

Examples of use

for skilled personnel

System description

Connection schemes

Adjustment



48002860

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

DeltaSol[®]M

Basic systems and hydraulic variants

The controller is preprogrammed for 7 basic systems. For these systems and hydraulic variants, the relay and sensor allocation has to be carried out as followed.

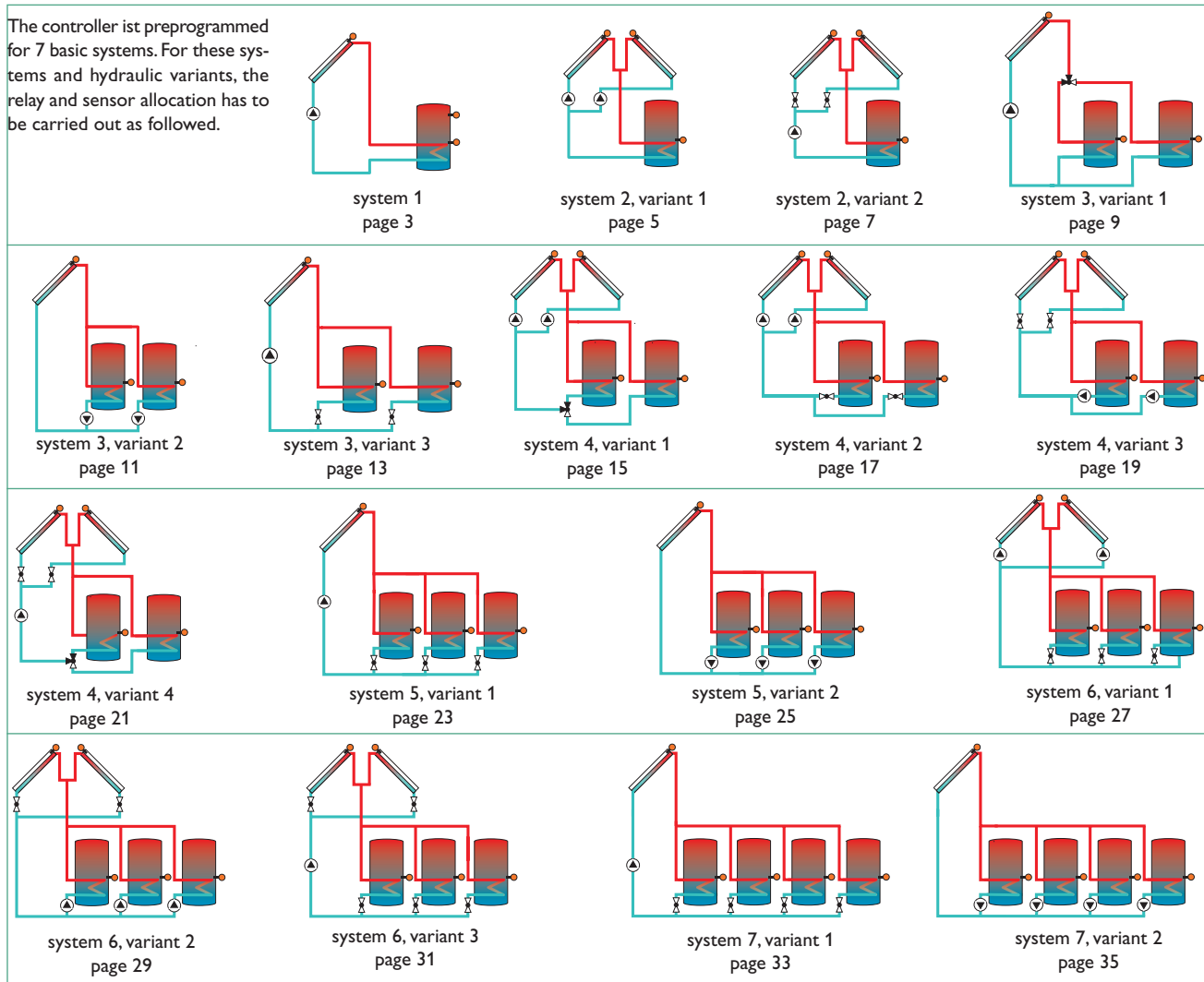
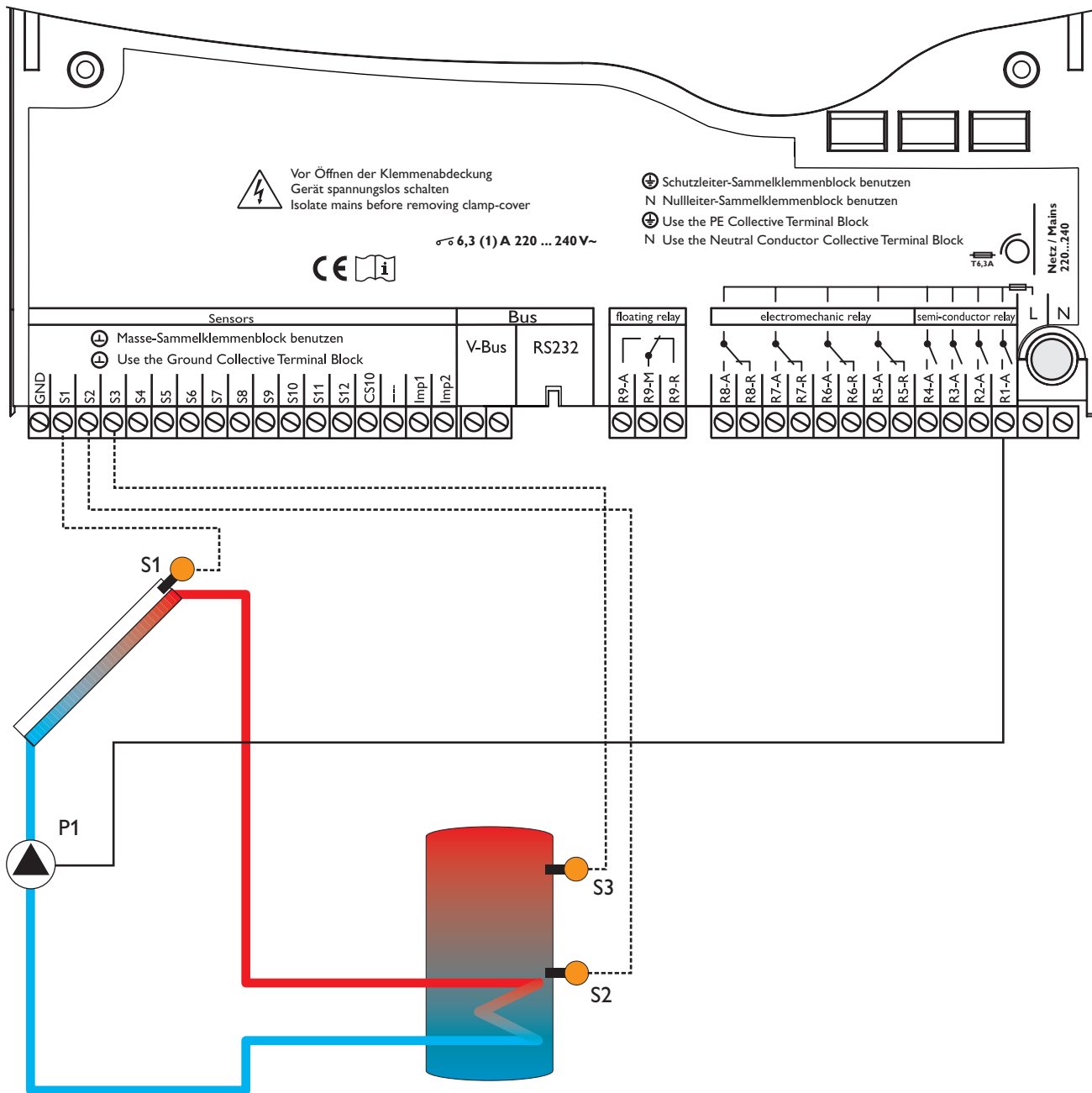


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1. System 1 1-store system



The controller calculates the temperature difference between the collector sensor S1 and the 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.

Terminal allocation		
relay:	pump P1	R1-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S3	S3

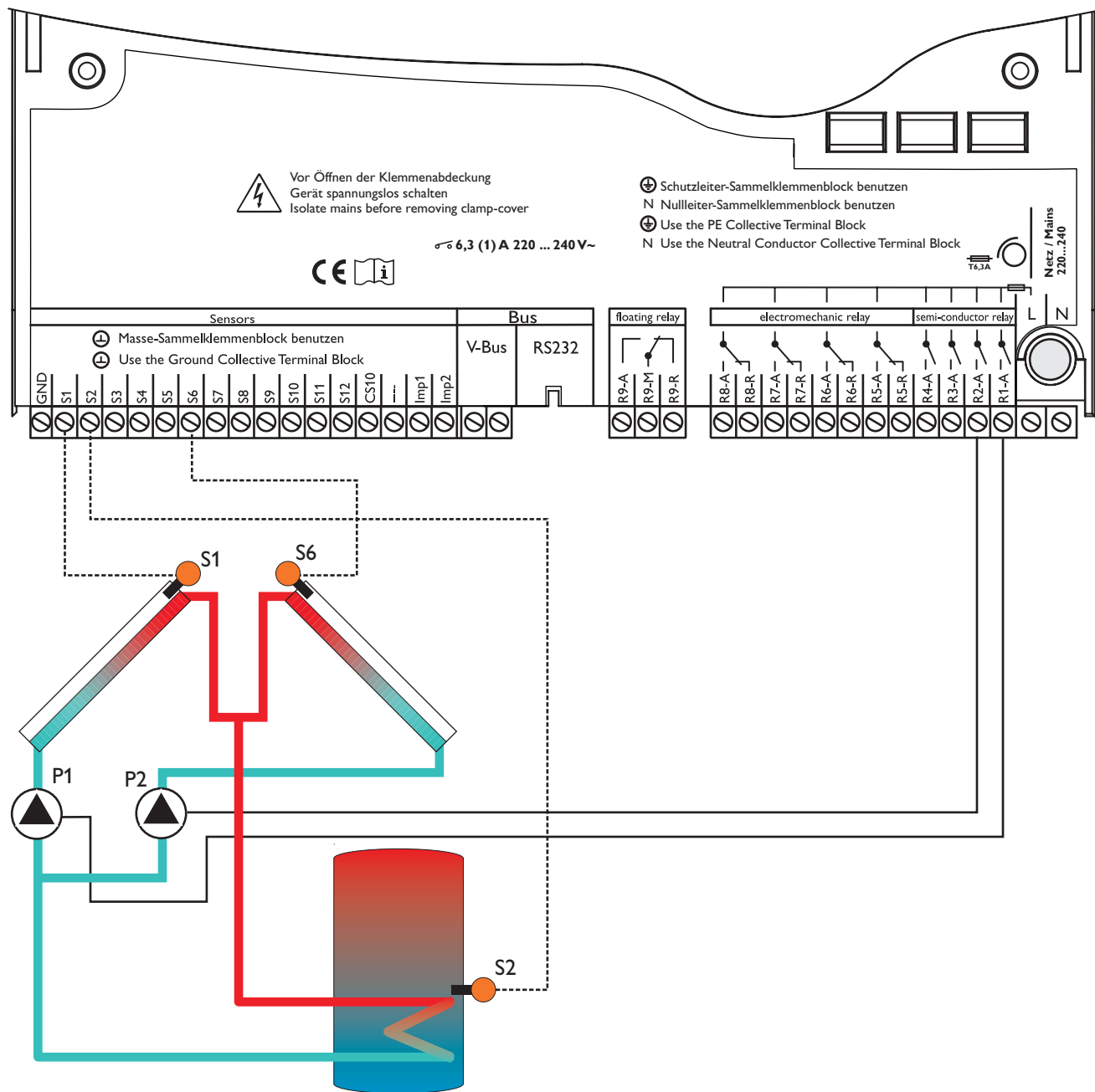
Solar / Options			
description	factory setting	change to	note
return			
system	1		system 1: 1-store system
Ext. Heat. Ex.	no		
Cool. func.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Bypass	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired store maximum temperature
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		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 should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

2. System 2

2.1 1-store system with east/west collectors, variant 1



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.

