

# DeltaSol® E

up to version 1.15

## Examples of use

System description

Connection schemes

Adjustment



48004451

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

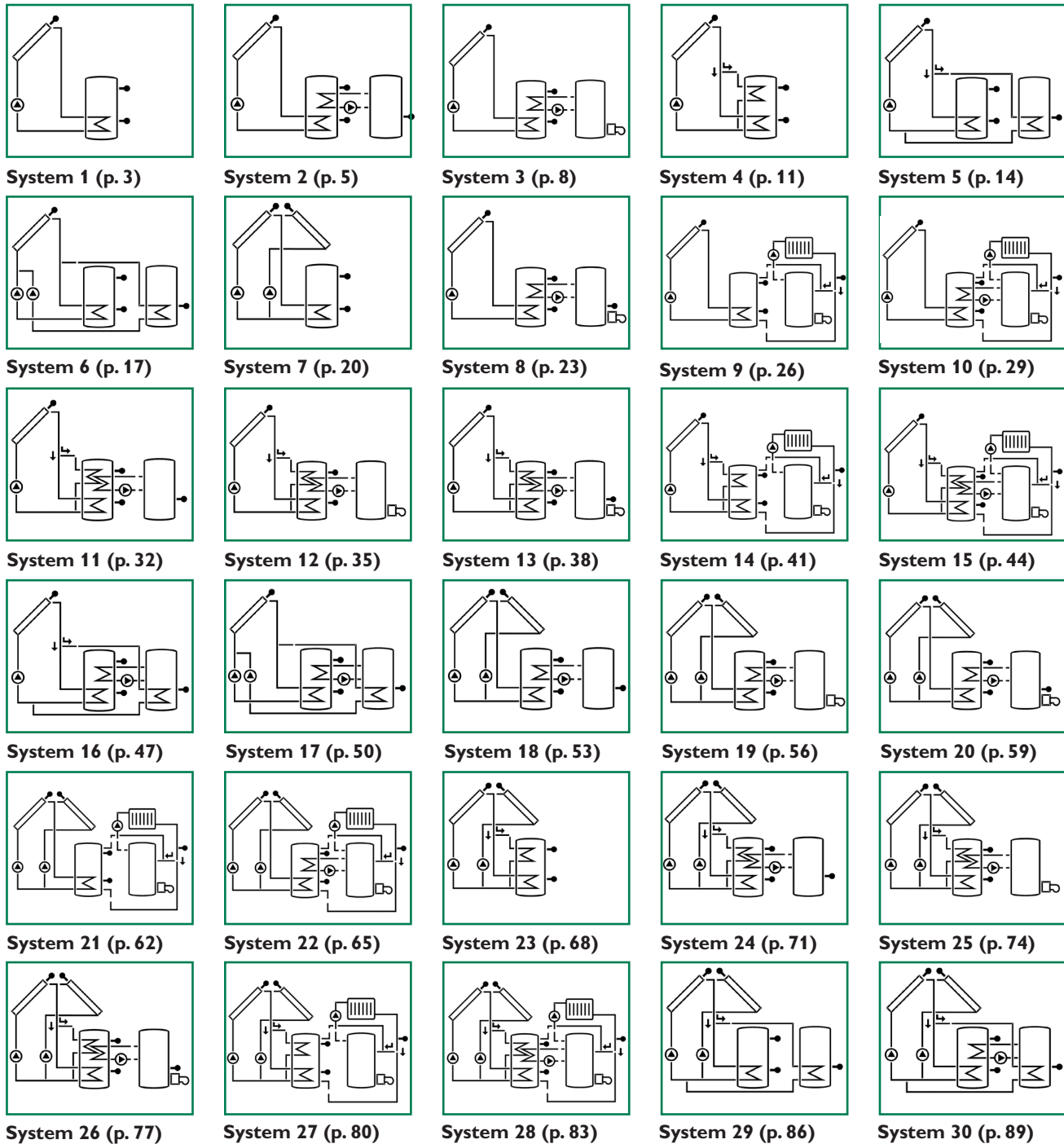
# DeltaSol® E



System  
description

## Overview of systems

The controller is pre-programmed for 30 basic systems. For these systems and hydraulic variants, the relay and sensor allocation has to be carried out as follows.



### Important note

We took a lot of care with the texts and drawings of this manual and to the best of our knowledge and consent. As faults can never be excluded, please note:

Your own calculations and plans, under consideration of the current standards and DIN-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. They can only be used at your own risk. No liability is assumed for incorrect, incomplete or false information and / or the resulting damages.

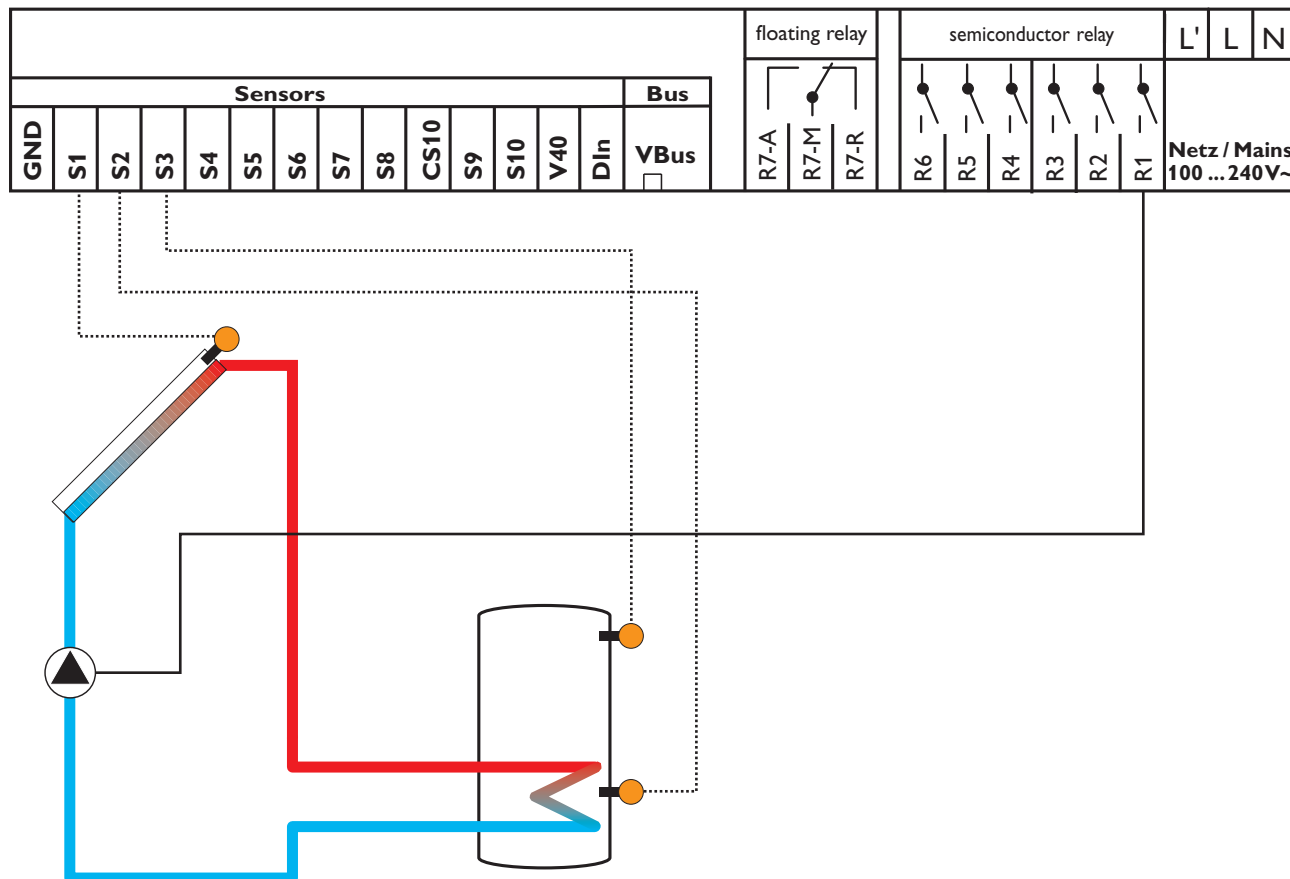
Subject to technical change. Errors excepted.

## System 1

### System description:

The controller calculates the temperature difference between collector sensor S1 and store sensor S2. If the difference is larger than or identical to the adjusted switch-on temperature difference, the pump (P1) will be switched on

and the store will be loaded until the switch-off temperature difference or the maximum store temperature is reached. Sensor S3 can optionally be connected for measurement purposes.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3			R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3			S3
Sen. 4			S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			Din
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	001	Adjust the desired schematic (e.g. schematic 28)
System	1		System 1 for one collector

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T$ -Stmax	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

System / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

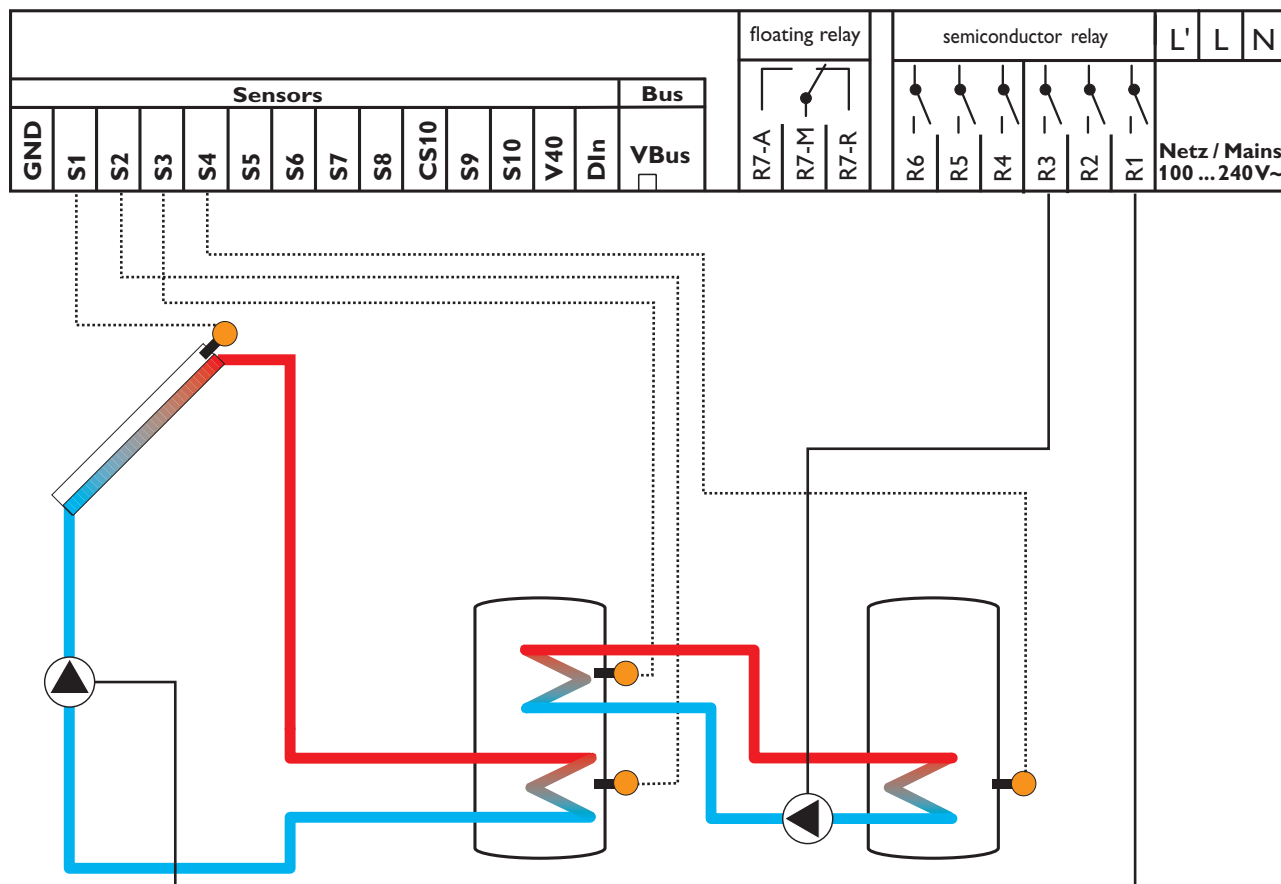
Expert			
Description	Factory setting	Change to	Note
$\Delta T$ too high	Yes		In this menu, the messages „ $\Delta T$ too high“ and „Non-ret. valve“ can be switched off.
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney	No		
<b>Sensors</b>	<b>Expert / Sensors</b>		
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>	<b>Expert / Relay</b>		
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>	<b>Expert / Language</b>		
German			
English			
français			
castellano			
italiano			

## System 2

### System description:

The controller calculates the temperature difference between collector sensor S1 and store sensor S2. If the difference is larger than or identical to the adjusted switch-on temperature difference, pump P1 will be switched on and the store will be loaded until the switch-off temperature

difference or the maximum store temperature is reached. Heat exchange to an existant store (P2) can be carried out via another temperature differential function (S3/S4).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Heat exchange pump	R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Store 1 top, heat exchange	S3
Sen. 4	S4	Store 2 bottom, heat exchange	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	002	Adjust the desired schematic (e.g. schematic 28)
System	1		System 1 for one collector and one store

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T$ -Stmax	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangements / Options			
Description	Factory setting	Change to	Note
Thermo. 2	No	Yes	Thermostat function (maximum limitation) for heat exchange
$\Delta T$ -Func.5	No	Yes	Differential function for afterheating
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T$ -Func.5)

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th2on	40	55	Th2on
Th2off	45	60	Th2off
$\Delta T$ 5on	5,0		Switch-on difference for the heat exchange pump
$\Delta T$ 5off	3,0		Switch-off difference for the heat exchange pump
<b>Timer 1</b>			<b>See Arrangement / Adjustment values / Timer 1</b>

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th2	4	Do not change the value as the sensor has already been correctly allocated.	
Sen1- $\Delta T$ 5	3		
Sen2- $\Delta T$ 5	4		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off.
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS-Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
⋮			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

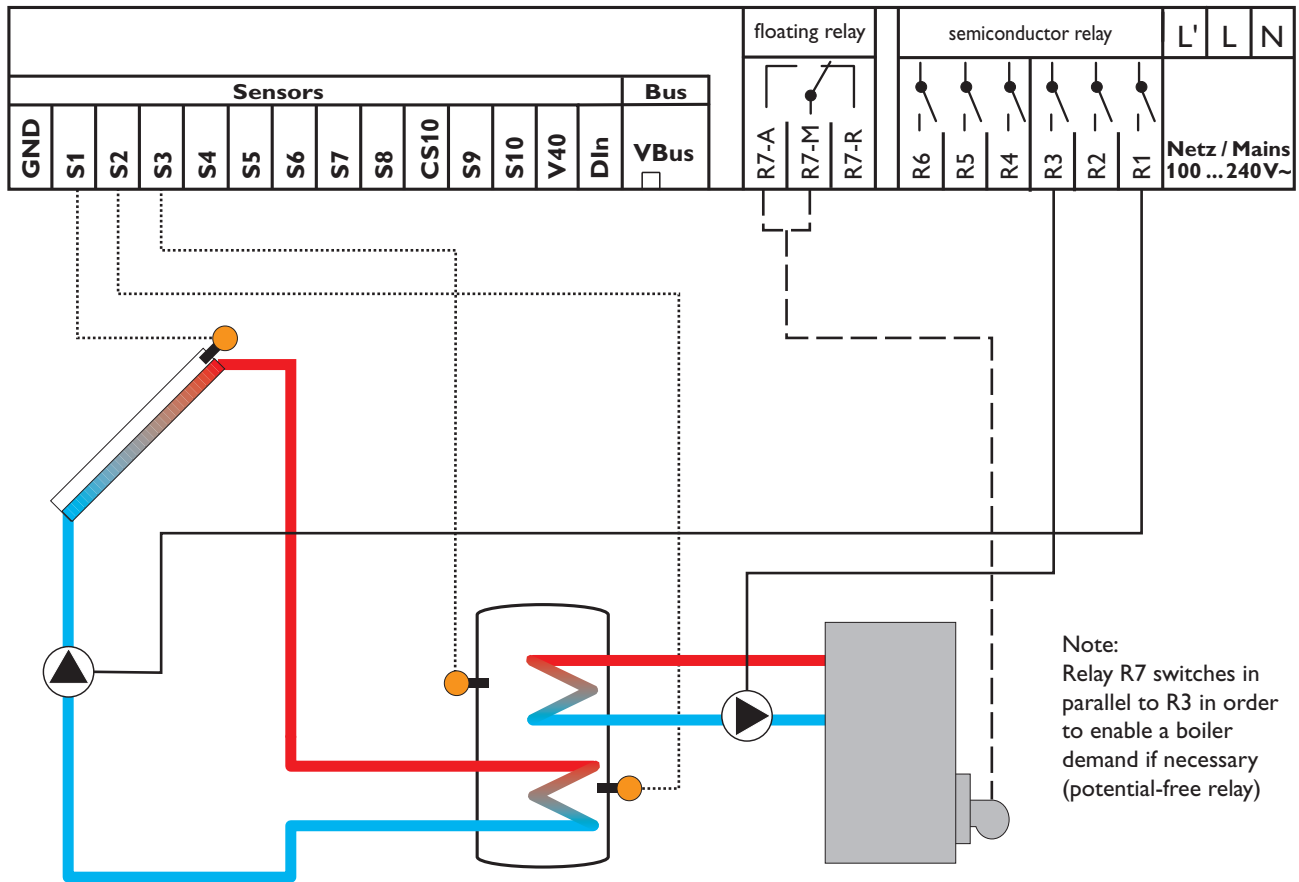
## System 3

### System description:

The controller calculates the temperature difference between collector sensor S1 and store sensor S2. If the difference is larger than or identical to the adjusted switch-on temperature difference, the pump (P1) will be switched on and the store will be loaded until the switch-off

temperature difference or the maximum store temperature is reached.

