SOM 7 SI

Installation, Configuration and Troubleshooting Manual

STIEBEL ELTRON

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128.5

SOM 7 SI

SOM 7 SI

US/CA

manual

49004470

Contents

Safety regulations:

Please read the following information carefully before installing and operating the controller. When configuring the controller please change the default settings as illustrated in section 4.2. This will avoid damage to the solar system by common problems such as overheating. ***Installing the controller using the default settings without making any adjustments to the configuration parameters is likely to result in an overheating condition of the solar system at some point. Please also note that changing the system scheme (Arr 1 - 9) will reset all settings to the defaults.*** Please ensure that the mounting is in accordance to local, state and federal regulations.

Reprinting / copying

Important notice:

Your own calculations and plans under consideration of the current norms and DIN-directions should primarily be basis for your projects. We don´t 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 the resulting damages.

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- **System Monitoring Display**
- **Up to 4 Temperature Sensors, Pt1000**
- **9 Selectable System Schemes**
- **Energy Production Measurement**
- **VBus®**
- **Function Control**
- **Thermostat Function with Time Control**
- **Service Center Software Connectivity**
- **User-Friendly Operation**
- **Compact, Easy to Install Housing**
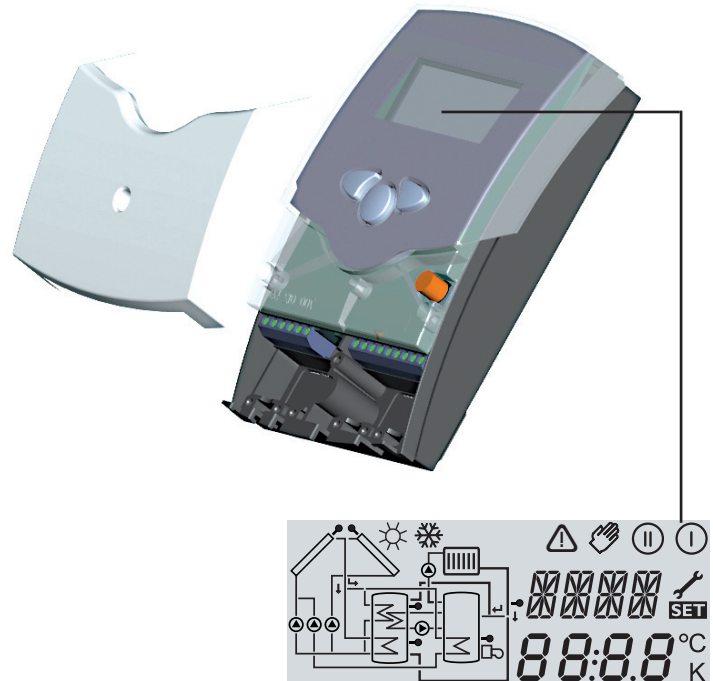
Scope of delivery:

1 x SOM 7 SI

1 x accessory bag
    1 x spare fuse T4A
    2 x screws and dowels
    4 x strain relief and screws

Additionally enclosed in the full kit:
    4 x sensor FKP6
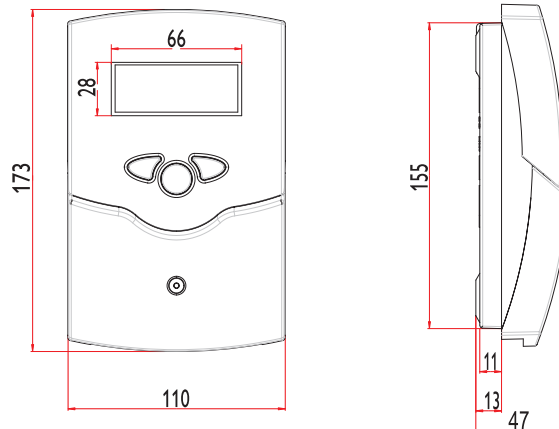
Technical data

Housing:
plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temp.: 32 ... 104 °F

Size: 172 x 110 x 46 mm

Mounting: wall mounting, mounting into patch-panels is possible

Display: System screen for system visualisation, 16-segment display, 7-segment display, 8 symbols for system status and operating control lamp

Operation: by 3 pushbuttons in the front of the housing

Functions: Differential temperature controller with optional add-on system functions. Function control according to BAW-standards, operating hours counter for solar pump, tube collector special function, thermostat function and heat quantity balancing.

Inputs: for 4 temperature sensors Pt1000

Outputs: 2 electromechanical relays

Bus: VBus®

Power supply:
120VAC

Total power supply:
4 (2) A 120VAC

CE

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1. Installation
1.1 Mounting

display

cover

pushbutton

cable conduits with strain relief

can fuse 4A

fastening
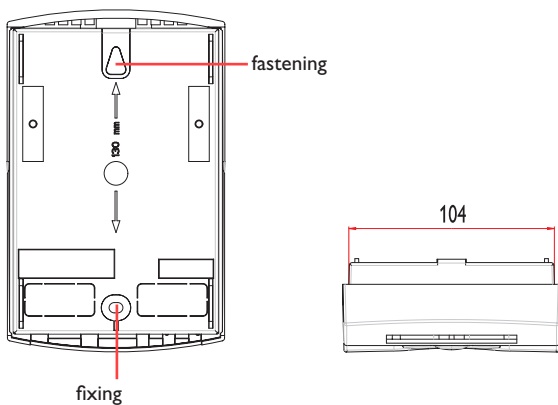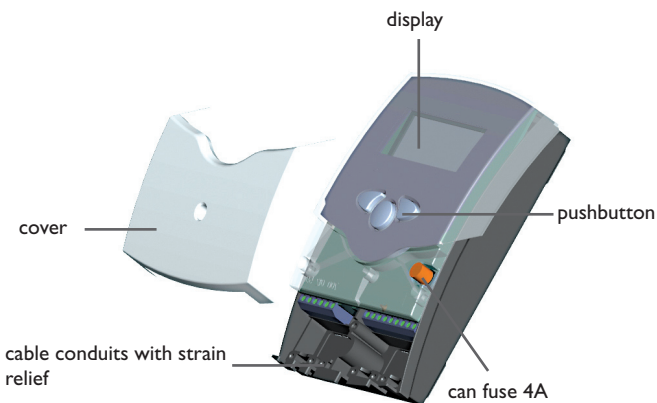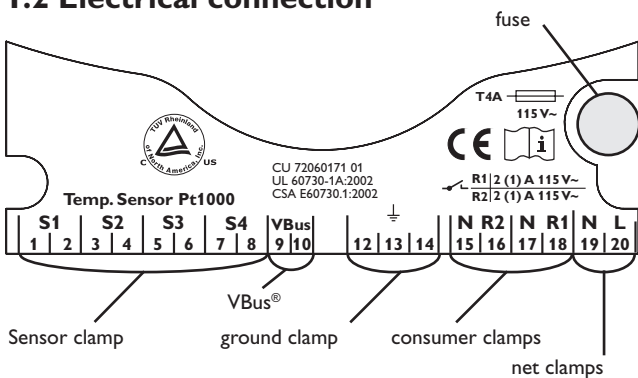
104

fixing

⚠ **Warning!**
Switch-off power supply before opening the housing.

The unit is designed for indoor installation only. It is not suitable for installation in hazardous locations and should not be sited near to any electromagnetic field. The controller must installed in accordance with all electrical regulations. These regulations vary from region to region. Please contact the appropriate agency in your area if unclear on this.

Wall Mounting Instructions

1. Unscrew the cross-recessed screw of the cover and remove it from the housing.

2. Mark the upper fastening point on the wall and mount the enclosed dowel and screw.

3. Hang up the housing at the upper fastening point and mark the lower fastening point on the wall. The distance between the 2 mounting holes is 130 mm.

4. Fasten the housing at its lower point..

1.2 Electrical connection

fuse

T4A 115 V~

 TÜV Rheinland c of North America us

CU 72060171 01
UL 60730-1A:2002
CSA E60730.1:2002

R1 | 2 (1) A 115 V~
R2 | 2 (1) A 115 V~

Temp. Sensor Pt1000

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

VBus®

Sensor clamp

ground clamp

consumer clamps

net clamps

⚡ Dangerous voltage on contact!

⚠ Electrostatic discharge can lead to damages of electronic components!

The power supply to the controller must only be made by an external power supply switch and the line voltage must be 120 VAC (50/60 Hz). Flexible lines are to be fixed at the housing by enclosed strain relief supports and screws.

The controller is equipped with 2 standard relays, to which the **consumers** (pumps, valves etc.) can be connected:

• Relay 1
18 = conductor R1
17 = neutral conductor N
13 = ground clamp

• Relay 2
16 = conductor R2
15 = neutral conductor N
14 = ground clamp

The **temperature sensors** (S1 up to S4) will be connected to the following terminals independently of the polarity:

1 / 2 = Sensor 1 (e.g. Sensor collector 1)
3 / 4 = Sensor 2 (e.g. Sensor tank 1)
5 / 6 = Sensor 3 (e.g. Sensor collector 2)
7 / 8 = Sensor 4 (e.g. Sensor tank 2)

The **power supply** is effected to the clamps:
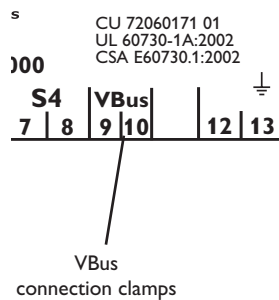19 = Neutral Conductor N
20 = Line Conductor L
12 = Ground Clamp ⏚

1.2.1 Data communication/ Bus

s

CU 72060171 01
UL 60730-1A:2002
CSA E60730.1:2002

000

| S4		VBus				
7	8	9	10		12	13

VBus
connection clamps

The controller comes with a VBus® for data communication and energy supply of external modules. The connection is effected with optional polarity at the clamps marked with „VBus®. Via this data bus you can install one or more VBus® modules.

- Energy Production Measurement Module WMZ-M1
- Large Display GA3
- Data Logger, DL1
- Data Teleindication, DFA2

The controller can also be connected to a PC with the help of a RS-COM adapter. With the Service Center Software (RCS) the controller parameters can be changed, measurements can be read out, processed and visualised. The software enables an easy function control and adjustment of the system.

1.2.2 Allocation of Clamps for System 1

Arr 1
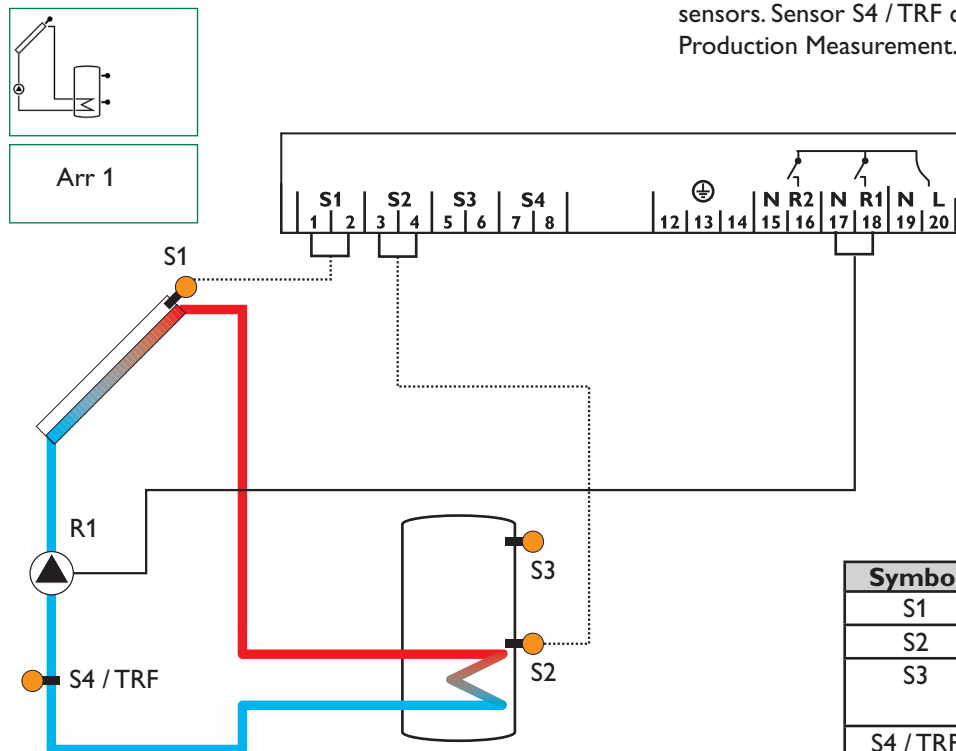
Standard Solar System with 1 tank, 1 pump and 2 sensors. Sensor S4 / TRF can optionally be used for Energy Production Measurement.

