Installation and service instructions

for contractors

Electronic temperature differential control unit
Vitosolic 200
Type SD4

For applicability, see the last page

VITOSOLIC 200

Please keep safe.

Safety instructions

⚠ Please follow these safety instructions closely to prevent accidents and material losses.

Safety instructions explained

⚠ **Danger**
This symbol warns against the risk of injury.

❗ **Please note**
This symbol warns against the risk of material losses and environmental pollution.

Note
Details identified by the word "Note" contain additional information.

Target group

These instructions are exclusively intended for qualified contractors.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations

Observe the following when working on this system:
- National installation regulations
- Statutory regulations regarding the prevention of accidents
- Statutory regulations regarding environmental protection
- The Code of Practice of relevant trade associations
- All current safety regulations as defined by DIN, EN, DVGW, VDE and all locally applicable standards
  - Ⓐ ÖNORM, EN and ÖVE
  - ⒸⒽ SEV, SUVA, SVTI and SWKI

Working on the system

- Isolate the system from the power supply (e.g. by removing the separate fuse or by means of a mains isolator) and check that it is no longer 'live'.
- Safeguard the system against reconnection.

❗ **Please note**
Electronic assemblies can be damaged by electrostatic discharge.
Prior to commencing any work, touch earthed objects such as heating or water pipes to discharge static loads.

Repair work

❗ **Please note**
Repairing components that fulfil a safety function can compromise the safe operation of your system.
Replace faulty components with genuine Viessmann spare parts.

Auxiliary components, spare and wearing parts

❗ **Please note**
Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty.
For replacements, use only original spare parts supplied or approved by Viessmann.

Index

Index

Fitting the solar control unit

When selecting the installation location, take note of
the electrical connections and cable/lead lengths.
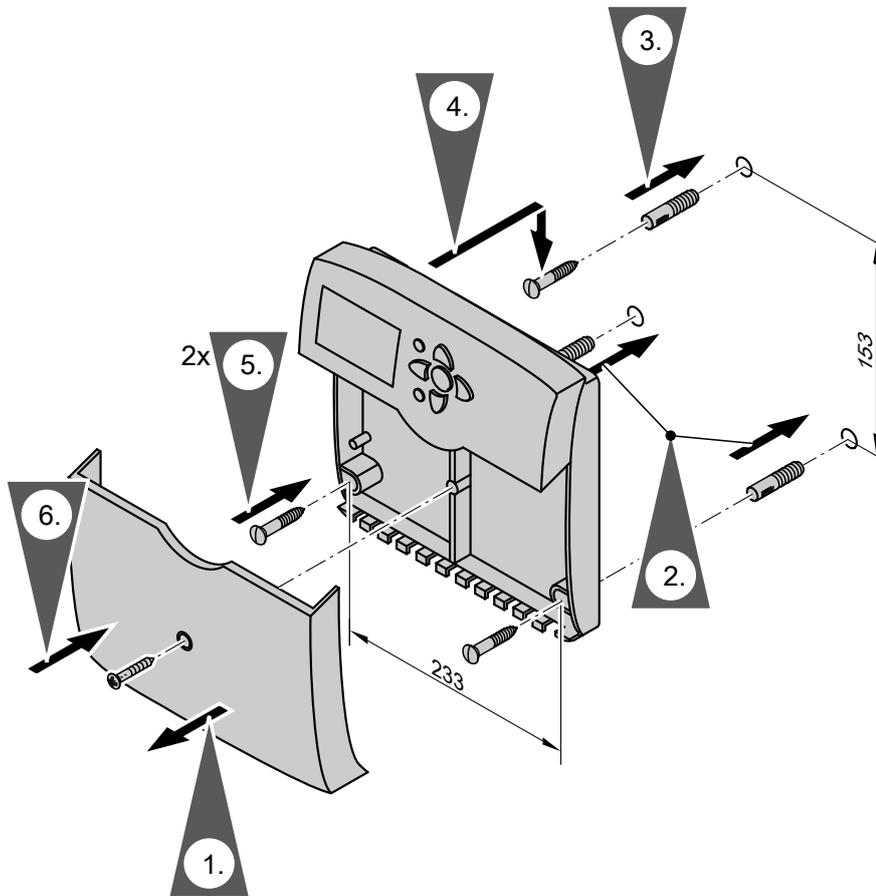
Fig. 1

Before closing the solar control unit, make all electrical
connections and apply strain relief to all cables/leads.

Overview of electrical connections

Fig. 2

(A) Wiring chamber of the solar control unit
(B) MCB/fuse, 6.3 A (slow)

230 V~ connections
(C) Semi-conductor relay
(R1 to R4 suitable for speed control)
(D) Floating relay output

LV terminals
(E) KM BUS
(F) V BUS (e.g. connection to a large display, accessory)
(G) PWM signals for pumps at R1 to R4
(H) Pulse counter input for connection of flow meters
(K) Solar cell CS (CS 10)
(L) Sensor inputs

Sensor inputs
S1, S9   NTC sensors, 20 kΩ
S2–S8   NTC sensors, 10 kΩ
S10–S12 NTC sensors, 10 kΩ

Pumps

Possible pumps
- Standard solar circuit pumps:
  - Without speed control (multi stage pumps)
  - With electronic speed control
- High efficiency circulation pumps
- Pumps with PWM input:
  - WILO pump
  - GRUNDFOS pump

Note
*Use only **solar circuit pumps, not** heating circuit pumps.*

For speed control, see page 36

Pumps (cont.)