Domestic hot water afterheating (P2) can be carried out with a thermostat function (S3).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Boiler pump	R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7	Boiler demand	Potential-free contact	R7-A
Relay 7			R7 R
Relay 7	Boiler demand	Potential-free contact	R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Store 1 top, afterheating	S3
Sen. 4			S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus



Solar / Options			
description	factory setting	change to	note
Schematic	000	003	Adjust the desired schematic (e.g. schematic 28)
System	1		System 1 for one collector and one store
Loading	1		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangements / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function for afterheating
Timer 1	No		In this menu, a timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T$ -Func.5)
Thermo. 9	No	Yes	Thermostat function for afterheating (boiler demand)
Timer 5	No		In this menu, a timer of function block 5 can be activated (Thermo. 9 / 10 and $\Delta T$ -Func.9)

System / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	55	Switch-on temperature for the boiler pump
Th1off	45	60	Switch-off temperature (minimum limitation) for the boiler pump
<b>Timer 1</b>			<b>See Arrangement / Adjustment values / Timer 1</b>
Th9on	40	55	Switch-on temperature for boiler demand
Th9off	45	60	Switch-off temperature for boiler demand
<b>Timer 5</b>			<b>See Arrangement / Adjustment values / Timer 5</b>

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen-Th9	9	3	Sensor S9 is allocated to thermostat function 3.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

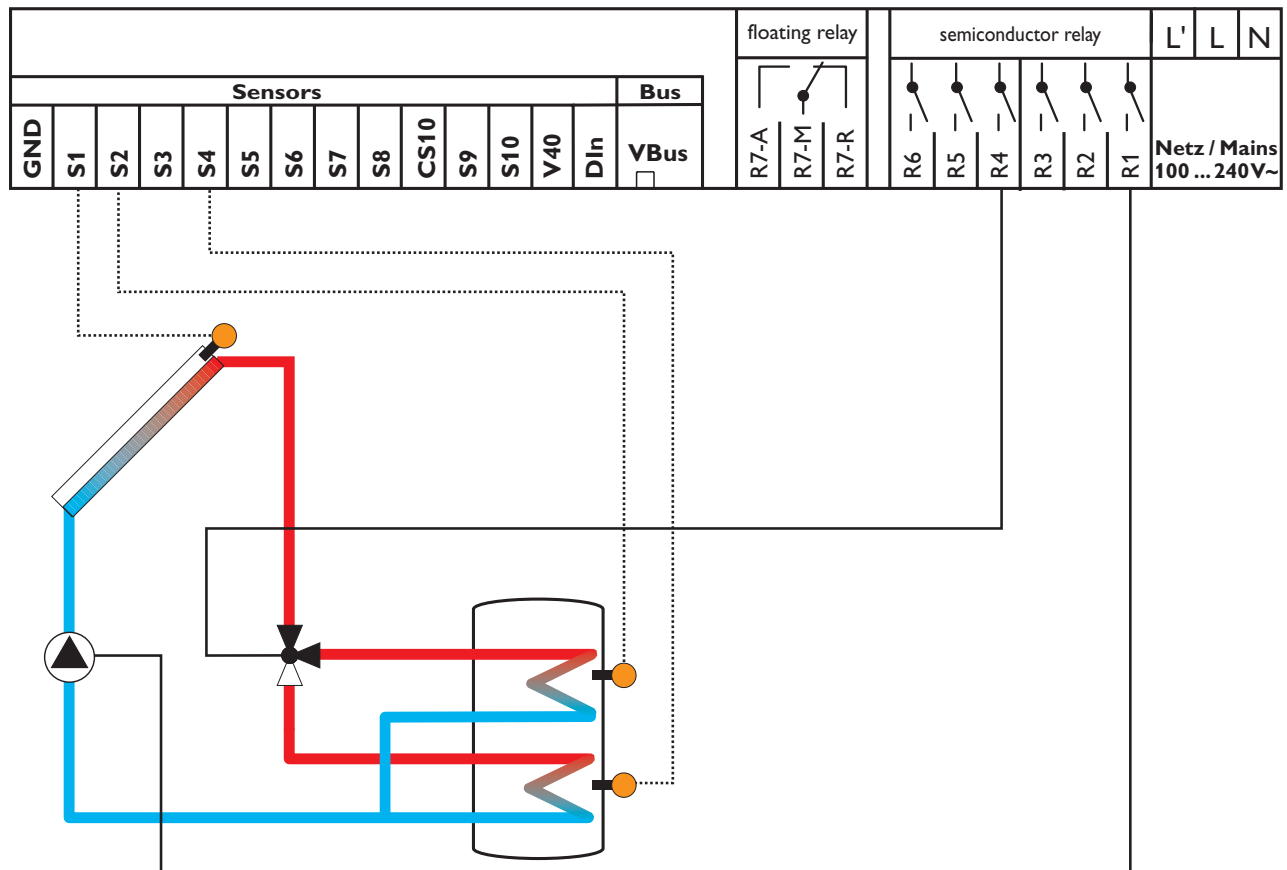
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 4

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated

and the corresponding store zone will be loaded up to the adjusted maximum temperature at most via the valve (V1). The priority logic causes prior loading of the upper zone of the store.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3			S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	004	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

System / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

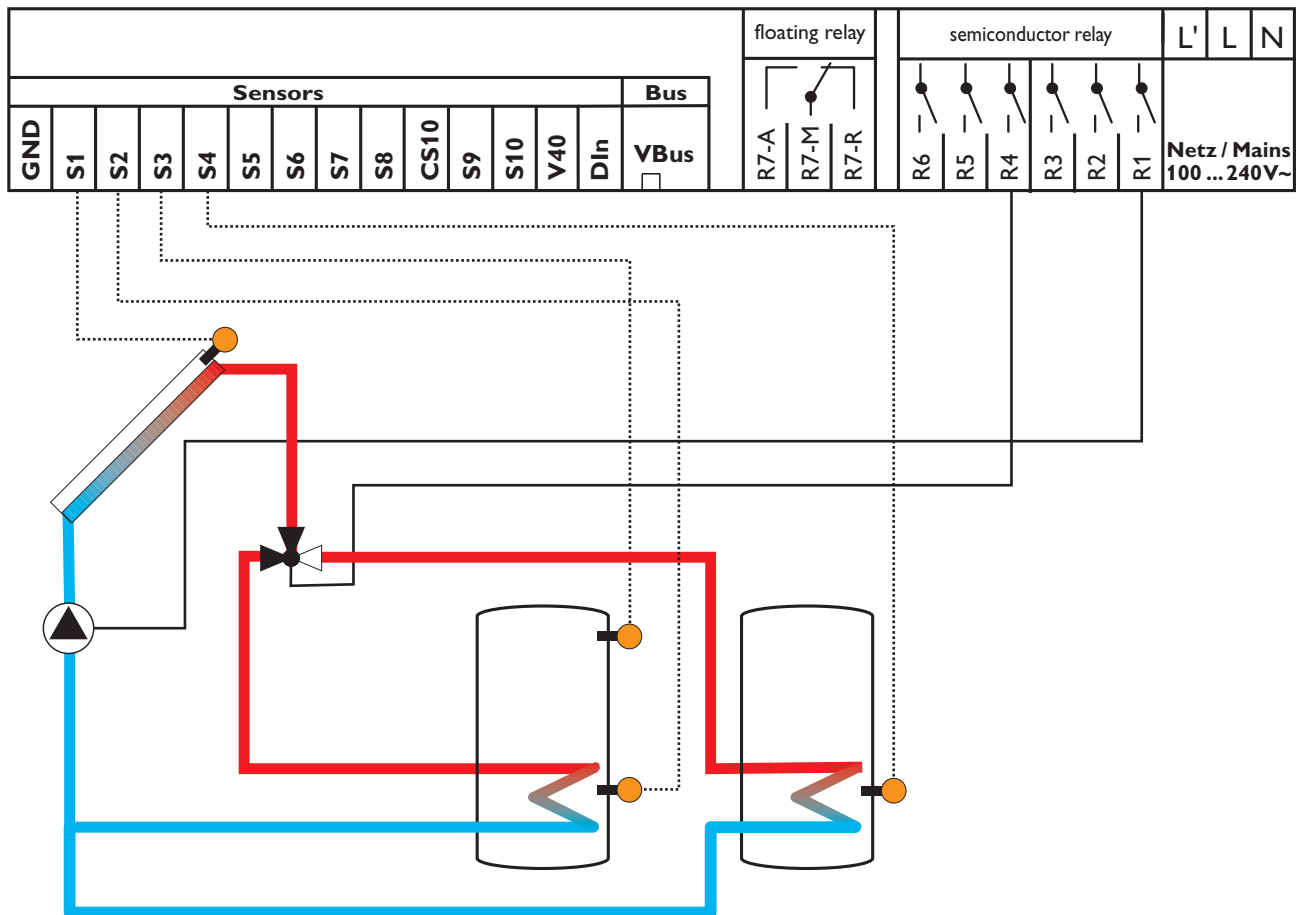
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
:			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 5

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on

temperature differences, the pump (P1) will be activated and the corresponding store will be loaded up to the adjusted maximum temperature at most via the valve (V1).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve store 1 / 2	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Sensor	S3
Sen. 4	S4	Store 2 bottom, solar	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	005	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and two stores
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 bottom.
Tst2max	60		Adjust the desired maximum store temperature for store 2 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 2 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 2 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 2 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1
Priority ST2	2		Non-priority store 2 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 2.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

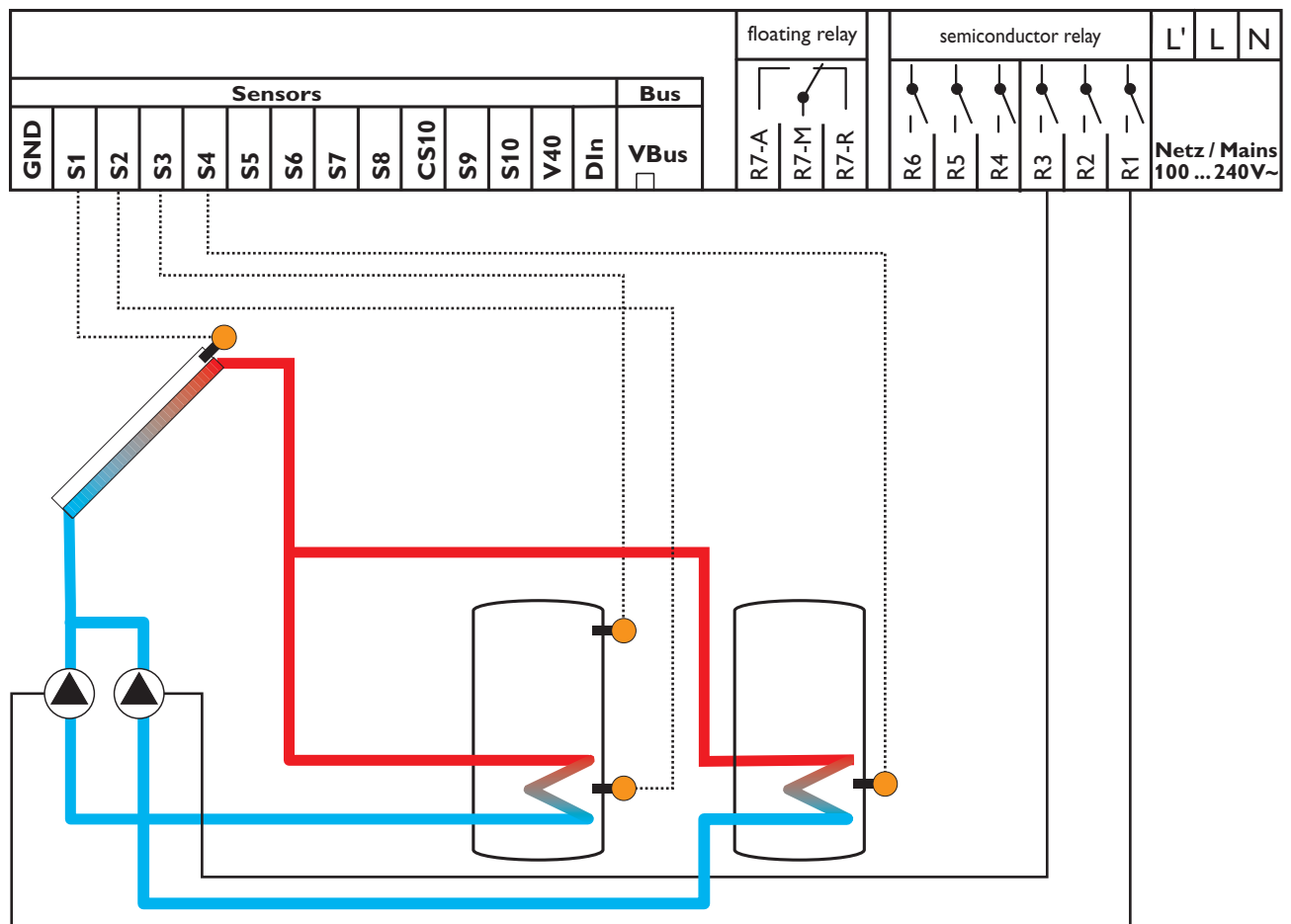


## System 6

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-

on temperature differences, the pump (P1 or P2) will be activated and the corresponding store will be loaded up to the adjusted maximum temperature at most.



Relay output	Description	Note	Terminals
Relay 1	P1	Store 1	R1-A
Relay 2			R2-A
Relay 3	P2	Store 2	R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Sensor	S3
Sen. 4	S4	Store 2 bottom, solar	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	006	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and two stores
Loading	1		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
Tst2max	60		Adjust the desired maximum store temperature for store 2.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 2.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 2.
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 2. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1
Priority ST2	2		Non-priority store 2
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T-St_{max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
$\Delta T-St_{2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 2.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T-Col$	2		The collector rise during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

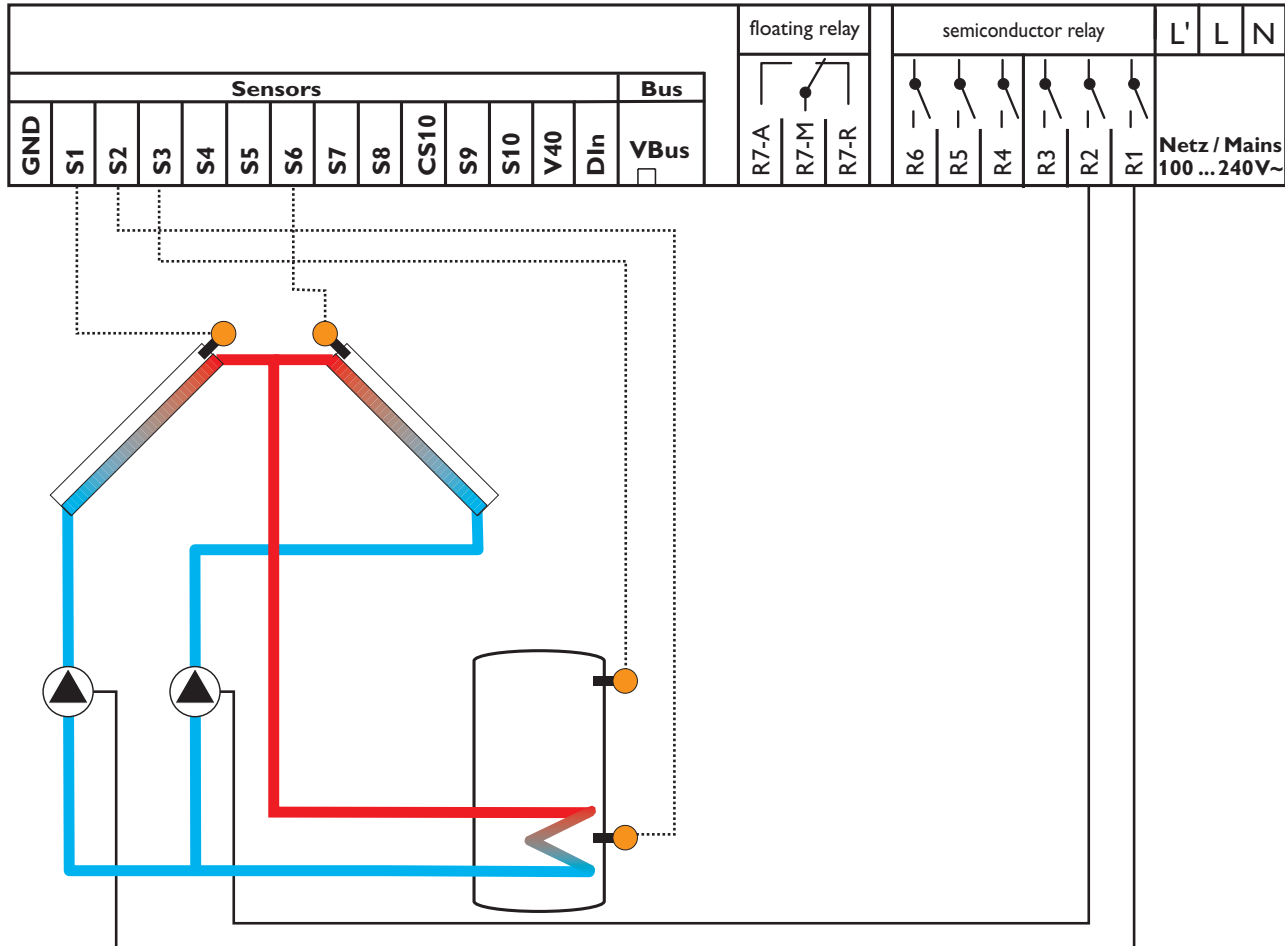
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 7

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperature at store sensor S2. If one of the measured temperature differences is

higher than the adjusted switch-on temperature differences, the corresponding pump (P1, P2) will be activated and the store will be loaded.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3			R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1 solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Sensor	S3
Sen. 4			S4
Sen. 5			S5
Sen. 6	S6	Collector 2 solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	007	Adjust the desired schematic (e.g. schematic 28)
System	1	2	System 2 for two collectors and one store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

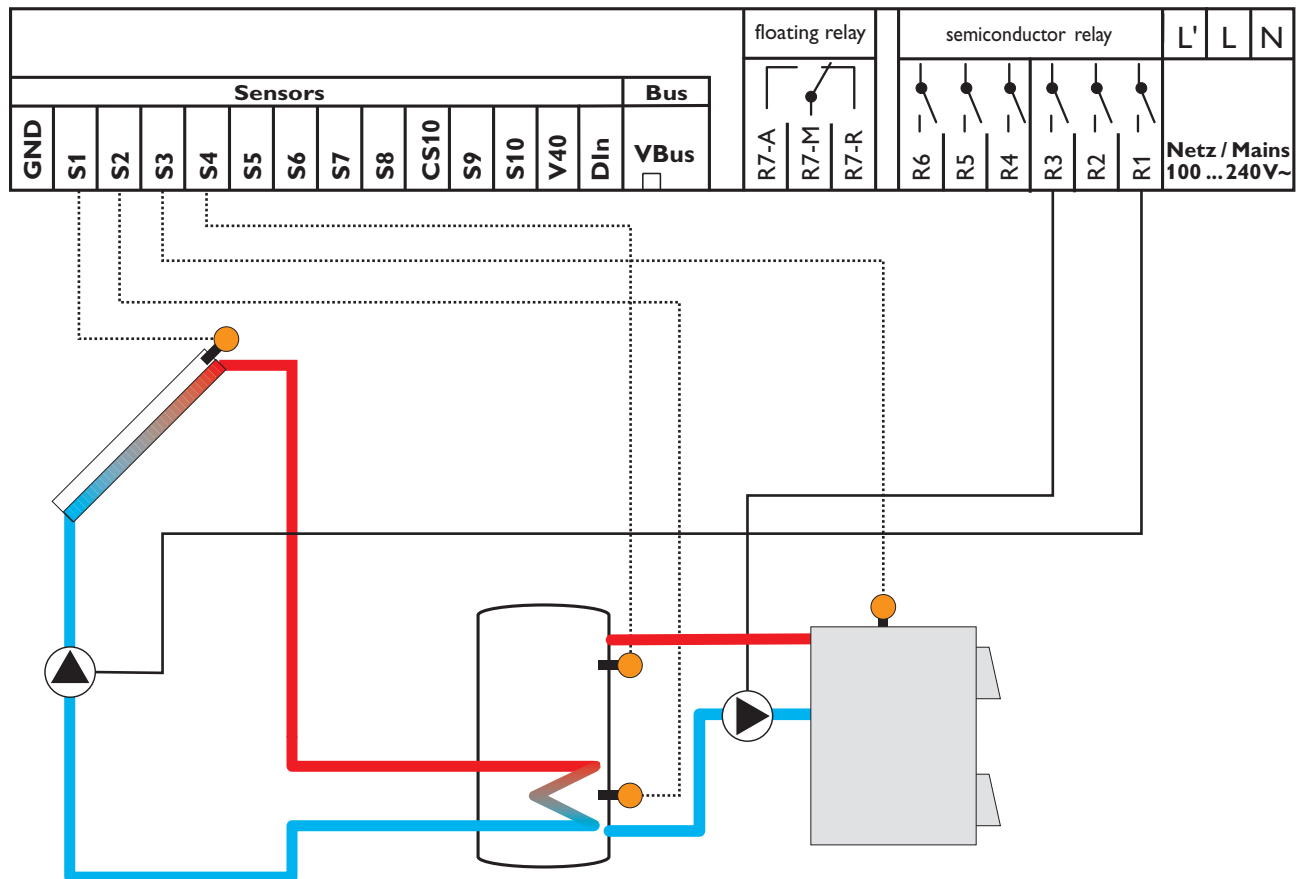
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
⋮			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 8

### System description:

The controller calculates the temperature difference between collector sensor S1 and store sensor S2. If the difference is larger than or identical to the adjusted switch-on temperature difference, the pump (P1) will be switched on

and the store will be loaded until the switch-off temperature difference or the maximum store temperature is reached. Via another temperature differential function (S3/S4), afterheating of the store can be carried out with a solid fuel boiler (P2).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Solid fuel boiler pump	R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Solid fuel boiler, heat source $\Delta T$ -Func.5	S3
Sen. 4	S4	Store 1 top, heat sink $\Delta T$ -Func.5	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	008	Adjust the desired schematic (e.g. schematic 28)
System	1		System 1 for one collector and one store