Terminal allocation

relays:	pump P1	R1-A
	pump P2	R2-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S6	S6

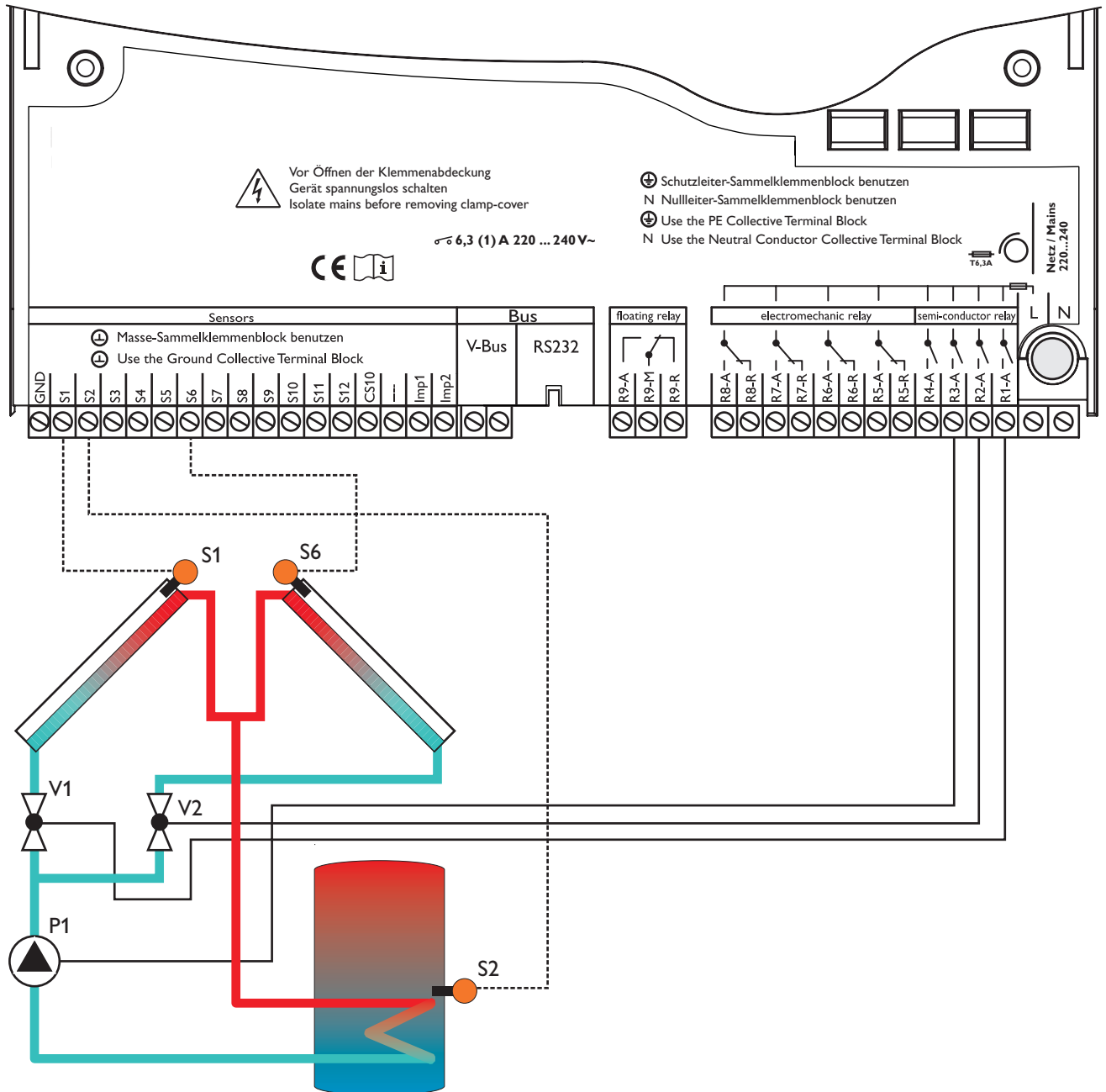
Solar / Options			
description	factory setting	change to	note
return			
system	1	2	system 1: east/west collectors, 1 store
Loading	1		variant 1: 2 pumps
Bypass	no		
Ext. Heat. Ex.	no		
Cool. func.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired store maximum temperature
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		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 should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 2

2.2 1-store system with east/west collectors, variant 2



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 pump (P1) will be activated, the corresponding valve (V1, V2) energised and the store will be loaded.

Terminal allocation

relays:	valve V1	R1-A
	valve V2	R2-A
	pump P1	R3-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S6	S6

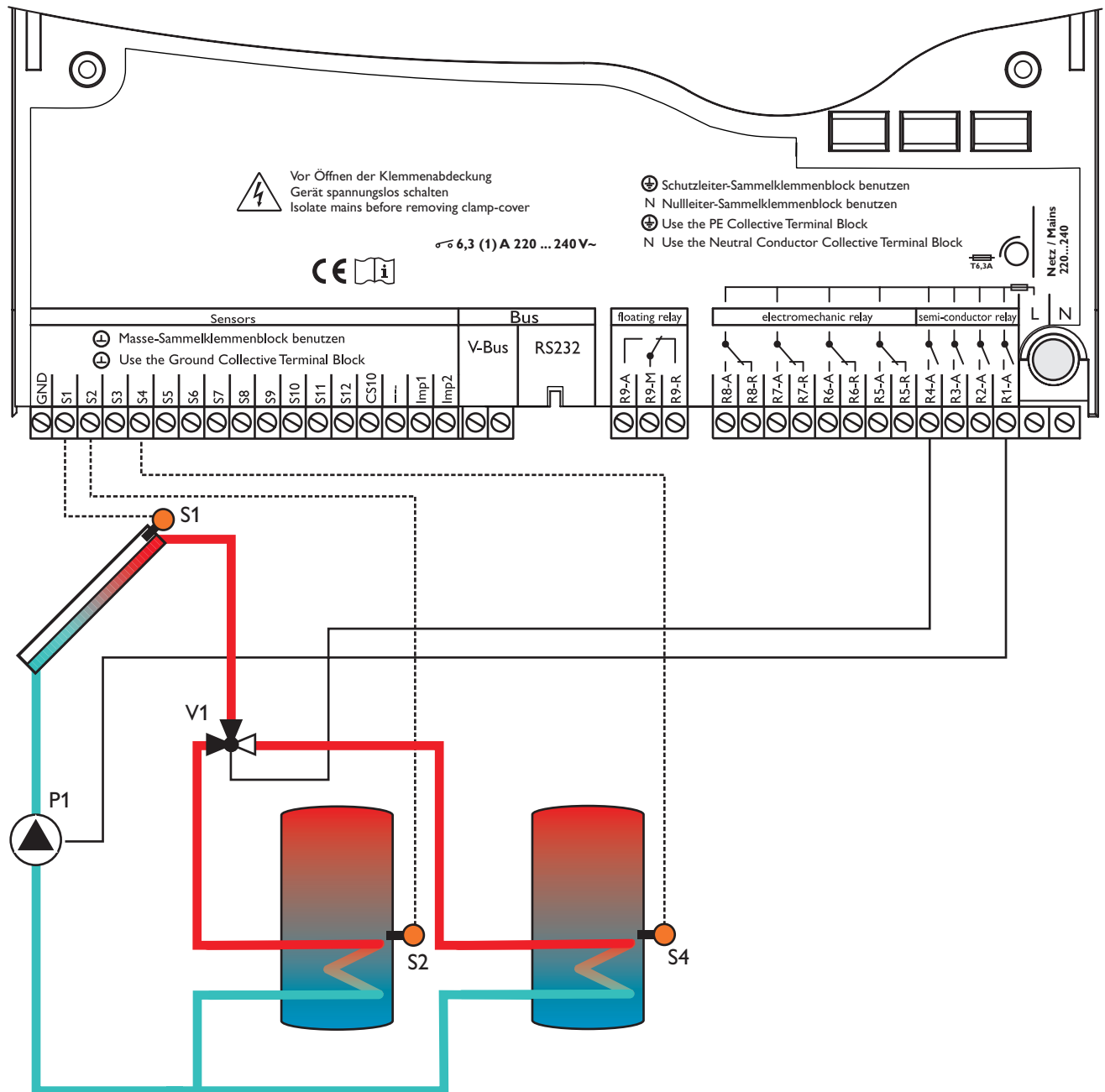
Solar / Options			
description	factory setting	change to	note
system	1	2	system 2: east/west collectors, 1 store
Loading	1	2	variant 2: 1 pump, 2 2-port valves
Bypass	no		
Cool. func.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		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 should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

3. System 3

3.1 2-store system, variant 1



The controller compares the temperature at sensor S1 to the temperature 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). In this system, priority has to be allocated to one of the stores, because parallel loading is not possible.