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

S4 / TRF

S2

Symbol	Specification
S1	Collector Sensor
S2	Lower Tank Sensor
S3	Upper Tank Sensor (optional)
S4 / TRF	Sensor for Energy Production Measurement (optional)
R1	Solar Pump

1.2.3 Allocation of Clamps for System 2

Solar System with Heat Exchange with an existing tank. With 1 tank, 4 sensors and 2 pumps.

Arr 2

Symbol	Specification
S1	Collector Sensor
S2	Lower Tank Sensor
S3	Upper Tank Sensor
S4	Tank 2 Sensor
R1	Solar Pump
R2	Pump for Heat Exchange
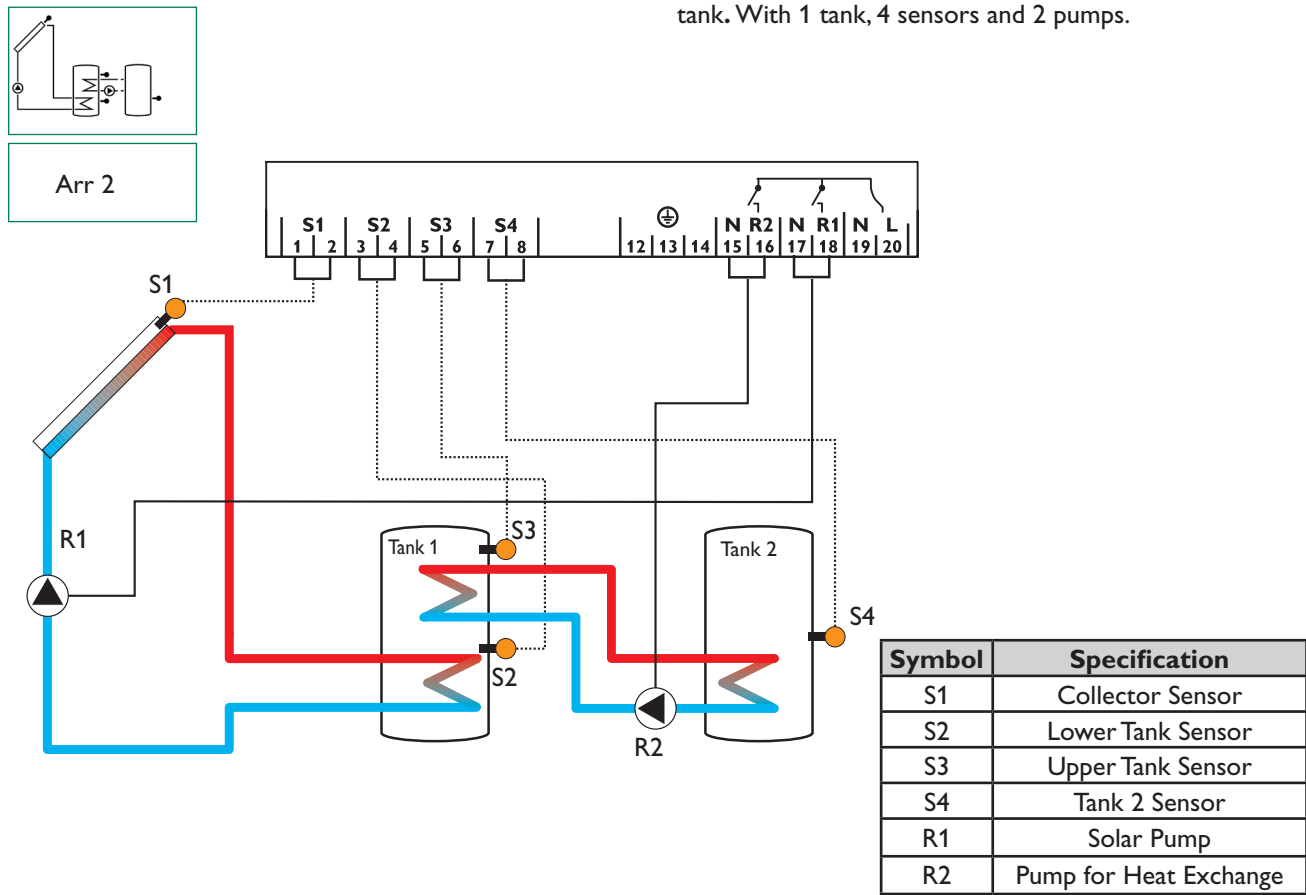
1.2.4 Allocation of Clamps for System 3

Solar System with After-Heating with 1 tank, 3 sensors and after-heating thermostatic control options. Sensor S4/TRF can optionally be used for Energy Production Measurement.

Arr 3

Symbol	Specification
S1	Collector Sensor
S2	Lower Tank Sensor
S3	Upper Tank Sensor
S4 / TRF	Sensor for Energy Production Measurement (Optional)
R1	Solar Pump

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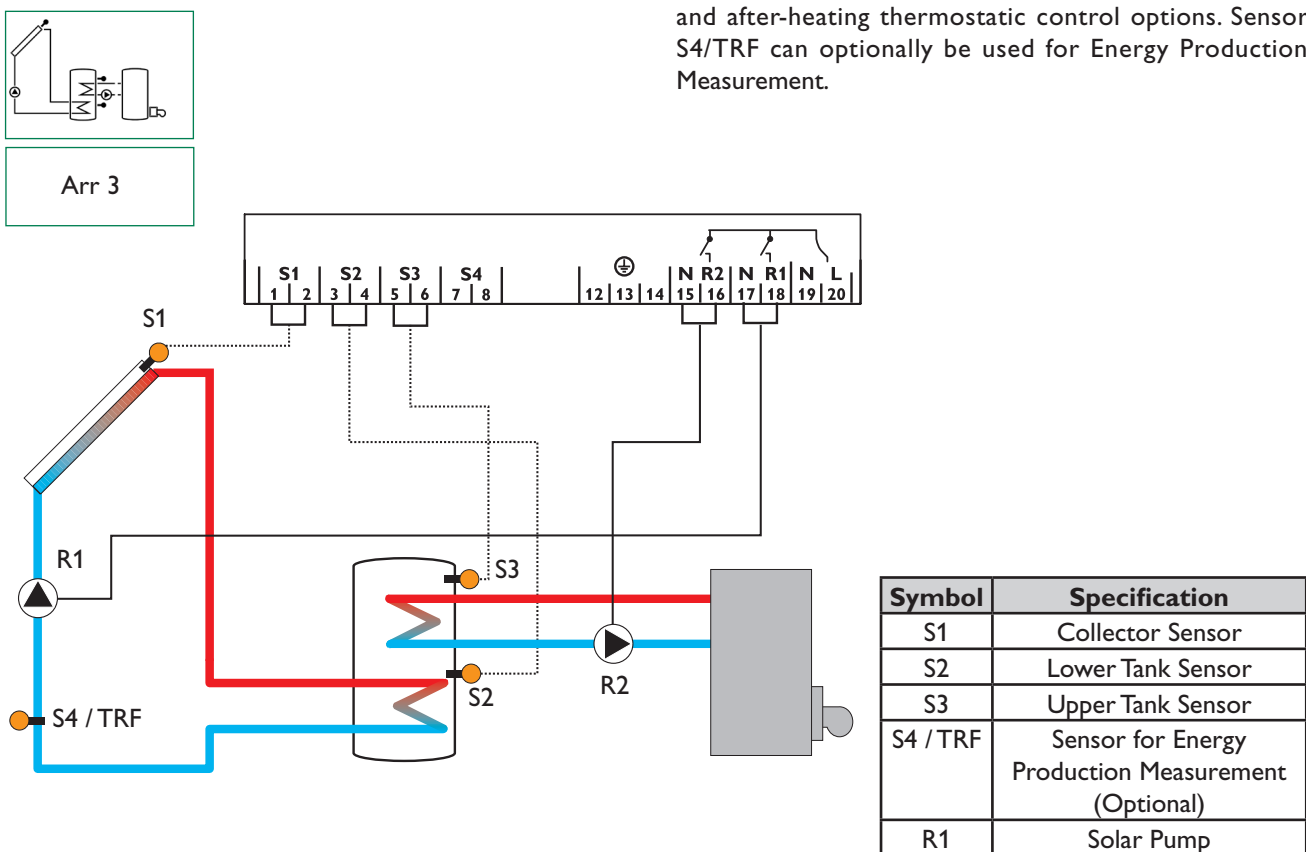
1.2.5 Allocation of clamps for system 4
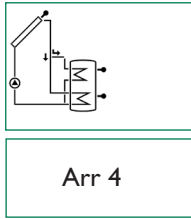
Solar System with Layered Tank Charge with 1 tank, 3 sensors, 1 solar pump and a 3-way-valve for layered tank charge. Sensor S4 / TRF can optionally be used for heat quantity balancing.