Installation

The circulation pump with connecting cable is included in the Solar-Divicon pump station.

📖 Separate installation and service instructions

Alternative pumps must be type-tested and installed in accordance with the manufacturer's instructions.

Connection

Recommended cable: 3-core with a cross-section of 0.75 mm^2
Connect the neutral and earth conductors with the respective collective terminal block.

Rated current
Semi-conductor relay R1 to R6: 0.8 A

Notes
- *Connect pumps with power consumption in excess of 190 W via an additional relay. Parameter **"Control"** must not be set to **"Pulse"** (see page 35).*
- *Connect **only one** pump each to relay outputs R1 to R6.*

Example: Connection of one standard solar circuit pump or high efficiency [HE] circulation pump to relay R1
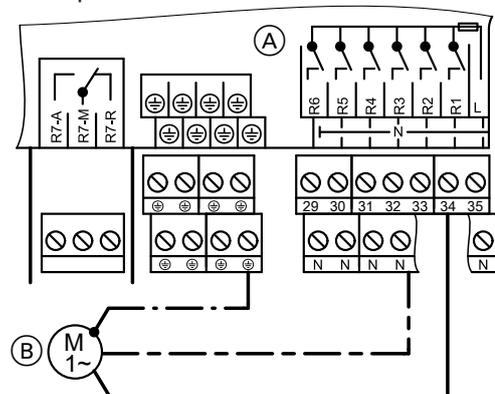
Fig. 3

Ⓐ Wiring chamber of the solar control unit
Ⓑ Pump

Example: Connection of one pump with PWM input to relay R1
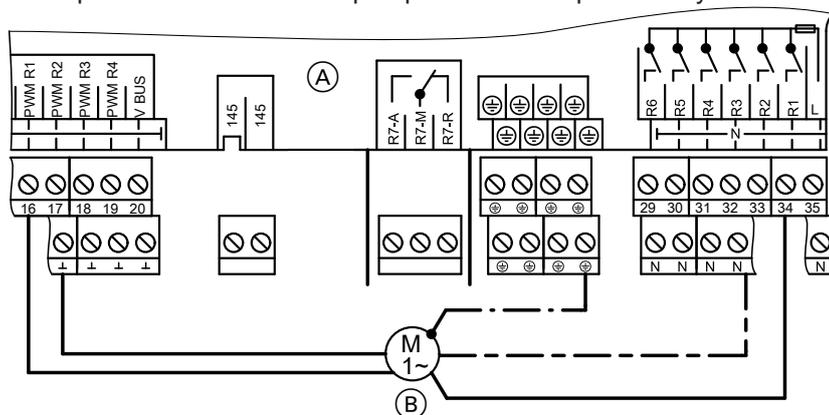
Fig. 4

Ⓐ Wiring chamber of the solar control unit
Ⓑ Pump

High limit safety cut-out

Temperature setting

Delivered condition: 120 °C
This must be changed to 95 °C to safely prevent temperatures in excess of 95 °C in the consumer.

High limit safety cut-out installation instructions

Installation

Install the sensor of the high limit safety cut-out:
- In the cylinder locking cap for Vitocell 300 (accessory)
- In the sensor well for the cylinder temperature sensor, which is connected to the boiler control unit

Installation instructions for cylinder locking cap and DHW cylinder

Connection

- Recommended cable: 3-core with a cross-section of 0.75 mm^2
- Systems with 2 collector arrays with one solar circuit pump require 2 high limit safety cut-outs.
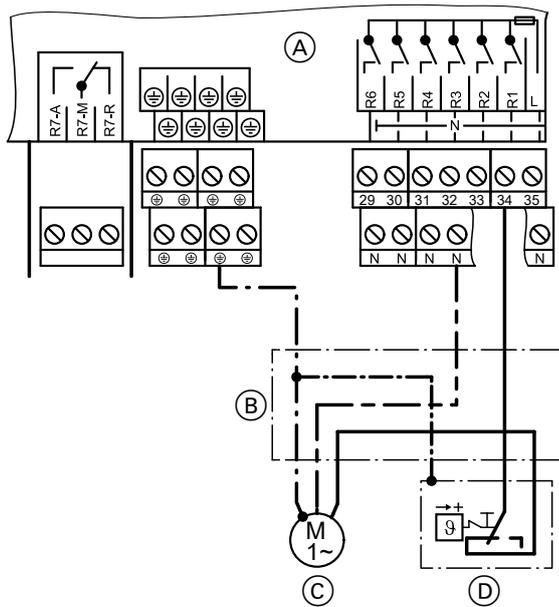
Fig. 5

Ⓐ Wiring chamber of the solar control unit
Ⓑ Junction box (on site)
Ⓒ Solar circuit pump or loading pump for additional consumers with high limit safety cut-out
Ⓓ High limit temperature cut-out device