Terminal allocation

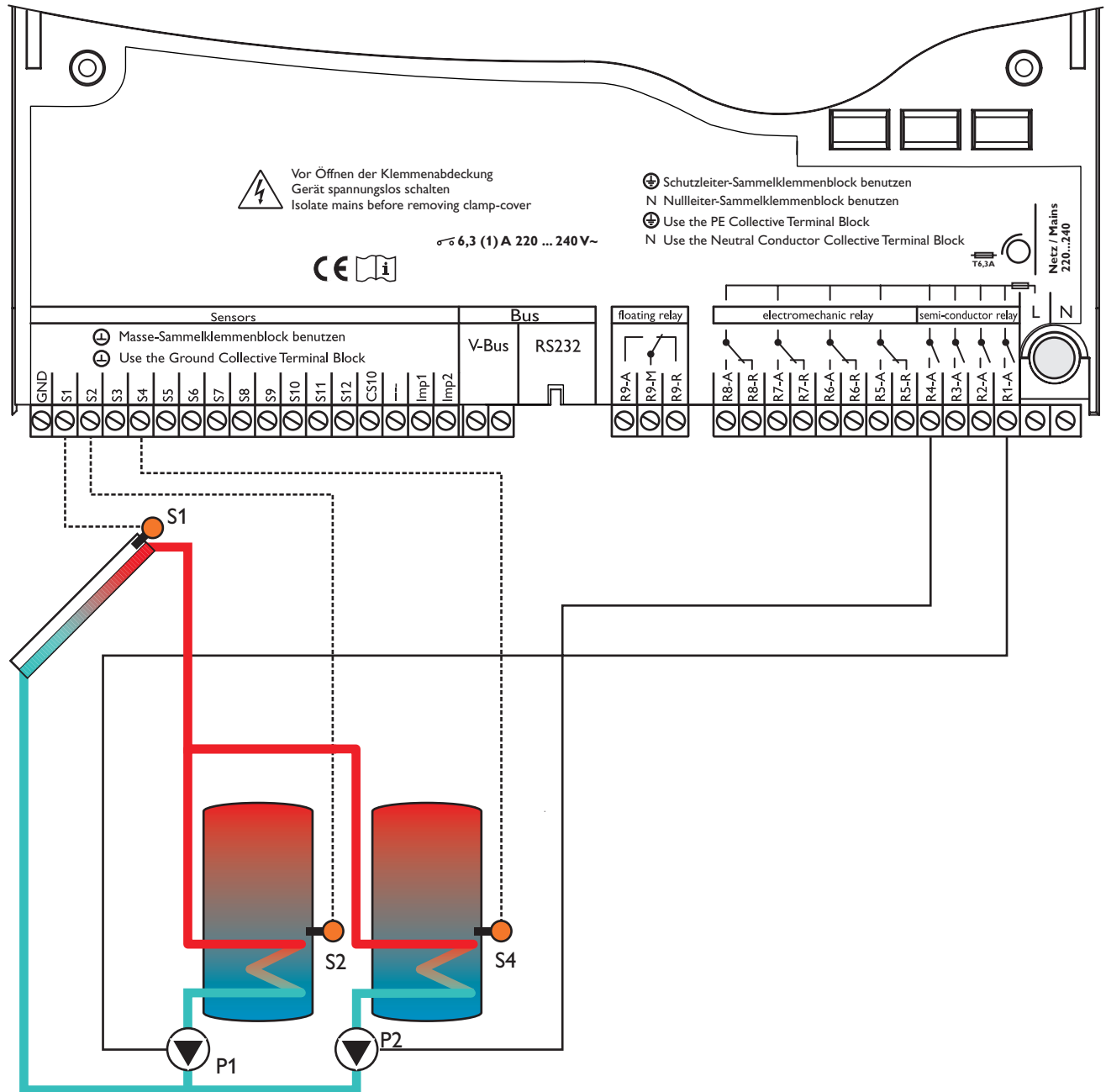
relays:	pump P1	R1-A
	valve V1	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4

Solar / Options			
description	factory setting	change to	note
return			
system	1	3	system 3: 2-store system
Loading	1		variant 1: 1 pump, 1 3-port valve
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 3 3.2 2-store system, variant 2



The controller compares the temperature at sensor S1 to the temperature at sensors S2 and S3. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pumps (P1, P2) will be activated (see speed control) and the corresponding store will be loaded up to the adjusted maximum temperature at most. In this system, priority has to be allocated to one of the stores, because parallel loading is not possible.

Terminal allocation

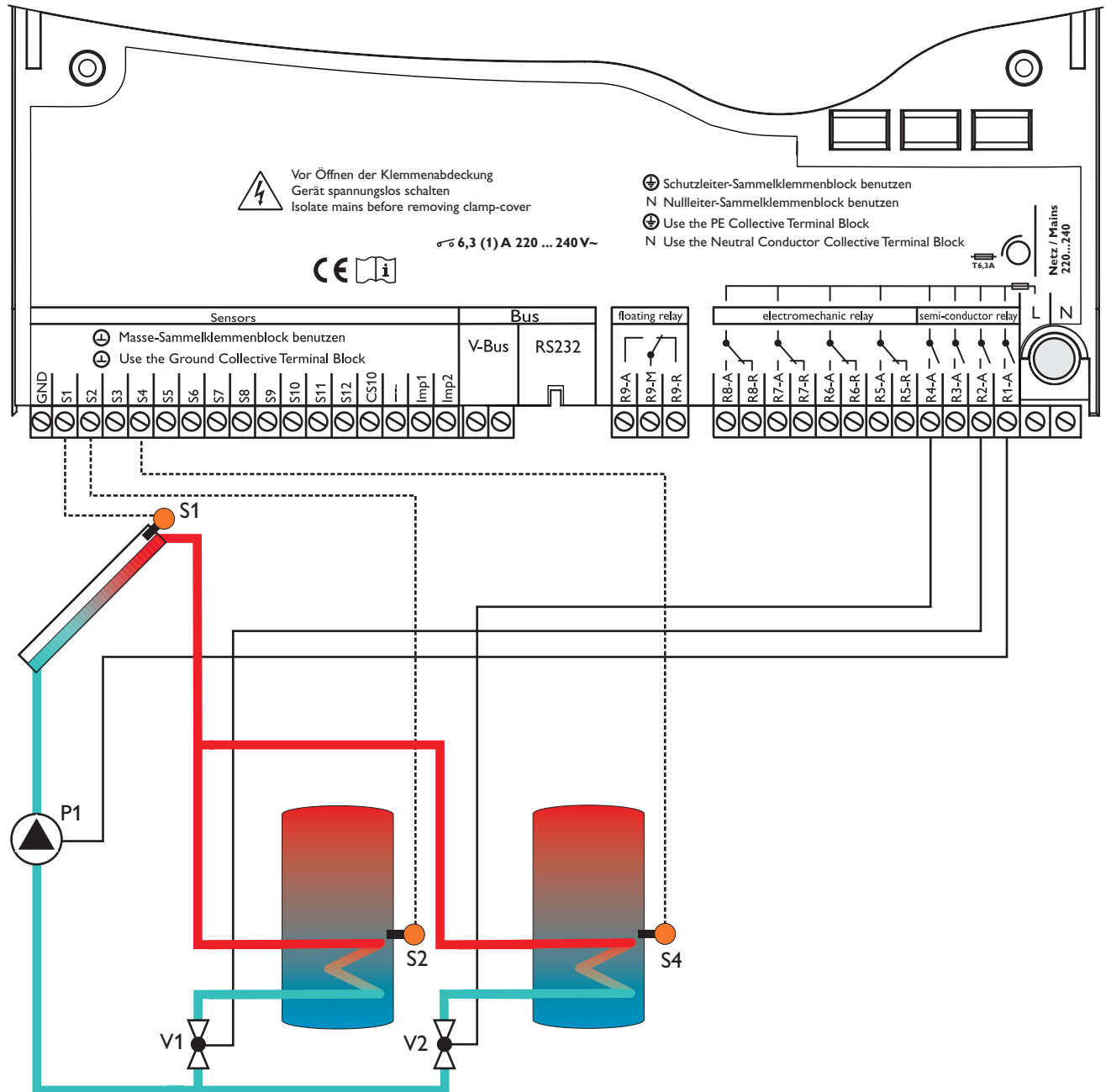
relays:	pump P1	R1-A
	pump P2	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4

Solar / Options			
description	factory setting	change to	note
return			
system	1	3	System 3: 2-store system
Loading	1	2	variant 2: 2 pumps
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 3 3.3 2-store system, variant 3



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 valves (V1 and V2).

Terminal allocation

relays:	pump P1	R1-A
	valve V1	R2-A
	valve V2	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4

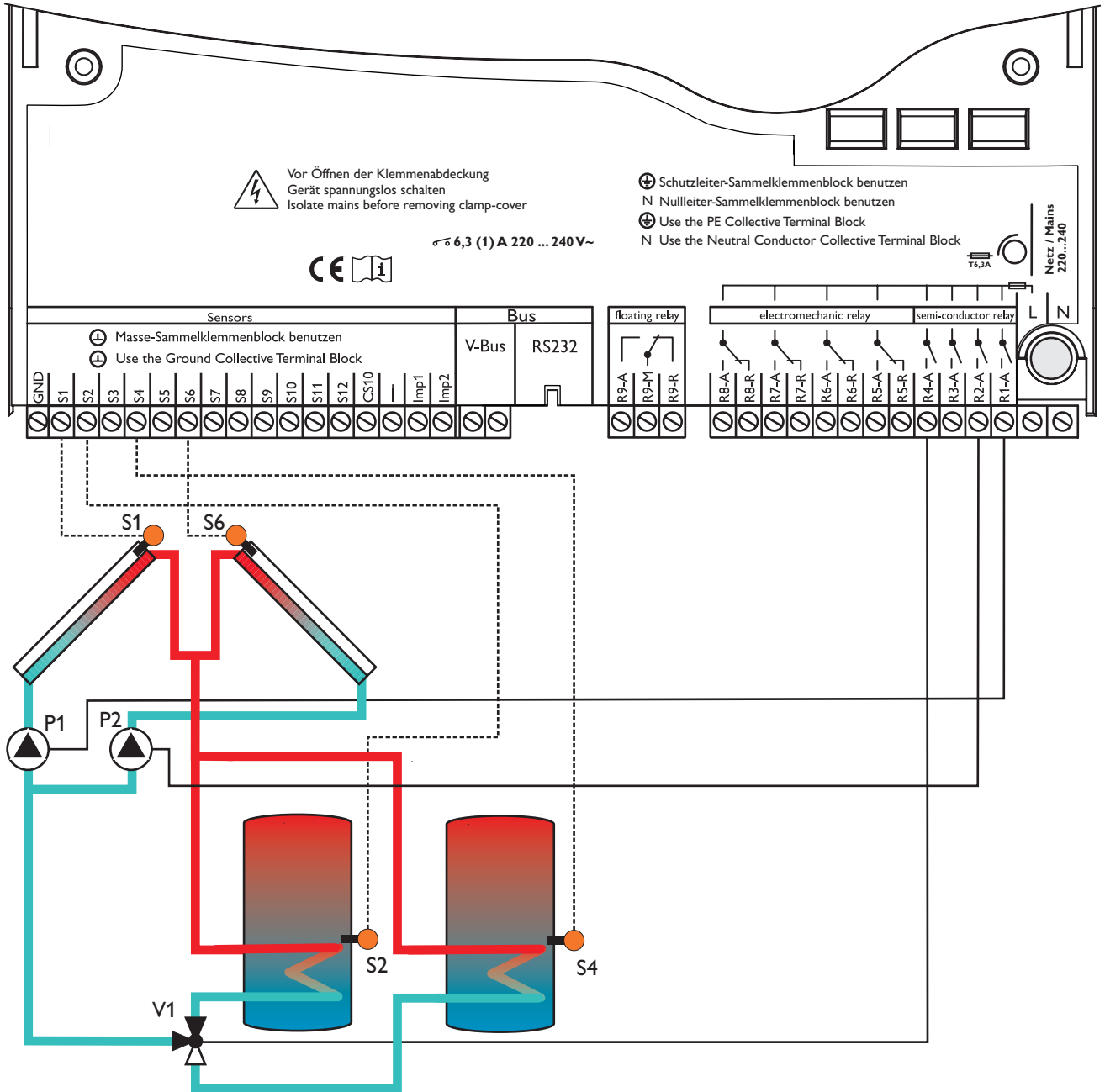
Solar / Options			
description	factory setting	change to	note
return			
system	1	3	System 3: 2-store system
Loading	1	3	variant 3: 1 pump, 2 2-port valves
Bypass	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

4. System 4

4.1 2-store system with east/west collectors, variant 1



The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensor S2 and S4. If one of the measured temperature differences is higher than the adjusted switch-on temperature differences, the corresponding pump P1, P2 is activated (see speed control) and, if necessary, valve V1 changes position. In this system, priority has to be allocated to one of the stores, because parallel loading is not possible.