Arr 4

Symbol	Specification
S1	Collector Sensor
S2	Lower Tank Sensor
S3	Upper Tank Sensor
S4 / TRF	Sensor for Energy Production Measurement (Optional)
R1	Solar Pump

1.2.6 Allocation of clamps for system 5
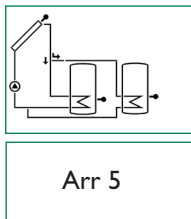
2 Tank Solar System with Valve Logic: with 2 tanks, 3 sensors, 1 solar pump and 1 3-way-valve. Sensor S4/ TRF can optionally be used for Energy Production Measurement
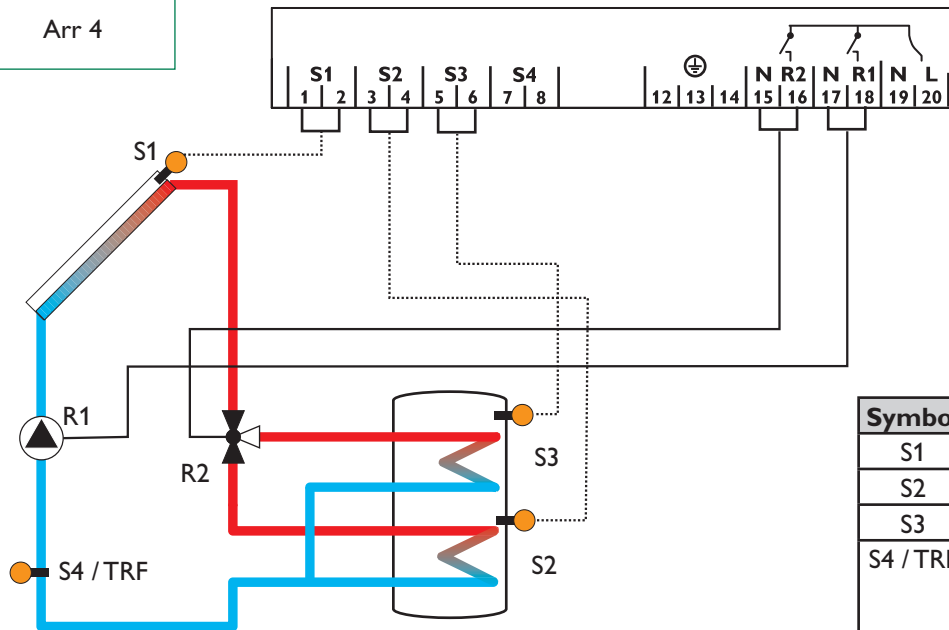
Arr 5
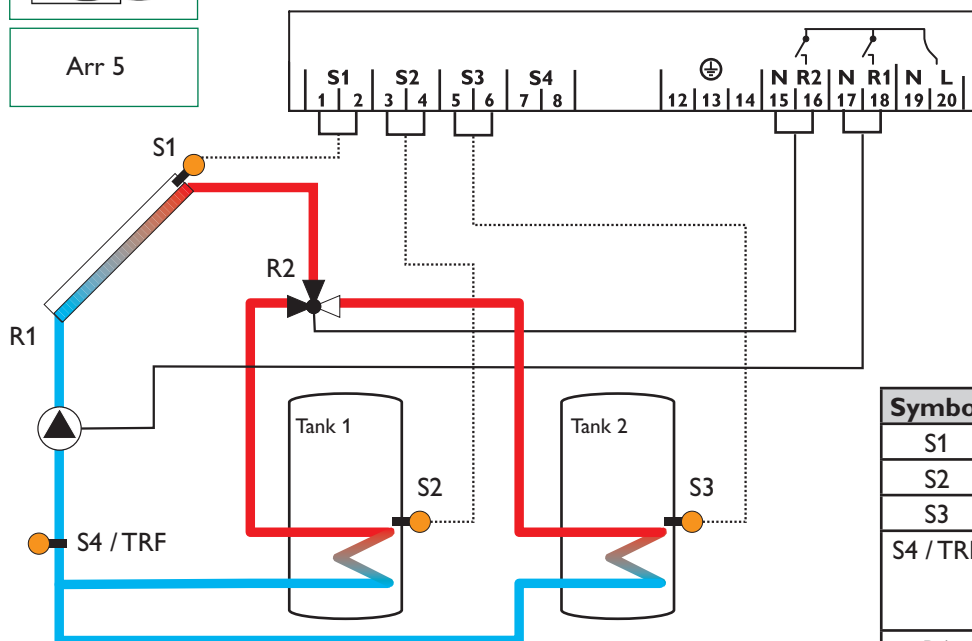
Symbol	Specification
S1	Collector sensor
S2	Tank 1 Sensor
S3	Tank 2 Sensor
S4 / TRF	Sensor for Energy Production Measurement (optional)
R1	Solar Pump
R2	3-Way Valve

1.2.6 Allocation of Clamps for System 6

2 Tank Solar System with Pump Logic with 2 tanks, 3 sensors and 2 solar pumps.

Arr 6

Symbol	Specification
S1	Collector Sensor
S2	Tank Sensor 1
S3	Tank Sensor 2
S4	Measuring Sensor (optinal)
R1	Solar Pump 1
R2	Solar Pump 2
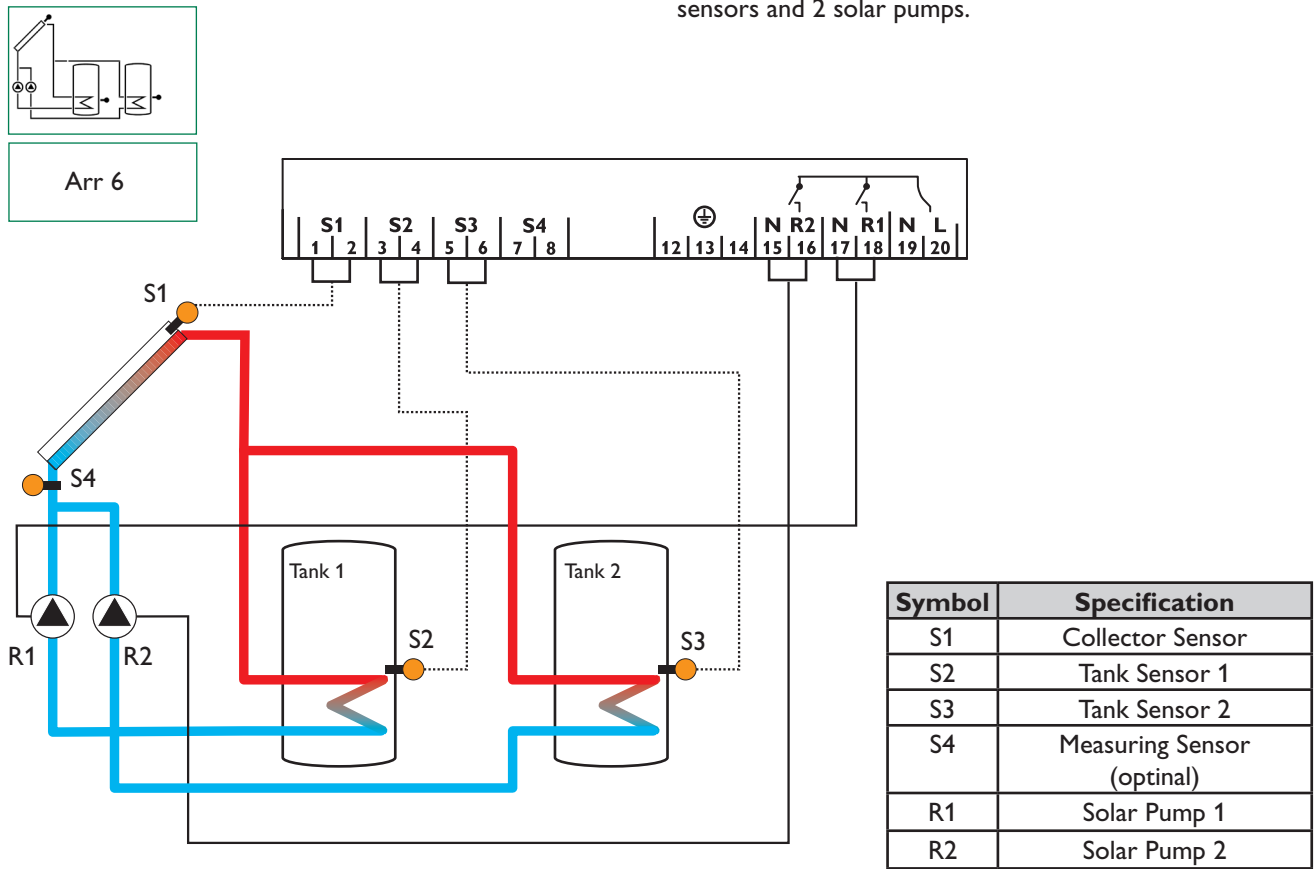
1.2.7 Allocation of Clamps for System 7

Solar System with East-West Collectors, 1 tank, 3 sensors and 2 solar pumps. This system is appropriate for any system with multiple collector banks with differing output power.

Arr 7

Symbol	Specification
S1	Collector Sensor
S2	Tank Sensor 1
S3	Collector Sensor 2
S4	Measuring Sensor (optinal)
R1	Collector 1 Solar Pump
R2	Collector 2 Solar Pump
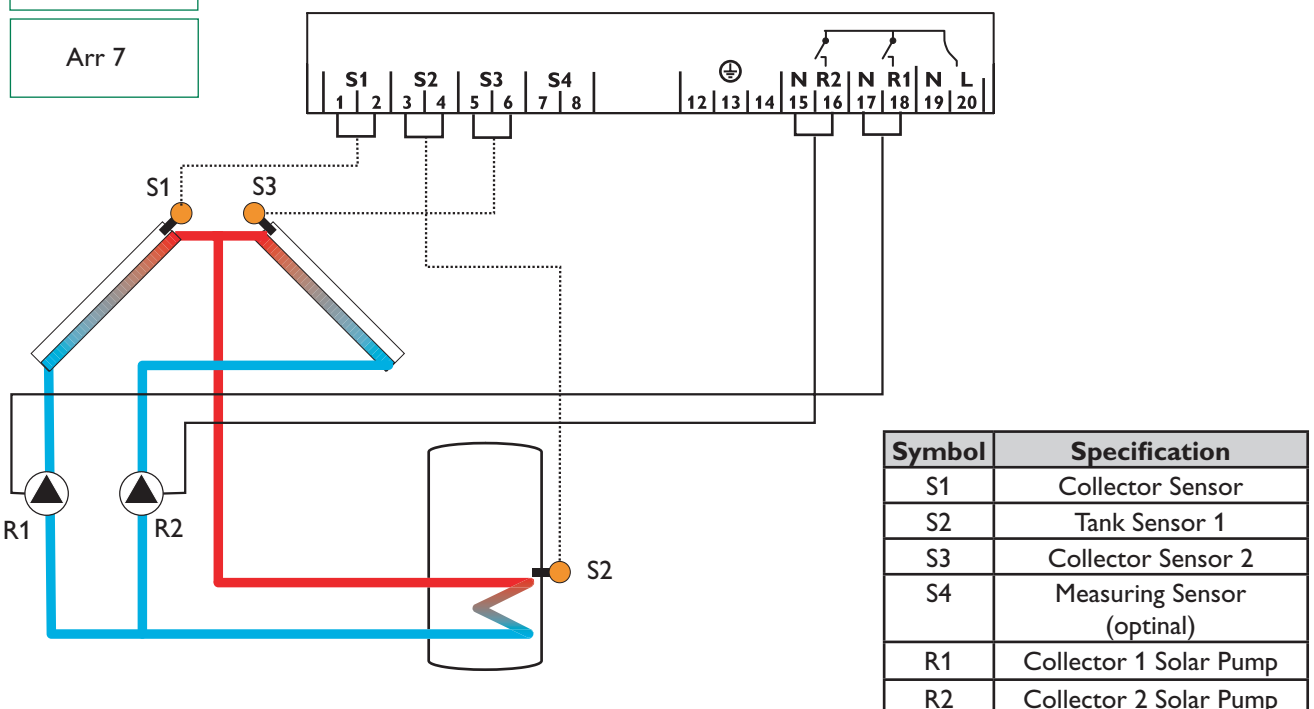
1.2.8 Allocation of Clamps for System 8