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T$ -stmax	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Solar / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function (minimum limitation) for solid fuel boiler
Thermo. 2	No	Yes	Thermostat function (maximum limitation) for the store
$\Delta T$ -Func.5	No	Yes	Differential function for the solid fuel boiler
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T$ -Func.5)

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	60	Switch-on temperature (minimum limitation) for the solid fuel boiler pump
Th1off	45	58	Switch-off difference for the solid fuel boiler pump
Th2on	40	55	Switch-off difference for the solid fuel boiler pump
Th2off	45	60	Switch-off temperature (maximum limitation) for the solid fuel boiler pump
$\Delta T$ 5on	5,0		Switch-on difference for the solid fuel boiler pump
$\Delta T$ 5off	3,0		Switch-off difference for the solid fuel boiler pump
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen-Th2	4		
Sen1- $\Delta T$ 5	3		
Sen2- $\Delta T$ 5	4		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed



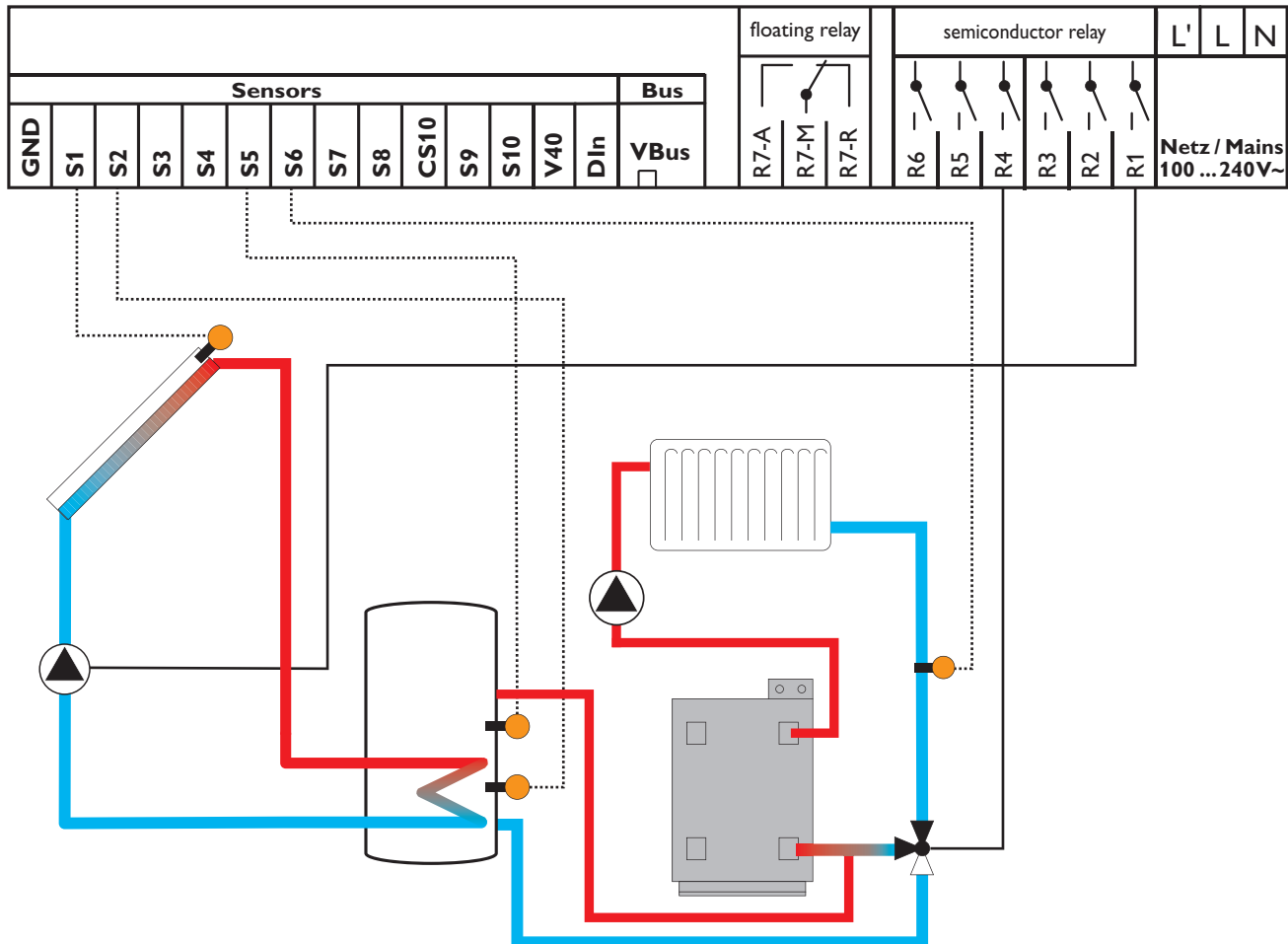
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pump can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 9

### System description:

The controller calculates the temperature difference between collector sensor S1 and store sensor S2. If the difference is larger than or identical to the adjusted switch-on temperature difference, pump P1 will be switched on and the store will be loaded until the switch-off temperature

difference or the maximum store temperature is reached. With another temperature differential function (S5/S6) heating circuit return preheating (heating circuit backup) is possible via V1.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve, return preheating	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3			S3
Sen. 4			S4
Sen. 5	S5	Store 1 center, return preheating	S5
Sen. 6	S6	Heating return, return preheating	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	009	Adjust the desired schematic (e.g. schematic 28)
System	1		System 1 for one collector and one store

Solar / Adjustment values			
description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T-S_{max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangements / Options			
Description	Factory setting	Change to	Note
$\Delta T-Func.6$	No	Yes	Differential function for return preheating

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
$\Delta T_{6on}$	5,0		Switch-on difference for return preheating
$\Delta T_{6off}$	3,0		Switch-off difference for return preheating

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen1- $\Delta T_6$	5	Do not change the value as the sensor has already been correctly allocated.	
Sen2- $\Delta T_6$	6		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

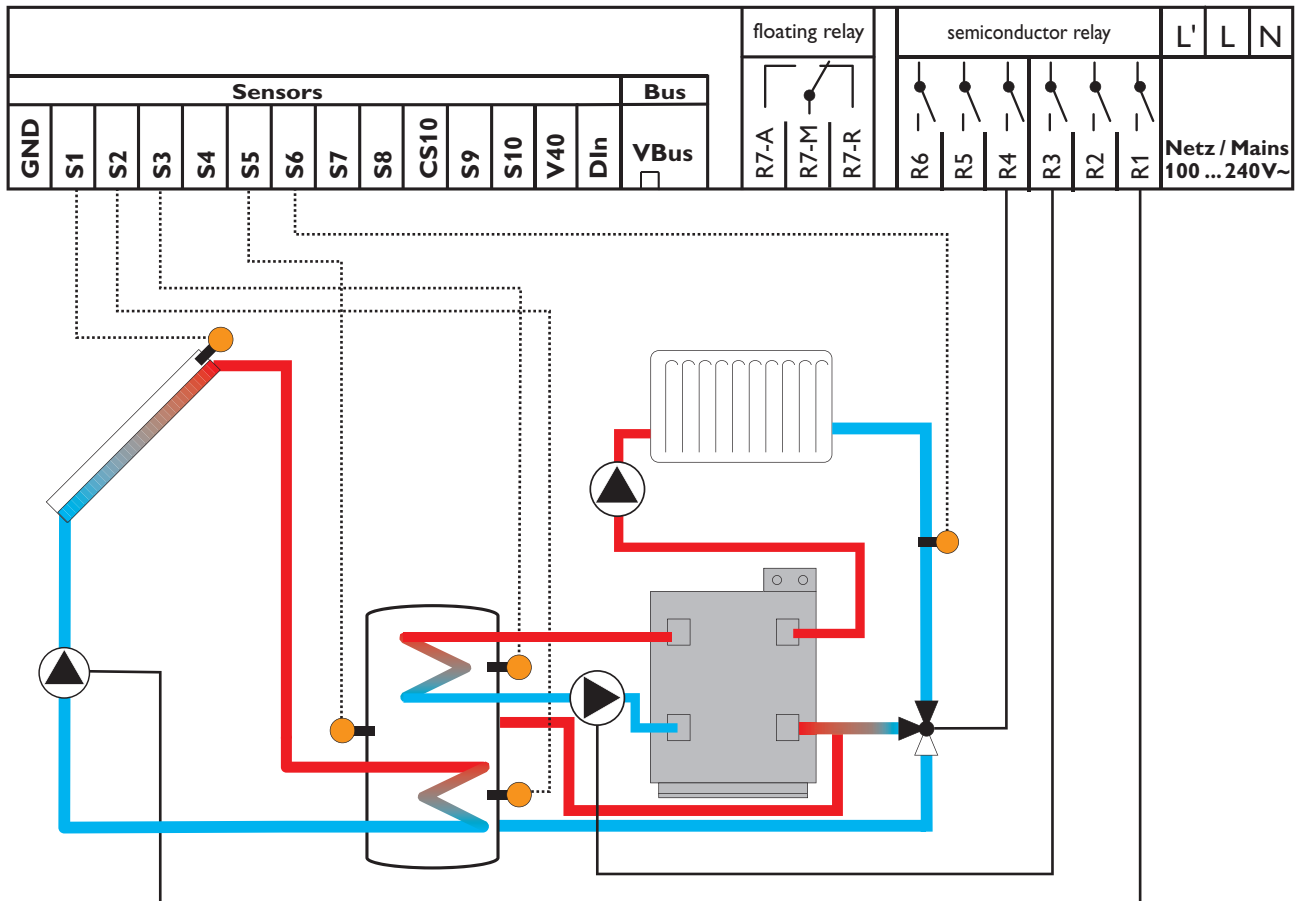
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b> <span style="float: right;"><b>Expert / Sensors</b></span>			
CS-Type	E		Adjust the CS-type, with the solar cell connected. A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
.			
Sensor 10	0,0		
<b>Relay</b> <span style="float: right;"><b>Expert / Relay</b></span>			
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b> <span style="float: right;"><b>Expert / Language</b></span>			
German			
English			
français			
castellano			
italiano			

## System 10

### System description:

The controller calculates the temperature difference between collector sensor S1 and store sensor S2. If the difference is larger than or identical to the adjusted switch-on temperature difference, pump P1 will be switched on and the store will be loaded until the switch-off temperature

difference or the maximum store temperature is reached. Via another temperature differential function (S5/S6) heating circuit backup (heating circuit return preheating) is possible via V1. Via a thermostat function (S3) domestic hot water afterheating (P2) can be carried out.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Boiler pump	R3-A
Relay 4	V1	3-port valve, return preheating	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Store 1 top, afterheating	S3
Sen. 4			S4
Sen. 5	S5	Store 1 center, return preheating	S5
Sen. 6	S6	Heating return, return preheating	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	010	Adjust the desired schematic (e.g. schematic 28)
System	1		System 1 for one collector and one store

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo.1	No	Yes	Thermostat function for afterheating
$\Delta T_{-Func.6}$	No	Yes	Differential function for return preheating

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	55	Switch-on temperature for afterheating
Th1off	45	60	Switch-off temperature (maximum limitation) for afterheating
<b>Timer 1</b>			<b>See Arrangement / Adjustment values / Timer 1</b>
$\Delta T_{6on}$	5,0		Switch-on difference for return preheating
$\Delta T_{6off}$	3,0		Switch-off difference for return preheating

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen1- $\Delta T_6$	5		
Sen2- $\Delta T_6$	6		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
⋮			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

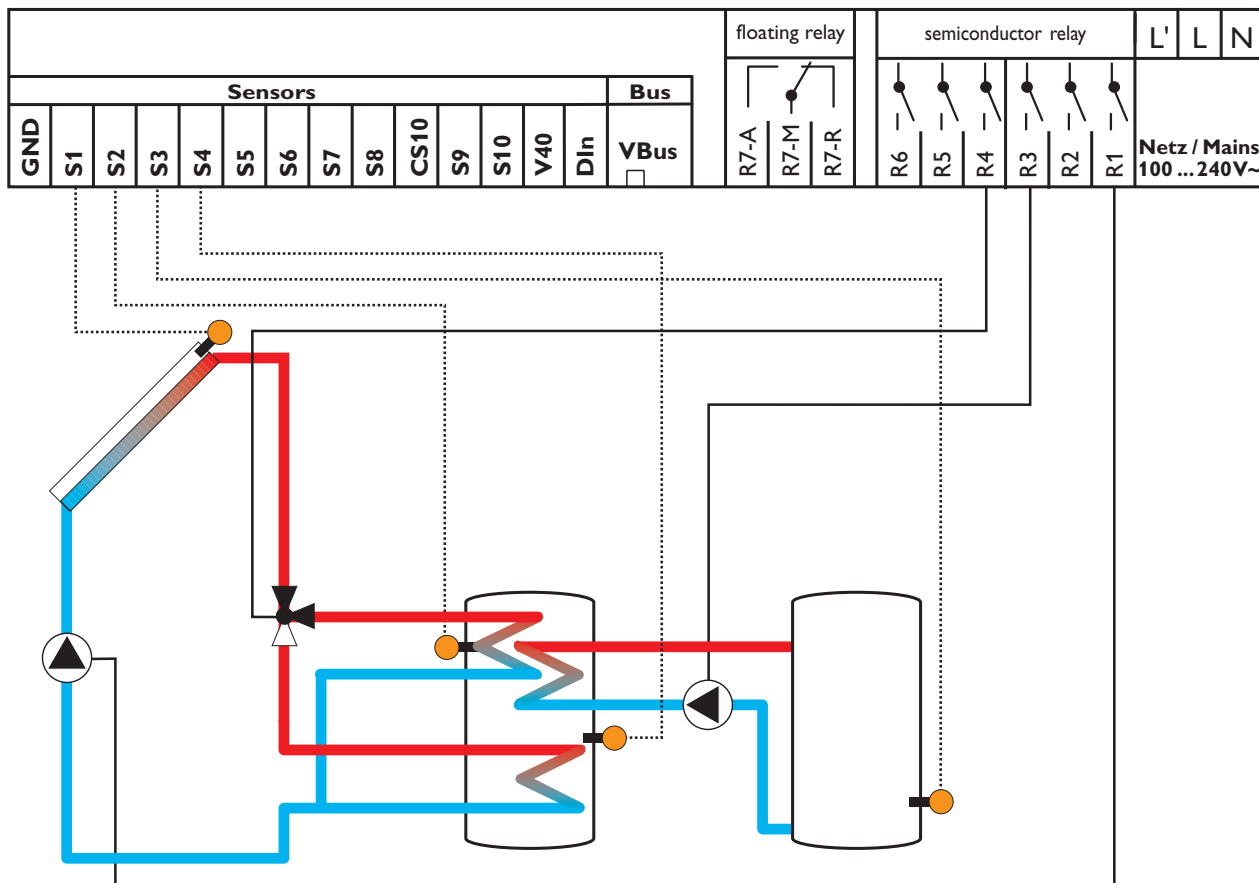
## System 11

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated and the corresponding store zone will be loaded up to the adjusted maximum temperature at most via the valve (V1).

The priority logic causes prior loading of the upper zone of the store.

Heat exchange control to an existant store (P2) can be carried out via another temperature differential function (S2 heat source/S3 heat sink).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Heat exchange pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3	S3	Store 2 bottom, heat exchange	S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus



Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	011	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function (maximum limitation) for heat exchange
$\Delta T_{-Func.5}$	No	Yes	Differential function for heat exchange
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	55	Switch-on temperature for the heat exchange pump
Th1off	45	60	Switch-off temperature (maximum limitation) for the heat exchange pump
$\Delta T_{5on}$	5,0		Switch-on difference for the heat exchange pump
$\Delta T_{5off}$	3,0		Switch-off difference for the heat exchange pump
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen1- $\Delta$ T5	3	2	Sensor S2 is used as the heat source sensor and is allocated to differential function 5.
Sen2- $\Delta$ T5	4	3	Sensor S3 is used as the heat sink sensor and is allocated to differential function 5.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
$\Delta$ T too high	Yes		In this menu, the messages „ $\Delta$ T too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

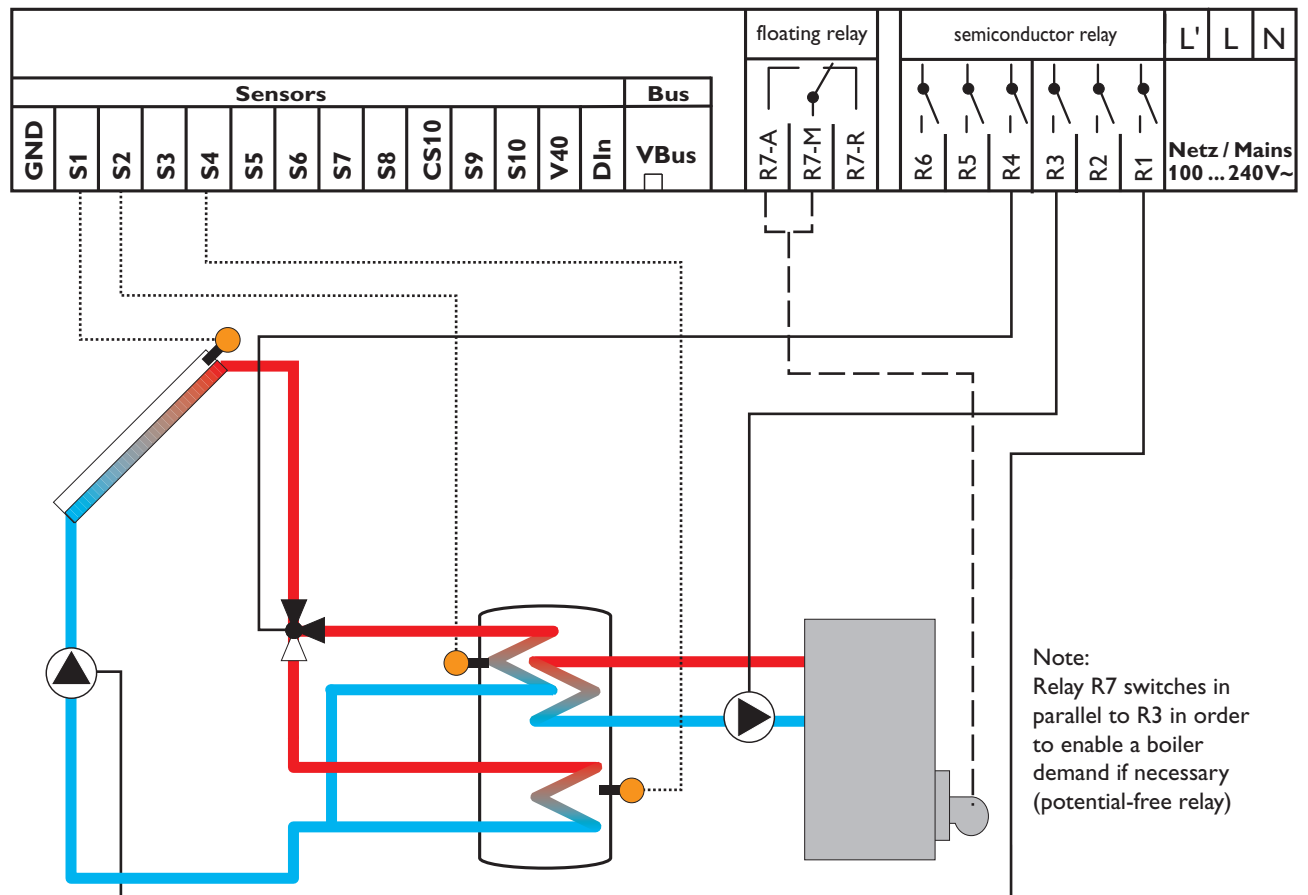
## System 12

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated and the corresponding store zone will be loaded up to the

adjusted maximum temperature at most via the valve (V1). The priority logic causes prior loading of the upper zone of the store.