Terminal allocation

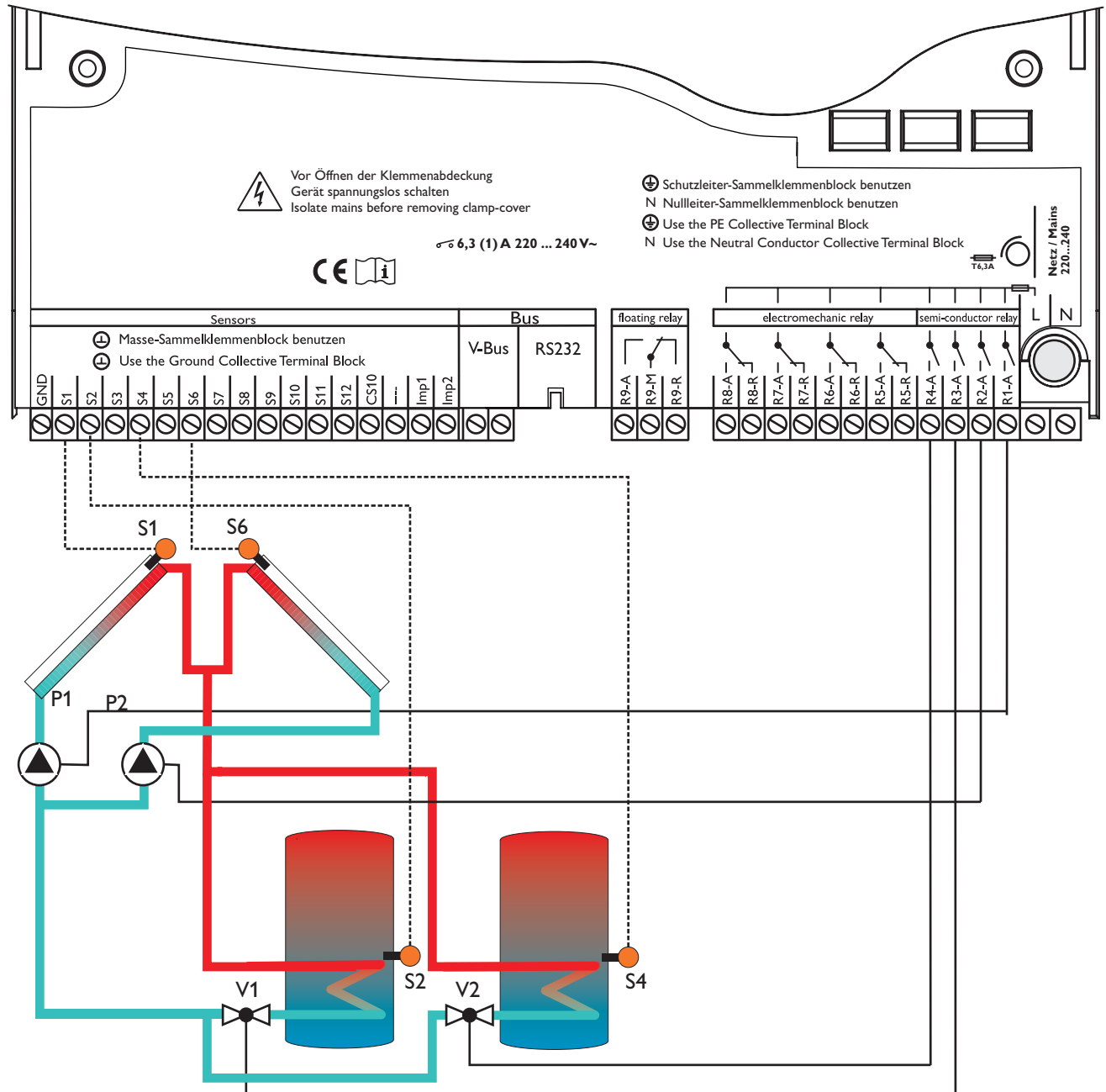
relays:	pump P1	R1-A
	pump P2	R2-A
	valve V1	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4
	sensor S6	S6

Solar / Options			
description	factory setting	change to	note
return			
system	1	4	System 4: east/west collectors, 2 store sys.
Loading	1		variant 1: 2 pumps, 1 3-port valve
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 4 4.2 2-store system with east/west collectors, variant 2



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 temperature differences, the pump P1, P2 and the corresponding valve (V1, V2) is activated and one of the stores will be loaded. In this system, priority has to be allocated to one of the stores, because parallel loading is not possible.

Terminal allocation		
relays:	pump P1	R1-A
	pump P2	R2-A
	valve V1	R3-A
	valve V2	R4-A
	sensors:	sensor S1
	sensor S2	S2
	sensor S4	S4
	sensor S6	S6

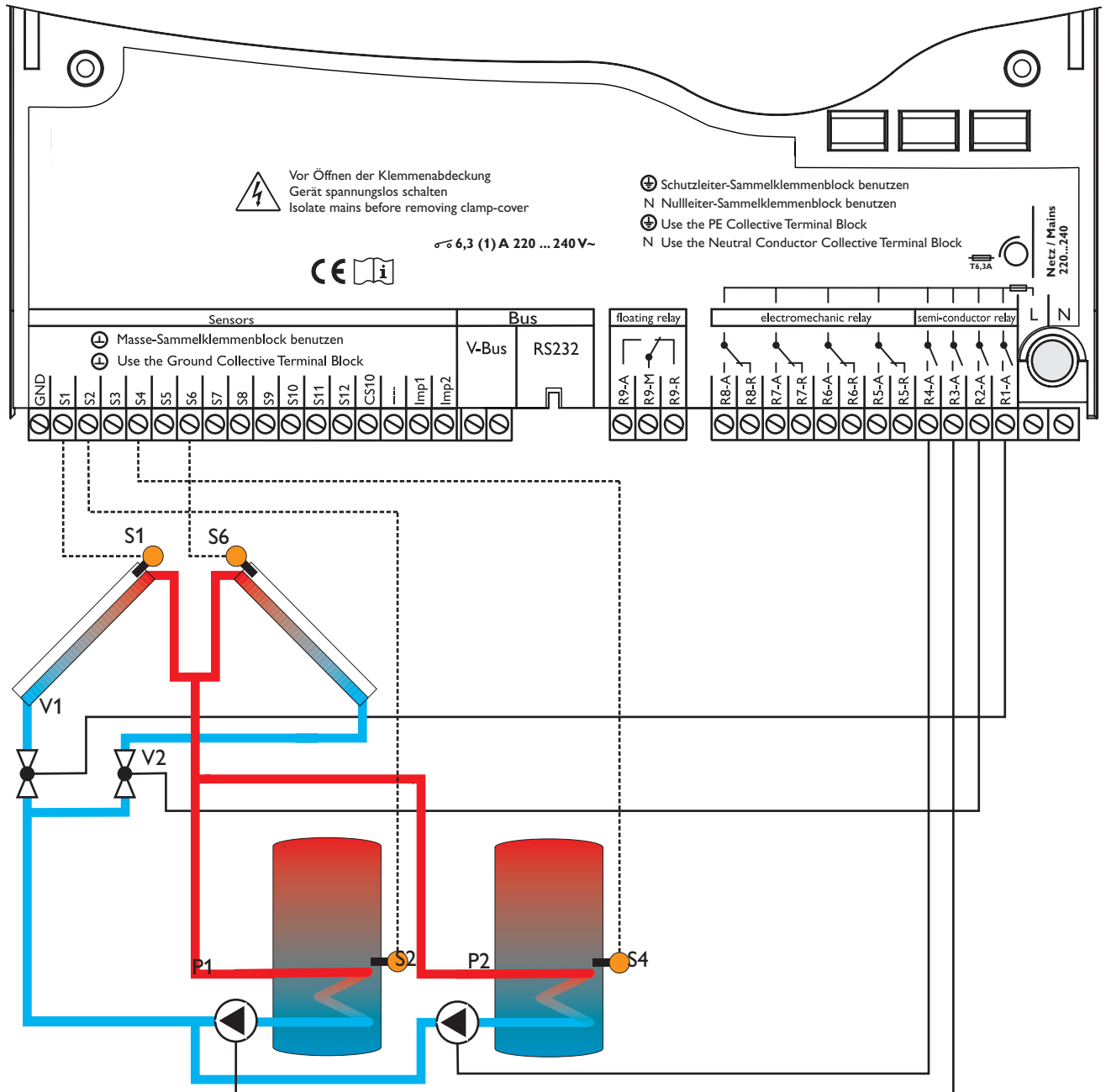
Solar / Options			
description	factory setting	change to	note
return			
system	1	4	System 4: east/west collectors, 2 store sys.
Loading	1	2	variant 2: 2 pumps, 2 2-port valves
Bypass	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 4

4.3 2-store system with east/west collectors, variant 3



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 is activated (see speed control) and the corresponding valve V1, V2 changes position. In this system, priority has to be allocated to one of the stores, because parallel loading is not possible.

Terminal allocation

relays:	valve V1	R1-A
	valve V2	R2-A
	pump P1	R3-A
	pump P2	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4
	sensor S6	S6