Installation sequence

Central fault message facility

- In accordance with the diagram, a central fault message facility can be connected to the floating relay output R7.
- Relay R7 must be enabled as a signal relay (for setting, see page 55 in the main menu **"Contractor"**).
  Note
  *This relay is then **not** available for any other function.*
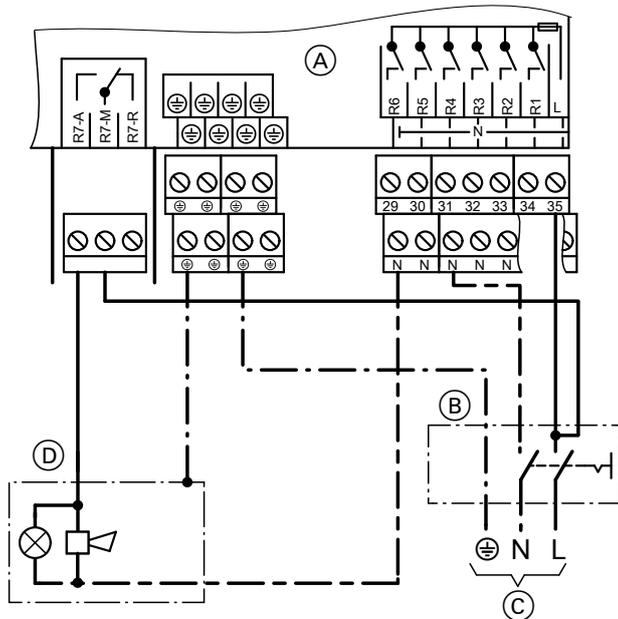
Fig. 6

Ⓐ Wiring chamber of the solar control unit
Ⓑ ON/OFF switch (on site)

Ⓒ Power supply
Ⓓ Central fault message facility

Collector temperature sensor

- NTC 20 kΩ
- Lead length 2.5 m

Installation

Collector installation instructions

Connection

"System examples"

Connect sensor to S1 or, in conjunction with 2 collector arrays to S9 (see page 7).
Extension of the connecting cable:
Recommended cable: 2-core with a cross-section of 0.75 mm^2

Note
Route this lead separated from 230/400 V cables.

Cylinder temperature sensor

- NTC 10 kΩ
- Lead length 3.8 m

Installation

📖 Installation instructions for the DHW cylinder or the heating water buffer cylinder

Information regarding Vitocell 100-V and Vitocell 300-V
Install this using the threaded elbow (see diagram below).
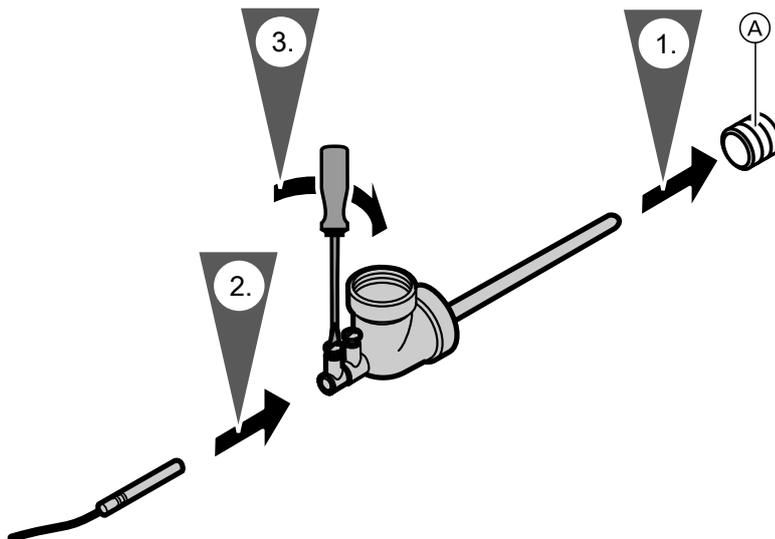
Fig. 7

Ⓐ Heating water return connection

Connection

📖 "System examples"

Connect the sensor to S2 (see page 7).
Extension of the connecting cable:
Recommended cable: 2-core with a cross-section of
0.75 mm^2

Note
Route this lead separated from 230/400 V cables.

