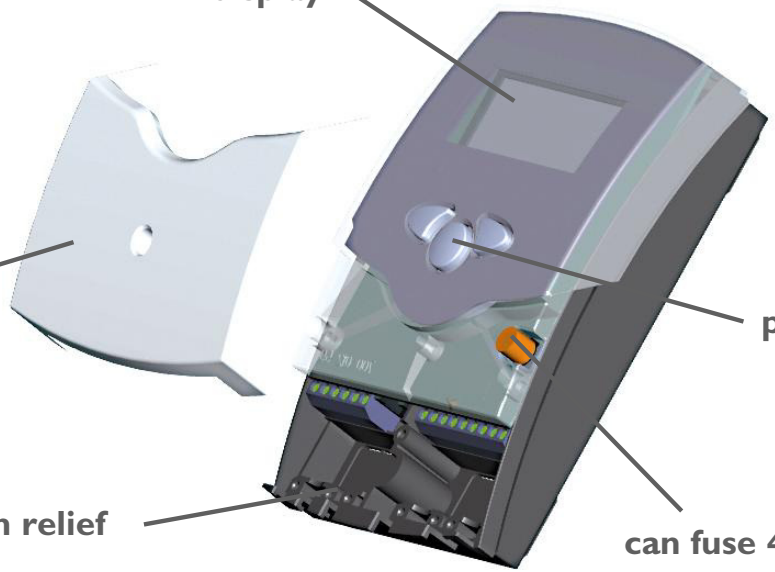
DeltaSol® BS/4 V2

- System-monitoring-display
- Up to 4 Pt1000 temperature sensors
- 2 semiconductor relays for pump speed control
- 3 basic system layouts to choose from
- Heat quantity measurement
- RESOL VBus®
- Function control
- Thermostat function (time-controlled)
- Control of the system by RESOL ServiceCenter software possible
- User-friendly operation
- Housing with outstanding design
- Extra-low power consumption

DeltaSol® BS/4 V2







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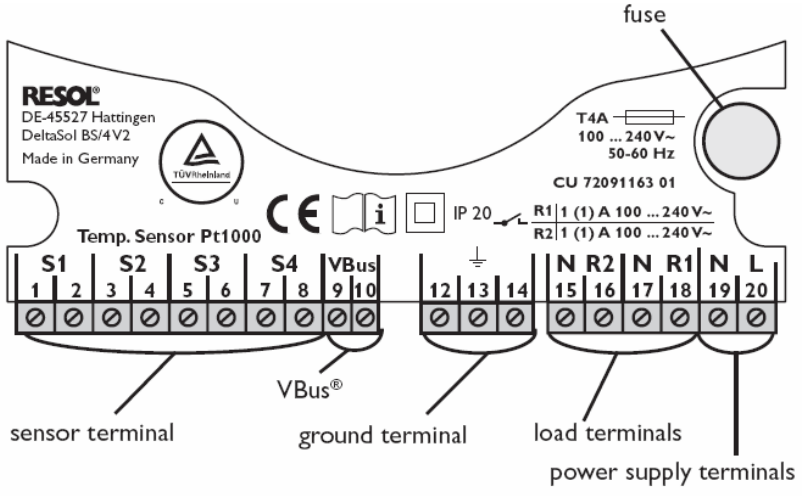
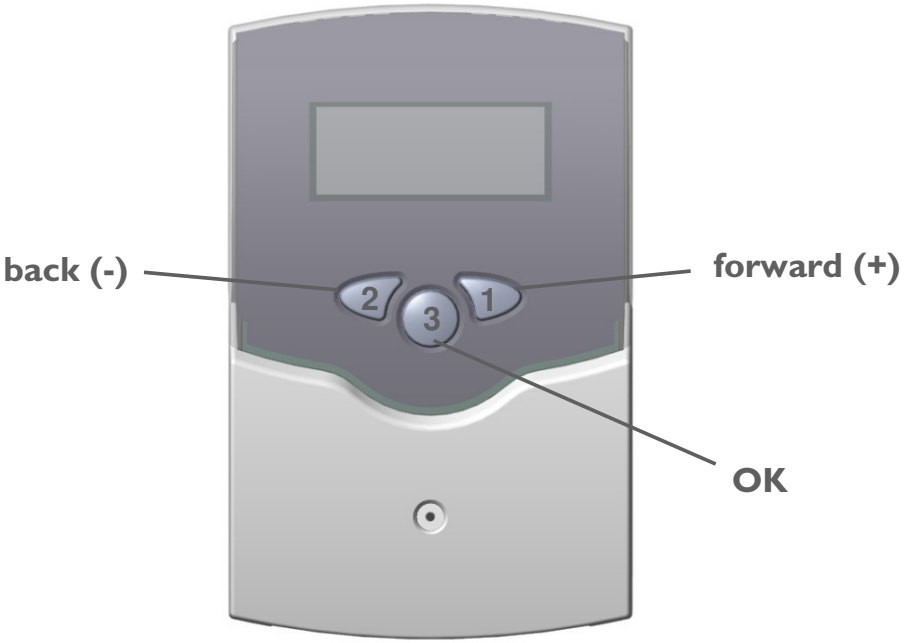
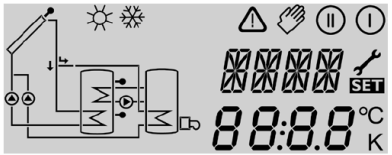
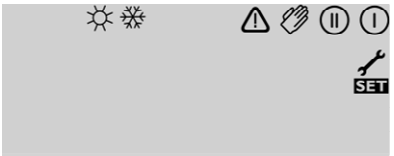