Domestic hot water afterheating (P2) can be carried out with a thermostat function (S3).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Boiler pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7	Boiler demand	Potential-free contact	R7-A
Relay 7			R7 R
Relay 7	Boiler demand	Potential-free contact	R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 top, solar afterheating	S2
Sen. 3			S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	012	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 2 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 2	No	Yes	Thermostat function for afterheating
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )
Thermo. 9	No	Yes	Thermostat function for afterheating (boiler demand)
Timer 5	No		In this menu, the timer of function block 5 can be activated (Thermo. 9 / 10 and $\Delta T_{-Func.9}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th2on	40	55	Switch-on temperature for afterheating
Th2off	45	60	Switch-off temperature (maximum limitation) for afterheating
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		
Th9on	40	55	Switch-on difference for boiler demand
Th9off	45	60	Switch-off difference for boiler demand
<b>Timer 5</b>	<b>See Arrangement / Adjustment values / Timer 5</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th2	4	2	Sensor S2 is allocated to thermostat function 2.
Sen-Th9	9	2	Sensor S2 is allocated to thermostat function 9.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		

Expert / Sensors			
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		

Expert / Relay			
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		

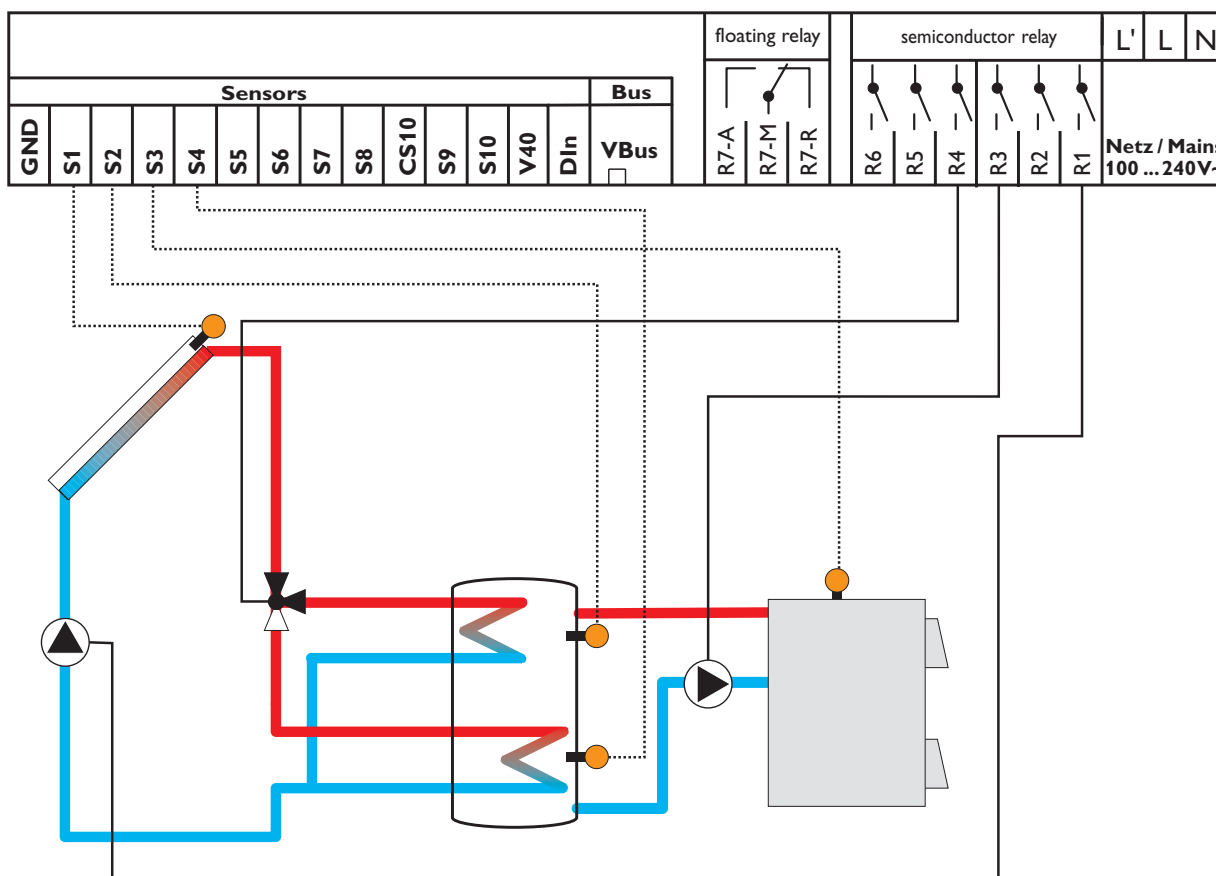
Expert / Language			
German			
English			
français			
castellano			
italiano			

## System 13

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated and the corresponding store zone will be loaded up to the ad-

justed maximum temperature via the valve (V1). The priority logic causes prior loading of the upper zone of the store. Via another temperature differential function (S3/S4), after heating of the store can be carried out with a solid fuel boiler (P2).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Solid fuel boiler pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 top,	S2
Sen. 3	S3	Solid fuel boiler, heat source $\Delta T$ -Func.5	S3
Sen. 4	S4	Store 1 bottom, solar, Heat sink $\Delta T$ -Func.5	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	013	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo.1	No	Yes	Thermostat function (minimum limitation) for solid fuel boiler
Thermo.2	No	Yes	Thermostat function (maximum limitation) for the store
$\Delta T_{-Func.5}$	No	Yes	Differential function for the solid fuel boiler
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo.1 / 2 and $\Delta T_{-Func.5}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	60	Switch-on temperature (minimum limitation) for the solid fuel boiler pump
Th1off	45	58	Switch-off temperature for the solid fuel boiler pump
Th2on	40	55	Switch-on temperature for the solid fuel boiler pump
Th2off	45	60	Switch-off temperature (maximum limitation) for the solid fuel boiler pump
$\Delta T_{5on}$	5,0		Switch-on difference for the solid fuel boiler pump
$\Delta T_{5off}$	3,0		Switch-off difference for the solid fuel boiler pump
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen-Th2	4		
Sen1- $\Delta$ T5	3		
Sen2- $\Delta$ T5	4		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
$\Delta$ T too high	Yes		In this menu, the messages „ $\Delta$ T too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pump can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			



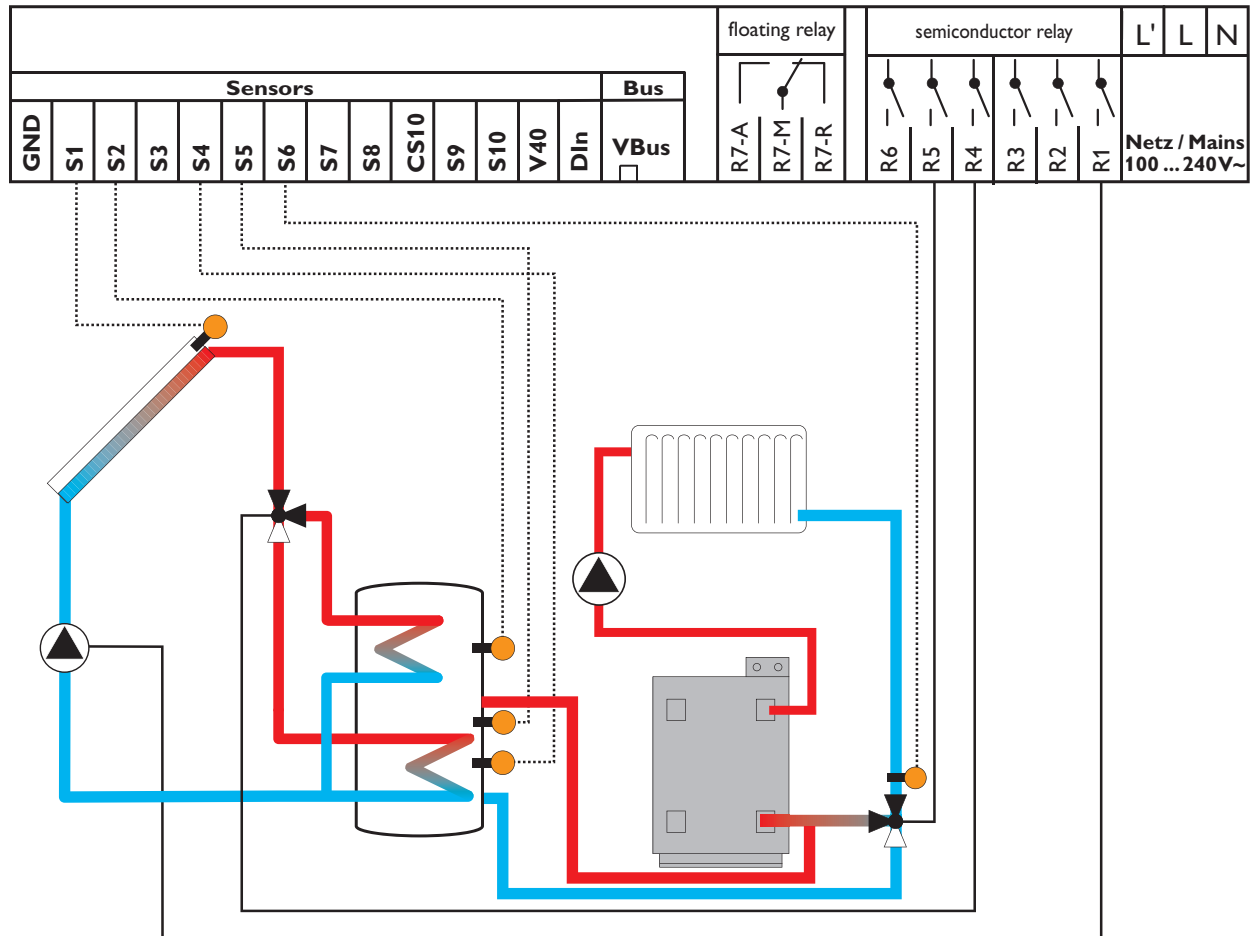
## System 14

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated and the corresponding store zone will be loaded up to the adjusted maximum temperature at most via the valve (V1).

The priority logic causes prior loading of the upper zone of the store.

With another temperature differential function (S5 heat source / S6 heat sink) heating circuit return preheating is possible via V2.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5	V2	3-port valve, return preheating	R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3			S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5	S5	Store center, return preheating	S5
Sen. 6	S6	Heating return, return preheating	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	014	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)

Arrangement / Options			
Description	Factory setting	Change to	Note
$\Delta T_{-Func.7}$	No	Yes	Differential function for return preheating

System / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
$\Delta T_{7on}$	5,0		Switch-on difference for return preheating
$\Delta T_{7off}$	3,0		Switch-off difference for return preheating

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen1- $\Delta$ T7	5	Do not change the value as the sensor has already been correctly allocated.	
Sen2- $\Delta$ T7	6		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
$\Delta$ T too high	Yes		In this menu, the messages „ $\Delta$ T too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

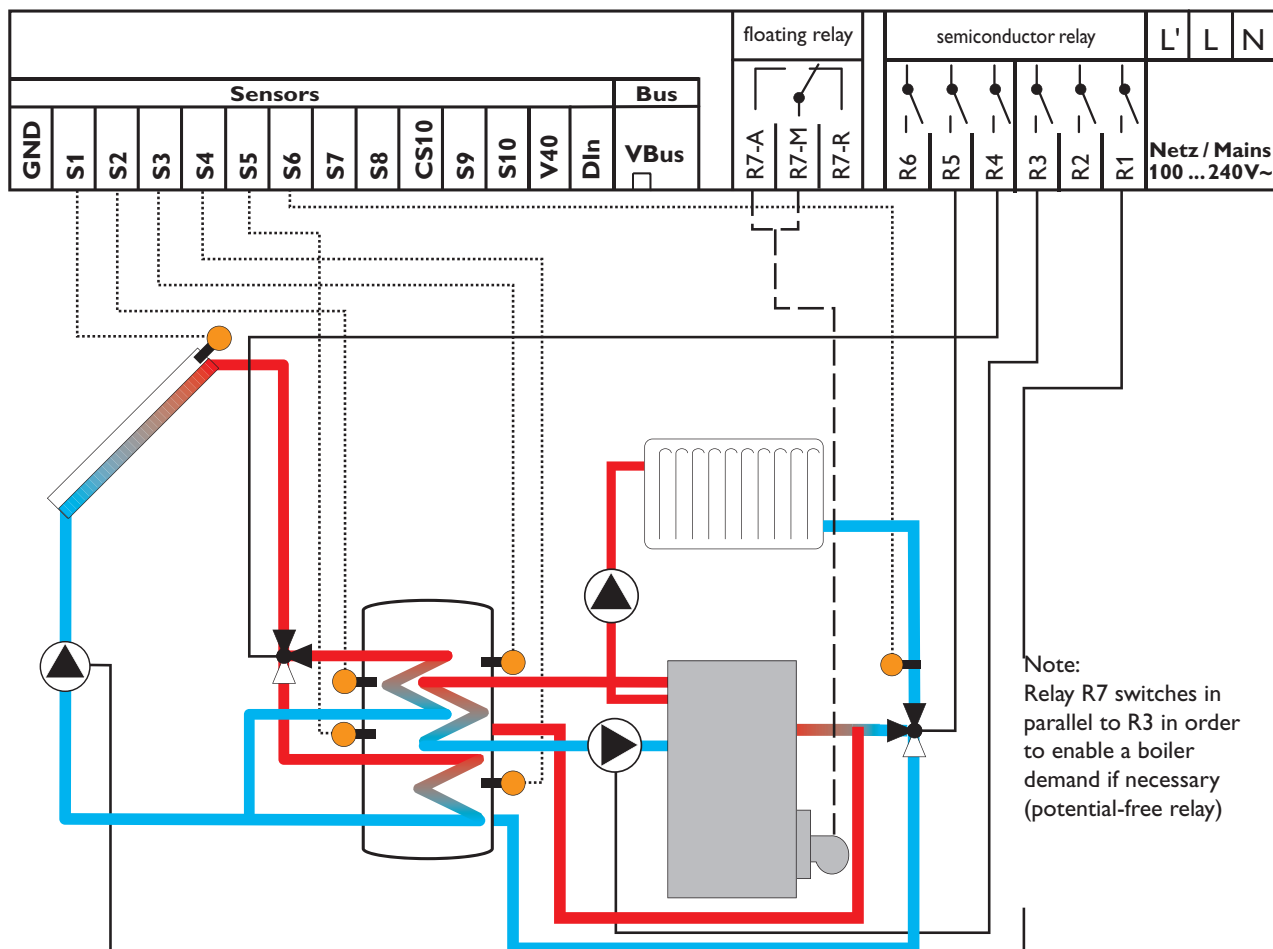
## System 15

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated and the corresponding store zone will be loaded up to the adjusted maximum temperature at most via the valve (V1).

The priority logic causes prior loading of the upper zone of the store.

With another temperature differential function (S5 heat source / S6 heat sink) heating circuit return preheating is possible via V2. With a thermostat function (S3) domestic hot water afterheating (P2) can be carried out.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Boiler pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5	V2	3-port valve, return preheating	R5-A
Relay 6			R6-A
Relay 7	Boiler demand	Potential-free contact	R7-A
Relay 7			R7 R
Relay 7	Boiler demand	Potential-free contact	R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3	S3	Boiler, afterheating	S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5	S5	Store center, return preheating	S5
Sen. 6	S6	Heating return, return preheating	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	015	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T\text{-}St_{max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T\text{-}St_{2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T\text{-}Col$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function for afterheating
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T\text{-}Func.5$ )
$\Delta T\text{-}Func.7$	No	Yes	Differential function for return preheating
Thermo. 9	No	Yes	Thermostat function for afterheating (boiler demand)
Timer 5	No		In this menu, the timer of function block 5 can be activated (Thermo. 9 / 10 and $\Delta T\text{-}Func.9$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	55	Switch-on temperature for afterheating
Th1off	45	60	Switch-off temperature (maximum limitation) for afterheating
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		
ΔT7on	5,0		Switch-on difference for return preheating
ΔT7off	3,0		Switch-off difference for return preheating
Th9on	40	55	Switch-on difference for the boiler pump
Th9off	45	60	Switch-off difference for boiler demand
<b>Timer 5</b>	<b>See Arrangement / Adjustment values / Timer 5</b>		

Arrangement / Expert			
description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen1-ΔT7	5		
Sen2-ΔT7	6		
Sen-Th9	9	3	Sensor S3 is allocated to thermostat function 9.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

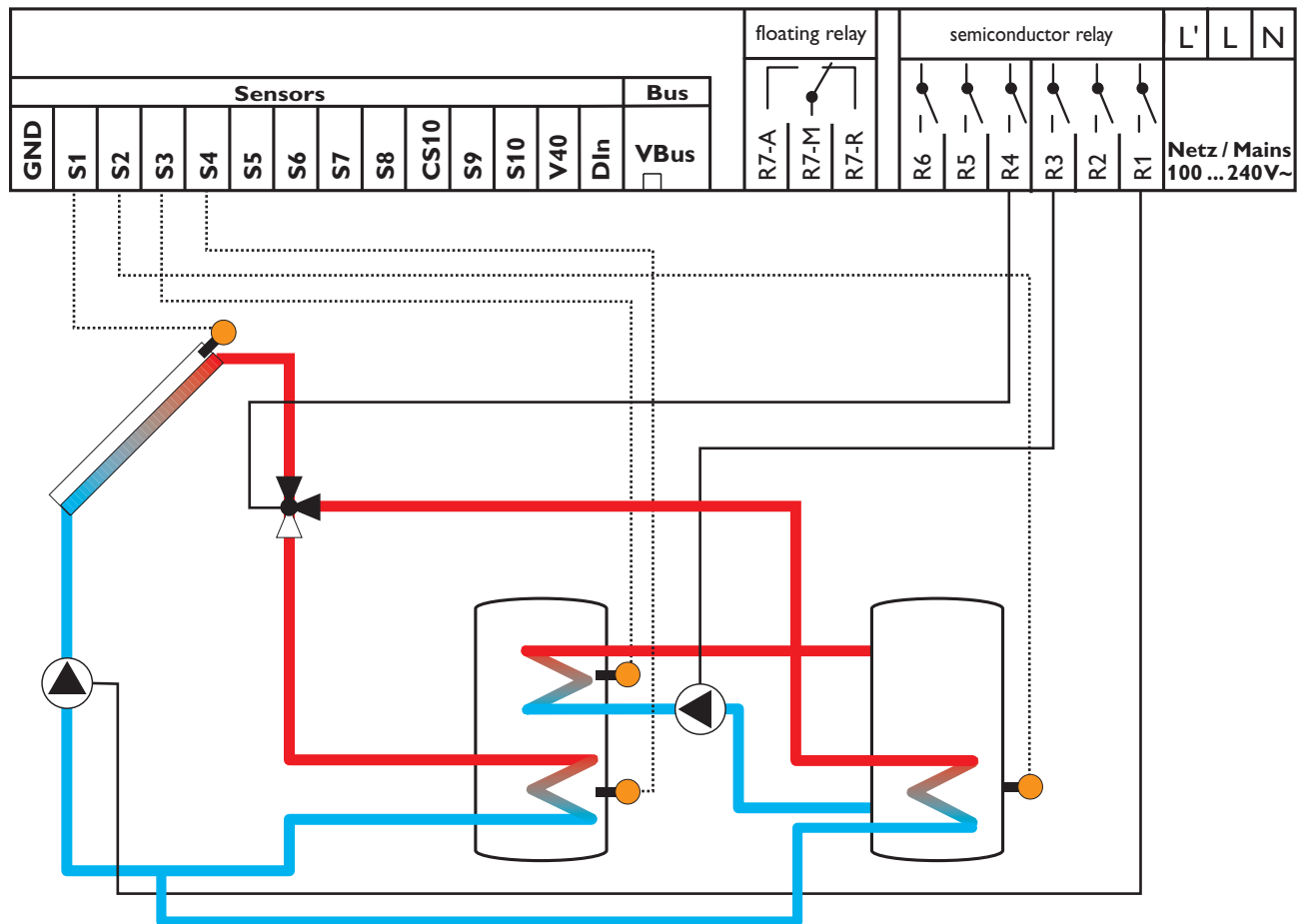
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>	<b>Expert / Sensors</b>		
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>	<b>Expert / Relay</b>		
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>	<b>Expert / Language</b>		
German			
English			
français			
castellano			
italiano			