Temperature sensor

- NTC 10 kΩ
- Lead length 3.8 m

Installation sequence

Installation
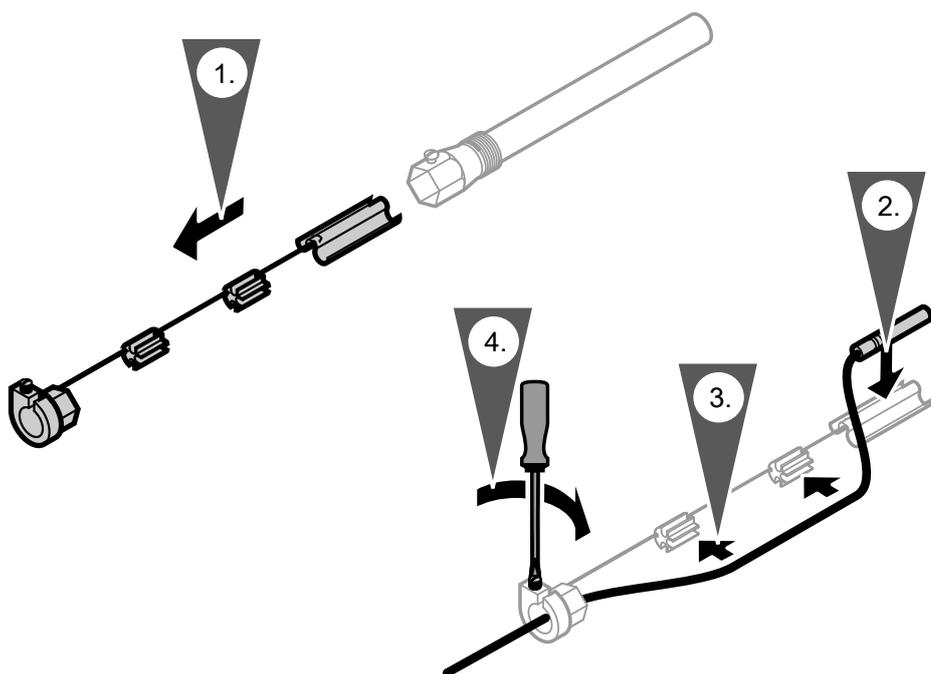
Fig. 8

Note
Do not wrap insulating tape around the sensor.
Seal in the sensor well.

Temperature sensor (swimming pool):
- Install sensor in the swimming pool return, upstream of the heat exchanger.
- When fitting to the return, secure the sensor with a metal tie and provide thermal insulation.
- Installation in accordance with the details provided by the swimming pool manufacturer or the installation instructions of any installed heat exchanger

Connection

 "System examples"

See also page 7.
Extension of the connecting cable:
Recommended cable: 2-core with a cross-section of
0.75 mm^2

Note
Route this lead separated from 230/400 V cables.

Solar cell

An identifying letter (type of solar cell) is visible on the solar cell. For commissioning, enter this in the table on page 72 in the main menu **"Contractor"** under **"Solar cell type"**.

Installation

 Separate installation instructions

Solar cell (cont.)

Connection

2-core cable with 0.75 mm^2 cross-section
Extension of the connecting cable:
Recommended cable: 2-core with a cross-section of
0.75 mm^2

Note
Route this lead separated from 230/400 V cables.
Observe polarity.
If connected incorrectly, the display
"!Rev.volt. SC" *will appear after commissioning.*
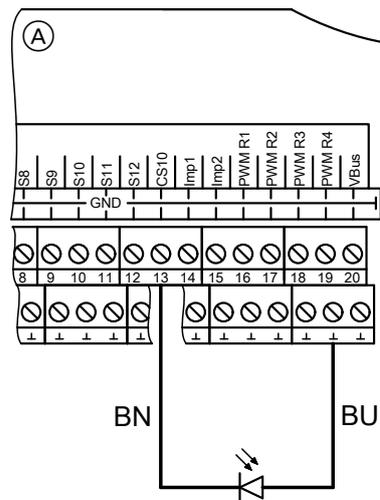
Fig. 9

Ⓐ Wiring chamber of the solar control unit
Ⓑ Solar cell CS (CS 10)

Power supply

Regulations

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with IEC 60364-4-41, the connection requirements of your local power supply utility, and VDE or national regulations.

- Protect the cable to the control unit with an appropriate fuse/MCB.
- Disconnect the system by means of a device that simultaneously separates all non-earthed conductors with at least 3 mm contact separation.
  We also recommend installing an AC/DC-sensitive RCD (RCD class B ⌁ ⎓) for DC (fault) currents that can occur with energy efficient equipment.
- Connect the power supply (230V~) in accordance with the diagram.

Power supply (cont.)

Connection
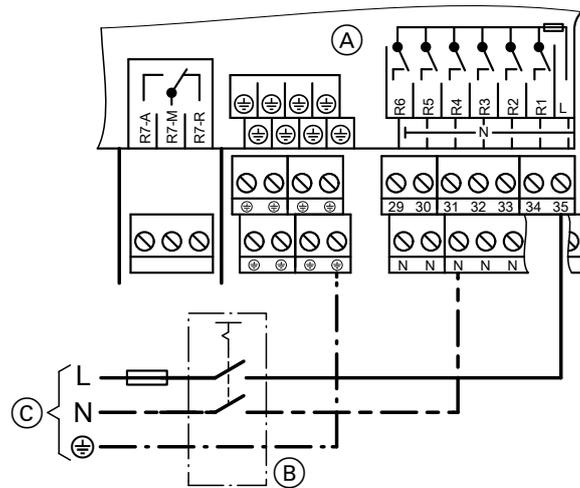
Fig. 10

Ⓐ Wiring chamber of the solar control unit
Ⓑ ON/OFF switch, 2-pole (on-site)
Ⓒ Mains voltage 230 V/50 Hz

⚠ **Danger**
Incorrect core allocation can result in serious injury and damage to the appliance.
Never interchange cores "L" and "N".
L Brown
N Blue
PE Green/yellow

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Switching the power ON

1. Check that the solar thermal system has been flushed, filled and vented.

   Service instructions for the collectors

2. Check whether all electrical connections have been correctly made.

3. Check that the high limit safety cut-out and temperature limiter (if required) are connected.

4. Switch ON the power; the solar control unit then begins an initialising phase.
   The standard display then appears (see following diagram).
   The solar control unit is now in automatic mode.