Arr 8

Solar System with After-Heating by Solid Fuel Boiler
with 1 tank, 4 sensors, 1 solar pump and 1 pump for after-heating.
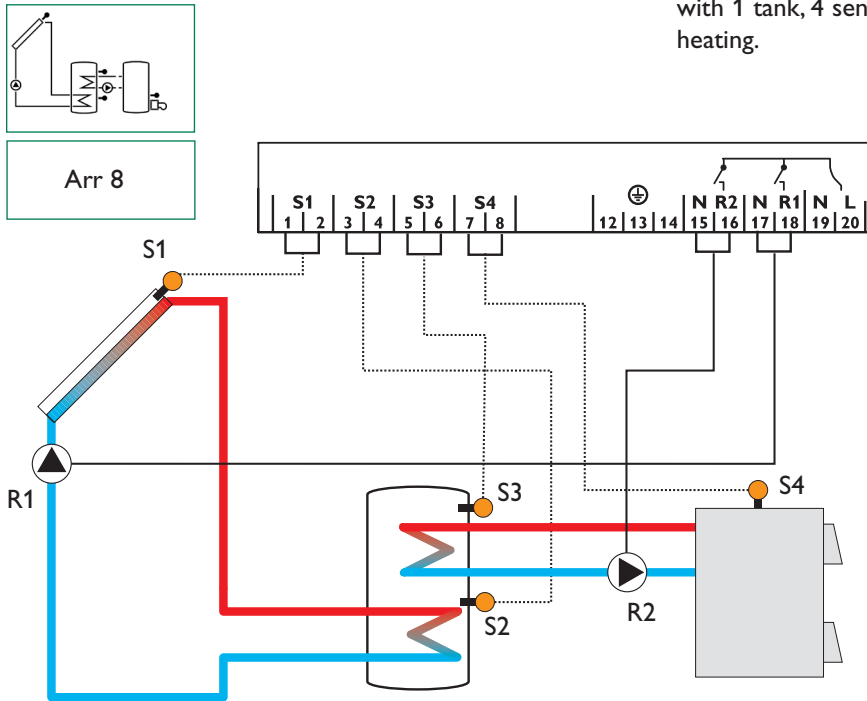
Symbol	Specification
S1	Collector Sensor
S2	Lower Tank Sensor
S3	Upper Tank Sensor
S4	Tank for Solid Fuel Boiler
R1	Solar Pump
R2	Pump for Solid Fuel Boiler

1.2.9 Allocation of clamps for system 9

Arr 9

Solar System and Heating Circuit Reverse Raising
with 1 tank, 4 sensors, 1 solar pump and 1 3-way-valve for heating circuit reverse raising.
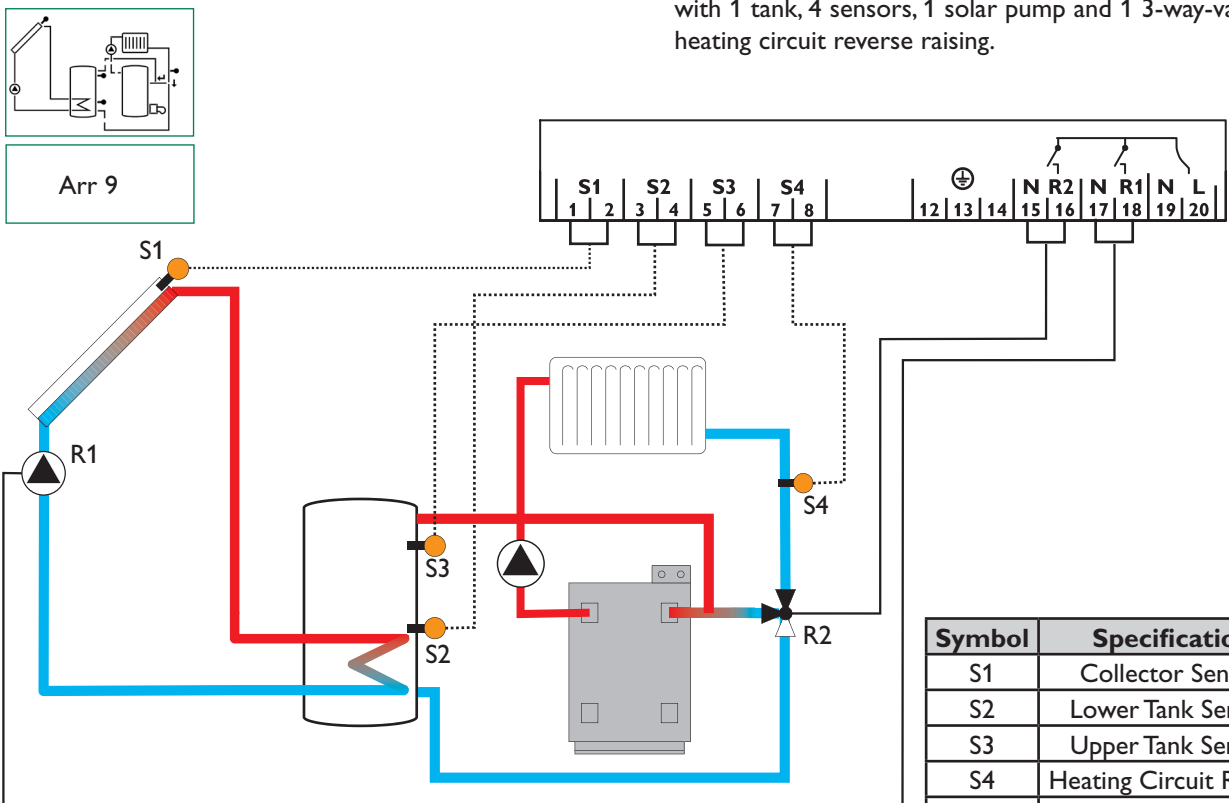
Symbol	Specification
S1	Collector Sensor
S2	Lower Tank Sensor
S3	Upper Tank Sensor
S4	Heating Circuit Return
R1	Solar Pump
R2	3-Way-Valve

2. Opeartion and function

2.1 Pushbuttons for adjustment

backward

forward

2 1

3

SET
(selection / adjustment mode)

The controller is operated by the 3 keys below the display. To enter the configuration mode toggle through the display parameters by pressing and releasing key 1 until this no longer causes the display to change. At this point press and hold key 1 until the configuration parameters are displa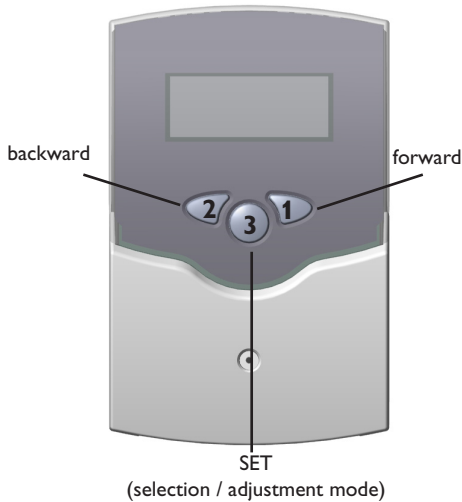yed (about 5 seconds), then quickly release the key to avoid toggling to the end of the parameter list. The first parameter in the list is DT O. To change the setting of a given parameter, follow the steps below.

1. Toggle to the parameter using keys 1 and/or 2. The abbreviation for the parameter is displayed on the right side of the screen, with the setting directly below, and the set icon solid (not blinking) on the extreme right.
2. Press key 3. The set icon begins blinking signifying that the parameter may now be adjusted.
3. Quickly use keys 1 and/or 2 to change the setting to that which is required.
4. Press key 3 again. The set icon stops blinking signifying that the new value has been stored.

2.2 System monitoring display
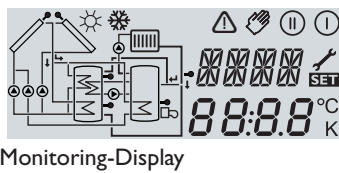
Monitoring-Display

The system display consists of an indication channel, a tool bar, and the system screen. These are detailed below.

2.2.1 Indication Channel

Indication channel

The **indication channel** consists of two lines. The upper line is an alphanumeric 16-segment display, in which an abbreviation of the current setting or reading is shown. In the lower 7-segment display, the value of said reading or setting is shown.

2.2.2 Tool bar

Toolbar only illustrated above

The additional symbols of the **tool bar** indicate the current system status.

Symbol	standard	blinking
(I)	relay 1 active	
(II)	relay 2 active	
☼	maximum tank limitation active / maximum tank temperature exceeded	collector cooling function or reccoling function active
❄	antifreeze- function activated	collector minimum limitation or antifreeze function active
⚠		collector security shutdown or tank securtiy shutdown active
⚠ + 🔧		sensor defect
⚠ + ✋		manual operation active
SET		an adjustment channel is changed SET-mode

SOM 7 SI
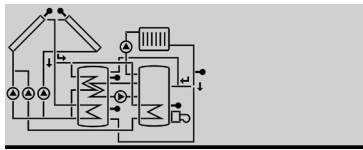
2.2.3 System screen

System Screen only

The system screen (active system scheme) shows the schemes selected on the controller. It consists of several system component symbols, which are - depending on the current status of the system - either flashing, permanently shown or hidden.

Sensors
upper sensor tank
Collector 2
Heating circuit
Collector 1
Valve
Pumps
Valve
Sensor
Additional symbol for operation of the burner
Tank heat-exchanger
Tank
Tank 2 or afterheating (with an additional symbol)
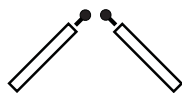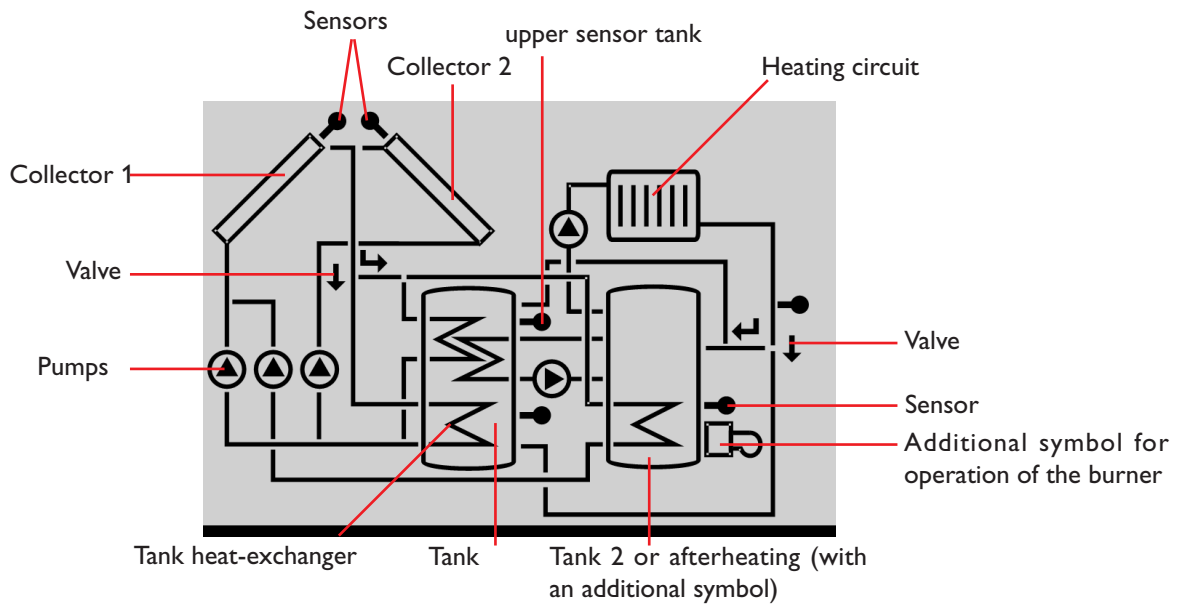
Collectors
with collector sensor
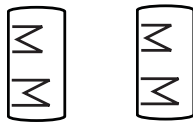
Tanks 1 and 2
with heat-exchanger

3-way-valve
The flow direction or the current breaking capacity is always shown.