## System 16

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated and the corresponding store will be loaded up to the adjusted

maximum temperature via the valve (V1). Heat exchange control to store 1 (P2) can be carried out using another temperature differential function (S3 heat source/S2 heat sink).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump	R1-A
Relay 2			R2-A
Relay 3	P2	Heat exchange pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Store 2 top, heat exchange	S3
Sen. 4	S4	Store 2 bottom, solar	S4
Sen. 5			S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	016	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 3 for one collector and two stores
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 bottom.
Tst2max	60		Adjust the desired maximum store temperature for store 2 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 2 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 2 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 2 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 bottom
Priority ST2	2		Non-priority store 2 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 2 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo.2	No	Yes	Thermostat function (maximum limitation) for heat exchange
$\Delta T_{-Func.5}$	No	Yes	Differential function for heat exchange
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th2on	40	55	Switch-on temperature for the heat exchange pump
Th2off	45	60	Switch-off temperature (maximum limitation) for the heat exchange pump
$\Delta T_{5on}$	5,0		Switch-on difference for the heat exchange pump
$\Delta T_{5off}$	3,0		Switch-off difference for the heat exchange pump
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		



Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th2	4	2	Sensor S2 is allocated to thermostat function 2.
Sen1-ΔT5	3	Do not change the value as the sensor has already been correctly allocated.	
Sen2-ΔT5	4	2	Sensor S2 is used as the heat sink sensor and is allocated to differential function 5.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

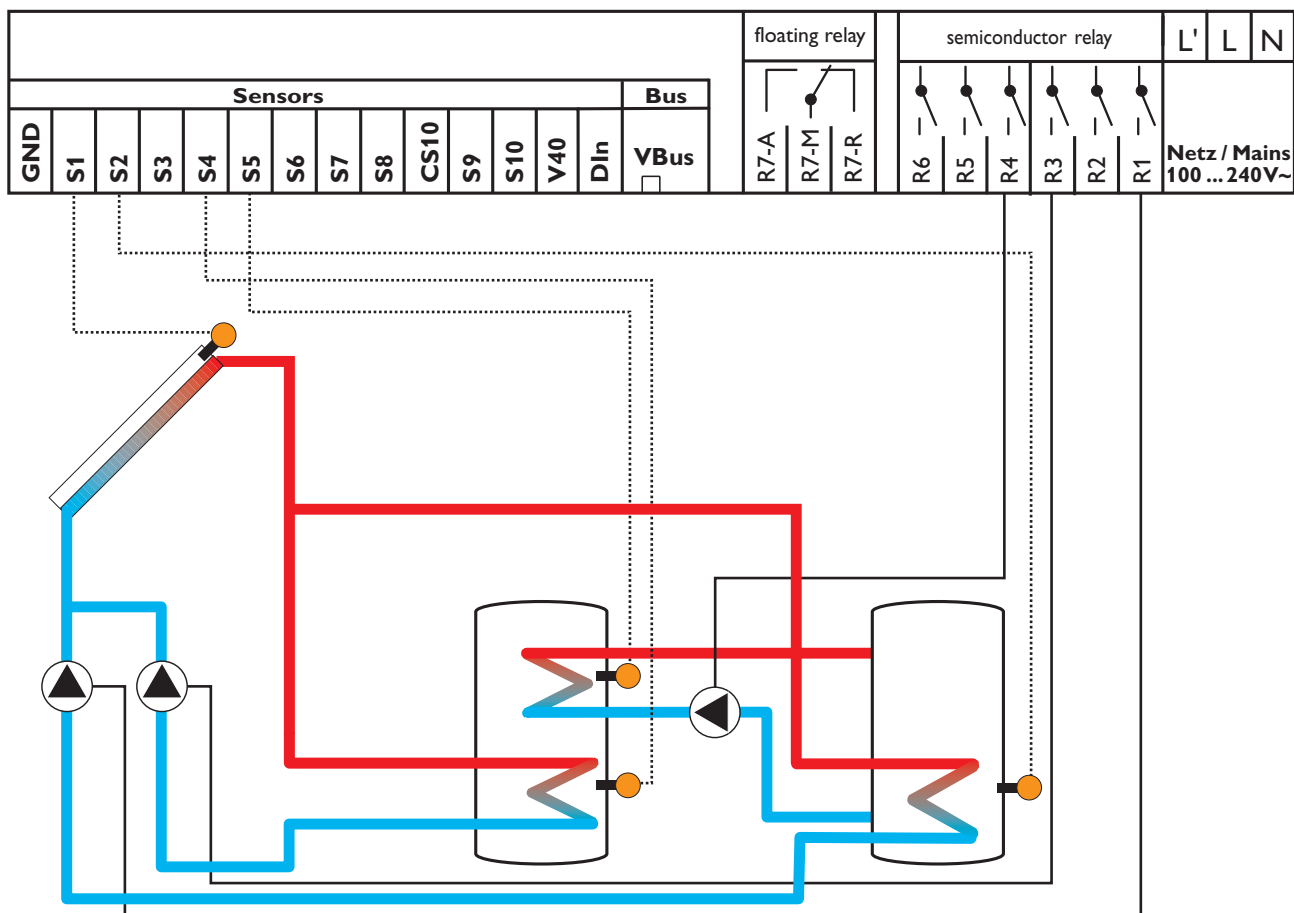
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 17

### System description:

The controller compares the temperature at sensor S1 to the temperatures at sensors S2 and S4. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1 or P2) will be activated and the corresponding store will

be loaded up to the adjusted maximum temperature. Heat exchange between stores 2 and 1 (P3) is possible via another temperature differential function (S5 heat source/ S2 heat sink).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump Store 1	R1-A
Relay 2			R2-A
Relay 3	P2	Solar pump Store 2	R3-A
Relay 4	P3	Heat exchange pump	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector Solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3			S3
Sen. 4	S4	Store 2 bottom, solar	S4
Sen. 5	S5	Store 2 top, heat exchange	S5
Sen. 6			S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	017	Adjust the desired schematic (e.g. schematic 28)
System	1	3	System 1 for one collector and two stores
Loading	1	2	Hydraulic type for two solar pumps
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
Tst2max	60		Adjust the desired maximum store temperature for store 2.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 2.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 2.
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 2 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1
Priority ST2	2		Non-priority store 2
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
$\Delta T-St_{max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
$\Delta T-St_{2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 2.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T-Col$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 4	No	Yes	Thermostat function (maximum limitation) for heat exchange
$\Delta T-Func.6$	No	Yes	Differential function for heat exchange
Timer 2	No		In this menu, the timer of function block 2 can be activated (Thermo. 1 / 2 and $\Delta T-Func.5$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th4on	40	55	Switch-on temperature for the heat exchange pump
Th4off	45	60	Switch-off temperature (maximum limitation) for the heat exchange pump
$\Delta T6on$	5,0		Switch-on difference for the heat exchange pump
$\Delta T6off$	3,0		Switch-off difference for the heat exchange pump
<b>Timer 2</b>			<b>See Arrangement / Adjustment values / Timer 2</b>

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th4	6	2	Sensor S2 is allocated to thermostat function 4.
Sen1-ΔT6	5	Do not change the value as the sensor has already been correctly allocated.	
Sen2-ΔT6	6	2	Sensor S2 is used as the heat sink sensor and is allocated to differential function 6.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

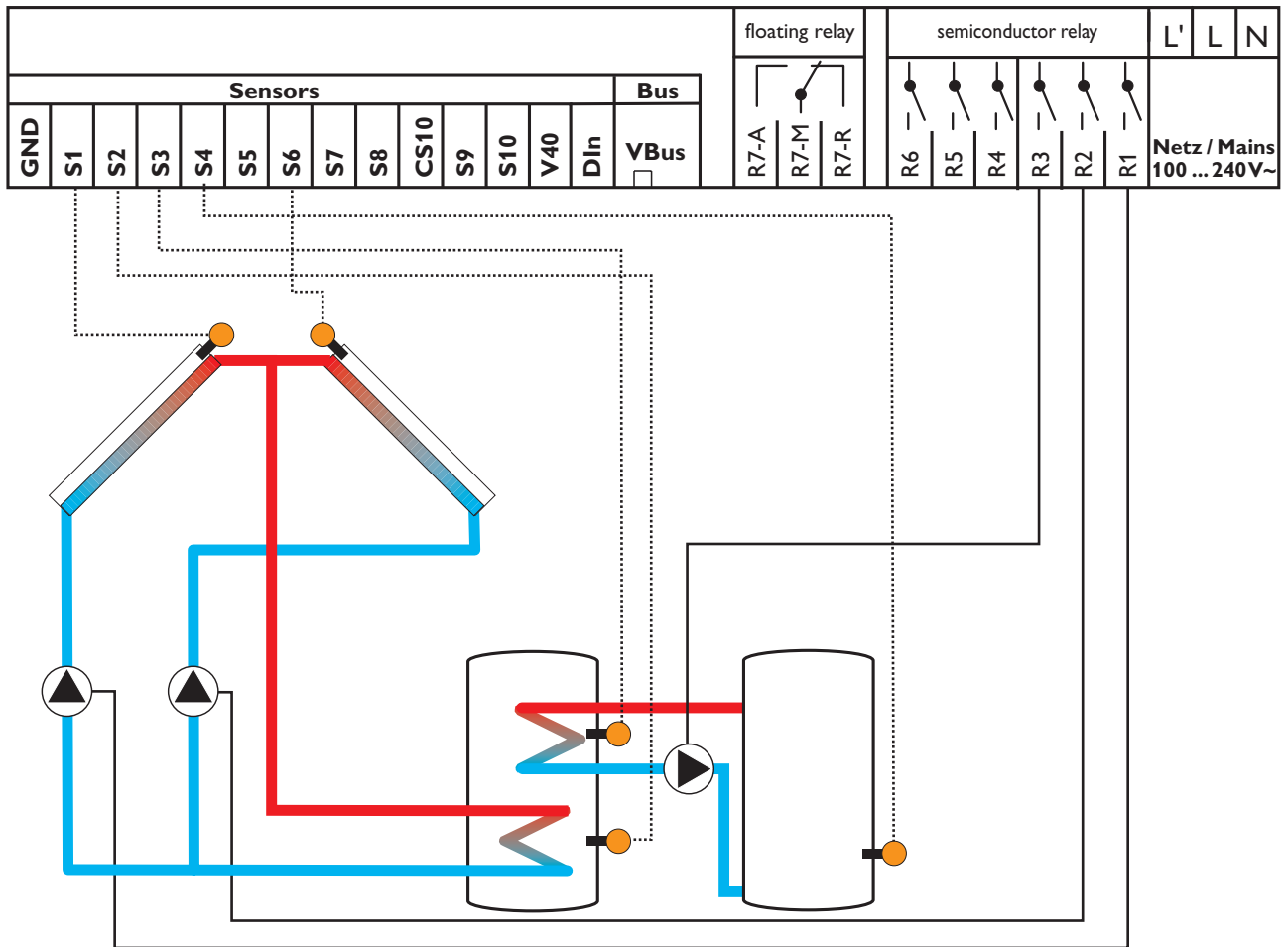
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 18

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperature at store sensor S2. If one of the measured temperature differences is higher than the adjusted switch-on temperature differences, the corresponding pump

(P1, P2) will be activated and the store will be loaded. Heat transfer control to an existant store (P3) can be carried out via another temperature differential function (S3 heat source/S4 heat sink).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Heat exchange pump	R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1 solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Store 1 top, heat exchange	S3
Sen. 4	S4	Store 2 bottom, heat exchange	S4
Sen. 5			S5
Sen. 6	S6	Collector 2 solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	018	Adjust the desired schematic (e.g. schematic 28)
System	1	2	System 2 for two collectors and one store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo.2	No	Yes	Thermostat function (maximum limitation) for heat exchange
$\Delta T_{-Func.5}$	No	Yes	Differential function for heat exchange
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th2on	40	55	Switch-on temperature for the heat exchange pump
Th2off	45	60	Switch-off temperature (maximum limitation) for the heat exchange pump
$\Delta T_{5on}$	5,0		Switch-on difference for the heat exchange pump
$\Delta T_{5off}$	3,0		Switch-off difference for the heat exchange pump
<b>Timer 1</b>			<b>See Arrangement / Adjustment values / Timer 1</b>

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th2	4	Do not change the value as the sensor has already been correctly allocated.	
Sen1-ΔT5	3		
Sen2-ΔT5	4		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>	<b>Expert / Sensors</b>		
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
⋮			
Sensor 10	0,0		
<b>Relay</b>	<b>Expert / Relay</b>		
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>	<b>Expert / Language</b>		
German			
English			
français			
castellano			
italiano			

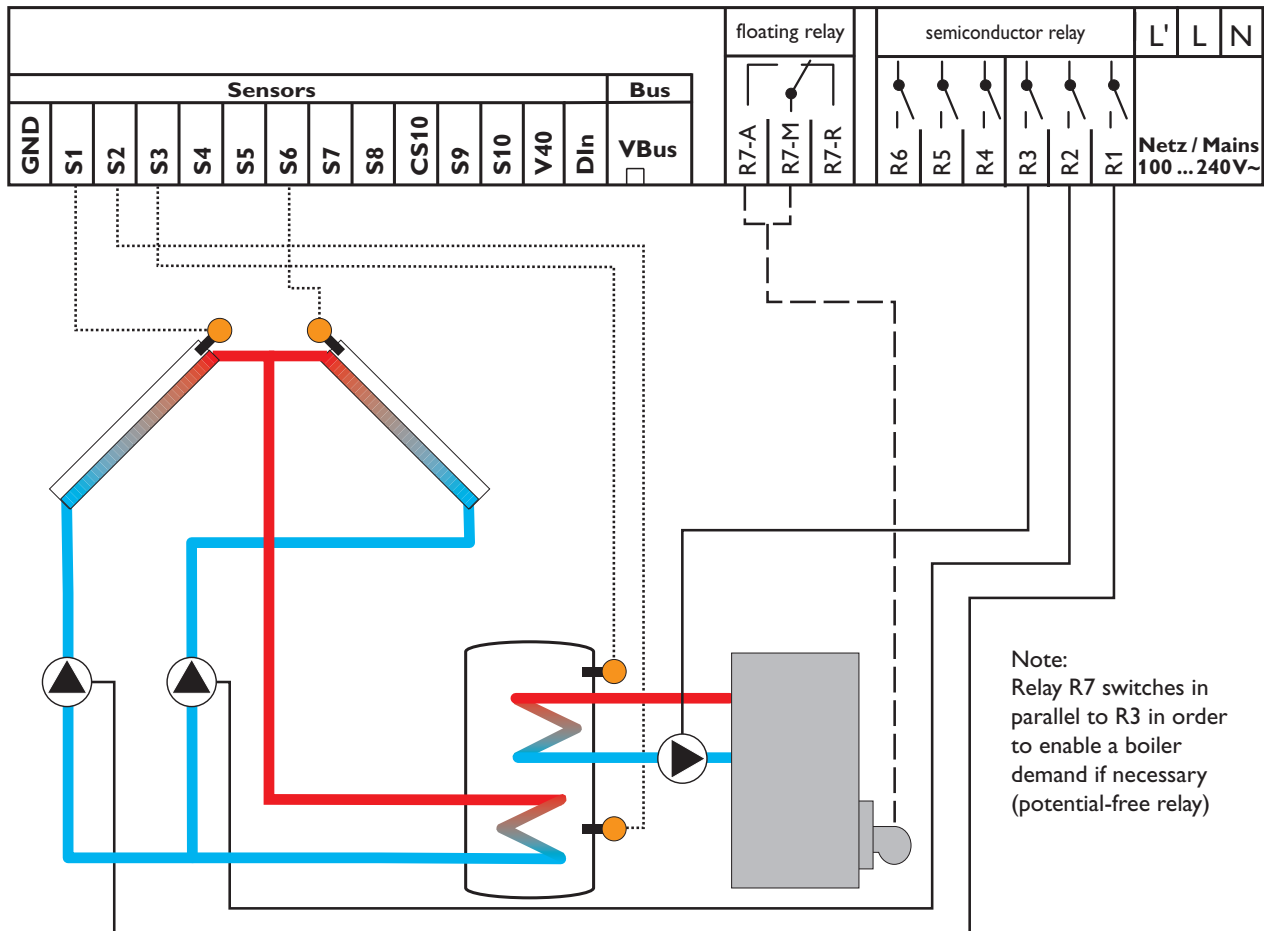
## System 19

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperature at store sensor S2. If one of the measured temperature differences is higher than the adjusted switch-on temperature differences,

the corresponding pump (P1, P2) will be activated and the store will be loaded.

Domestic hot water afterheating (P3) is possible via a thermostat function (S3).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Boiler pump	R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7	Boiler demand	Potential-free contact	R7-A
Relay 7			R7 R
Relay 7	Boiler demand	Potential-free contact	R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1 solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Store 1 top, afterheating	S3
Sen. 4			S4
Sen. 5			S5
Sen. 6	S6	Collector 2 solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus



Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	019	Adjust the desired schematic (e.g. schematic 28)
System	1	2	System 2 for two collectors and one store
Loading	1		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function for afterheating
Timer 1	No	Yes	In this menu, a timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )
Thermo. 9	No	Yes	Thermostat function for afterheating (boiler demand)
Timer 5	No		In this menu, a timer of function block 5 can be activated (Thermo. 9 / 10 and $\Delta T_{-Func.9}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	55	Switch-on temperature for afterheating
Th1off	45	60	Switch-off temperature (minimum limitation) for afterheating
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		
Th9on	40	55	Switch-on difference for boiler demand
Th9off	45	60	Switch-off difference for boiler demand
<b>Timer 5</b>	<b>See Arrangement / Adjustment values / Timer 5</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen-Th9	9	3	Sensor S3 is allocated to thermostat function 9.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

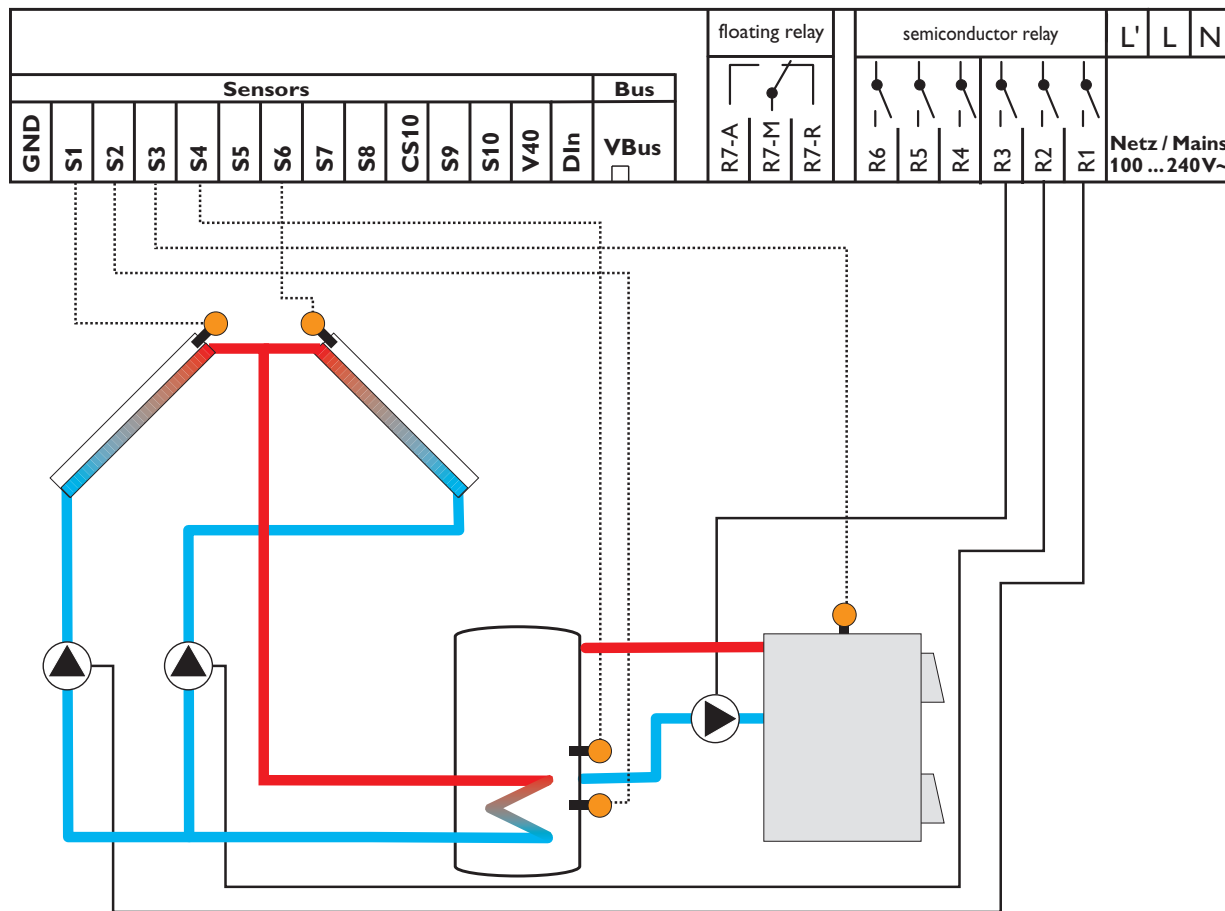
## System 20

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperature at store sensor S2. If one of the measured temperature differences is higher than the adjusted switch-on temperature differences, the corresponding pump (P1, P2) will be activated and the

store will be loaded.