Navigation through the menu

Controls
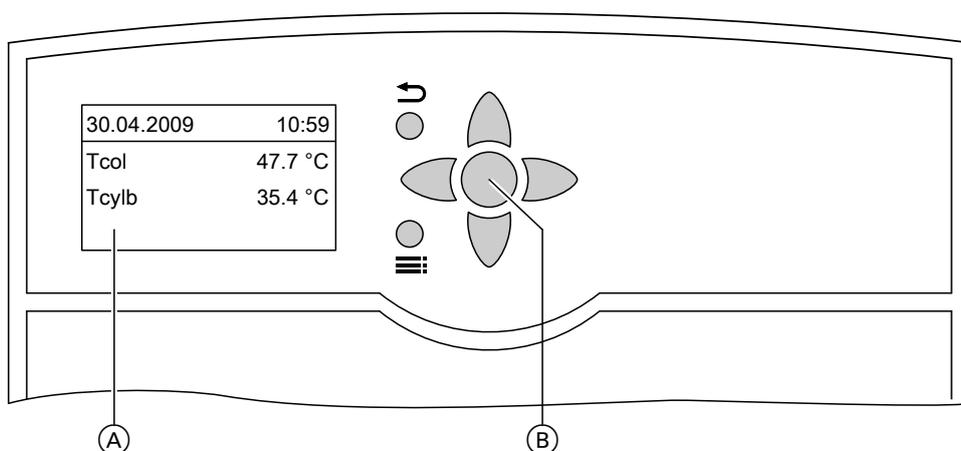
Fig. 11

(A) Standard display
   The standard display will automatically appear after approx. 4 min if no adjustments are made.

(B) OK key
   ▪ Press once: Confirmation of the menu selection
   ▪ Press twice: Confirmation of a value change

≣· ▪ Calling up the main menu
   ▪ Back to the standard display from any menu

⊃ ▪ Back to the previous menu point
   ▪ Terminating an adjustment already begun (the value reverts to its previous setting)

▲/▼ Cursor keys
   Navigating through the menu
   The display can only show four lines of the menu at a time. The arrow on the left of the display highlights the available menu item.

▶/◀ Cursor keys
   To display values (with graphic support; see the following diagram)
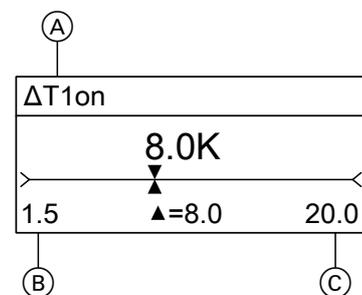
Fig. 12

(A) Parameter
(B) Minimum value
(C) Maximum value

Commissioning

Entering the operator code

Press the following keys:

1. ☰: **"Hauptmenü:"** will be displayed.
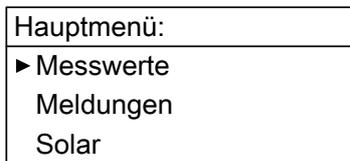
```
Hauptmenü:
►Messwerte
 Meldungen
 Solar
```
Fig. 13

2. ▼ for **"Bedienercode"** (lowest menu point)

```
Hauptmenü:
 SD-Karte
 Manuellbetrieb
►Bedienercode
```
Fig. 14

3. OK to confirm
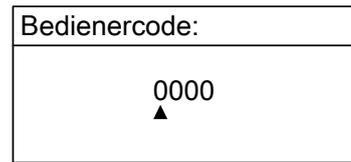
```
Bedienercode:

    0000
     ▲
```
Fig. 15

4. ▶ / ◀ for "0200"
Confirm every figure with **OK**.
Key sequence: OK/ ▶ / ▶/ OK/ OK/ OK

Note
After commissioning set the operator code to "0000".

Language selection

Press the following keys:

1. ☰: **"Hauptmenü:"** will be displayed.
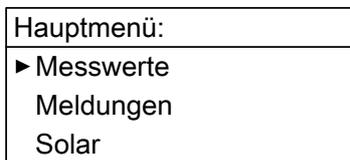
```
Hauptmenü:
►Messwerte
 Meldungen
 Solar
```
Fig. 16

2. ▼ for **"Experte"** (lowest menu point)
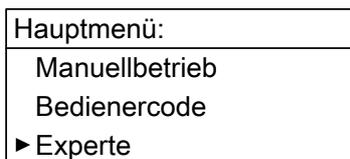
```
Hauptmenü:
 Manuellbetrieb
 Bedienercode
►Experte
```
Fig. 17

3. OK to confirm

4. ▼ for **"Sprache"** (lowest menu point)
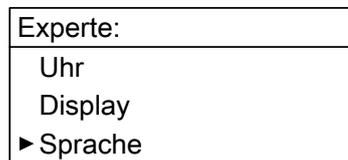
```
Experte:
 Uhr
 Display
►Sprache
```
Fig. 18

5. OK to confirm

6. ▲ / ▼ for the required language

7. OK to confirm

Setting the time and date

Main menu **"System"**
■ **"Sys. setting:"**
 – **"Time"**
 First set the hour, then the minutes.
 – **"Date"**
 Set the year, month and day in that order.

For further time adjustments, see page 73.

5516 519 GB

Adjusting the display

The level of backlighting and font colour can be selected (black on a white background or vice-versa).

Main menu **"Contractor"**
- **"Display"**
  - **"Inverted"**
  - **"Lighting"**

Setting parameters

1. Set the system and hydraulic type according to the installed system in the menu **"Solar options"** (selection, see from page 18).