System monitoring display



Tool bar to show actual status of the system

Channel indication

upper line text display

lower line temperature or temperature difference display

- Relay activity
- Maximum store temperature exceeded
- Antifreeze function active
- Sensor fault
- Manual mode

Commissioning menu

All vital adjustments for an easy commissioning

LANG:
Language selection
Selection: dE,En
Factory setting: En

Arr:
System layout selection.
Adjustment range: 1 ... 3
Factory setting: 1

UNIT:
Temperature unit selection
Selection: °C, °F
Factory setting: °C

S MX
Maximum store temp.
Adjustment range: 4 ... 95 °C [40 ... 200 °F]
Arr 10: 4 ... 90 °C [40 ... 190 °F] in steps of 1 K [2 °Ra]
Factory setting: 60 °C [140 °F]

TIME:
Real time adjustment

nMN
Pump speed control
Adjustment range: 30...100 in steps of 5 %
Factory setting: 30

Display: measured values (depending on the selected system layout)

Collector temperatures

COL: collector temperature

Store temperatures

TST: store temperatut

TSTB: store temperature base

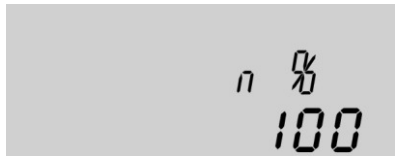
TSTT: store temperature top

TDIS: thermal disinfection temperaure

Other temperatures

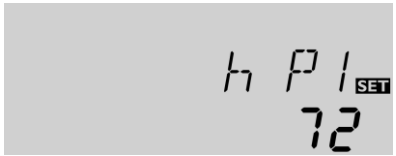
TR: temperature return
[if heat quantity measurement is active]

Pump speed



n %: current pump speed

Operation hours



h P: operation hours

h P1: operation hours relay 1

h P2: operation hours relay 2

Heat quantity

kWh: heat quantity in kWh
[if heat quantity measurement is active]

Heat quantity

MWh: heat quantity in MWh
[if heat quantity measurement is active]

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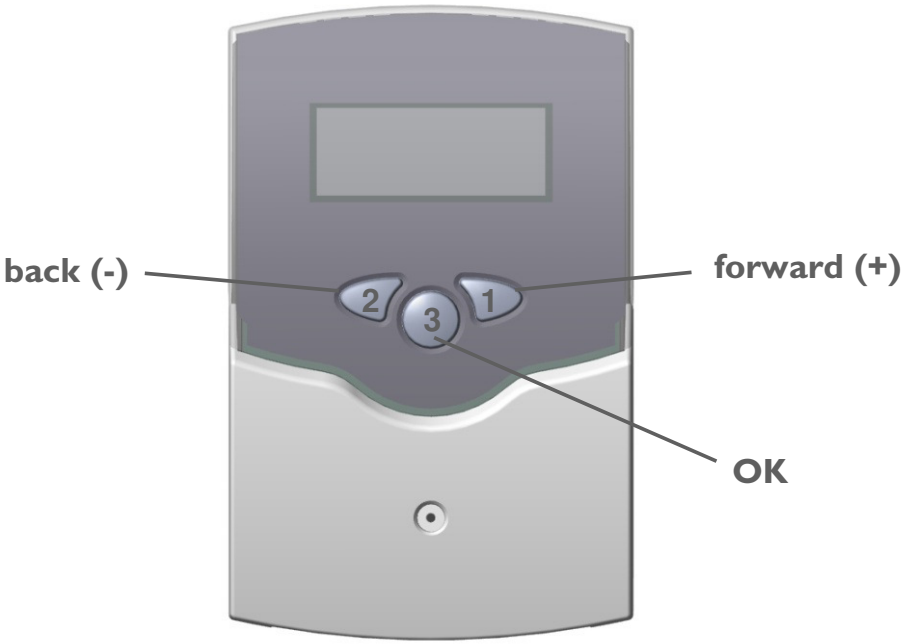

Operation

✓ Scroll through the display channels by pressing buttons 1 and 2

Accessing the adjustment channels:

✓ Scroll down in the display menu and press button 1 for approx. two seconds after you have reached the last display item

✓ When an **adjustment value** is shown on the display, SET is indicated to the right of the channel name

✓ Press button 3 in order to access the adjustment mode SET starts flashing

✓ Adjust the value using buttons 1 and 2

✓ Briefly press button 3, SET permanently appears, the adjusted value will be saved

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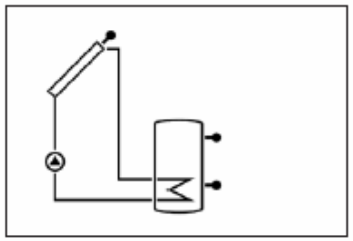
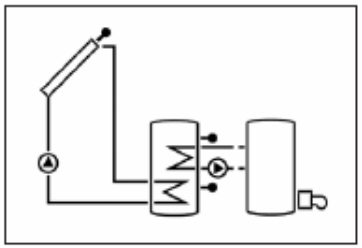
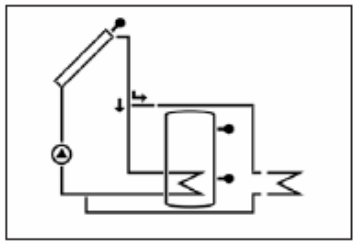