With another temperature differential function (S4/S43), afterheating of the store can be carried out with a solid fuel boiler (P3).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Solid fuel boiler pump	R3-A
Relay 4			R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1 solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Solid fuel boiler, heat source $\Delta T$ -Func.5	S3
Sen. 4	S4	Store 1 center Heat sink $\Delta T$ -Func.5	S4
Sen. 5			S5
Sen. 6	S6	Collector 2 solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	020	Adjust the desired schematic (e.g. schematic 28)
System	1	2	System 2 for two collectors and one store
Loading	1		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo.1	No	Yes	Thermostat function (minimum limitation) for solid fuel boiler
Thermo.2	No	Yes	Thermostat function (maximum limitation) for the store
$\Delta T_{-Func.5}$	No	Yes	Differential function for the solid fuel boiler
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	60	Switch-on temperature (minimum limitation) for the solid fuel boiler pump
Th1off	45	58	Switch-off temperature for the solid fuel boiler pump
Th2on	40	55	Switch-on temperature for the solid fuel boiler pump
Th2off	45	60	Switch-off temperature (maximum limitation) for the solid fuel boiler pump
$\Delta T_{5on}$	5,0		Switch-on difference for the solid fuel boiler pump
$\Delta T_{5off}$	3,0		Switch-off difference for the solid fuel boiler pump
<b>Timer 1</b>			<b>See Arrangement / Adjustment values / Timer 1</b>

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen-Th2	4		
Sen1- $\Delta T_5$	3		
Sen2- $\Delta T_5$	4		

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
⋮			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

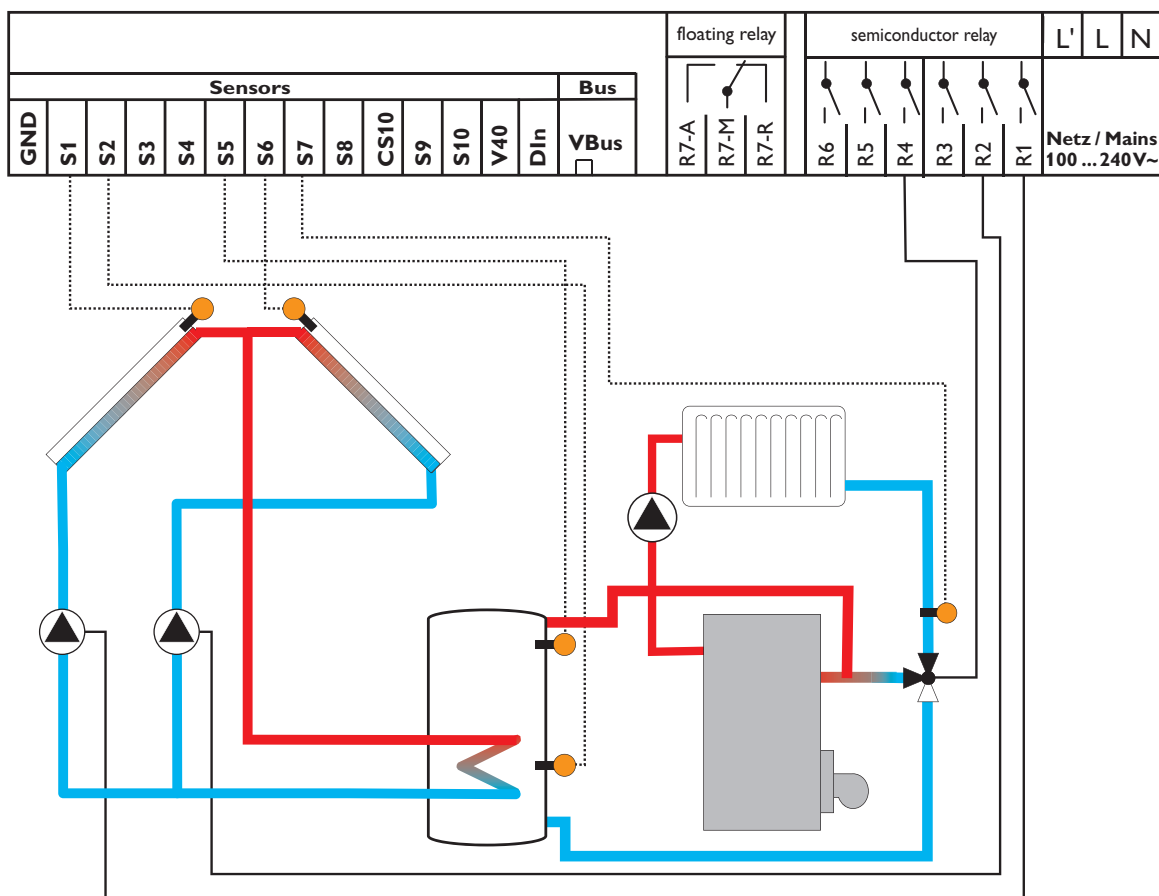
## System 21

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperature at store sensor S2. If one of the measured temperature differences is higher than the adjusted switch-on temperature differences, the corresponding pump (P1, P2) will be activated and the

store will be loaded.

With another temperature differential function (S5 heat source / S7 heat sink) heating circuit return preheating is possible via V1.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve, return preheating	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1 solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3			S3
Sen. 4			S4
Sen. 5	S5	Store 1 top, return preheating	S5
Sen. 6	S6	Collector 2 solar	S6
Sen. 7	S7	Heating return, return preheating	S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	021	Adjust the desired schematic (e.g. schematic 28)
System	1	2	System 2 for two collectors and one store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
$\Delta T_{-Func.6}$	No	Yes	Differential function for return preheating

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
$\Delta T_{6on}$	5,0		Switch-on difference for return preheating
$\Delta T_{6off}$	3,0		Switch-off difference for return preheating

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen1- $\Delta T_6$	5	Do not change the value as the sensor has already been correctly allocated.	
Sen2- $\Delta T_6$	6	7	Sensor S7 is used as the heat sink sensor and is allocated to differential function 6.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

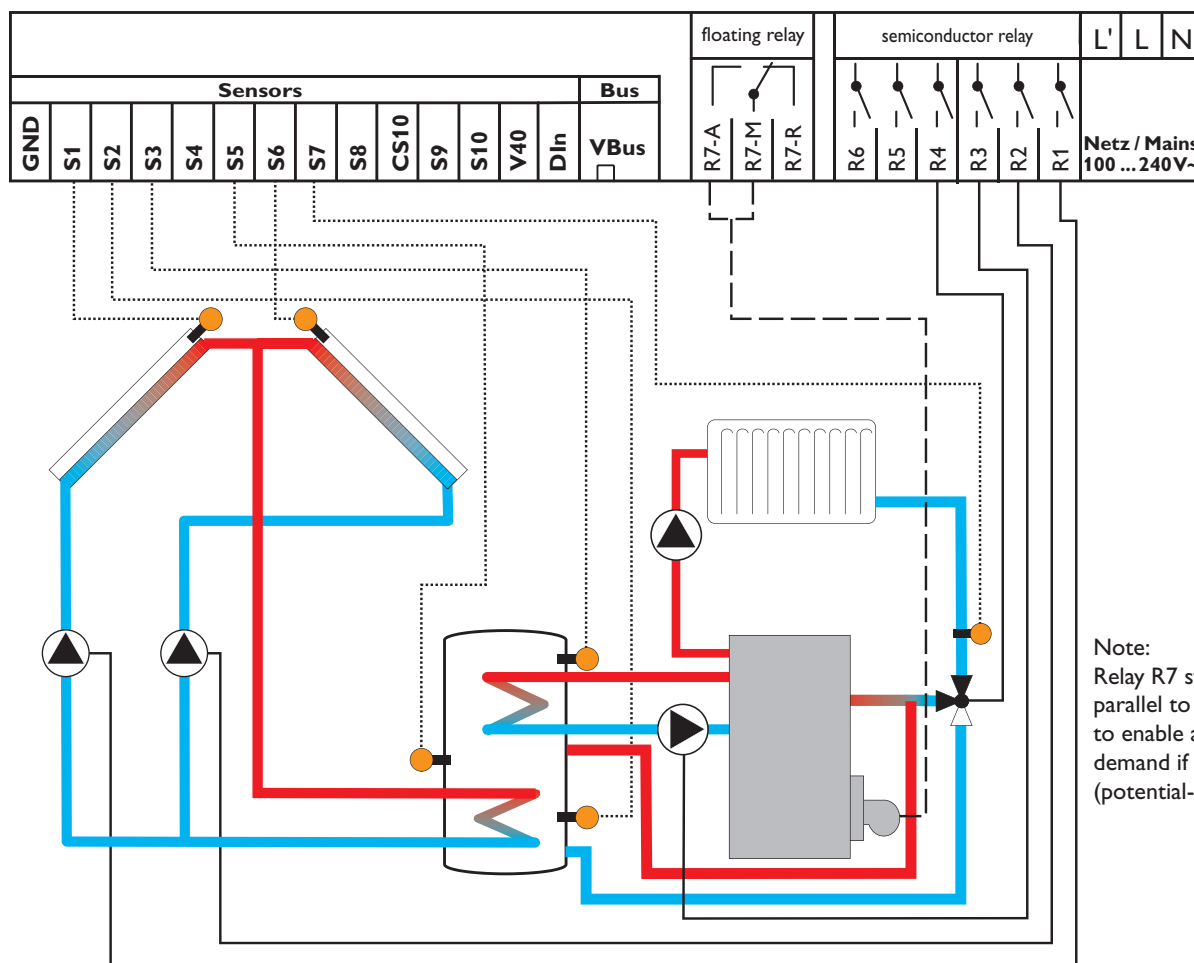


## System 22

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperature at store sensor S2. If one of the measured temperature differences is higher than the adjusted switch-on temperature differences, the corresponding pump (P1, P2) will be activated and the store will be loaded.

With another temperature differential function (S5 heat source / S7 heat sink) heating circuit return preheating (heating circuit backup) is possible via V1. With a thermostat function (S3) domestic hot water afterheating (P3) can be carried out.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Boiler pump	R3-A
Relay 4	V1	3-port valve, return preheating	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7	Boiler demand	Potential-free contact	R7-A
Relay 7			R7 R
Relay 7	Boiler demand	Potential-free contact	R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1 solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3	S3	Boiler, afterheating	S3
Sen. 4			S4
Sen. 5	S5	Store 1 top, return preheating	S5
Sen. 6	S6	Collector 2 solar	S6
Sen. 7	S7	Heating return, return preheating	S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	022	Adjust the desired schamtic (e.g. schematic 28)
System	1	2	System 2 for two collectors and one store
Loading	1		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of the collector.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1.
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function for afterheating
Timer 1	No		In this menu, a timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )
$\Delta T_{-Func.6}$	No	Yes	Differential function for return preheating
Thermo. 9	No	Yes	Thermostat function for afterheating (boiler demand)
Timer 5	No		In this menu, the timer of function block 5 can be activated (Thermo. 9 / 10 and $\Delta T_{-Func.9}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40		Switch-on temperature for afterheating
Th1off	45		Switch-off temperature (maximum limitation) for afterheating
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		
$\Delta T_{6on}$	5,0		Switch-on difference for return preheating
$\Delta T_{6off}$	3,0		Switch-off difference for return preheating
Th9on	40		Switch-on temperature for boiler demand
Th9off	45		Switch-off temperature for boiler demand
<b>Timer 5</b>	<b>See Arrangement / Adjustment values / Timer 5</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen1- $\Delta T_6$	5		
Sen2- $\Delta T_6$	6	7	Sensor S7 is used as the heat sink sensor and is allocated to differential function 6.
Sen-Th9	6	3	Sensor S3 is allocated to thermostat function 9.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

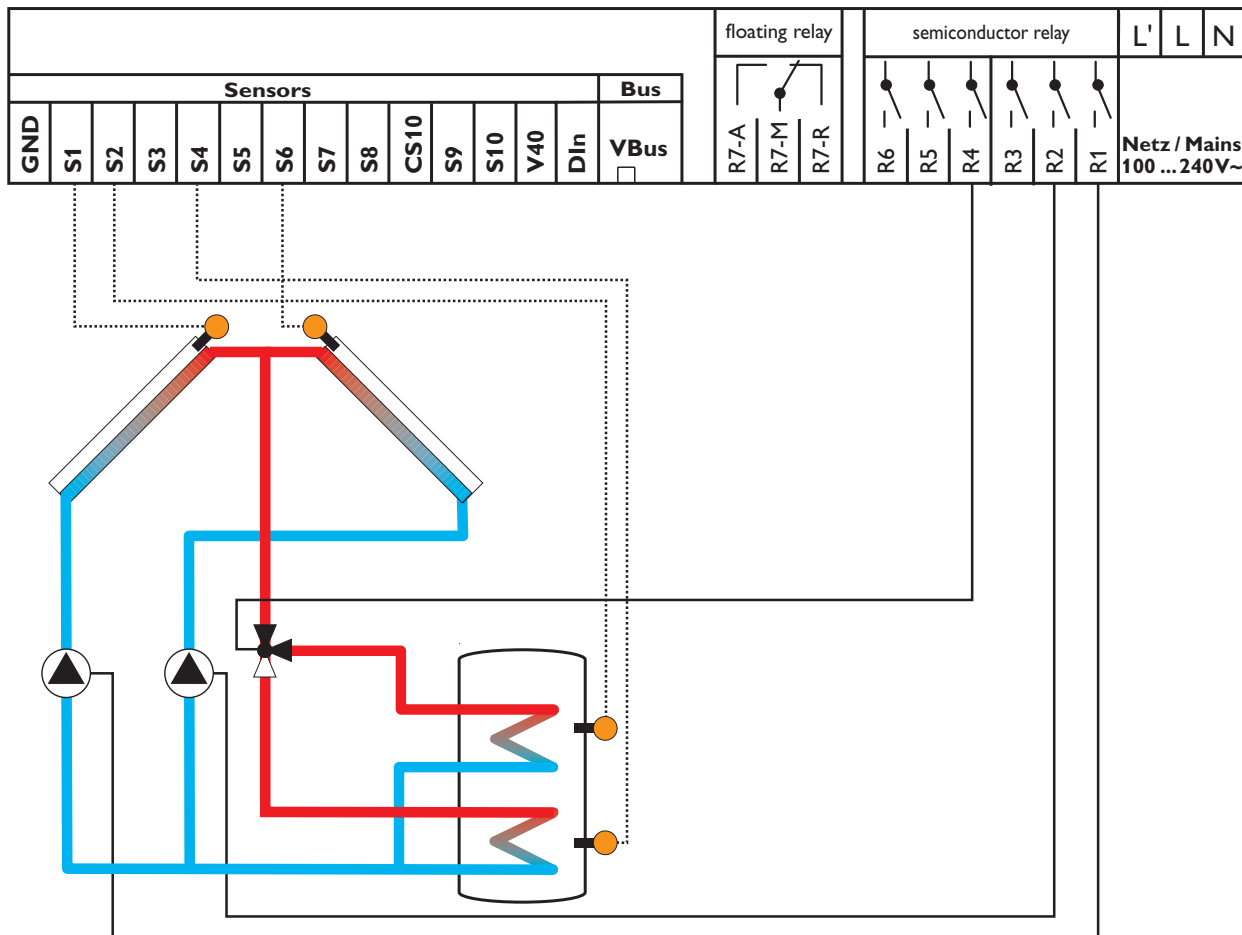
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 23

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences,

the corresponding pump (P1, P2) will be switched on and the corresponding store zone will be loaded up to the maximum temperature via valve (V1). The priority logic causes prior loading of the upper zone of the store.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3			S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5			S5
Sen. 6	S6	Collector 2, solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	023	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
Tcol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

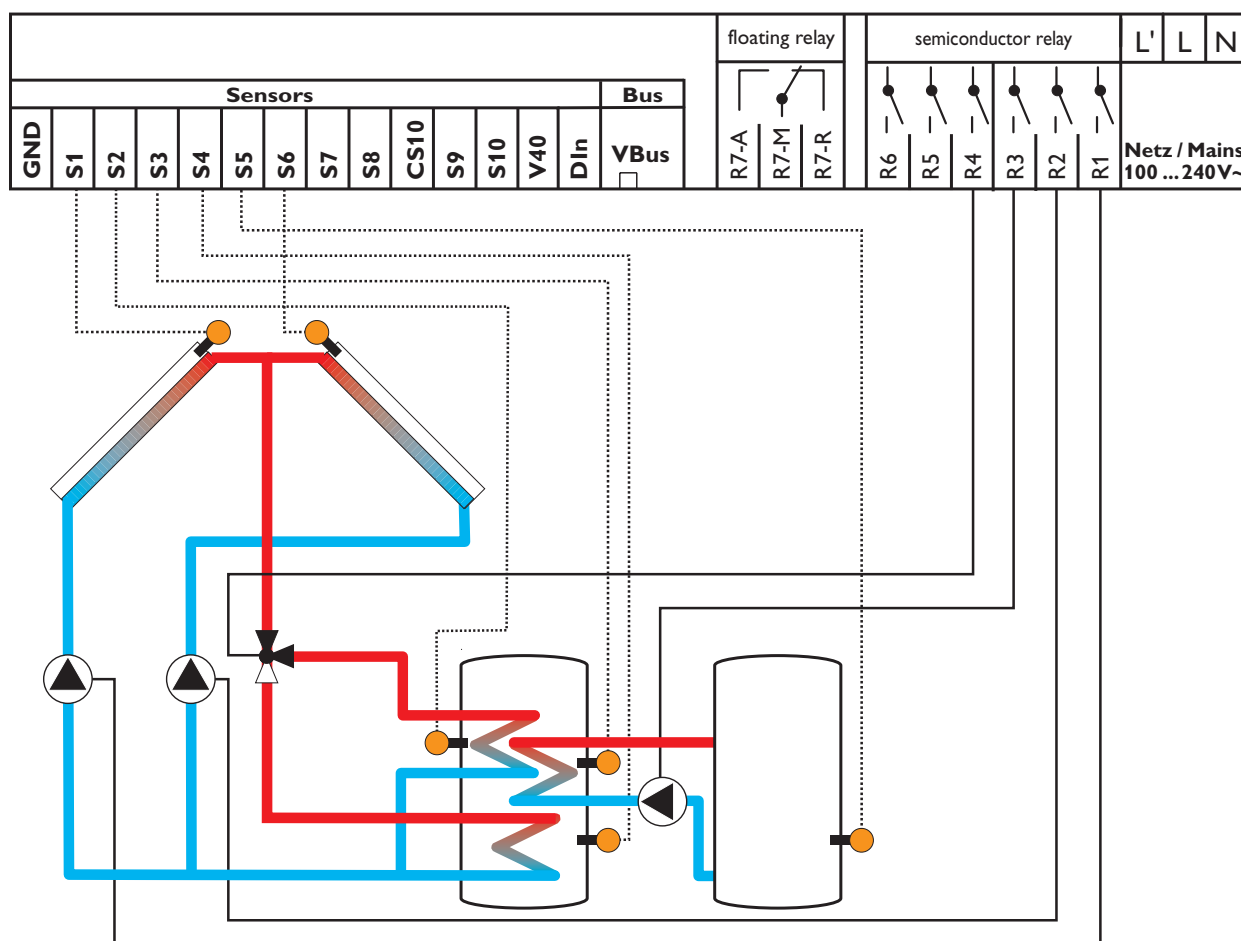
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 24