Temperature sensor

Heating circuit

Pump
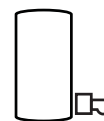
Afterheating
with burner symbol

2.3 Blinking codes

2.3.1 System screen blinking codes

- Pumps are blinking during starting phase
- Sensors are blinking when their value is being displayed in the indication channel.
- Sensors are quickly blinking in case of sensor defect.
- Burner symbol is blinking if after-heating is activated

2.3.2 LED blinking codes

Constantly green:	Normal operation
Red/green blinking:	Power-up phase
	Manual operation
Red blinking:	Sensor defect
	(sensor symbol is quickly blinking)

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3. Primary commissioning
For primary commissioning the system scheme has to be selected first

operating control lamp

backward

forward

2   3   1

SET
(selection / adjustment mode)
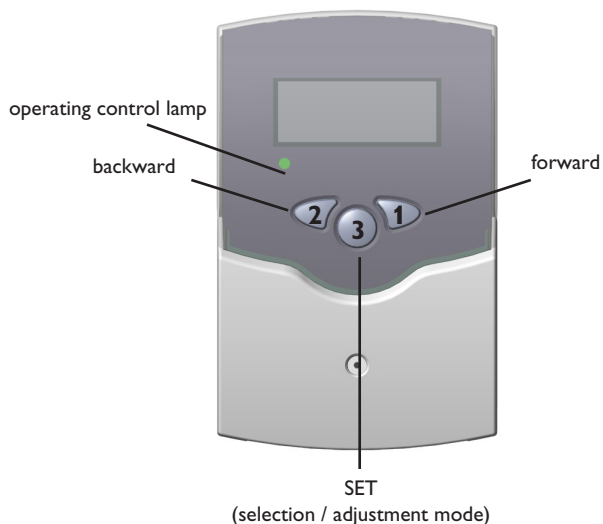
1. After AC power is supplied to the unit it goes through its power up tests during which the control lamp is blinking red and green. After this the unit is ready for configuration. The unit's default system scheme is Arr. 1.

2. Clock time adjustment in channel TIME. By pressing the **SET** button once you can adjust hours, pressing it once again the minutes. The time can be adjusted by buttons 1 and 2 and saved by pressing the **SET** button.

3. - select adjustment channel Arr

   - change into **SET**-mode (see 2.1)

   - adjustment are saved by pressing button **SET**

Now the controller is ready for operation and should enable an optimum operation of the solar system with the factory settings.
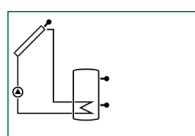
Arr 1
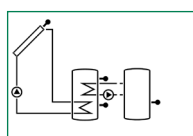
Arr 2
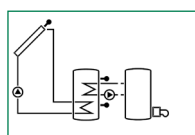
Arr 3
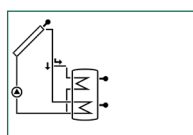
Arr 4
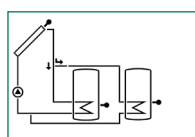
Arr 5
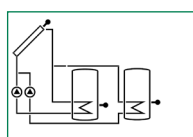
Arr 6
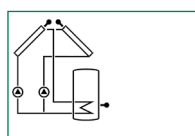
Arr 7
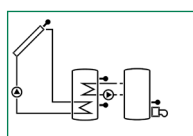
Arr 8
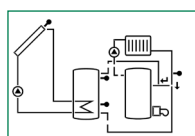
Arr 9

System survey:

Arr 1 :   Standard Solar System

Arr 2 :   Solar System with Heat Exchange

Arr 3 :   Solar System with After-Heating

Arr 4 :   Solar System with Tank Charge in Layers

Arr 5 :   2-Tank Solar System with Valve Logic

Arr 6 :   2-Tank Solar System with Pump Logic

Arr 7 :   Solar System with 2 Collectors and 1 Tank

Arr 8 :   Solar System with After-Heating by Solid Hot Fuel Boiler

Arr 9 :   Solar System with Heating Circuit Reverse Raising

4. Control parameter and indication channels

4.1 Channel-overview

Legend:

x

Corresponding channel is available.

x*

Corresponding channel is available if the appropriate option is activated.

Please note:
S3 and S4 are only indicated in case of sensors connected

①

Corresponding channel is only available if the option Energy Production Measurement is **activated** (OHQM).

②

Corresponding channel is only available if the option Energy Production Measurement is **deactivated** (OHQM).

MEDT

The channel antifreeze content (MED%) is only shown if **the antifreeze is not water or Tyfocor LS / G-LS (MEDT 0 or 3).** Adjustments concerning the antifreeze content will only make sense if the antifreeze is used in the solar circuit.

Channnel	Arr									Specification	Page
	1	2	3	4	5	6	7	8	9		
COL	x	x	x	x	x	x		x	x	Temperature collector 1	15
COL 1							x			Temperature collector 1	15
TST	x						x			Temperature tank 1	15
TSTU			x	x				x	x	Temperature tank 1 below	15
TST1		x			x	x				Temperature tank 1 below	15
TSTO		x	x	x				x	x	Temperature tank 1 at the top	15
TST2		x			x	x				Temperature tank 2 below	15
TFSB								x		Temperature solid hot fuel boiler	15
TRET									x	Temperature heating circuit	15
COL2							x			Temperature collector 2	15
S3	x									Temperature sensor 3	15
TRF	①		①							Temperature return sensor	15
S4	②		②	②	②	x	x			Temperature sensor 4	15
hP	x			x	x				x	Operating hours relay 1	16
h P1		x	x			x	x	x		Operating hours relay 1	16
h P2		x	x			x	x	x		Operating hours relay 2	16
kWh	①		①	①	①					Heat quantity kWh	16
MWh	①		①	①	①					Heat quantity MWh	16
time					x					Time	15
Arr					1-9					System	12
DT O	x	x	x				x	x	x	Switch-on temperature diff	17
DT1O				x	x	x				Switch-on temperature diff 1	17
DT F	x	x	x				x	x	x	Switch-off temperature diff 1	17
DT1F				x	x	x				Switch-off temperature difference	17
S MX	x	x	x				x	x	x	Maximum temperature tank 1	17
S1 MX				x	x	x				Maximum temperature tank 1	17
DT2O				x	x	x				Switch-on temperature difference 2	17
DT2F				x	x	x				Switch-off temperature difference 2	17
S2MX				x	x	x				Maximum temperature tank 2	17
EM	x	x	x	x	x	x		x	x	emergency temperature collector 1	18
EM1							x			emergency temperature collector 1	18

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Channel	Arr									Specification	Page
	1	2	3	4	5	6	7	8	9		
OCX	x	x	x	x	x	x		x	x	option collector cooling collector 1	18
OCX1							x			option collector cooling collector 1	18
CMX	x*	x*	x*	x*	x*	x*		x*	x*	maximum temperature collector 1	18
CMX1							x*			maximum temperature collector 1	18
OKN	x	x	x	x	x	x		x	x	option minimum limitation collector 1	18
OKN1							x			option minimum limitation collector 1	18
CMN	x*	x*	x*	x*	x*	x*		x*	x*	minimun temperature collector 1	18
CMN1							x*			minimun temperature collector 1	18
OCF	x	x	x	x	x	x		x	x	option antifreeze collector 1	18
OCF1							x			option antifreeze collector 1	18
CFR	x*	x*	x*	x*	x*	x*		x*	x*	antifreeze temperature collector 1	18
CFR1							x*			antifreeze temperature collector 1	18
EM2							x			emergency temperature collector 2	18
OCX2							x			option collector cooling collector 2	18
KMX2							x*			maximum temperature collector 2	18
OCN2							x			option miminum limitation collector 2	18
CMN2							x*			minium temperature collector 2	18
OCF2							x			option antifreeze collector 2	18
CFR2							x*			antifreeze temperature collector 2	18
PRIO				x	x	x				priority	19
tST				x	x	x				stop time	19
tRUN				x	x	x				Ciruclation time	19
OREC	x	x	x	x	x	x	x	x	x	option reccoling	19
O TC	x	x	x	x	x	x	x	x	x	option tube collector	19
DT3O		x						x		switch-on temperature difference 3	17
DT3F		x						x		switch-off temperature difference 3	17
MX3O		x						x		switch-on treshold for maximum temp.	17
MX3F		x						x		switch-off treshold for maximum temp.	17
MN3O		x						x		switch-on treshold for minimum temp.	17
MN3F		x						x		switch-off treshold for minimum temp.	17
AH O			x							switch-on temp. for thermostat 1	20
AH F			x							switch-off temp. for thermostat 1	20
OHQM	x		x	x	x					option WMZ	16
FMAX	①		①	①	①					maximum flow	16
MEDT	①		①	①	①					antifreeze type	16
MED%	MEDT		MEDT	MEDT	MEDT					antifreeze content	16
t1 on			x							Switch on time 1 thermostat	20
t1 off			x							Switch off time 1 thermostat	20
t2 on			x							Switch on time 2 thermostat	20
t2 off			x							Switch off time 2 thermostat	20
t3 on			x							Switch on time 3 thermostat	20
t3 off			x							Switch off time 3 thermostat	20
HND1	x	x	x	x	x	x	x	x	x	manual operation relay 1	20
HND2	x	x	x	x	x	x	x	x	x	manual operation relay 2	20
LANG	x	x	x	x	x	x	x	x	x	Language	20
UNIT	x	x	x	x	x	x	x	x	x	Change over °FAH / °CEL	20
PROG	XX.XX									program number	
VERS	X.XX									version number	

4.1.1   Collector Temperatures

COL, COL1, COL2:
Collector Temperature
display range: -40 → +480°F

```
COL
 185
```

Shows the current collector temperature.

*   COL : collector temperature (1-collector-system)
*   COL1: collector 1 temperature
*   COL2: collector 2 temperature

4.1.2   Tank Temperatures

**TST, TSTL, TSTU,
TST1, TST2:**
Tank Temperatures
Display range: -40 → +480 °F

```
TST
 111.5
```

Shows the current tank temperature.

*   TST   : tank temperature (1-tank-system)
*   TSTL : tank temperature, lower
*   TSTU : tank temperature, upper
*   TST1 : tank 1 temperature
*   TST2 : tank 2 temperature

4.1.3   Sensor 3 and Sensor 4 Temperatures

S3, S4:
S3, S4:
Sensor Temperatures
Display range: -40 → +480 °F

```
S3
 87.5
```

Shows the current temperature of the corresponding additional sensor (without control function).
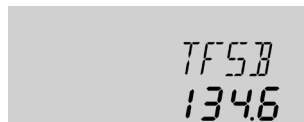
*   S3   : sensor 3 temperature
*   S4   : sensor 4 temperature

Please note:
S3 and S4 are only shown if the temperature sensors are connected.
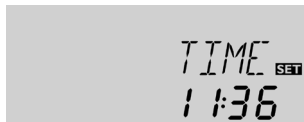
4.1.4   Other Temperatures

TFSB, TRET, TRF:
O t h e r   M e a s u r e d
Temperatures
Display range: -40 → +480 °F

```
TFSB
 134.6
```

Shows the current temperature of the corresponding sensor.

*   TFSB : solid fuel boiler temperature
*   TRET : heating reverse raising temperature
*   TRF   : return flow temperature

4.1.5   Time

```
TIME SET
 11:36
```

This channel stores and displays the current time in 24 hour format. To change the stored time, press the key 3 for 2 seconds. This causes the **SET** icon to blink and the hour may be adjusted using keys 1 and 2. To adjust the minutes press key 3 again. The **SET** icon continues to blink, but keys 1 and 2 now cause the minutes to change. Pressing key 3 again causes the displayed value to be stored.

4.1.6 Operating hours counter

h P / h P1 / h P2:
Operating Hours Counter
Indication channel

```
h P1 [SET]
     305
```
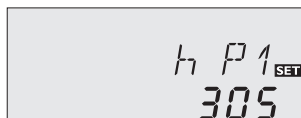
The operating hours counter adds up the solar operating hours of the respective relay (**h P / h P1 / hP2**). The total amount of hours which the relay has been active is shown on the display.