Arr 1



Arr 2



Arr 3

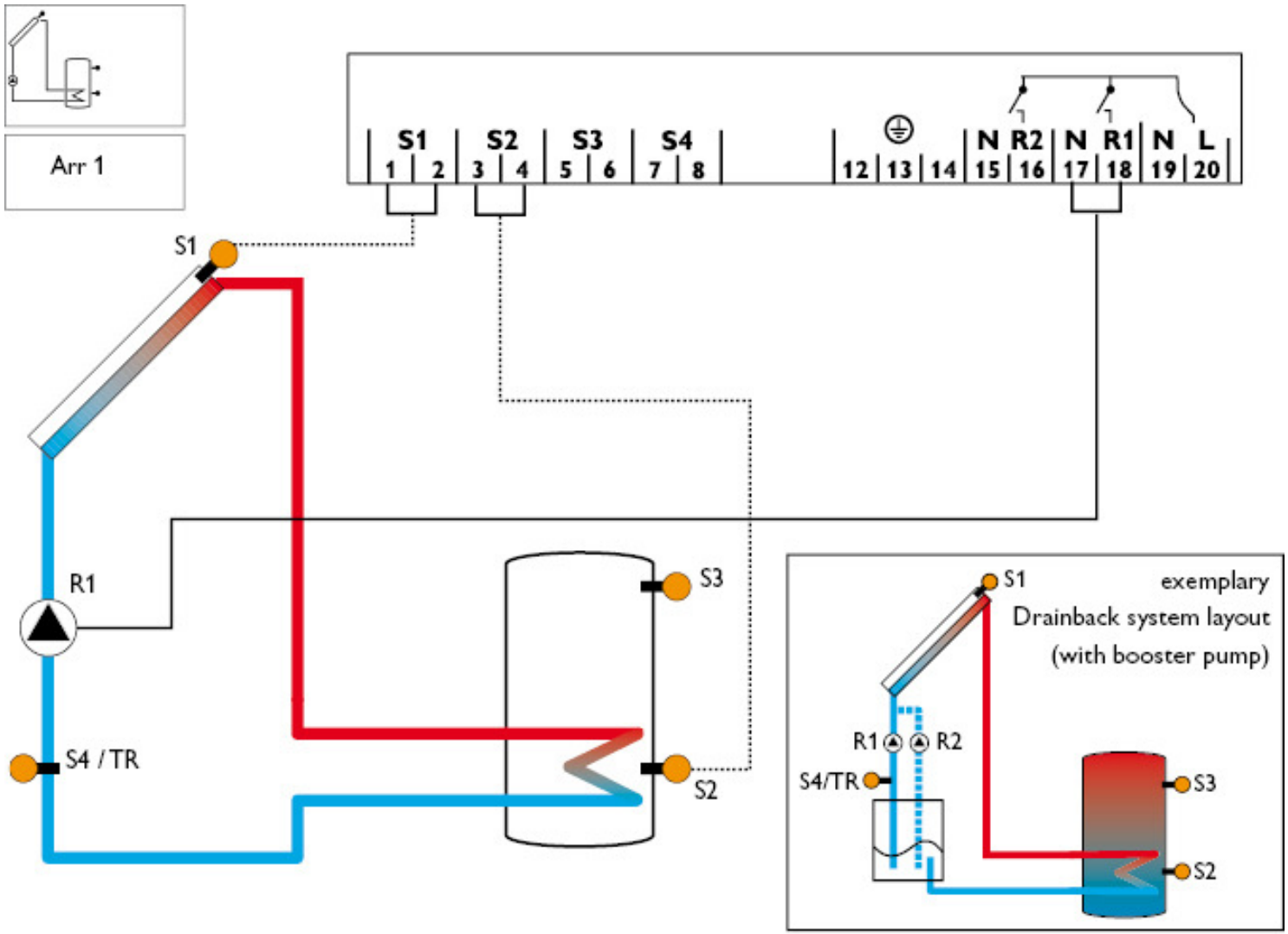
Overview of system layouts:

Arr 1 : standard solar system layout

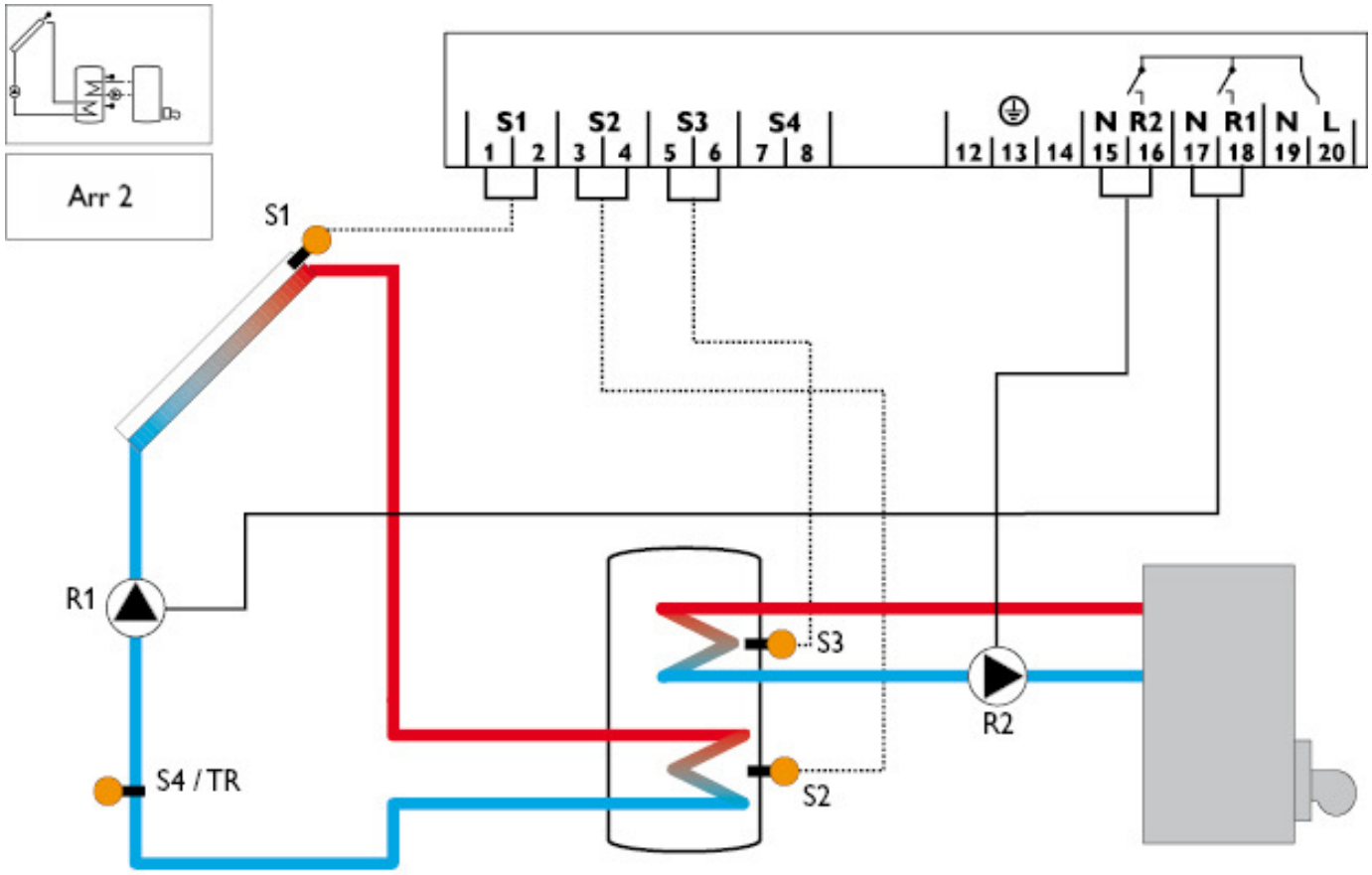
Arr 2 : solar system layout with afterheating