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump (P1, P2) will be switched on and the corresponding store zone will be loaded up to the maxi-

imum temperature at most via the valve (V1). The priority logic causes prior loading of the upper zone of the store. Heat exchange control to an existant store (P3) can be carried out via another temperature differential function (S3 heat source/S5 heat sink).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Heat exchange pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3	S3	Store 1 top, heat exchange	S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5	S5	Store 2 bottom, heat exchange	S5
Sen. 6	S6	Collector 2, solar	S6
Sen. 7			S7
Sen. 8			S8
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	024	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T-St_{max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T-St_{2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T-Col$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 2	No	Yes	Thermostat function (maximum limitation) for heat exchange
$\Delta T-Func.5$	No	Yes	Differential function for heat exchange
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T-Func.5$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th2on	40		Switch-on temperature for the heat exchange pump
Th2off	45		Switch-off temperature (maximum limitation) for the heat exchange pump
$\Delta T_{5on}$	5,0		Switch-on difference for the heat exchange pump
$\Delta T_{5off}$	3,0		Switch-off difference for the heat exchange pump
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		



Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th2	4	5	Sensor S5 is allocated to thermostat function 2.
Sen1-ΔT5	3	Do not change the value as the sensor has already been correctly allocated.	
Sen2-ΔT5	4	5	Sensor S5 is used as the heat sink sensor and is allocated to differential function 5.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

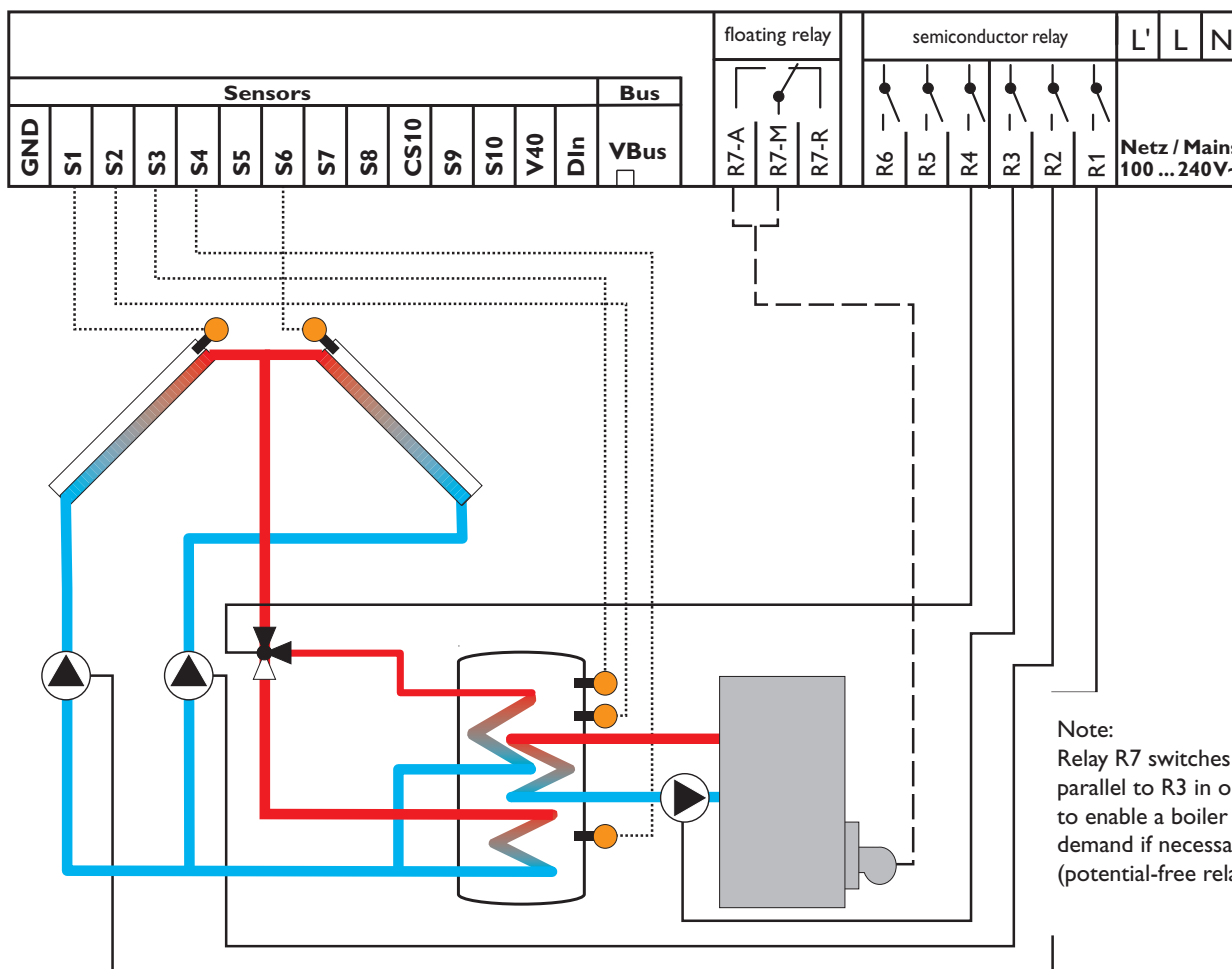
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
⋮			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## System 25

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump (P1, P2) will be switched on

and the corresponding store zone will be loaded up to the maximum temperature at most via valve (V1). The priority logic causes prior loading of the upper zone of the store. Domestic hot water afterheating (P3) is possible via a thermostat function (S3).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Boiler pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7	Boiler demand	Potential-free contact	R7-A
Relay 7			R7 R
Relay 7	Boiler demand	Potential-free contact	R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3	S3	Store 1 top, afterheating	S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5			S5
Sen. 6	S6	Collector 2, solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	025	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function for afterheating
Timer 1	No		In this menu, a timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )
Thermo. 9	No	Yes	Thermostat function for afterheating (boiler demand)
Timer 5	No		In this menu, a timer of function block 5 can be activated (Thermo. 9 / 10 and $\Delta T_{-Func.9}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	55	Switch-on temperature for afterheating
Th1off	45	60	Switch-off temperature (minimum limitation) for afterheating
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		
Th9on	40	55	Switch-on difference for boiler demand
Th9off	45	60	Switch-off difference for boiler demand
<b>Timer 5</b>	<b>See Arrangement / Adjustment values / Timer 5</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen-Th9	9	3	Sensor S3 is allocated to thermostat function 9.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

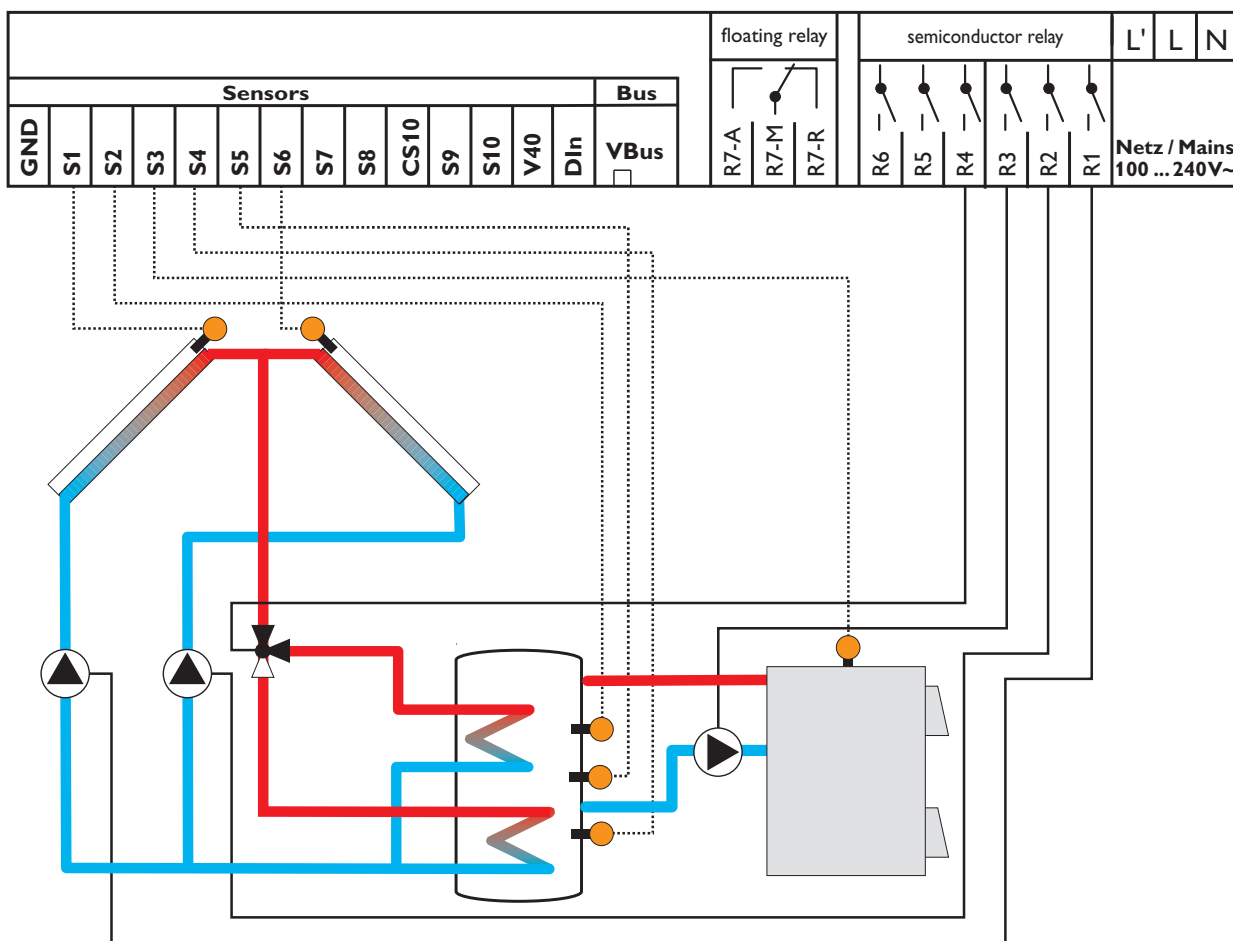
Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b> <span style="float: right;"><b>Expert / Sensors</b></span>			
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b> <span style="float: right;"><b>Expert / Relay</b></span>			
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b> <span style="float: right;"><b>Expert / Language</b></span>			
German			
English			
français			
castellano			
italiano			

## System 26

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump (P1, P2) will be switched on and the corresponding store zone will be loaded up to the maximum

temperature at most via the valve (V1). The priority logic causes prior loading of the upper zone of the store. With another temperature differential function (S3/S5), afterheating of the store can be carried out with a solid fuel boiler (P3).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Boiler pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3	S3	Boiler, afterheating	S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5	S5	Store 1 center, afterheating	S5
Sen. 6	S6	Collector 2, solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	026	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo. 1	No	Yes	Thermostat function (minimum limitation) for solid fuel boiler
Thermo. 2	No	Yes	Thermostat function (maximum limitation) for the store
$\Delta T_{-Func.5}$	No	Yes	Differential function for the solid fuel boiler
Timer 1	No		In this menu, the timer of function block 1 can be activated (Thermo. 1 / 2 and $\Delta T_{-Func.5}$ )

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	60	Switch-on temperature (minimum limitation) for the solid fuel boiler pump
Th1off	45	58	Switch-off temperature for the solid fuel boiler pump
Th2on	40	55	Switch-on temperature for the solid fuel boiler pump
Th2off	45	60	Switch-off temperature (maximum limitation) for the solid fuel boiler pump
$\Delta T_{5on}$	5,0		Switch-on difference for the solid fuel boiler pump
$\Delta T_{5off}$	3,0		Switch-off difference for the solid fuel boiler pump
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen-Th2	4	5	Sensor S5 is allocated to thermostat function 2.
Sen1- $\Delta T_5$	3	Do not change the value as the sensor has already been correctly allocated.	
Sen2- $\Delta T_5$	4	5	Sensor S5 is used as the heat sink sensor and is allocated to differential function 5.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

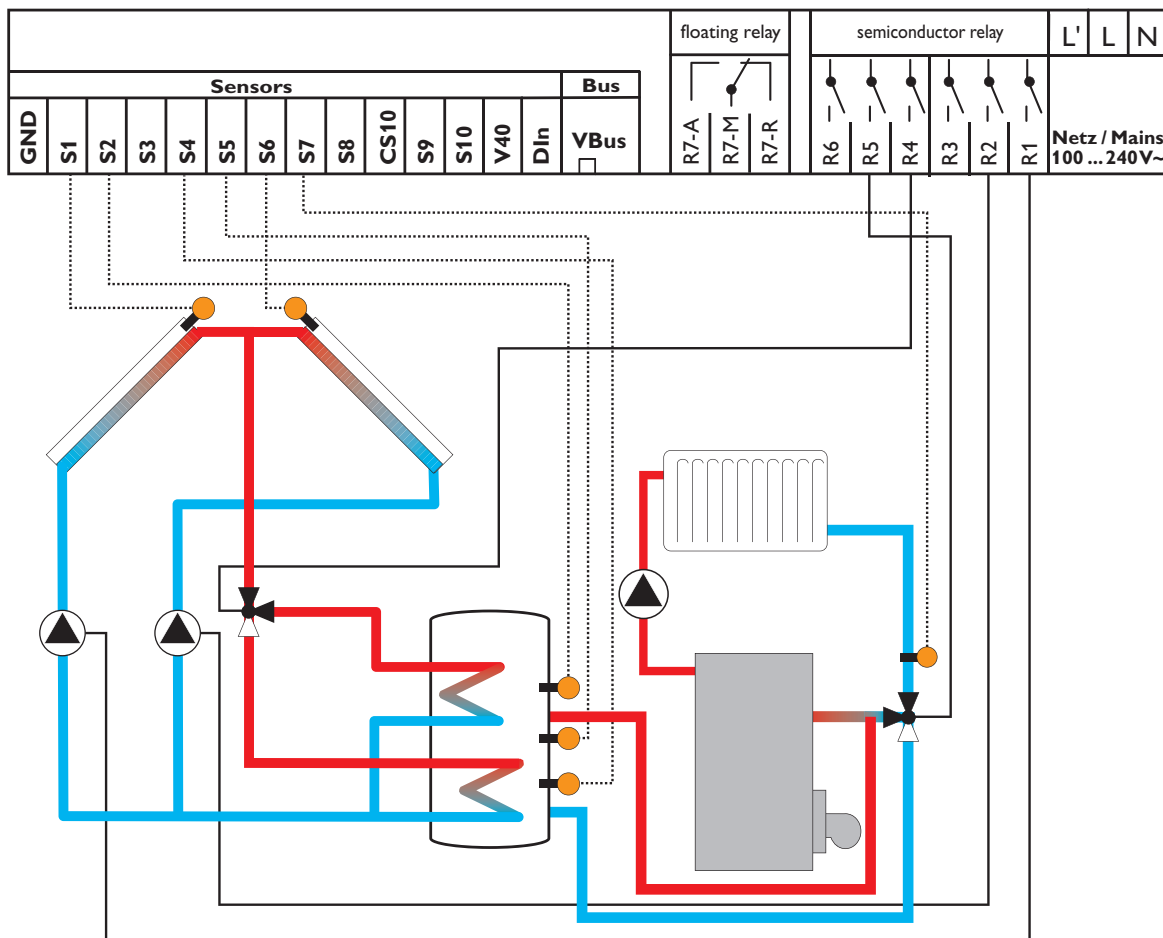
Expert			
Description	Factory setting	Change to	Note
$\Delta T$ too high	Yes		In this menu, the messages „ $\Delta T$ too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>	<b>Expert / Sensors</b>		
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>	<b>Expert / Relay</b>		
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>	<b>Expert / Language</b>		
German			
English			
français			
castellano			
italiano			

## System 27

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump (P1, P2) will be switched on and the corresponding store zone will be loaded up to the maximum

temperature at most via the valve (V1). The priority logic causes prior loading of the upper zone of the store. With another temperature differential function (S5 heat source / S7 heat sink) heating circuit return preheating is possible via V2.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5	V2	3-port valve, return preheating	R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3			S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5	S5	Store 1 center, return preheating	S5
Sen. 6	S6	Collector 2, solar	S6
Sen. 7	S7	Heating return, return preheating	S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus



Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	027	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>			<b>Solar / Expert / Solar control</b>

Arrangement / Options			
Description	Factory setting	Change to	Note
$\Delta T_{-Func.7}$	No	Yes	Differential function for return preheating

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
$\Delta T_{7on}$	5,0		Switch-on difference for return preheating
$\Delta T_{7off}$	3,0		Switch-off difference for return preheating

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen1- $\Delta T_7$	5	Do not change the value as the sensor has already been correctly allocated.	
Sen2- $\Delta T_7$	6	7	Sensor S7 is used as the heat sink sensor and is allocated to differential function 7.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
$\Delta T$ too high	Yes		In this menu, the messages „ $\Delta T$ too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		

Sensors			
Expert / Sensors			
Description	Factory setting	Change to	Note
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		

Relay			
Expert / Relay			
Description	Factory setting	Change to	Note
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		

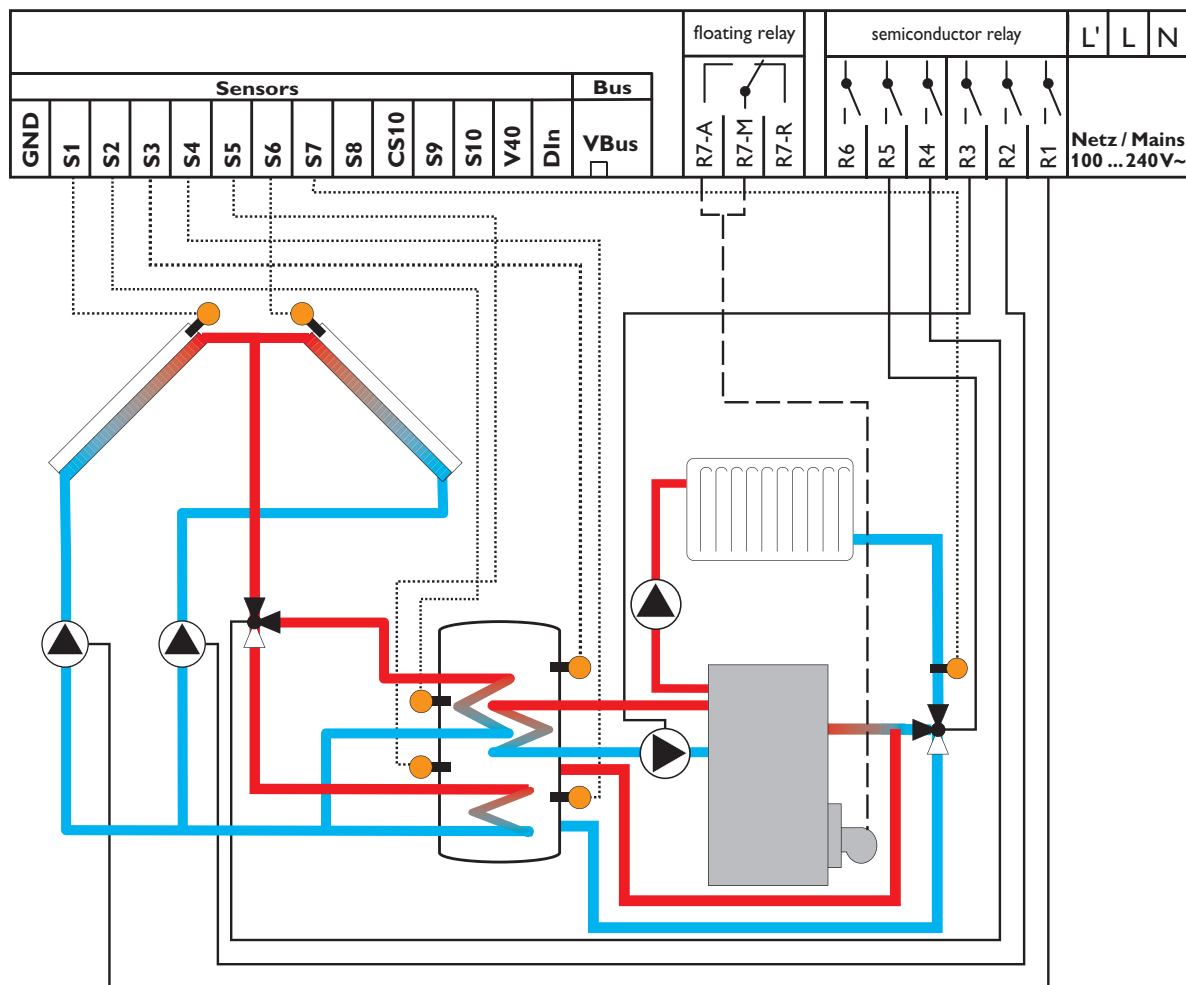
Language			
Expert / Language			
Description	Factory setting	Change to	Note
German			
English			
français			
castellano			
italiano			

## System 28

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump (P1, P2) will be switched on and the corresponding store zone will be loaded up to the maximum temperature at most via the valve (V1). The priority logic

causes prior loading of the upper zone of the store. With another temperature differential function (S5 heat source / S7 heat sink) heating circuit return preheating (heating circuit backup) is possible via V2. With a thermostat function (S3) domestic hot water afterheating (P3) can be carried out.