The operating hours total can be reset. As soon as the operating hours channel is selected, the symbol [SET] is displayed solid. To reset the operating hours press and hold the middle key (key 3) for approximately 5 seconds. The set symbol blinks. Press key 3 again and the operating hours counter is reset to 0.

In order to interrupt the RESET-procedure, don't press any button for about 5 seconds. The controller returns automatically into the display mode.

4.1.7 Energy Production Measurement

OHQM: Energy Production Measurement. Adjustment range: OFF/ON
Factory setting: OFF
FMAX:
Volumetric flow rate in l/min
Adjustment range 0 - 20
in steps of 0.1
Factory setting 6.0

```
OHQM [SET]
     OFF
```

```
FMAX [SET]
     6.0
```
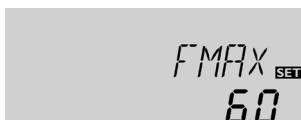
A measurement of the system's energy production is possible in conjunction with a flowmeter and an additional sensor which measures the heat exchanger's return temperature. Activate this option by changing the value of **OHQM** to **"on"**.

Adjust this setting to the maximum flow rate of the system in liters per minute**.** This is necessary in order to calculate the system's actual energy output. Some controllers have an additional parameter, **FMXG**, which is the flow rate in gallons per minute.

MEDT: Type of antifreeze
Adjustment range 0 - 3
Factory setting 1

```
MEDT [SET]
      1
```

Type of antifreeze:
0 : water
1 : propylene glycol
2 : ethylene glycol
3 : Tyfocor® LS / G-LS

MED%: Concentration of antifreeze in (Vol-) %
MED% is blinded out by MEDT 0 and 3.
Adjustment range 20 - 70
Factory setting 45

```
MED% [SET]
     45
```

kWh/MWh: Energy production in kWh / MWh
Display channel

```
KWh [SET]
     51
```

The energy produced by the system is measured by the calculation of the volume of heat exchanger fluid moved through the system and a comparison of the temperature of the fluid leaving the collector (S1) with that of the fluid exiting the storage tank's heat exchanger (S4). It is shown in kWh in one channel and MWh in another.

The total energy produced can be reset. As soon as one of the display channels of the heat quantity is selected, the symbol [SET] is displayed solid. To reset the total energy produced press and hold the middle key (key 3) for approximately 5 seconds. The set symbol blinks. Press key 3 again and the total energy produced is reset to 0..

In order to interrupt the RESET-procedure, no button should be pressed for about 5 seconds. The controller returns automatically into indication mode.

4.1.8 ∆T-regulation

DT O / DT1O / DT2O / DT3O:
Switch-on temperature differential
Adjustment range
2.0 - 40.0 °F
Factory setting 12.0

```
DT O SET
    12.0
```

DT F / DT1F / DT2F / DT3F:
Switch-off temperature differential
Adjustment range
1.0 - 38.0 °F
Factory setting 8.0 °F

```
DT F SET
     8.0
```

Primarily the controller works in the same way as a standard differential controller. If the switch-on difference (**DT O/DT1O/DT2O/DT3O**) is sensed, the pump is activated. If the adjusted switch-off temperature is measured (**DTF/DT1F/DT2F/DT3F**), the controller switches-off.
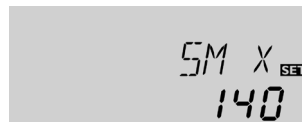
Please note: Switch-on temperature difference DT O must be at least 2 °F higher than the switch-off temperature-difference DT F.

4.1.9 Maximum Tank Temperature

S MX / S1MX / S2MX:
Maximum storage tank temp.
Adjustment range: 40 - 205 °F
Factory setting 140 °F

```
SM X SET
    140
```

If the adjusted maximum temperature is exceeded, a further loading of the store is stopped so that a damaging overheating can be avoided. If the maximum store temperature is exceeded, the symbol ☀ is displayed.

Please note: The controller is equipped with a security-switch-off of the storage tank, which will not allow further loading of the tank if it reaches 205 °F.

4.1.10 ∆T-controller (solid fuel boiler and heat exchange)

Maximum Temperature Limitation
MX3O / MX3F:
Maximum temperature limitation
Adjustment range
MX3O 137- 205°F
MX3F 30 - 136°F
__Factory settings__
MX3O 140°F
MX3F 136°F

```
MX3O SET
   140.0
```

```
MX3F SET
   136.0
```

Minimum Temperature Limitation
MN3O / MN3F:
Minimum Temperature Limitation
__Adjustment range__
__Arr 2__
MN3O 30 - 49°F
MN3F 41 - 195°F
__Arr 8__
MN3O 30 - 149°F
MN3F 141 - 195°F
__Factory settings__
__Arr 2__
MN3O 40°F | **MN3F** 50°F
__Arr 8__
MN3O 140°F | **MN3F** 150°F

```
MN3O SET
    40.0
```

```
MN3F SET
    50.0
```

The Maximum Temperature Limitation regulates the temperatures at which the second differential switch-on temperature (**DT3O**) will operate. This feature is only available if Arr 2 or Arr 8 is selected (for solid fuel boilers or heat exchange regulation).

If the relevent sensor measures a temperature greater than **MX3O,** relay 2 is disabled. Relay 2 will not be enabled again until a temperature less than **MX3F** is reached.
Reference sensor:
S3 by Arr 8 (TSTU)
S4 by Arr 2 (TST2)

The Minimum Temperature Limitation also works in conjunction with the second differential switch-on temperature (**DT3O**). If the relevent sensor measures a temperature less than **MN3O**, relay 2 will be disabled. Relay 2 will not be enabled again until a temperature greater than **MN3F** is measured. by the relevent sensor.
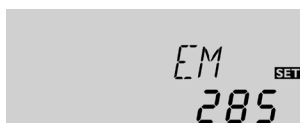**Reference sensor:**
S4 by Arr 8 (TFSB)
S3 by Arr 2 (TSTU)

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4.1.11 Collector Emergency Shutdown Temperature

EM / **EM1** / **EM2**:
Collector Emergency
Shutdown Temperature
Adjustment range
230 - 400 °F,
Factory setting 285 °F

```
EM        SET
    285
```

If the collector emergency shutdown temperature (**EM/EM1/EM2**) is reached, the solar pump (R1/R2) is deactivated in order to avoid damaging the solar components. The default setting is 285°F. If the system is in emergency shutdown mode the symbol ⚠ is flashing. The system will not exit this mode until the temperature measured is 30°F lower than the value of this setting.

#### 4.1.12 System Cooling Functions.

OCX / **OCX1** / **OCX2**:
System Cooling
Adjustment range OFF/ON
Factory setting OFF

```
OCX       SET
    OFF
```

The system cooling function is used to prevent the system's heat exchanger fluid from overheating. This in turn prevents the degradation of the fluid's corrosion inhibitors avoiding damage to the system components. If the system cooling function is activated the symbol ☀ is flashing.

CMX / **CMX1** / **CMX2**:
Maximum Collector
Temperature
Adjustment range:
210 - 380 °F
Factory setting 250 °F

```
CMX       SET
    250
```
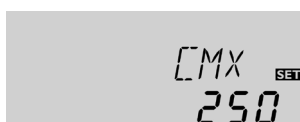
If the maximum collector temperature (**CMX**/**CMX1**/**CMX2**) is reached the maximum storage tank temperature (**S MX**/**S1MX**/**S2MX**) is overridden and the system's circulator pump is turned on, cooling the system's HX fluid using the water in the storage tank. This will continue until either the collector temperature is measured to be at least 9°F lower than the setting of "CMX/CMX1/CMX2", the tank reaches it's 205°F security-switch-off temperature, or the collector reaches its collector emergency shutdown temperature. The last two instances should not occur if the system is sized and configured properly.

4.1.13 Minimum Collector Temperature Limit
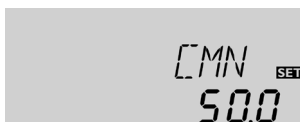
OCN / **OCN1** / **OCN2**:
Collector Minimum
Temperature Limitation
Adjustment range OFF/ON

```
OCN       SET
    OFF
```

CMN / **CMN1** / **CMN2**:

Collector Minimum
Temperature
Adjustment range 50- 195°F
Factory setting 50°F

```
CMN       SET
    50.0
```

The minimum collector temperature is a temperature which must be exceeded in order for the solar pump (R1/R2) to be switched-on. The minimum temperature setting is used to avoid starting-up the solar pump (or solid fuel boiler charging pumps) when the temperature of the heat exchanger fluid is too low. If the minimum temperature feature is activated the symbol ❄ is shown on the display (blinking).

4.1.14 Antifreeze Function

OCF / **OCF1** / **OCF2**:
Antifreeze Function
Adjustment range OFF/ON
Factory setting OFF

```
OCF       SET
    OFF
```

The antifreeze function activates the loading circuit between collector and tank if the antifreeze temperature is reached in order to protect the heat exchanger fluid against freezing or "thickening". If the antifreeze temperature is exceeded by 2°F, the loading circuit will be deactivated.

Please note:

CFR / **CFR1** / **CFR2**:
Antifreeze Temperature
Adjustment range 15-50°F
Factory setting 40°F

```
CFR       SET
    40.0
```

As there is only a limited heat quantity of the tank available for this function, the antifreeze function should only be used in regions with few days of temperatures around freezing point.

4.1.15 Oscillating Charge

<u>Respective Adjustment Values:</u>

	Factory setting	Adjustment range
Priority [PRIO]	(1 / Arr 5,6) (2 / Arr 4)	0-2
Oscillating Break Time [tST]	2 min.	1-30 min.
Oscillating Charge Time [tRUN]	15 min.	1-30 min.

SOM 7 SI Priority Logic

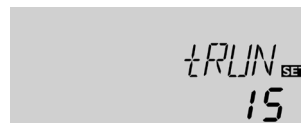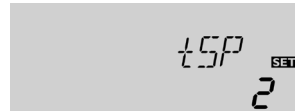**Tank Priority:**

```
PRIO SET
     1
```

The above oscillating charge parameters are only available in multi-tank or layered charge systems (Arr 4, 5 and 6). If **Tank Priority** is set to 0, the tanks which show a temperature difference towards the collector are loaded in numerical order (tank 1 or tank 2). Usually only one tank is loaded at this point. For Arr= 5, 6 parallel loading is also possible.

Oscillating Break Time/Oscillating Charge Time/ Collector Rising Temperature

```
tSP SET
    2
```

```
tRUN SET
     15
```

The controller checks the tanks regarding loading facilities (switch-on difference). If the priority tank cannot be loaded, the lower-ranking tank is checked. If the lower-ranking tank can be charged this is effected by the so-called "oscilating charge time" (**tRUN**). When the oscillating charge time is over the loading is stopped. The controller regulates the increase of the collector temperature. If it increases by the collector rising temperature (ΔT-Col 4°F, fixed software value), the expired break time is again reset to zero and the oscillating break time starts again. If the switch-on conditions of the priority tank are not reached, the loading of the lower-ranking tank is continued. If the priority switch has reached its maximum temperature, the oscillating charge is not effected.

4.1.16 Recooling function

OREC:
Recooling Option
adjustment range
OFF / ON
Factory setting: OFF

```
OREC SET
OFF
```

This setting is designed to be used in conjunction with the System Cooling Function, which overrides the maximum store temperature (**S MX, S1MX, S2MX**) when used. This function will cool the tank back down to its maximum temperature when the collector temperature becomes low enough to facilitate such. This prevents a cumulative overheating condition if the cooling function needs to be used multiple days in a row. In order to utilize this function with tube collectors, a heat rejection loop (heat dump) is necessary.