Arr 3 : standard solar system layout with heat dump

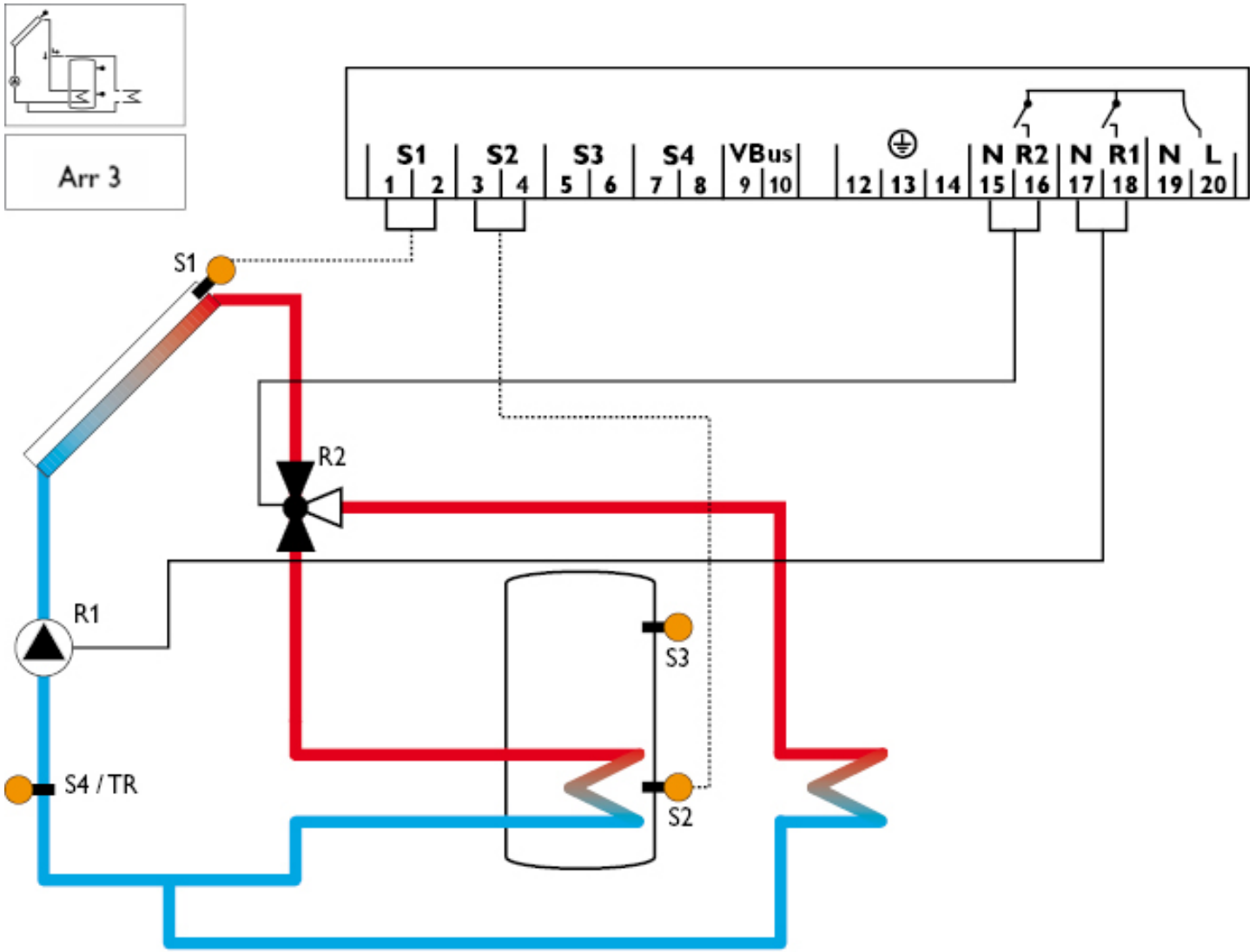
System 1


Arr 1
S1 S2 S3 S4
1 2 3 4 5 6 7 8
12 13 14
N R2 N R1 N L
15 16 17 18 19 20
S1
R1
S3
S4 / TR
S2
S1
exemplary
Drainback system layout
(with booster pump)
R1
R2
S4/TR
S3
S2

System 2


Arr 2
S1
S2
S3
S4
N R2
N R1
N L
1 2 3 4 5 6 7 8 12 13 14 15 16 17 18 19 20
S1
R1
S3
R2
S4 / TR
S2

System 3


Arr 3
S1 S2 S3 S4 VBus
1 2 3 4 5 6 7 8 9 10
12 13 14
N R2 N R1 N L
15 16 17 18 19 20
S1
R2
R1
S3
S4 / TR
S2

Switch-on temperature difference

DT O
DT1O
DT2O
DT3O

Switch-off temperature difference

DT F
DT1F
DT2F
DT3F

Nominal temperature difference

DT S
DT1S
DT2S
DT3S

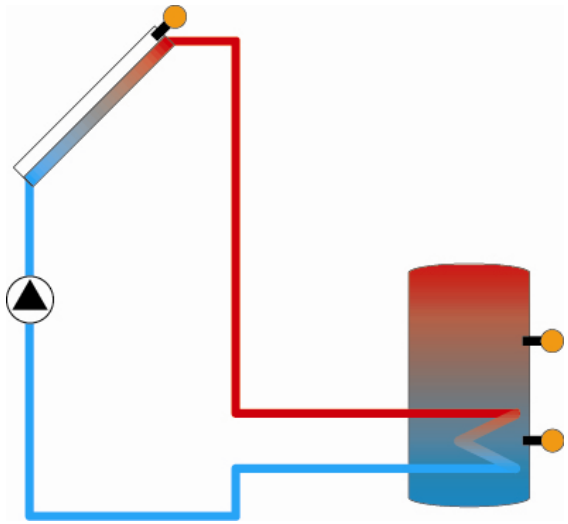
Rise

RIS
RIS1
RIS2
RIS3

Maximum store temperature

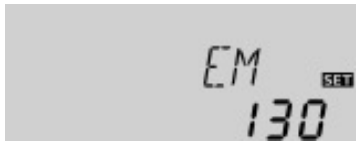
S MX
S1MX
S2MX

Please note: The controller is equipped with a security switch-off of the store, which avoids a further loading of the store if 95 ° C is reached at the store.



Temperature limitation and antifreeze function

Collector emergency temp.



Collector minimum limitation

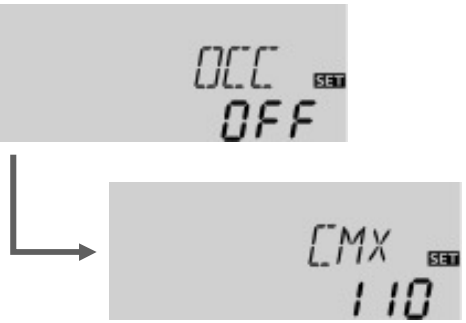
Collector minimum temp.