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Boiler pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5	V2	3-port valve, return preheating	R5-A
Relay 6			R6-A
Relay 7	Boiler demand	Potential-free contact	R7-A
Relay 7			R7 R
Relay 7	Boiler demand	Potential-free contact	R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 top, solar	S2
Sen. 3	S3	Store 1 top, afterheating	S3
Sen. 4	S4	Store 1 bottom, solar	S4
Sen. 5	S5	Store 1 center, return preheating	S5
Sen. 6	S6	Collector 2, solar	S6
Sen. 7	S7	Heating return, return preheating	S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	028	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and one stratified store
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 top.
Tst2max	60		Adjust the desired maximum store temperature for store 1 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 top.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 top.
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1 top. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 1 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 top
Priority ST2	2		Non-priority store 1 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T-St_{max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 top.
$\Delta T-St_{2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T-Col$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo.1	No	Yes	Thermostat function for afterheating
$\Delta T-Func.7$	No	Yes	Differential function for return preheating
Thermo.9	No	Yes	Thermostat function for afterheating (boiler demand)

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.
Th1on	40	55	Switch-on temperature for the loading pump
Th1off	45	60	Switch-off temperature (minimum limitation) for the loading pump
<b>Timer 1</b>	<b>See Arrangement / Adjustment values / Timer 1</b>		
$\Delta T7_{on}$	5,0		Switch-on difference for return preheating
$\Delta T7_{off}$	3,0		Switch-off difference for return preheating
Th9on	40	55	Switch-on difference for boiler demand
Th9off	45	60	Switch-off difference for boiler demand
<b>Timer 5</b>	<b>See Arrangement / Adjustment values / Timer 5</b>		

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th1	3	Do not change the value as the sensor has already been correctly allocated.	
Sen1- $\Delta T7$	5		
Sen2- $\Delta T7$	6	7	Sensor S7 is used as the heat sink sensor and is allocated to differential function 7.
Sen-Th9	9	3	Sensor S3 is allocated to thermostat function 9.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

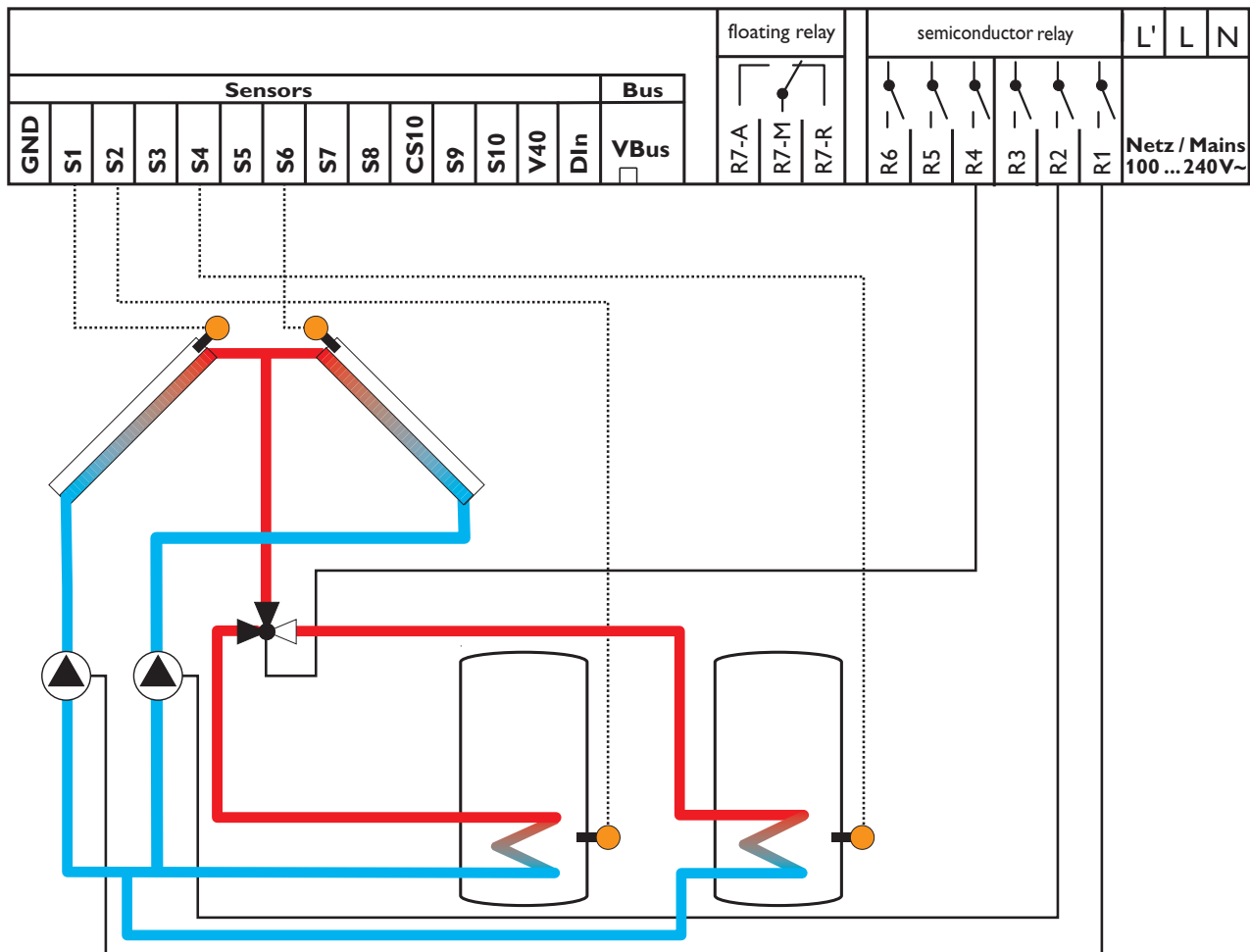
Expert			
Description	Factory setting	Change to	Note
$\Delta T$ too high	Yes		In this menu, the messages „ $\Delta T$ too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>	<b>Expert / Sensors</b>		
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
Sensor 10	0,0		
<b>Relay</b>	<b>Expert / Relay</b>		
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>	<b>Expert / Language</b>		
German			
English			
français			
castellano			
italiano			

## System 29

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the temperatures at S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump

(P1, P2) will be switched on and the corresponding store will be loaded up to the maximum temperature at most via the valve (V1).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3			R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 6			R6-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 bottom, solar	S2
Sen. 3			S3
Sen. 4	S4	Store 2 bottom, solar	S4
Sen. 5			S5
Sen. 6	S6	Collector 2, solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	029	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and two stores
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 bottom.
Tst2max	60		Adjust the desired maximum store temperature for store 2 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 2 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 2 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 2 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 bottom
Priority ST2	2		Non-priority store 2 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 2 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
ΔT too high	Yes		In this menu, the messages „ΔT too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
Sensors			
Expert / Sensors			
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
Relay			
Expert / Relay			
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
Language			
Expert / Language			
German			
English			
français			
castellano			
italiano			



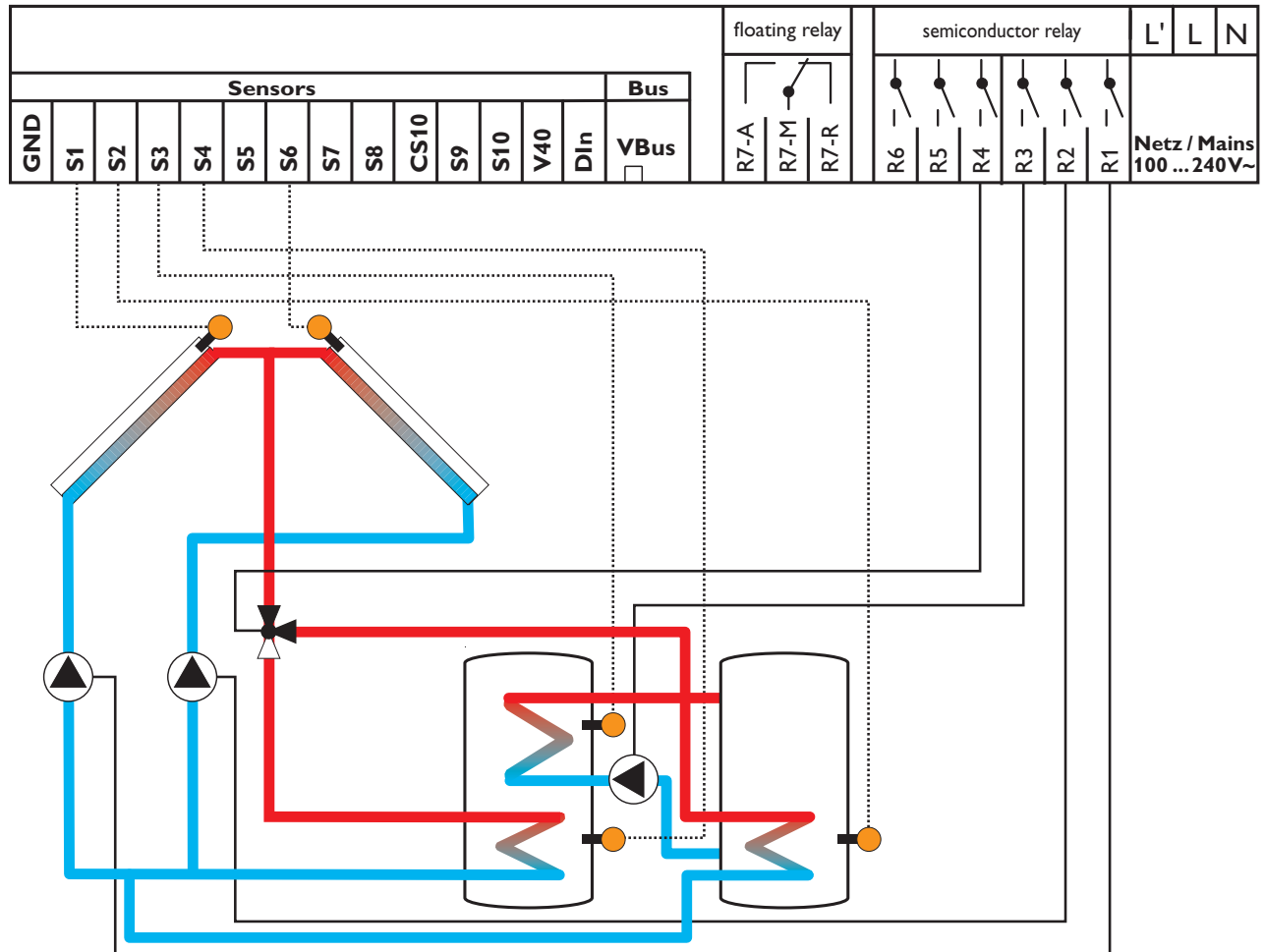
## System 30

### System description:

The controller compares the temperatures at the collector sensors S1 and S6 to the temperatures at S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump (P1, P2) will be switched on and the corresponding store

will be loaded up to the maximum temperature at most via the valve (V1).

Heat exchange control to store 1 (P2) can be carried out using another temperature differential function (S3 heat source/S2 heat sink).



Relay output	Description	Note	Terminals
Relay 1	P1	Solar pump collector 1	R1-A
Relay 2	P2	Solar pump collector 2	R2-A
Relay 3	P3	Heat exchange pump	R3-A
Relay 4	V1	3-port valve store top / bottom	R4-A
Relay 5			R5-A
Relay 7			R7-A
Relay 7			R7 R
Relay 7			R7 M

Sensor input	Description	Note	Terminals
Sen. 1	S1	Collector 1, solar	S1
Sen. 2	S2	Store 1 bottom, Solar heat exchange	S2
Sen. 3	S3	Store 2 top, heat exchange	S3
Sen. 4	S4	Store 2 bottom, solar	S4
Sen. 5			S5
Sen. 6	S6	Collector 2 solar	S6
Sen. 7			S7
Sen. 8			S8
CS10			CS10
Sen. 9			S9
Sen. 10			S10
V40			V40
Din			S11
VBus			VBus

Solar / Options			
Description	Factory setting	Change to	Note
Schematic	000	030	Adjust the desired schematic (e.g. schematic 28)
System	1	4	System 4 for two collectors and two stores
Loading	1		
ST2 on	Yes		

Solar / Adjustment values			
Description	Factory setting	Change to	Note
Tstmax	60		Adjust the desired maximum store temperature for store 1 bottom.
Tst2max	60		Adjust the desired maximum store temperature for store 2 bottom.
$\Delta T_{on}$	5,0		Adjust the desired switch-on temperature difference for store 1 bottom.
$\Delta T_{off}$	3,0		Adjust the desired switch-off temperature difference for store 1 bottom
$\Delta T_{set}$	10,0		Adjust the desired set temperature difference for store 1. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2on}$	5,0		Adjust the desired switch-on temperature difference for store 2 bottom.
$\Delta T_{2off}$	3,0		Adjust the desired switch-off temperature difference for store 2 bottom
$\Delta T_{2set}$	10,0		Adjust the desired set temperature difference for store 2 bottom. Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Priority store 1 bottom
Priority ST2	2		Non-priority store 2 bottom
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function is not to start.

Solar / Expert			
Description	Factory setting	Change to	Note
Tcolmin	10		Adjust the minimum temperature of collector 1.
TCol2min	10		Adjust the minimum temperature of collector 2.
$\Delta T_{-Stmax}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 1 bottom.
$\Delta T_{-St2max}$	2,0		This menu is used for changing the hysteresis for maximum limitation of store 2 bottom.
t-st	2		The loading break time for the priority logic function can be changed (see appendix priority logic)
t-circ.	15		The oscillating loading time for the priority logic function can be changed (see appendix priority logic)
$\Delta T_{-Col}$	2		The collector rise temperature during the break time of the priority logic function can be changed (see appendix priority logic)
<b>Control</b>	<b>Solar / Expert / Solar control</b>		

Arrangement / Options			
Description	Factory setting	Change to	Note
Thermo.2	No	Yes	Thermostat function for heat exchange
$\Delta T_{-Func.5}$	No	Yes	Differential function for heat exchange

Arrangement / Adjustment values			
Description	Factory setting	Change to	Note
Date	01.01.2006		Adjust the actual date
Time	12:01		Adjust the actual clock time
Th2on	40	55	Switch-on temperature for heat exchange
Th2off	45	60	Switch-off temperature (maximum limitation) for heat exchange
$\Delta T_{5on}$	5,0		Switch-on difference for heat exchange
$\Delta T_{5off}$	3,0		Switch-off difference for heat exchange

Arrangement / Expert			
Description	Factory setting	Change to	Note
Sen-Th2	4	2	Sensor S5 is allocated to thermostat function 3.
Sen1- $\Delta T_5$	3	Do not change the value as the sensor has already been correctly allocated.	
Sen2- $\Delta T_5$	4	2	Sensor S2 is used as the heat sink sensor and is allocated to differential function 5.

User code			
Description	Factory setting	Change to	Note
Code	0262	0000	After having adjusted the controller settings, enter the user code 0000. Note: The expert menu is "hidden", parameters and balance values cannot be changed

Expert			
Description	Factory setting	Change to	Note
$\Delta T$ too high	Yes		In this menu, the messages „ $\Delta T$ too high“ and „Non-ret. valve“ can be switched off
Non-ret. valve	Yes		
Message relay	No		
Message inp.	No		
Chimney sweeper	No		
<b>Sensors</b>		<b>Expert / Sensors</b>	
CS-Type	E		Adjust the CS-type, with the solar cell connected: A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7
CS Adjust			The CS adjustment should be carried out with the irradiation sensor disconnected or when it is dark (select with adjustment button)! The sensor type must have been previously selected!
CS Offset		Control value	This menu indicates the offset after the solar cell has been adjusted.
Sensor 1	0,0		In this menu, an offset can be allocated to the measured values of sensors 1 to 10 (e.g. in the case of long sensor cables) Adjustment range +/- 5 K (the temperatures indicated in the measured values menu will be corrected using the values adjusted in this menu).
...			
Sensor 10	0,0		
<b>Relay</b>		<b>Expert / Relay</b>	
Min speed 1	30		In this menu the minimum speed of the circulating pumps can be adjusted; at 100% speed control is deactivated.
Min speed 2	30		
Min speed 3	30		
<b>Language</b>		<b>Expert / Language</b>	
German			
English			
français			
castellano			
italiano			

## Priority logic

Corresponding adjustment values:

	Factory setting	Adjustment range
<b>Solar / Adjustment values:</b>		
<b>Priority ST1</b>	<b>1</b>	1 - 4
<b>Priority ST2</b>	<b>2</b>	1 - 4
<b>Priority ST3</b>	<b>3</b>	1 - 4
<b>Priority ST4</b>	<b>4</b>	1 - 4
<b>Solar / Expert:</b>		
<b>Loading break time [t-st]</b>	<b>2 min.</b>	1 - 60 min.
<b>Store sequence control [t-circ.]</b>	<b>15 min</b>	1 - 60 min.
<b>Collector rise temperature [T-col]</b>	<b>2 K</b>	1 - 10 K.

### Priority logic:

The options and parameters mentioned above are used in multi-store systems only.

### Priority / parallel loading:

If **Priority St1, St2, St3, St4** is set to **1**, the stores with a temperature difference to the collector are loaded in parallel as long as their switch-on conditions are fulfilled.

If **St1** is set to **1**, **St2** to **2**, **St3** to **3**, **St4** to **4** (factory setting) the first store will be loaded first as long as its switch-on conditions are fulfilled. When the selected priority store reaches its adjusted maximum temperature, the subordinate stores will be loaded in numerical order using store sequence control: store 1, then store 2, then store 3, then store 4.

### Loading break time / store sequence control / collector rise temperature:

The controller checks whether the stores can be loaded (switch-on difference). When the priority store cannot be loaded, the subordinate stores are checked. If a subordinate store can be loaded, it will be loaded for the **oscillating loading time [t-circ.]**. After this period of time, the loading process stops. The controller monitors the increase in collector temperature. If it increases by the **collector rise temperature [T-Kol]** within the **loading break time [t-st]**, the elapsed break time is set to 0. The break time starts again. As soon as the switch-on condition of the priority store is fulfilled, it will be loaded. If the switch-on condition of the priority store is not fulfilled, loading of the subordinate stores will be continued. If the priority store reaches its maximum temperature, oscillating loading will not be carried out.

### Example:

Priority ST1: 2  
Priority ST2: 1  
Priority ST3: 3  
Priority ST4: 2

Store 2 is priorly loaded. If the priority store has reached its adjusted maximum store temperature, the subordinate stores St1 and st4 are loaded in parallel, provided that their switch-on conditions are fulfilled. Store St3 is the last store to be loaded in the priority sequence.

Speed control of the system generally depends on the numerical order of the stores to be loaded.

## Distributed by:

### Note

The design and the specifications can be changed without notice. The illustrations may differ from the original product.