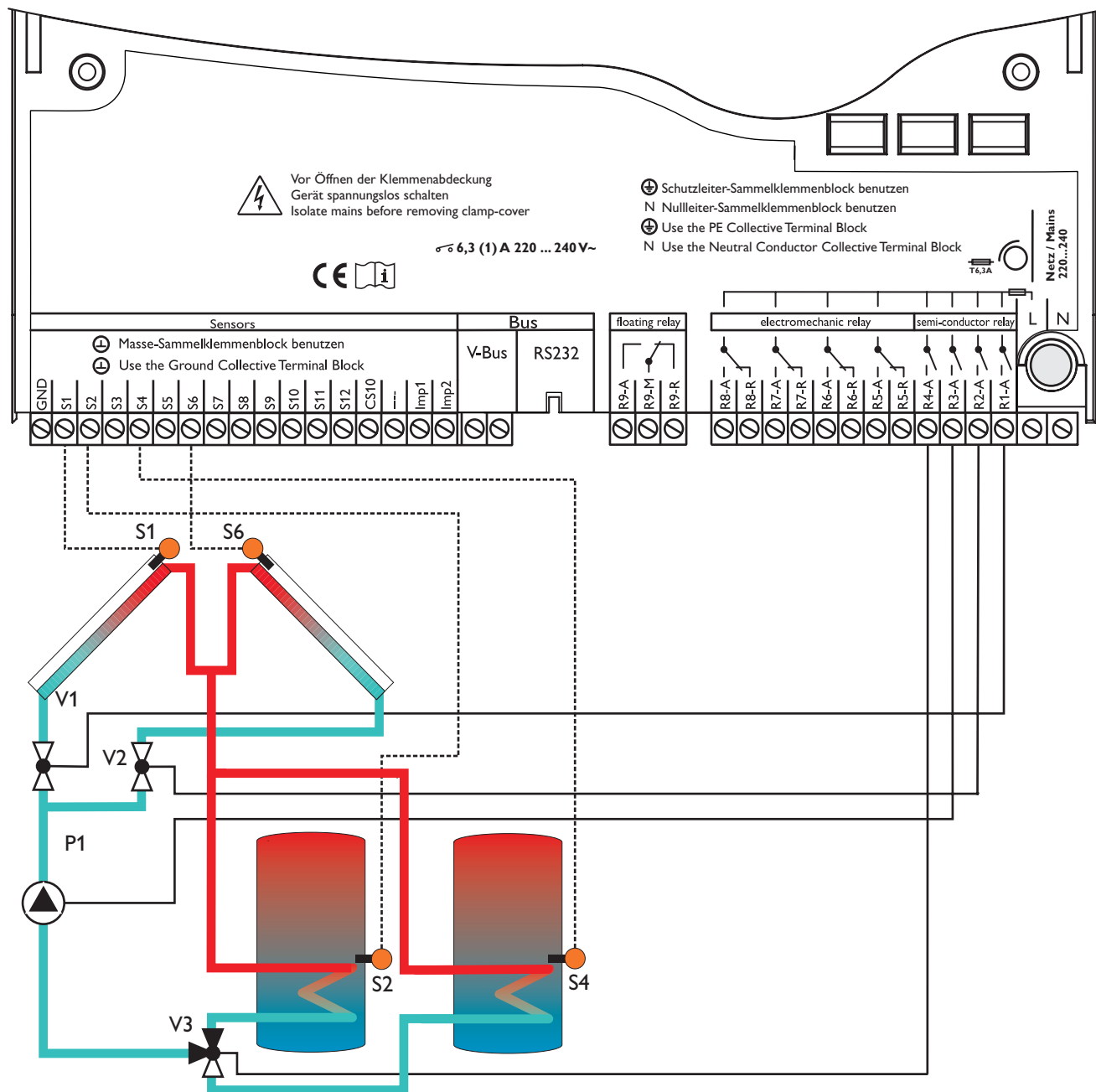
Solar / Options			
description	factory setting	change to	note
return			
system	1	4	System 4: east/west collectors, 2 store sys.
Loading	1	3	variant 3: 2 pumps, 2 2-port valves
Bypass	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 4

4.4 2-store system with east/west collectors, variant 4



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 pump (P1) is activated (see speed control) and, if necessary, valve (V1, V2 and V3) changes position. In this system, priority has to be allocated to one of the stores, because parallel loading is not possible.

Terminal allocation

relays:	valve V1	R1-A
	valve V2	R2-A
	pump P1	R3-A
	valve V3	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4
	sensor S6	S6

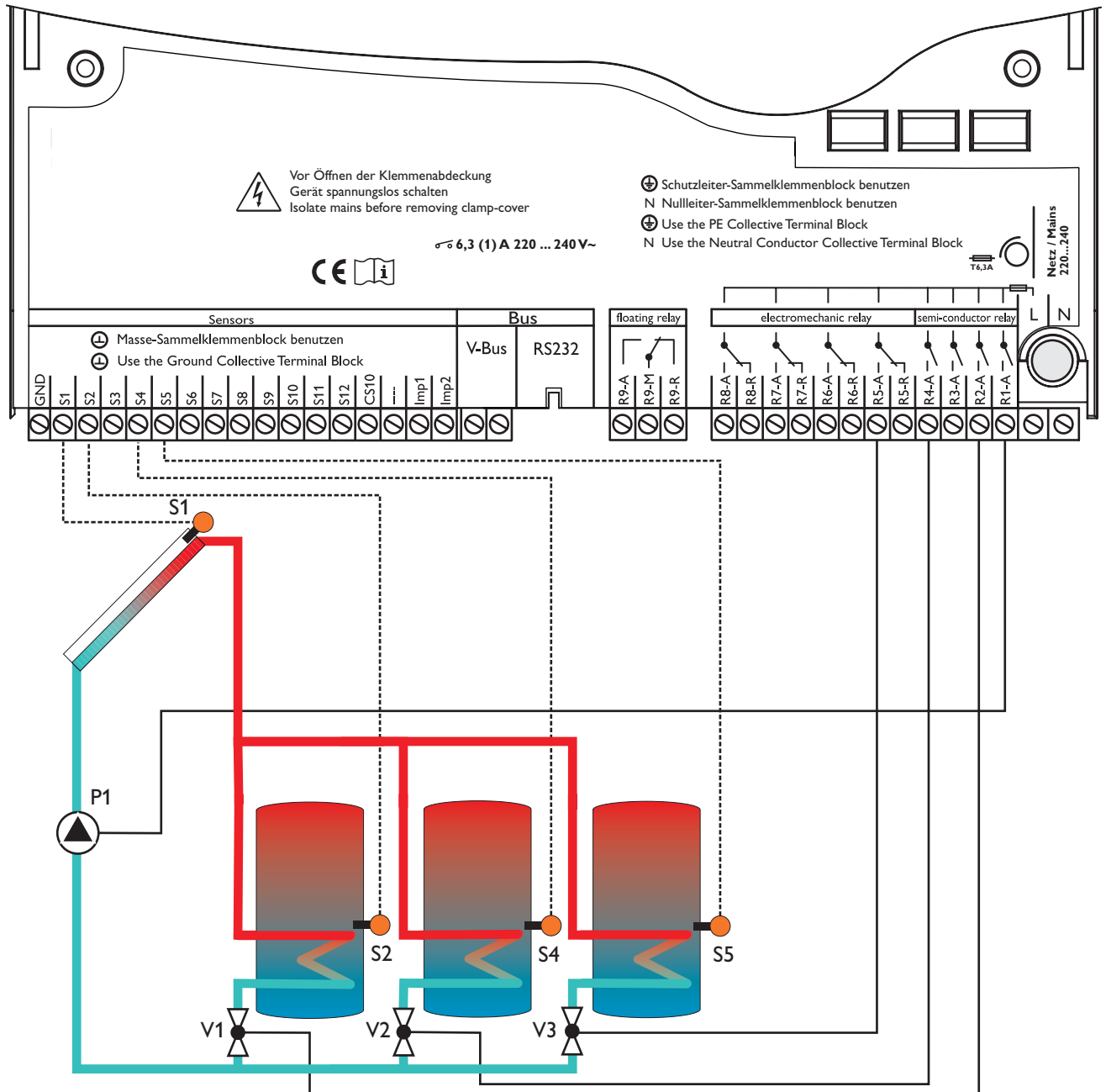
Solar / Options			
description	factory setting	change to	note
return			
system	1	4	System 4: east/west collectors, 2 store sys.
Loading	1	4	variant 4: 1 pump, 2 2-port valves, 1 3-port valve
Bypass	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

5. System 5

5.1 3-store system, variant 1



The controller compares the temperature at sensor S1 to the temperatures at sensors S2, S4 and S5. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated (see speed control) and the corresponding store will be loaded up to the adjusted maximum temperature at most via the valves (V1, V2 and V3). In this system, priority can be allocated to one store or (and) parallel loading (of the other stores) can be carried out.

Terminal allocation

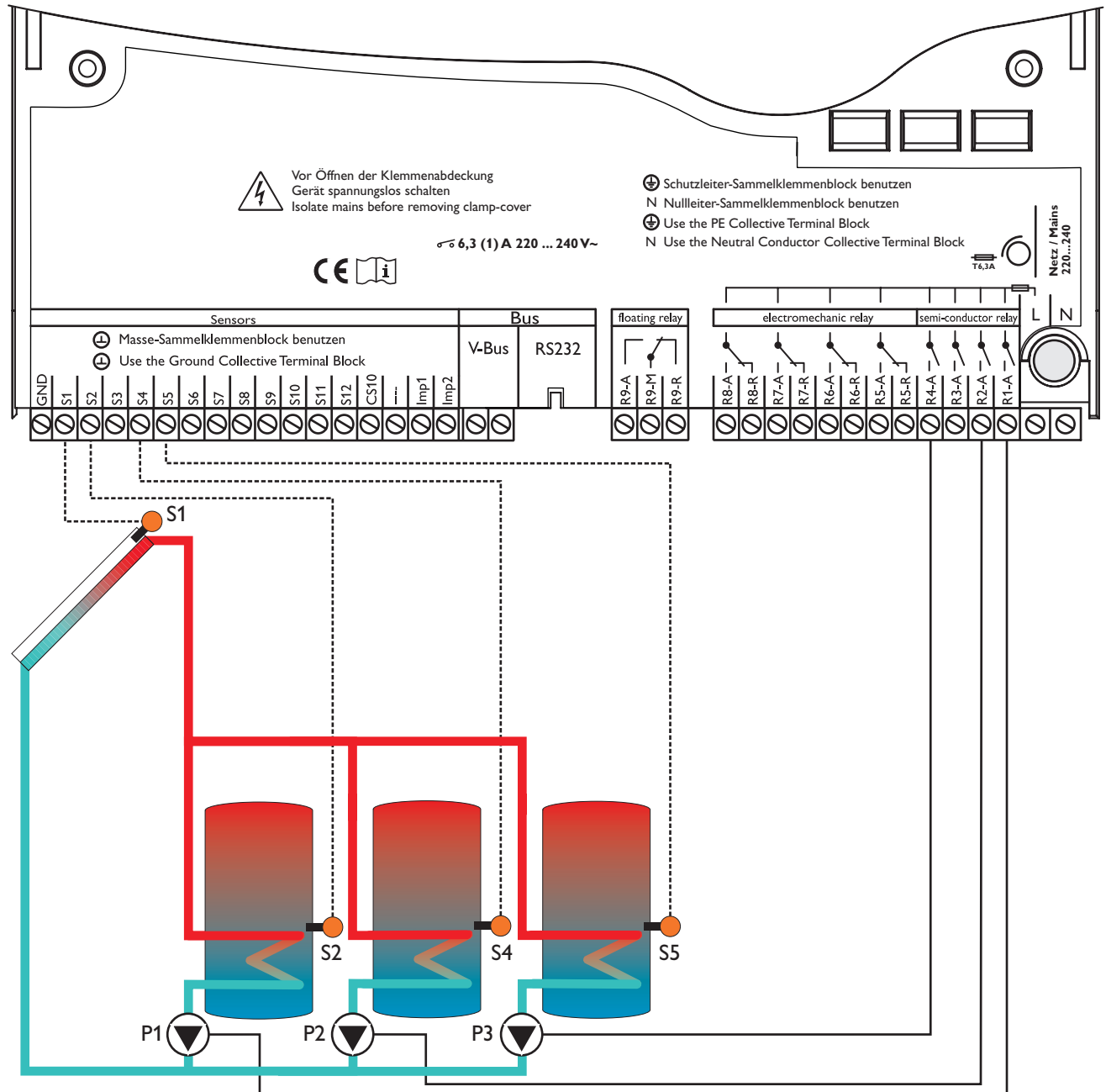
relays:	pump P1	R1-A
	valve V1	R2-A
	valve V2	R4-A
	valve V3	R5-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4
	sensor S5	S5

Solar / Options			
description	factory setting	change to	note
return			
system	1	5	System 5: 3-store system
Loading	1		variant 1: 1 pump, 3 2-port valves
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		
ST3 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
Tst3max	60		Adjust the desired maximum store temperature for store 3
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Priority ST3	3		Priority sequence ST3 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 5 5.2 3-store system, variant 2



The controller compares the temperature at sensor S1 to the temperatures at sensors S2, S4 and S5. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the corresponding pump P1, P2, P3 will be activated (see speed control) and the corresponding store will be loaded up to the adjusted maximum temperature at most. In this system, priority can be allocated to one store or (and) parallel loading (of the other stores) can be carried out.