Antifreeze function

Antifreeze temperature

Cooling function

System cooling ⟵ **blocked** ⟶ **Collector cooling**



Arr = 3 no cooling functions, but
CMX = switching condition for
heat dump function

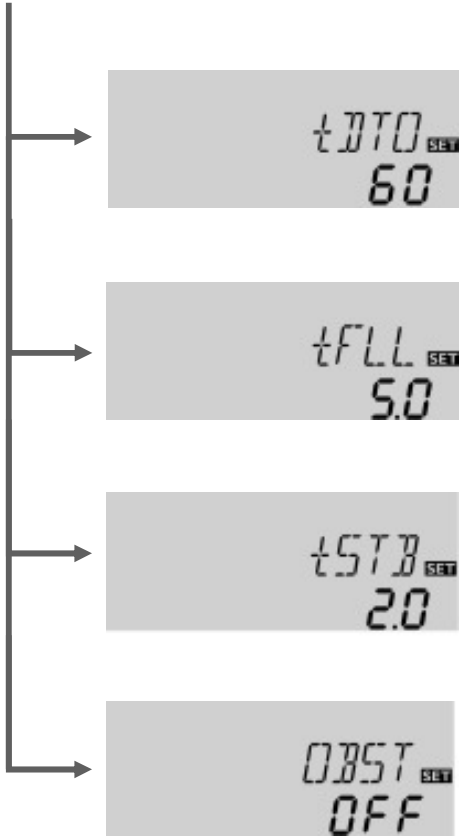
Store cooling — **additional** → **Holiday cooling**