   Note
   *Setting the **"System"** and **"Hyd. type"** determines the relay and sensor input assignments (specified in the grey cells in the tables from page 18).*

   Main menu **"Solar"**
   - **"Solar options:"**
     - **"System"**
       Delivered condition: 1
     - **"Hyd.type"**
       Delivered condition: 1

   Note
   *All parameters are reset to their delivered condition when the setting for **"System"** is changed.*

2. Adjust the pump type (see page 35).

3. Enable speed control if required (see page 36).

4. Set the solar options (see from page 37). This determines additional relay and sensor input assignments.

5. Set the system options (see from page 45). This determines additional relay and sensor input assignments.

6. Set special functions (see from page 49).

Information regarding the relays

Functions for which the same relay output is used can only be implemented as **alternatives**.

Example system 1 (see page 18):
Function **"Par. relay"** (parallel relay) can only be enabled when no **"Add. fct."** (additional function for DHW heating) is active.

Sensor information

12 temperature sensors can be connected to the Vitosolic 200:
- Temperature sensors NTC 10 kΩ are suitable for temperatures **up to 90 °C** . They can be connected to sensor inputs S2 **to** S8 and S10 **to** S12.
- Temperature sensors NTC 20 kΩ are suitable for temperatures **above 90 °C** . They can be connected to sensor inputs S1 **and** S9.

Resetting parameters to their delivered condition

Main menu **"Solar"**
- **"Solar options:"**
  - **"System"**, select 1.

Service

Commissioning

Selecting the system and hydraulic type

Overview

With the Vitosolic 200, **8 systems** with different **hydraulic types** can be implemented.

System	Hydraulic type
▪ How many collector arrays have been installed? ▪ How many consumers have been installed?	▪ Which hydraulic version (pump or valve control)?

System	Number of collector arrays	Number of consumers
Delivered condition: **1** (see page 18)	╱	▯
2 (see from page 19)	╱ ╲	▯
3 (see from page 21)	╱	▯ ▯
4 (see from page 24)	╱ ╲	▯ ▯
5 (see from page 28)	╱	▯ ▯ ▯
6 (see from page 30)	╱ ╲	▯ ▯ ▯
7 (see from page 32)	╱	▯ ▯ ▯ ▯
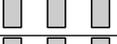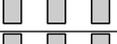
System 1
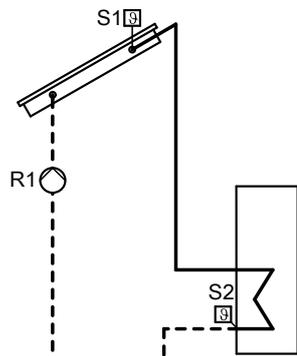
Fig. 19

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x							x	x							
Function block 1			x							x	x					
Cooling function			x													
Ext. heat exchanger (secondary pump to R4)				x						x						
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass		x								x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 2, hydraulic type 1

Fig. 20

[1] *Only if this function is achieved via contact control (see page 44).*

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x						x	x							x
Function block 1			x							x	x					
Cooling function			x													
Ext. heat exchanger (secondary pump to R4)				x						x						
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass						x				x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 2, hydraulic type 2

Fig. 21

[1] Only if this function is achieved via contact control (see page 44).

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x				x	x							x
Function block 1			x							x	x					
Ext. heat exchanger (secondary pump to R3)			x							x						
Cooling function			x													
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass						x				x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 3, hydraulic type 1

Fig. 22

[1] Only if this function is achieved via contact control (see page 44).

Commissioning

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x			x				x	x		x					
Function block 1			x							x	x					
Ext. heat exchanger (secondary pump to R3)			x							x						
Additional function					x											
Parallel relay					x											
Function block 2						x							x	x			
Cylinder heating						x							x	x			
Bypass		x								x							
Function block 3							x								x	x	
Central fault message							x										
Reheating suppression[1]							x										

System 3, hydraulic type 2

Fig. 23

---

[1] Only if this function is achieved via contact control (see page 44).

22

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x			x				x	x		x					
Function block 1			x							x	x					
Ext. heat exchanger (primary pump to R3)			x							x						
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass		x								x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 3, hydraulic type 3

Fig. 24

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[1] *Only if this function is achieved via contact control (see page 44).*

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

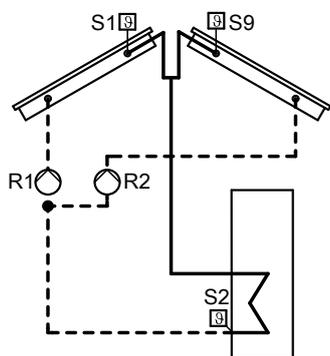| Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x				x	x		x					
Function block 1			x							x	x					
Ext. heat exchanger (secondary pump to R3)			x							x						
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass						x				x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 4, hydraulic type 1

Fig. 25

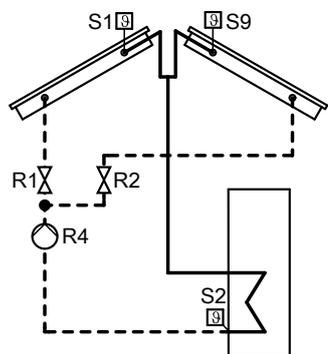[1] Only if this function is achieved via contact control (see page 44).