Terminal allocation

relay:	pump P1	R1-A
	pump P2	R2-A
	valve V1	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4
	sensor S5	S5

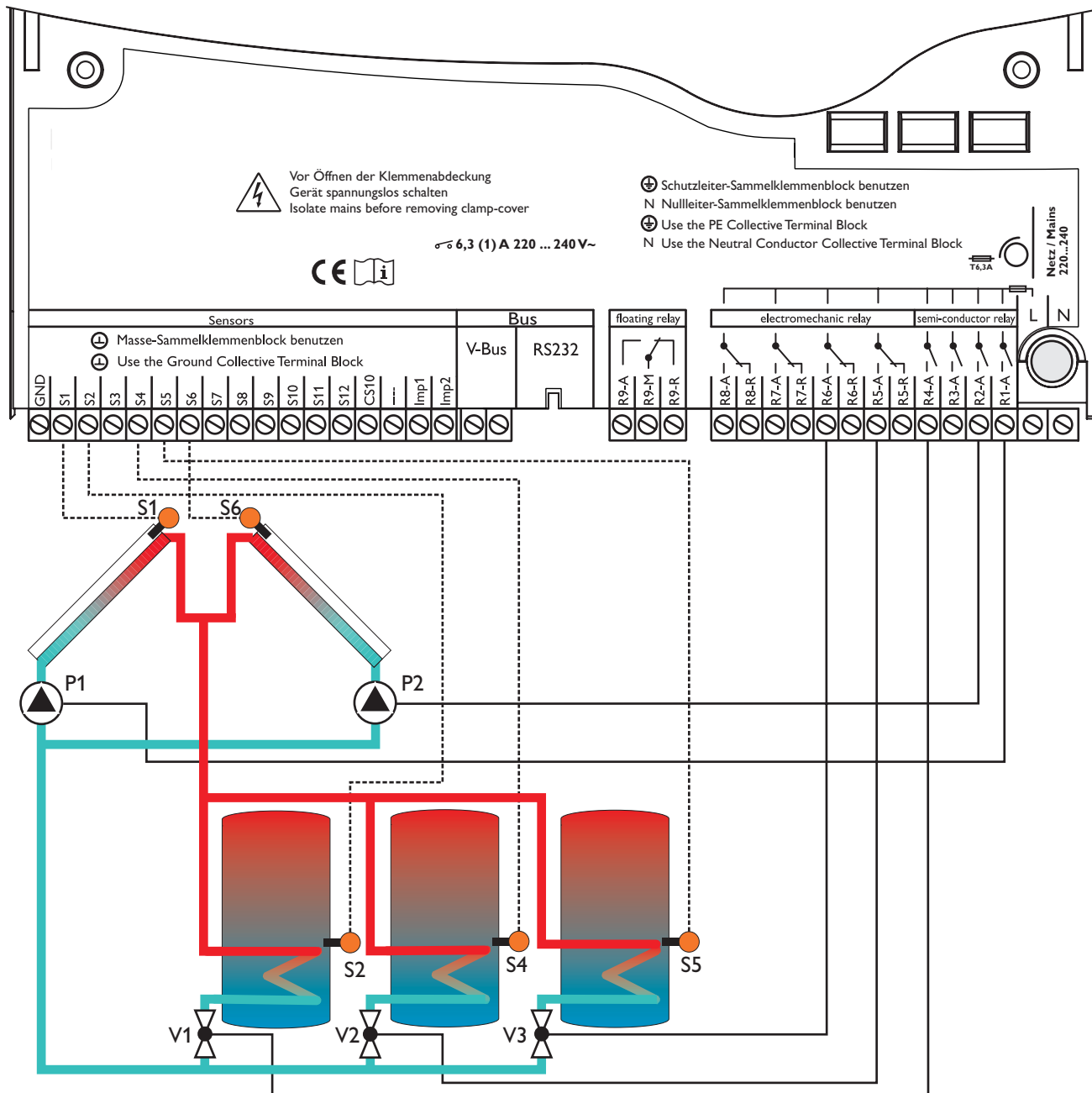
Solar / Options			
description	factory setting	change to	note
return			
system	1	5	System 5: 3-store system
Loading	1	2	variant 2: 3 pumps
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		
ST3 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
Tst3max	60		Adjust the desired maximum store temperature for store 3
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 3
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 3
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Priority ST3	3		Priority sequence ST3 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

6. System 6

6.1 3-store system with east/west collectors, variant 1



The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2, S4 and S5. If one of the measured temperature differences is higher than the adjusted switch-on differences, the corresponding pump P1, P2 is switched on (see speed control) and the corresponding store is loaded up to the maximum temperature at most via the valves V1, V2, V3. In this system, priority can be allocated to one store or (and) parallel loading (of the other stores) can be carried out.

Terminal allocation

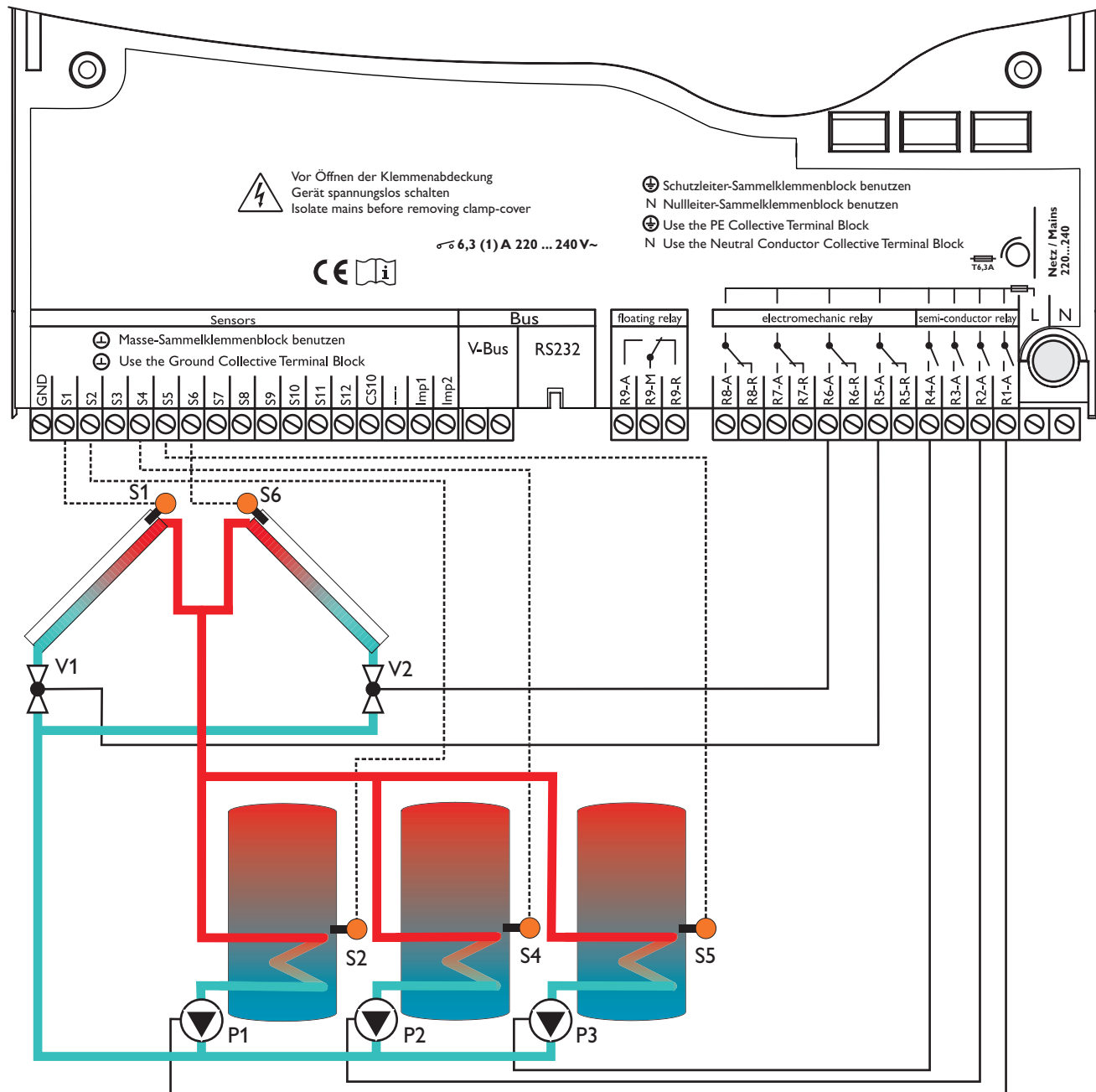
relays:	pump P1	R1-A
	pump P2	R2-A
	valve V1	R4-A
	valve V2	R5-A
	valve V3	R6-A
	sensors:	sensor S1
sensor S2		S2
sensor S4		S4
sensor S5		S5
sensor S6		S6

Solar / Options			
description	factory setting	change to	note
return			
system	1	6	System 6: east/west collectors, 3 store system
Loading	1		variant 1: 2 pumps, 3 2-port valves
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		
ST3 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
Tst3max	60		Adjust the desired maximum store temperature for store 3
ΔT_{ein}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2\text{on}}$	5,0		Adjust the desired switch-on temperature difference for store 2.
$\Delta T_{2\text{off}}$	3,0		Adjust the desired switch-off temperature difference for store 2.
$\Delta T_{2\text{set}}$	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
$\Delta T_{2\text{on}}$	5,0		Adjust the desired switch-on temperature difference for store 3
$\Delta T_{3\text{off}}$	3,0		Adjust the desired switch-off temperature difference for store 3
$\Delta T_{2\text{set}}$	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Priority ST3	3		Priority sequence ST3 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 6 6.2 3-store system with east/west collectors, variant 2



The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2, S4 and S5. If one of the measured temperature differences is higher than the adjusted switch-on temperature differences, valve V1 and/or V2 is/are energised and the corresponding store is loaded up to the adjusted maximum temperature at most via the pumps P1, P2, P3. In this system, priority can be allocated to one store or (and) parallel loading (of the other stores) can be carried out.