S MX = switch-on condition

More extensive cooling during times
without DHW consumption

Drainback option

Drainback option activation



Initialisation

- Switch-on cond. must be continuously fulfilled

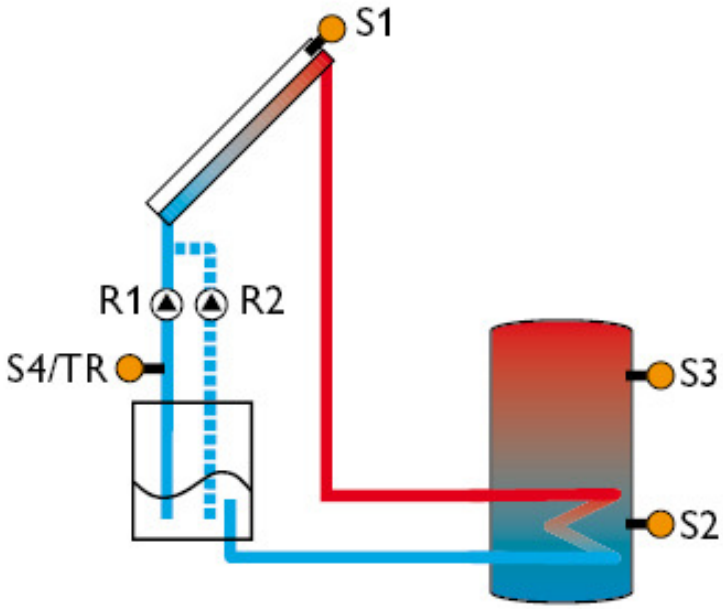
Filling time

- Pump at 100 %
- Booster active

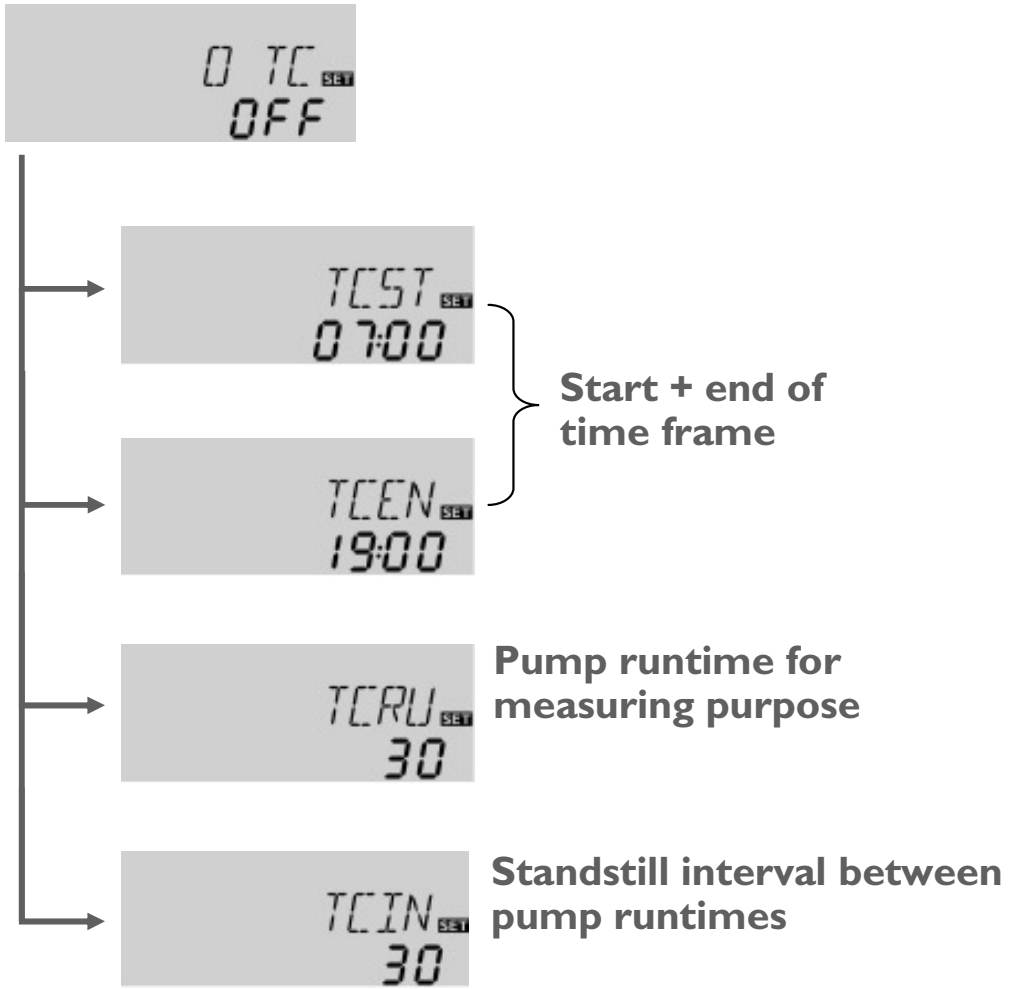
Stabilisation

- Switch-off conditions ignored while medium heats up

Booster option



Tube collector function



In a drainback system, the filling and stabilising procedure will take place for each OTC pump runtime. Evaluate if OTC activation is necessary!

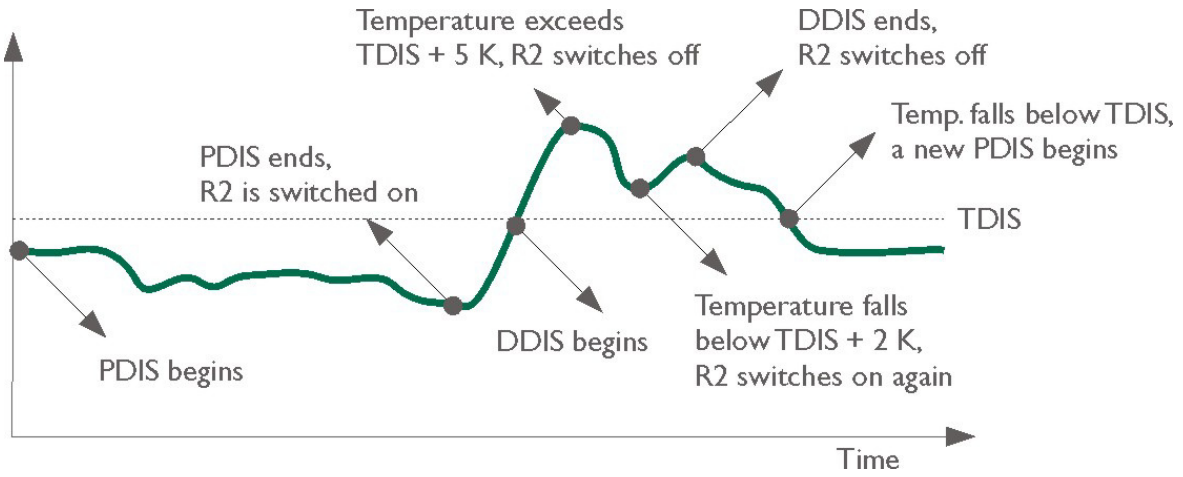
Thermal disinfection

Monitoring period

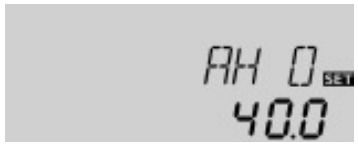
Disinfection period

Disinfection temperature

Starting delay time

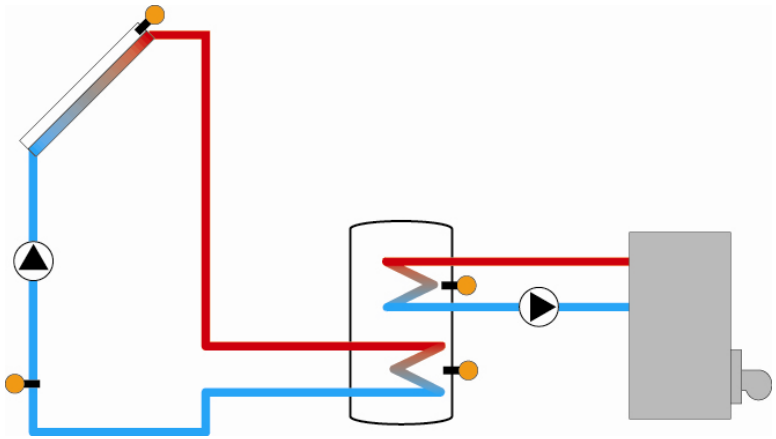


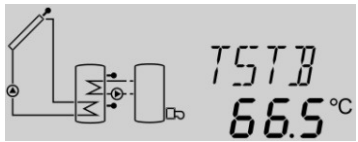
Arr 2 thermostat function



Thermostat switch-on temperature

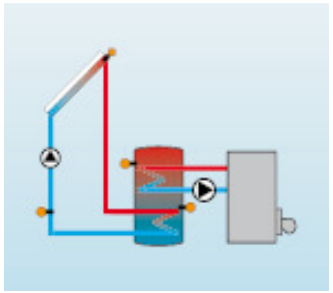
Thermostat switch-off temperature





AH O < AH F

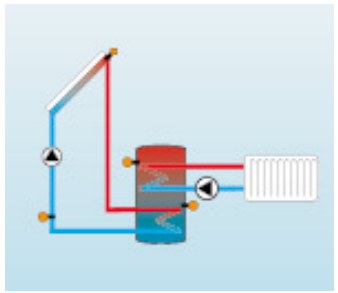
thermostat function for afterheating



Afterheating

AH O > AH F

thermostat function for using surplus energy



Use of surplus energy

DeltaSol® BS/4 V2

Option heat quantity measurement

Maximum flow in l/min at 100 % pump speed

Type of antifreeze:

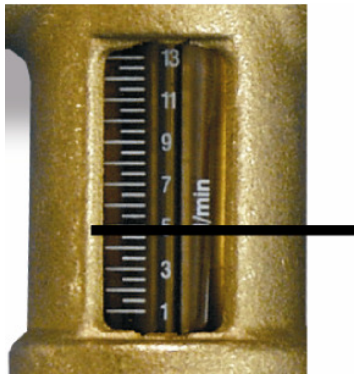
0: water

1: propylene glycol

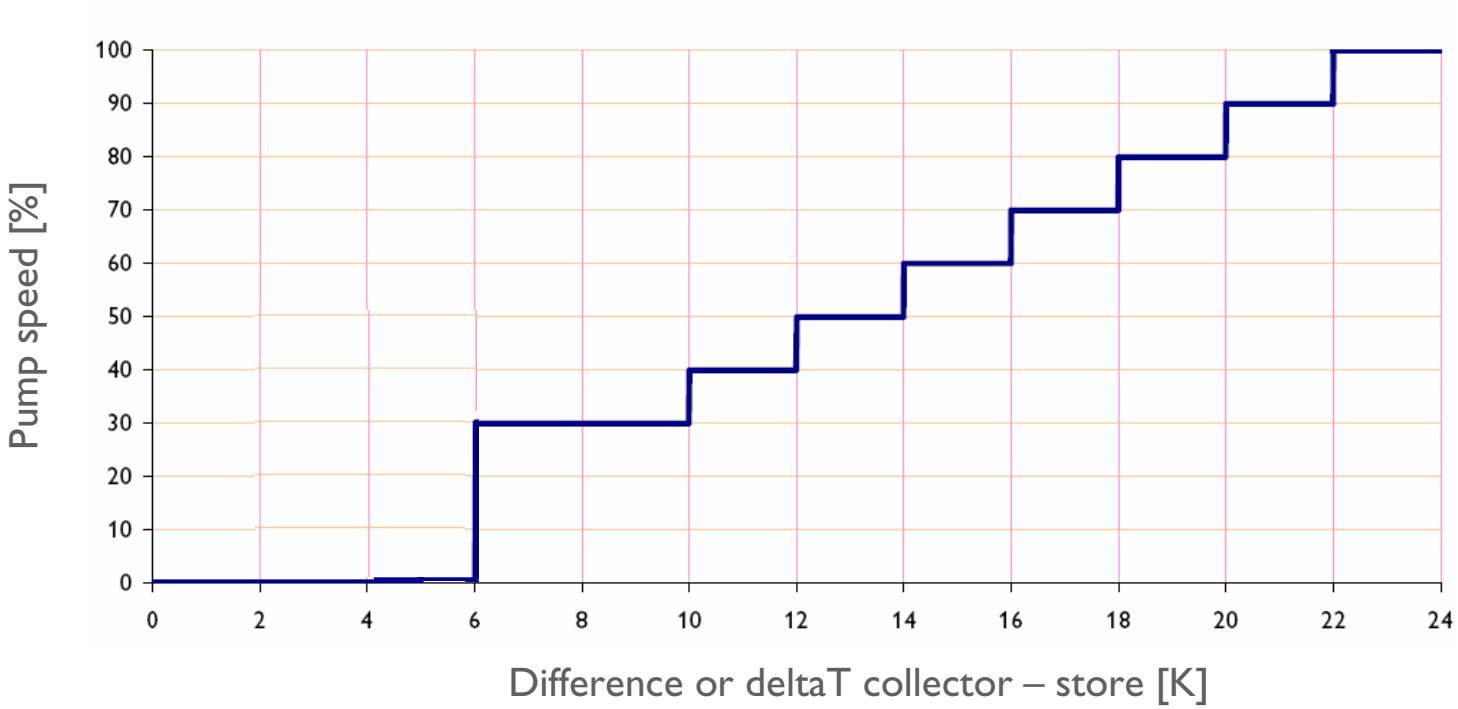
2: ethylne glycol

3: Tyfocor® LS/G-LS

Concentration of antifreeze in VOL %



First the controller works as a standard differential controller. If the switch-on difference (DT O) is reached, the pump is activated at full speed for 10 seconds. The speed is then reduced to the minimum pump speed value (nMN = 30 %). If the temperature difference reaches the adjusted set value (DT S), the pump speed increases by one step (10 %). If the difference increases by 2 K (RIS), the pump speed increases by 10 % respectively until the maximum pump speed of 100 % is reached. The response of the controller can be adapted via the parameter „Rise“. If the temperature difference falls below the adjusted switchoff temperature difference (DT F), the controller switches off.



Manual operation

OFF: Relay off ⚠ (flashing) + ✋ + LED red/green flashing

AUTO: Relay in automatic operation

ON: Relay on ⚠ (flashing) + ✋ + LED red/green flashing

Temperature unit selection

The unit can be switched between ° C/K and ° F/° Ra during operation.

Language

dE : German

En : English

It : Italian

Fr : French