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

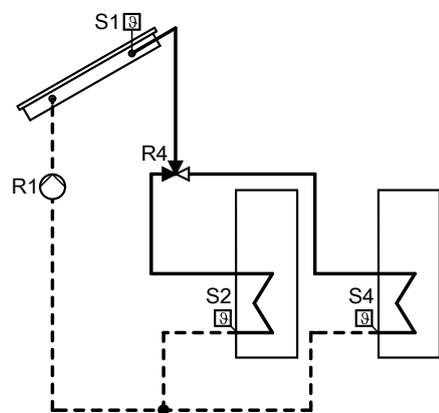| Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x				x	x		x					x
Function block 1			x							x	x					
Ext. heat exchanger (secondary pump to R3)			x							x						
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass						x				x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 4, hydraulic type 2

Fig. 26

[1] *Only if this function is achieved via contact control (see page 44).*

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

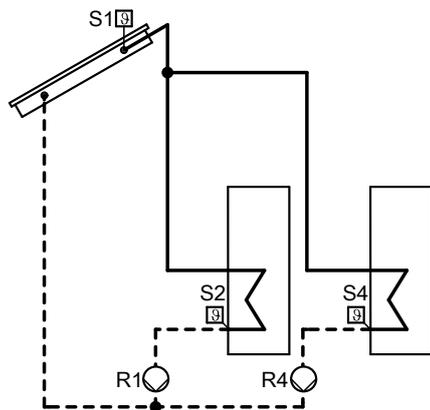| Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x	x	x				x	x		x					x
Ext. heat exchanger (secondary pump to R5)					x					x						
Additional function					x											
Parallel relay					x											
Function block 2						x							x	x			
Cylinder heating						x							x	x			
Bypass						x					x						
Function block 3							x								x	x	
Central fault message							x										
Reheating suppression[1]							x										

System 4, hydraulic type 3

Fig. 27

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[1] Only if this function is achieved via contact control (see page 44).

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x	x	x				x	x		x					x
Ext. heat exchanger (primary pump to R5)					x					x						
Additional function					x											
Parallel relay					x											
Function block 2						x							x	x		
Cylinder heating						x							x	x		
Bypass						x					x					
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

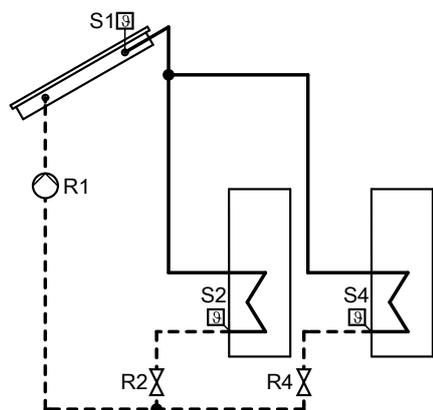**System 4, hydraulic type 4**

Fig. 28

[1] *Only if this function is achieved via contact control (see page 44).*

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x	x	x				x	x		x					x
Ext. heat exchanger (secondary pump to R5)					x					x						
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass						x				x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

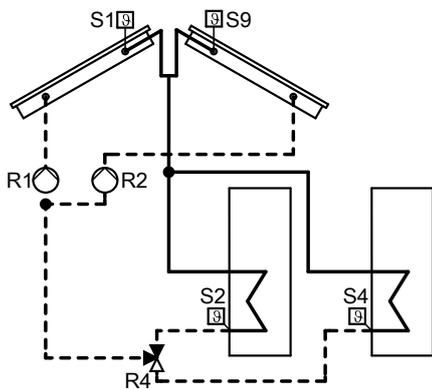### System 5, hydraulic type 1

Fig. 29

[1] Only if this function is achieved via contact control (see page 44).

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

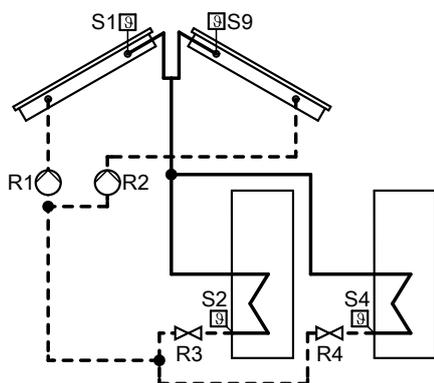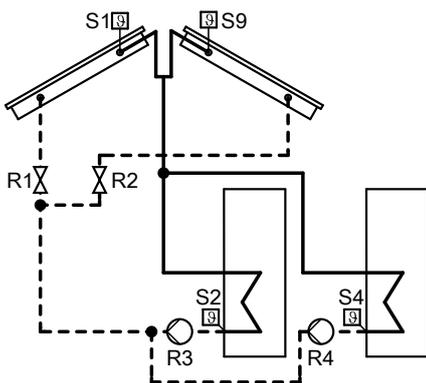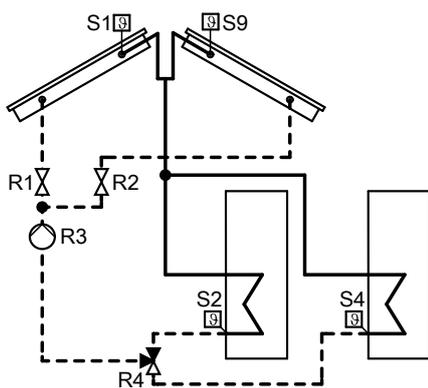| Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x	x			x	x		x	x				
Function block 1			x							x	x					
Ext. heat exchanger (secondary pump to R3)			x							x						
Additional function			x													
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass						x					x					
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression*1							x									

System 5, hydraulic type 2

Fig. 30

*1 Only if this function is achieved via contact control (see page 44).