Terminal allocation

relays:	pump P1	R1-A
	pump P2	R2-A
	Pump P3	R4-A
	valve V1	R5-A
	valve V2	R6-A
	sensors:	sensor S1
sensor S2		S2
sensor S4		S4
sensor S5		S5
sensor S6		S6

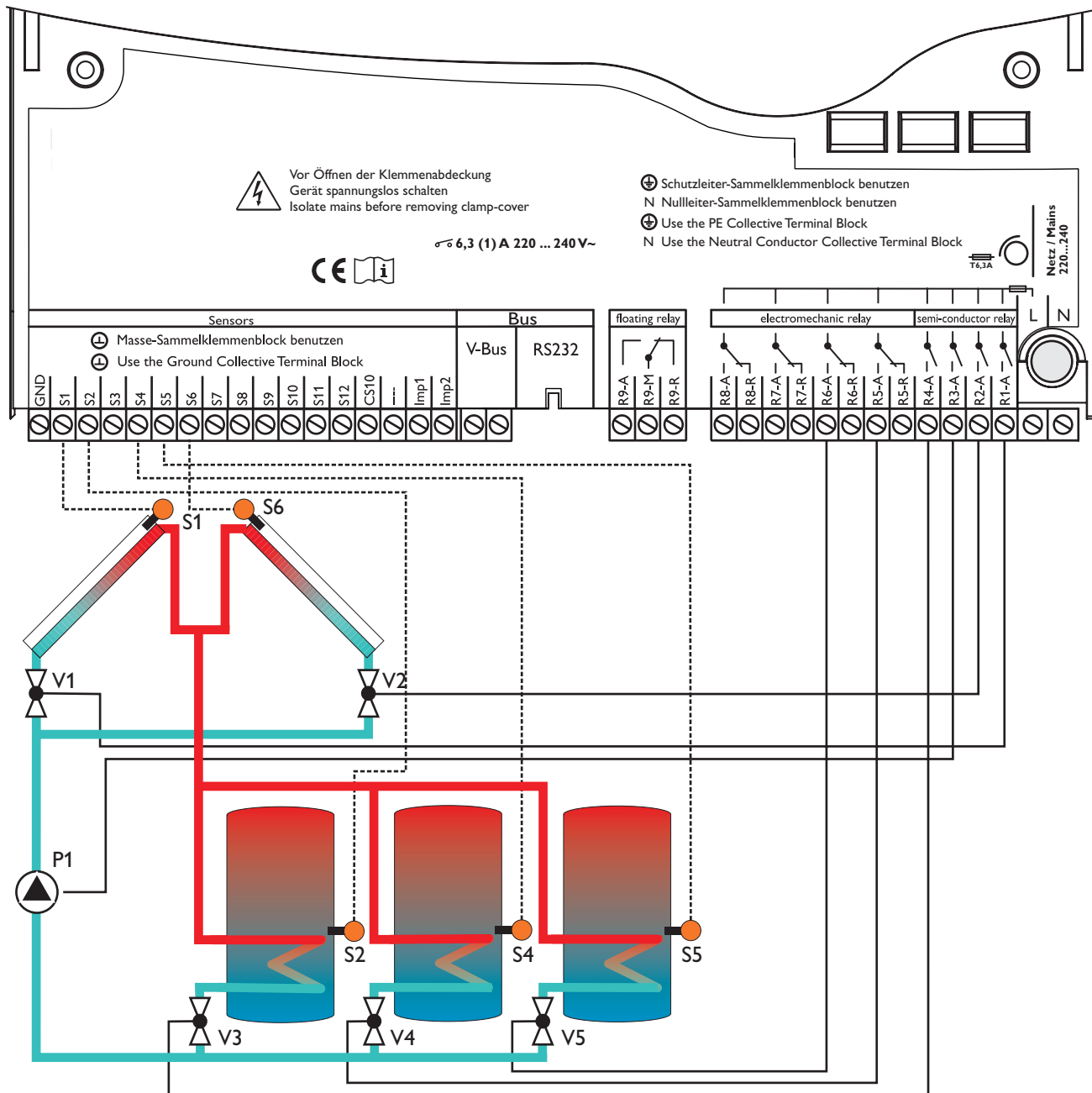
Solar / Options			
description	factory setting	change to	note
return			
system	1	6	System 6: east/west collectors, 3-store system
Loading	1	2	variant 2: 3 pumps, 2 2-port valves
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		
ST3 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
Tst3max	60		Adjust the desired maximum store temperature for store 3
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{3on}	5,0		Adjust the desired switch-on temperature difference for store 3
ΔT_{3off}	3,0		Adjust the desired switch-off temperature difference for store 3
ΔT_{3set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Priority ST3	3		Priority sequence ST3 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 6

6.3 3-store system with east/west collectors, variant 3



The controller compares the temperatures at the collector sensors S1 and S6 to the store temperatures at the store sensors S2, S4 and S5. If one of the temperature differences is higher than the adjusted switch-on temperature differences, pump P1 and the corresponding valve V1, V2 are activated and one of the stores is loaded up to the maximum temperature at most, depending on the position of the valves V3, V4, V5. In this system, priority can be allocated to one store or (and) parallel loading (of the other stores) can be carried out.

Terminal allocation	
relays:	valve V1 R1-A
	valve V2 R2-A
	pump P1 R3-A
	valve V3 R4-A
	valve V4 R5-A
	valve V5 R6-A
sensors:	sensor S1 S1
	sensor S2 S2
	sensor S4 S4
	sensor S5 S5
	sensor S6 S6

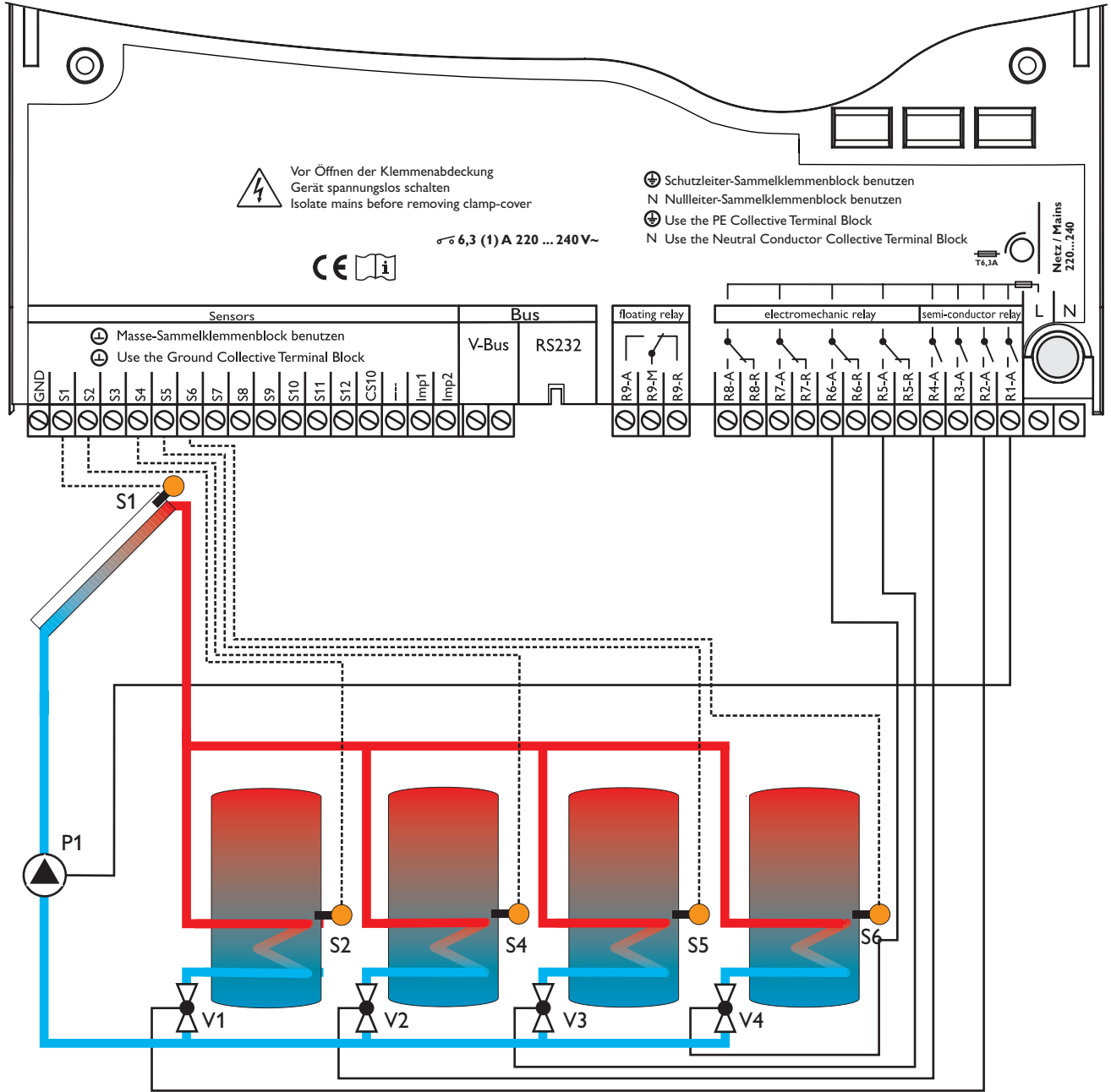
Solar / Options			
description	factory setting	change to	note
return			
system	1	6	System 6: east/west collectors, 3-store system
Loading	1	3	variant 3: 1 pump, 5 2-port valves
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		
ST3 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
Tst3max	60		Adjust the desired maximum store temperature difference for store 3
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 3
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 3
ΔT_{3set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Priority ST3	3		Priority sequence ST3 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

7. System 7

7.1 4-store system, variant 1



The controller compares the temperature at sensor S1 to the temperatures at sensors S2, S4, S5 and S6. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump (P1) will be activated (see speed control) and the corresponding store will be loaded up to the adjusted maximum temperature at most via the valves V1, V2, V3 and V4. In this system, priority can be allocated to one store or (and) parallel loading (of the other stores) can be carried out .