4.1.17 Tube collector special function

O TC:
Tube Collector Function
Adjustment range:
OFF / ON
Factory setting: OFF

```
O TC SET
OFF
```

If the controller measures an increase of 4 °F compared to the collector temperature which was last stored, the solar pump is switched-on for about 30 seconds. After the solar pump is deactivated the current collector temperature is stored as new reference value. If the measured temperature (new reference value) is again exceeded by 4 °F, the solar pump again switches-on for 30 seconds. If the switch-on differential is reached during any of these processes the controller automatically switches over to solar charging.
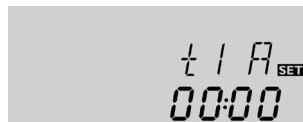
If the collector temperature drops by 4 °F while the system fluid is stagnant, the switch-on value for the special tube collector function will be recalculated.

4.1.18 Thermostat Function (Arr = 3)

Afterheating

use of surplus energy

AH O SET
105.0

AH F SET
115.0
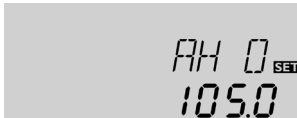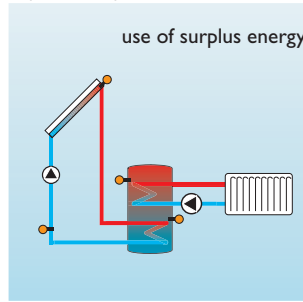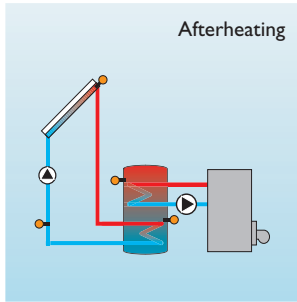
AH O:
Thermostat
Switch-on Temperature
Adjustment range 30 - 205°F
Factory setting 105°F

AH F:
Thermostat
Switch-off Temperature
Adjustment range 30-205°F
Factory setting 115°F

The thermostat function is independent from the solar loop's differential switching temperatures and can be used either to control a backup heating source such as a boiler, or to send some of the tank's excess thermal energy to a heating loop or heat dump. Whis one it does is dependent upon the settings **AH O** and **AH F**.

- If **AH O** < **AH F**
  The thermostat function is used to add heat to the tank using a back up heating source.
- If **AH O** > **AH F**
  The thermostat function is used to remove the tank's excess thermal energy.

Symbol Ⓘ will be shown on the display if the second relay output is activated.

t1 E SET
00:00

t1 A SET
00:00

t1 E, t2 E, t3 E:
Thermostat switch-on time
Adjustment range:
00:00 - 23:45
Factory setting: 00:00

t1 A, t2 A, t3 A:
Thermostat switch-off time
Adjustment range:
00:00 - 23:45
Factory setting: 00:00

In order to block the thermostat function for a certain time span, there are 3 time frames t1, t2 and t3. If, for example, the function should be activated only between 6:00 and 9:00, **t1 E** should be set to 6:00 and **t1 A** should be set for 9:00. If all of the thermostat time functions are set to 00:00, the themostat function will be in continuous operation. (factory setting).

4.1.19 Operating Mode

HND1/HND2:
Operating Mode
Adjustment range:
OFF, AUTO, ON
Factory setting: AUTO

HND1 SET
Auto

HND2 SET
Auto
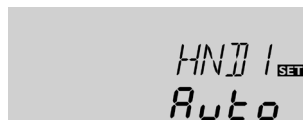
For control and service work the operating mode of the controller can be manually adjusted by selecting the adjustment value HAND, in which the following settings are available.

- **HND1 / HND2**
  Operating mode
  OFF   :   relay off ⚠ (blinking) + ✋

  AUTO :   relay in automatic operation
  ON   :   relay on ⚠ (blinking) + ✋

4.1.20 Language

LANGUAGE
Language Setting
Adjustment range:
dE, En, It, Fr
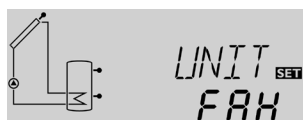Factory setting: En

LANG SET
En

The menu language can be adjusted in this channel.

- dE : German
- En : English
- It : Italian
- Fr : French

4.1.21 Units for Temperature Display
UNIT:
Temperature Display Units
Adjustment range:
FAH, CEL
Factory setting: FAH

UNIT SET
FAH

The menu unit can be adjusted:

- °FAH
- °CEL

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4.2 Recommended Settings for any System Scheme

Below is a list of important settings which must be changed from their default value no matter what system scheme (Arr. 1 - Arr. 9) is being used. Any time the system scheme is changed these values need to be reset to the below values. If this is not done there is a very good chance that the system will overheat and thus be in need of time consuming and possibly costly repairs.

Display Code	Parameter Name and Reference	Recommended Setting and Explanation (All temperatures in °F)
EM	Collector Emergency Shutdown Temperature (p. 18)	**310°** This prevents the HX fluid directly behind that in the sensor well from causing the system to go into emergency shutdown mode as soon as the cooling function is activated.
OCX	System Cooling Function (p. 18)	**On** Failure to change this option to 'on' will likely result in overheating of the system at some point.
CMX	Maximum Collector Temperature (p. 18)	**230°** Having a relatively large ΔT between CMX and EM prevents the HX fluid directly behind that in the sensor well from causing the system to go into emergency shutdown mode as soon as the cooling function is activated.
OREC	Recooling Function (p. 19)	**On** This prevents a cumulative overheating of the system by ensuring a relatively high Δt between the tank temperature and and the security switch-off of the tank (205°).

Below is a list of the recommended switch-on and switch-off settings for the controller. These options are available on all 9 system schemes. These settings also need to be reset to the below values whenever the system scheme (Arr. 1 - Arr. 9) is changed. Advanced users may want to set these differently depending on the circumstances.

Display Code	Parameter Name and Reference	Recommended Setting and Explanation (All temperatures in °F)
DT O	Switch on Temperature Difference (p. 17)	**15°** Setting this too low can cause the circulator to cycle on and off too frequently.
DT F	Switch off Temperature Difference (p. 17)	**5°** Too high of a ΔT between DT O and DT F can cause the circulator to switch on and off too frequently.

4.2.1 Recommended Settings for Standard DHW System (Arr. 1)

Display Code	Parameter Name and Reference	Recommended Setting and Explanation (All temperatures in °F)
DT O	Switch on Temperature Difference (p. 17)	**15°** Setting this too low can cause the circulator to cycle on and off too frequently.
DT F	Switch off Temperature Difference (p. 17)	**5°** Too high of a ΔT between DT O and DT F can cause the circulator to switch on and off too frequently.
S MX	Maximum Store Temperature (p. 17)	**140°** This will prevent the temperature at the top of the tank from getting hot enough to cause the T & P valve to release. This will also allow the cooling function to operate effectively.
EM	Collector Emergency Shutdown Temperature (p. 18)	**310°** This prevents the HX fluid directly behind that in the sensor well from causing the system to go into emergency shutdown mode as soon as the cooling function is activated.
OCX	System Cooling Function (p. 18)	**On** Failure to change this option to 'on' will likely result in overheating of the system at some point.
CMX	Maximum Collector Temperature (p. 18)	**230°** Having a relatively large ΔT between CMX and EM prevents the HX fluid directly behind that in the sensor well from causing the system to go into emergency shutdown mode as soon as the cooling function is activated.
OCN	Minimum Collector Temperature (p. 18)	**Off** The ΔT between DT O and DT F achieves the requisite effect for most situations.
OCF	Antifreeze Option (p. 18)	**Off** Unless the system is located in a region which rarely experiences temperatures near freezing, **and** a very low glycol to water percentage is being used.
OREC	Recooling Function (p. 19)	**On** This prevents a cumulative overheating of the system by ensuring a relatively high Δt between the tank temperature and and the security switch-off of the tank (205°).
O TC	Tube Collector Function (p. 19)	**Off** Unless the system is utilizing tube collectors.
OHQM	Energy Production Measurement (p. 16)	**Off** Unless the installer has installed a sensor in position S4 and wishes to utilize this function.
HND1	Circulator Pump Operating Mode (p. 20)	**Auto** This is the normal operating mode. The other two modes are for testing, charging, etc.
LANG	Language (p. 20)	**En** (English) For most applications in North America this is appropriate, with some exceptions.
UNIT	Units for Temperature Display (p. 20)	**FAH** For most applications in North America this is appropriate, but it is purely a matter of preference.

Please note that advanced users may desire to adjust certain parameters differently depending on the circumstances. These suggested settings are merely a manner in which to configure the unit that will avoid damage to the system from overheating. Installing the SOM 7 with the default settings will likely result in an overheating condition of the solar system.

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**4.2.2 Recommended Settings for Standard DHW System with Boiler Backup (Arr. 3)**

Display Code	Parameter Name and Reference	Recommended Setting and Explanation (All temperatures in °F)
DT O	Switch on Temperature Difference (p. 17)	**15°** Setting this too low can cause the circulator to cycle on and off too frequently.
DT F	Switch off Temperature Difference (p. 17)	**5°** Too high of a ΔT between DT O and DT F can cause the circulator to switch on and off too frequently.
S MX	Maximum Store Temperature (p. 17)	**140°** This will prevent the temperature at the top of the tank from getting hot enough to cause the T & P valve to release. This will also allow the cooling function to operate effectively.
EM	Collector Emergency Shutdown Temperature (p. 18)	**310°** This prevents the HX fluid directly behind that in the sensor well from causing the system to go into emergency shutdown mode as soon as the cooling function is activated.
OCX	System Cooling Function (p. 18)	**On** Failure to change this option to 'on' will likely result in overheating of the system at some point.
CMX	Maximum Collector Temperature (p. 18)	**230°** Having a relatively large ΔT between CMX and EM prevents the HX fluid directly behind that in the sensor well from causing the system to go into emergency shutdown mode as soon as the cooling function is activated.
OCN	Minimum Collector Temperature (p. 18)	**Off** The ΔT between DT O and DT F achieves the requisite effect for most situations.
OCF	Antifreeze Option (p. 18)	**Off** Unless the system is located in a region which rarely experiences temperatures near freezing, **and** a very low glycol to water percentage is being used.
OREC	Recooling Function (p. 19)	**On** This prevents a cumulative overheating of the system by ensuring a relatively high Δt between the tank temperature and and the security switch-off of the tank (205°).
O TC	Tube Collector Function (p. 19)	**Off** Unless the system is utilizing tube collectors.
AH O	Thermostat Switch-On Temperature (p. 20)	**115** Or whatever temperature the user wants the boiler to begin heating the tank water via the upper heat exchanger.
AH O	Thermostat Switch-Off Temperature (p. 20)	**125** Or whatever temperature the user wants the boiler to stop heating the tank water via the upper heat exchanger.
t1 0-t3 F	Thermostat Switching Times (p. 20)	**00:00** Unless there are certain times in the day when the boiler loop should not switch on.
OHQM	Energy Production Measurement (p. 16)	**Off** Unless the installer has installed a sensor in position S4 and wishes to utilize this function.
HND1	Solar Pump Operating Mode (p. 20)	**Auto** This is the normal operating mode. The other two modes are for testing, charging, etc.
HND2	Boiler Loop Operating Mode (p. 20)	**Auto** This is the normal operating mode. The other two modes are for testing, charging, etc.
LANG	Language (p. 20)	**En** (English) For most applications in North America this is appropriate, with some exceptions.

Display Code	Parameter Name and Reference	Recommended Setting and Explanation (All temperatures in °F)
UNIT	Units for Temperature Display (p. 20)	**FAH** For most applications in North America this is appropriate, but it is purely a matter of preference.

Please note that advanced users may desire to adjust certain parameters differently depending on the circumstances. These suggested settings are merely a manner in which to configure the unit that will avoid damage to the system from overheating. Installing the SOM 7 with the default settings will likely result in an overheating condition of the solar system.

4.2.2.1 SOM 7 Wiring Diagram for Connection to Cold Start Boiler

In order to interface the SOM 7 with the boiler control board of a typical boiler (which does not heat up the boiler water unless a zone calls for heat) it is necessary to incorporate a relay circuit. Below is a wiring diagram in which a commonly used single zone controller in conjunction with a SOM 7 is controlling such a boiler.
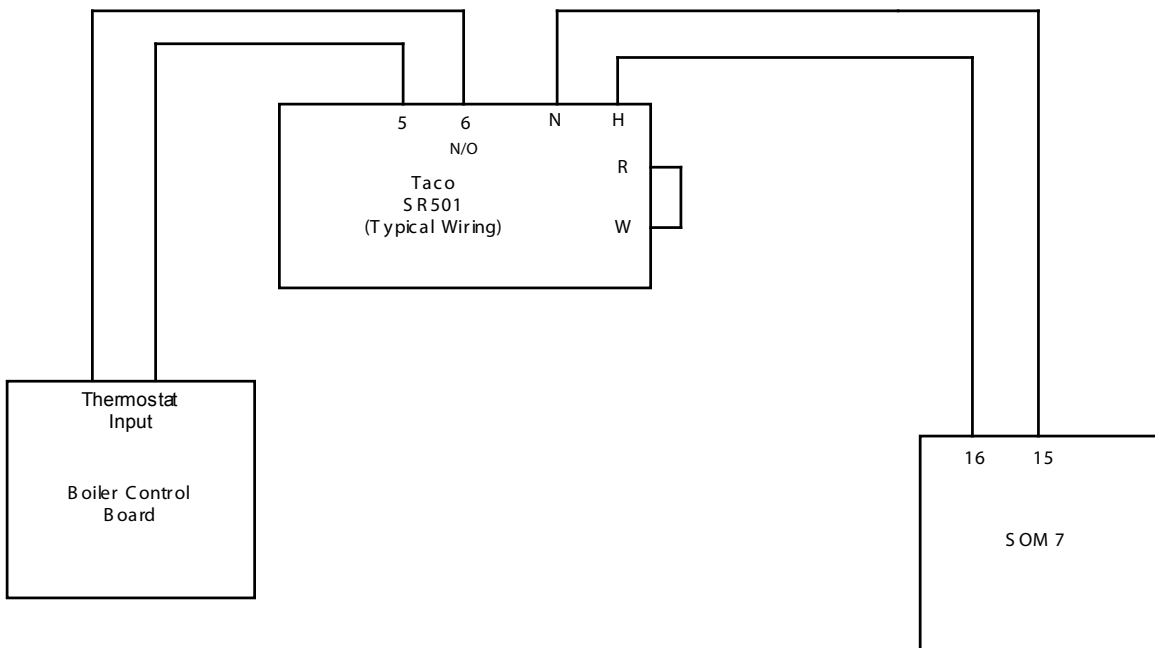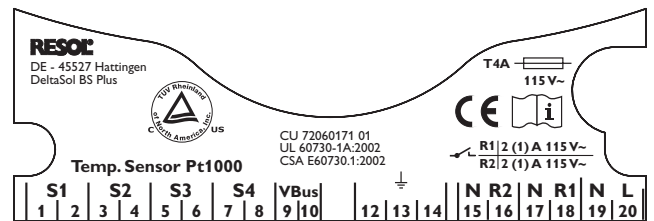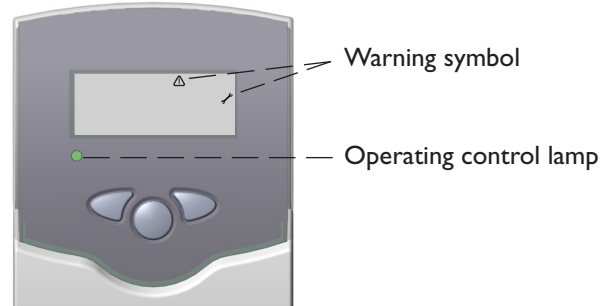
5. Troublesooting Tips

If a malfunction occurs, it will be indicated on the display of
the controller:

°F	Ω	°F	Ω
14	961	131	1213
23	980	140	1232
32	1000	149	1252
41	1019	158	1271
50	1039	167	1290
59	1058	176	1309
68	1078	185	1328
77	1097	194	1347
86	1117	203	1366
95	1136	212	1385
104	1155	221	1404
113	1175	230	1423
122	1194	239	1442
Resistance values of the Pt1000-sensors			

Warning symbol

Operating control lamp

RESOL
DE - 45527 Hattingen
DeltaSol BS Plus

T4A
115 V~

CU 72060171 01
UL 60730-1A:2002
CSA E60730.1:2002

R1 2 (1) A 115 V~
R2 2 (1) A 115 V~

Temp. Sensor Pt1000

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

Symptom	Possible Cause and Remedies List
Operating control lamp flashes red. The ⚒ symbol is displayed and the ⚠ symbol is flashing. The indication channel of the relevent sensor displays 888.8 instead of the temperature.	<u>SOM unit is sensing an open circuit condition.</u> 1. Measure the resistance between the two terminals to which the relevent sensor is attached. If it measures infinite resistance continue to step 2. If it measures a resistance within range of the above chart, call for service. 2. Disconnect the sensor wire from the terminals and measure the resistance between the two wires. If it still measures infinite resistance continue to step 3. If it measures a resistance within range of the above chart, there is a problem with the connection from the sensor wire to the terminal. 3. This problem lies either with the sensor or the wire/connections. In order to determine whether the problem lies with the sensor itself, the sensor must be disconnected from any extension wire and its resistance must be measured. If, when the sensor is disconnected, the resistance is measured to be within the values of the resistance chart the problem is with the extension wire/connections.

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Symptom	Possible Cause and Remedies List
Operating control lamp flashes red. The 🔧 symbol is displayed and the ⚠ symbol is flashing. The indication channel of the relevent sensor displays -88.8 instead of the temperature.	SOM unit is sensing a short circuit condition. 1. Measure the resistance between the two terminals to which the relevant sensor is attached. If it measures a resistance close to zero continue to step 2. If it measures a resistance within range of the above chart, call for service. 2. Disconnect the sensor wire from the terminals and measure the resistance between the two wires. If it still measures a resistance close to zero continue to step 3. If it measures a resistance within range of the above chart, there is a problem with the connection from the sensor wire to the terminal. 3. This problem lies either with the sensor or the wire/connections. In order to determine whether the problem lies with the sensor itself, the sensor and its 4' wire which was factory installed must be disconnected from any extension wire and its resistance must be measured. If, when the sensor is disconnected, the resistance is measured to be within the values of the resistance chart the problem is with the extension wire/connections.
Operating control lamp is off and screen is blank.	SOM unit's control board is not receiving power. **HAZARDOUS VOLTAGE PRESENT!** 1. Measure the voltage between terminals **19** and **20**. If the voltage is close to the nominal voltage of 120 VAC, continue to step 2. If the voltage is not correct, the problem lies with the power supply to the unit. 2. Remove the unit's can fuse and measure its resistance. If the resistance is close to zero, call for service. If infinite resistance is measured, replace the fuse.
Collector is much hotter than the storage tank, but the system's circulator is not on.	1. Compare the tank's present temperature with its maximum setting (**S MX**). If the storage tank is within 4 degrees of this setting the circulator pump will not turn on even if the switch on temperature has been reached unless the System Cooling Function (**OCX**) is turned on and the Maximum Collector Temperature (**CMX**) has been reached. 2. Check to see if the ⚠ symbol is blinking. If this is the case the system is in Emergency Shutdown Mode. Either the collector sensor measured a temperature equal to or greater than the Collector Emergency Shutdown Temperature (step 3), or the store sensor measured a temperature of at least 205 °F (step 4). 3. If the system has reached the Collector Emergency Shutdown Temperature, the controller's configuration needs to be checked. Is the cooling function (**OCX**) set to on? Is there a sufficiently large ΔT between the Maximum Collector Temperature (**CMX**) and the Collector Emergency Shutdown Temperature (**EM**)? To get the system to exit emergency shutdown mode the **EM** setting must be at least 30 °F greater than the measured collector temperature. 4. If the storage tank has reached its emergency shutdown temperature (205 °F), the circulator will not turn on unless the store sensor measures a temperature of 201 °F or less. This parameter is not adjustable.

Symptom	Possible Cause and Remedies List
LED is blinking red and green.	1. Check the Circulator Pump Operating Mode, HNDx. This should be set to "auto". If it is set to either "on" or "off" the unit will flash red and green, the ⚠ symbol will flash and the 🖑 symbol will be displayed. 2. If the unit is in its power up mode this condition is normal.
Tank temperature cools excessively overnight.	1. Make sure that the check valve between the upper port of the lower heat exchanger and the output of the solar array is installed and functioning properly. 2. Check all configuration settings (see section 4.2). 3. Make sure that all system components are properly insulated.
Circulator pump is running, collector is much hotter than store, but the tank fails to heat up.	1. Make sure that the controller is actually powering the circulator. Is the ⏻ symbol displayed in the tool bar? If not, check all configuration settings (see section 4.2). Otherwise continue to step 2. **HAZARDOUS VOLTAGE PRESENT!** 2. Check for 120 VAC between terminals 17 and 18. If the ⏻ symbol is displayed and there is not 120 VAC between these two terminals, call for service. 3. Check the system's flow meter. Is the system getting the proper voumetric flow rate required by the collectors? If not, try adjusting the system's flow adjustment valve (if present). 4. If the system is getting no flow even though the circulator is running there is either an obstruction in the collector loop, or there is air in the system. If the system recently experienced an overheating condition, the problem is most likely the latter and the system needs to be purged. There is also a possibility that the circulator pump itself is defective.

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6. Warranty

WARRANTY

RESIDENTIAL & COMMERCIAL WARRANTY: STIEBEL ELTRON WARRANTS TO THE ORIGINAL OWNER THAT THE SOM 7 CONTROLLER WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF TWO (2) YEARS FROM THE DATE OF PURCHASE. SHOULD THE PART(S) PROVE TO BE DEFECTIVE UNDER NORMAL USE DURING THIS PERIOD, STIEBEL ELTRON, INC. WILL BE RESPONSIBLE FOR REPLACEMENT OF THE DETECTIVE PART(S) ONLY. STIEBEL ELTRON, INC. IS NOT RESPONSIBLE FOR LABOR CHARGES TO REMOVE AND/OR REPLACE THE DEFECTIVE PART(S), OR ANY INCIDENTAL OR CONSEQUENTIAL EXPENSES.

SHOULD THE OWNER WISH TO RETURN THE SOM 7 CONTROLLER FOR REPAIR, THE OWNER MUST FIRST SECURE WRITTEN AUTHORIZATION FROM STIEBEL ELTRON, INC. THE OWNER SHALL BE REQUIRED TO SHOW PROOF OF PURCHASE DATE, AND TO PAY ALL TRANSPORTATION COSTS TO RETURN THE DEFECTIVE PART(S) OR SOM 7 CONTROLLER. WARRANTY IS VOID IF SOM 7 CONTROLLER HAS BEEN INSTALLED OR USED IMPROPERLY OR IF DESIGN HAS BEEN ALTERED IN ANY WAY.

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