Terminal allocation

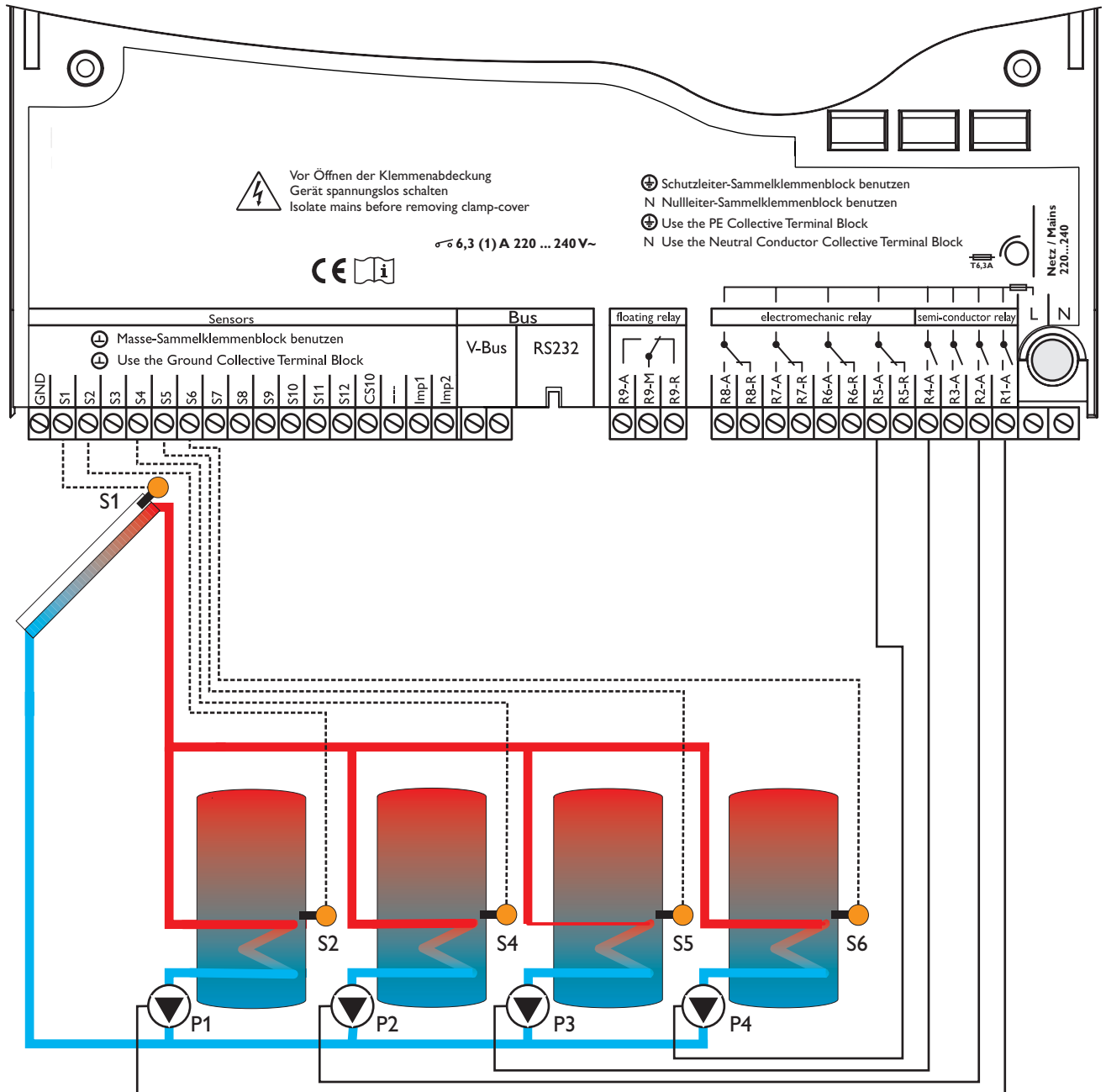
relays:	pump P1	R1-A
	valve V1	R2-A
	valve V2	R4-A
	valve V3	R5-A
sensors:	valve V4	R6-A
	sensor S1	S1
	sensor S2	S2
	sensor S4	S4
	sensor S5	S5
	sensor S6	S6

Solar / Options			
description	factory setting	change to	note
return			
system	1	7	System 7: 4-store system
Loading	1		variant 1: 1 pump, 4 2-port valves
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		
ST3 on	yes		
ST4 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
Tst3max	60		Adjust the desired maximum store temperature difference for store 3
Tst4max	60		Adjust the desired maximum store temperature difference for store 4
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{3on}	5,0		Adjust the desired switch-on temperature difference for store 3
ΔT_{3off}	3,0		Adjust the desired switch-off temperature difference for store 3
ΔT_{3set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{4on}	5,0		Adjust the desired switch-on temperature difference for store 4.
ΔT_{4off}	3,0		Adjust the desired switch-off temperature difference for store 4.
ΔT_{4set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
priority ST2	2		Store sequence ST2 subordinate
Priority ST3	3		Priority sequence ST3 subordinate
Priority ST4	4		Priority sequence ST4 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

System 7 7.2 4-store system, variant 2



The controller compares the temperature at sensor S1 to the temperatures at sensors S2, S4, S5 and S6. If the measured temperature differences are higher than the adjusted switch-on temperature differences, the pump P1, P2, P3, P4 will be activated (see speed control) and the corresponding store will be loaded up to the adjusted maximum temperature at most. In this system, priority can be allocated to one store or (and) parallel loading (of the other stores) can be carried out.

Terminal allocation

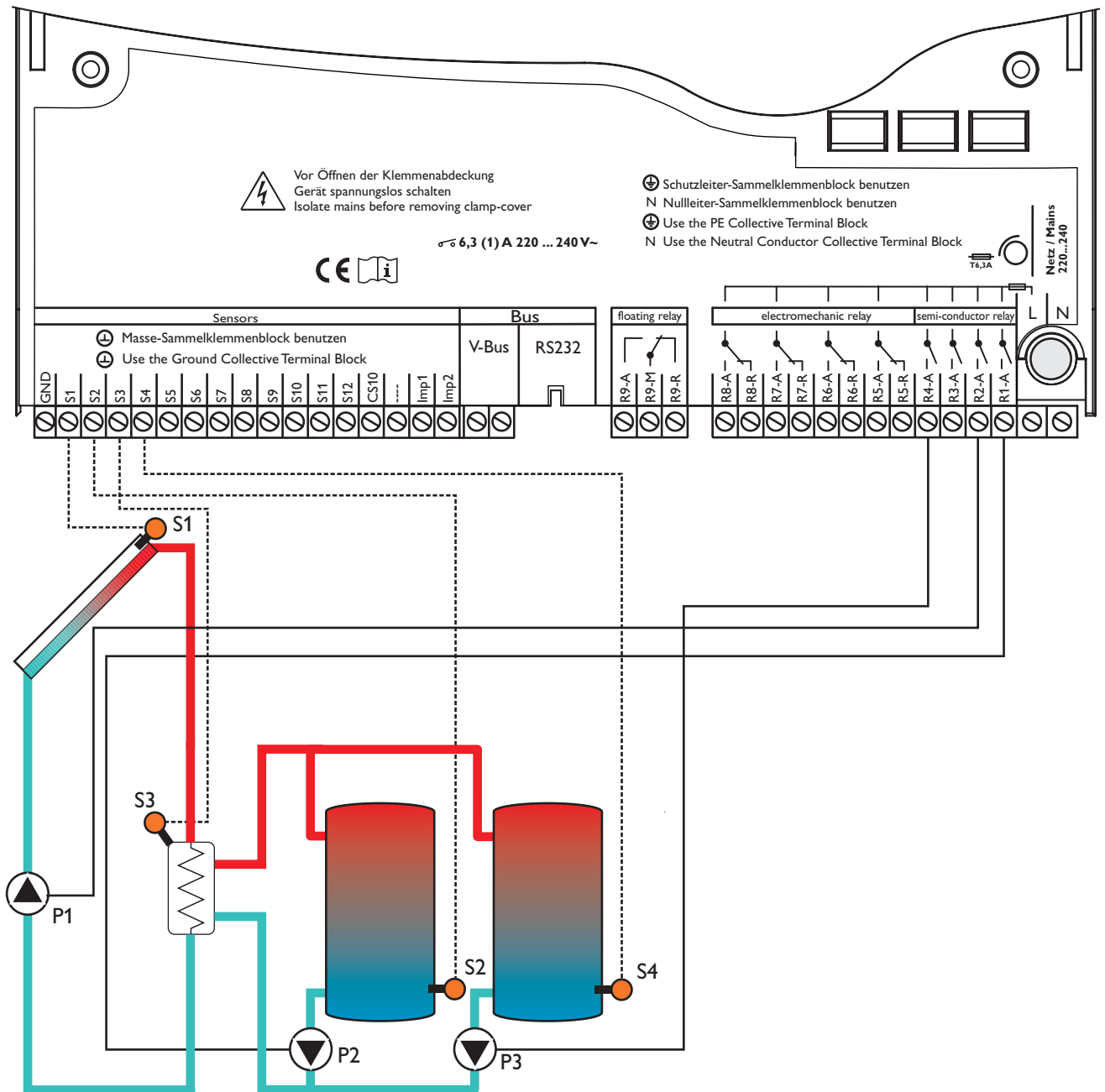
relays:	pump P1	R1-A
	pump P2	R2-A
	pump P3	R4-A
	pump P4	R5-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S4	S4
	sensor S5	S5
	sensor S6	S6

Solar / Options			
description	factory setting	change to	note
return			
system	1	7	System 7: 4-store system
Loading	1	2	variant 2: 4 pumps
Bypass	no		
Ext. Heat. Ex.	no		
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		
ST3 on	yes		
ST4 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
Tst3max	60		Adjust the desired maximum store temperature difference for store 3
Tst4max	60		Adjust the desired maximum store temperature difference for store 4
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{3on}	5,0		Adjust the desired switch-on temperature difference for store 3
ΔT_{3off}	3,0		Adjust the desired switch-off temperature difference for store 3
ΔT_{3set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{4on}	5,0		Adjust the desired switch-on temperature difference for store 4.
ΔT_{4off}	3,0		Adjust the desired switch-off temperature difference for store 4.
ΔT_{4set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
Priority ST1	1		Store sequence ST1 priority
Priority ST2	2		Store sequence ST2 subordinate
Priority ST3	3		Priority sequence ST3 subordinate
Priority ST4	4		Priority sequence ST4 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

8. Example: system with external heat exchanger 2-store system, variant 2



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, pump P1 is activated (see speed control), the primary circuit gets heated. At the same time, the temperature difference between S3, S2 and S4 is being detected. If the temperature difference exceeds the adjusted value, pumps P2 and/ or P3 are activated (see speed control) and the corresponding store is loaded up to the adjusted maximum temperature.

Terminal allocation		
relays:	pump P1	R2-A
	pump P2	R1-A
	pump P3	R4-A
sensors:	sensor S1	S1
	sensor S2	S2
	sensor S3	S3
	sensor S4	S4

Solar / Options			
description	factory setting	change to	note
return			
system	1	3	System 3: 2-store system
Loading	1	2	variant 2: 2 pumps
Bypass	no		
Ext. Heat. Ex.	no	yes	The external heat exchanger option is activated. (Relay output R2)
Tube Col.	no		
Col. Cooling	no		
Recooling	no		
Frost. Prot.	no		
Target Tem.	no		
Par. Relay	no		
CS-Bypass	no		
AH Suppress.	no		
ST2 on	yes		

Solar / Adjustment values			
description	factory setting	change to	note
Tst max	60		Adjust the desired maximum store temperature temperature
Tst2max	60		Adjust the desired maximum store temperature for store 2.
ΔT_{on}	5,0		Adjust the desired switch-on temperature difference.
ΔT_{off}	3,0		Adjust the desired switch-off temperature difference.
ΔT_{set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
ΔT_{2on}	5,0		Adjust the desired switch-on temperature difference for store 2.
ΔT_{2off}	3,0		Adjust the desired switch-off temperature difference for store 2.
ΔT_{2set}	10 K		Once the adjusted temperature difference is reached, the speed is increased by 10 %.
HE- ΔT_{on}	5,0		Adjust the desired switch-on temperature difference for secondary pump ext. heat exchanger
HE- ΔT_{off}	3,0		Adjust the desired switch-off temperature difference for secondary pump ext. heat exchanger
Priority ST1	1		Store sequence ST1 priority
priority ST2	2		Store sequence ST2 subordinate
Tcolsec	130		Adjust this value to 200°C when the collector emergency shutdown function should not start.

System / Adjustment values			
description	factory setting	change to	note
Time	12:00		Adjust the actual clock time.

Notes

Priority logic

Corresponding adjustment values:

	factory setting	adjustment range
Solar / Adjustment values:		
Priority ST1	1	1 - 4
Priority ST2	2	1 - 4
Priority ST3	3	1 - 4
Priority ST4	4	1 - 4
Solar / Expert:		
Loading break time [t-st]	2 min.	1 - 60 min.
Store sequence control [t-circ.]	15 min	1 - 60 min.
Collector rise temperature [T-col]	2 K	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 via oscillating loading: 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.

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Note

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