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x				x	x		x	x				
Function block 1			x							x	x					
Ext. heat exchanger (primary pump to R3)			x							x						
Additional function					x											
Parallel relay					x											
Function block 2						x						x	x			
Cylinder heating						x						x	x			
Bypass						x					x					
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 6, hydraulic type 1

Fig. 31

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x	x	x		x	x		x	x				x
Function block 1			x							x	x					
Ext. heat exchanger (secondary pump to R3)			x							x						
Additional function			x													
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

[1] Only if this function is achieved via contact control (see page 44).

Selecting the system and hydraulic type (cont.)

System 6, hydraulic type 2

Fig. 32

Relay and sensor input assignments

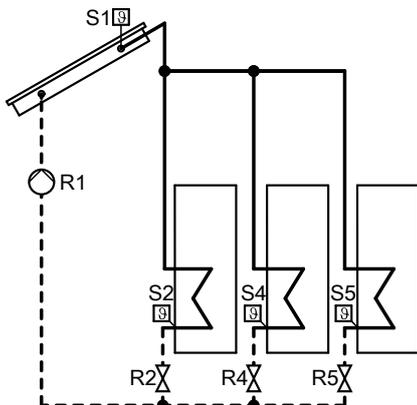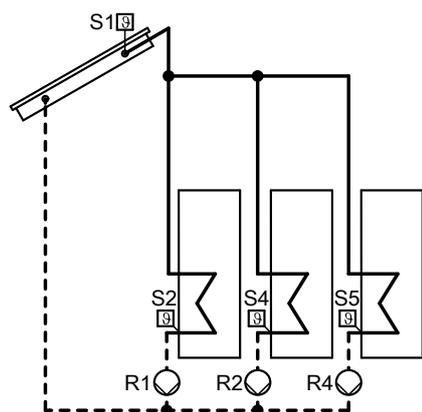| Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x	x	x		x	x		x	x				x
Function block 1			x							x	x					
Ext. heat exchanger (primary pump to R3)			x							x						
Additional function			x													
Bypass							x			x						
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 6, hydraulic type 3

Fig. 33

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[1] *Only if this function is achieved via contact control (see page 44).*

Selecting the system and hydraulic type (cont.)

Relay and sensor input assignment

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x	x	x	x	x		x	x		x	x				x
Ext. heat exchanger (secondary pump to R7)							x		x							
Bypass							x		x							
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

System 7, hydraulic type 1

Fig. 34

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x	x	x		x	x		x	x	x			
Function block 1			x							x	x					
Ext. heat exchanger (secondary pump to R3)			x							x						
Additional function			x													
Bypass							x		x							
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

[1] Only if this function is achieved via contact control (see page 44).

Selecting the system and hydraulic type (cont.)
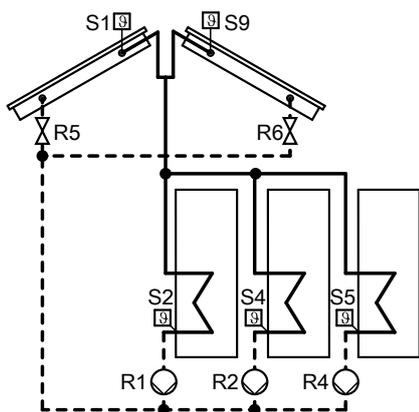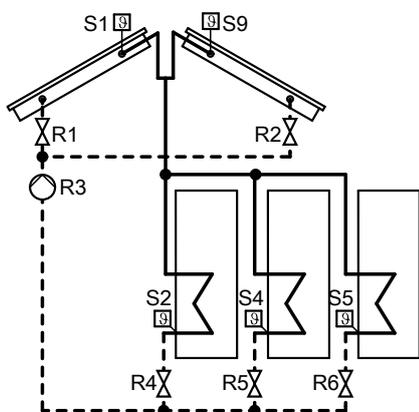
System 7, hydraulic type 2
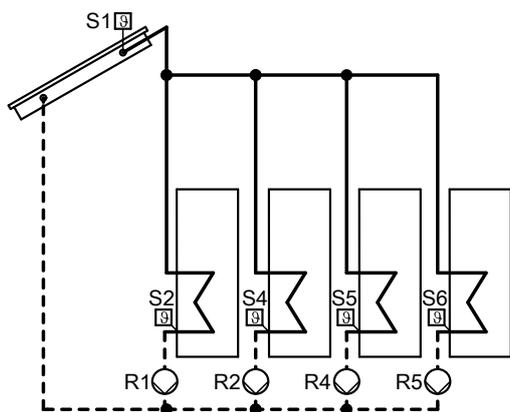
Fig. 35

Relay and sensor input assignments

Functions	Relay R...							Sensor S...								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
Assignment by scheme	x	x		x	x			x	x		x	x	x			
Function block 1			x							x	x					
Ext. heat exchanger (primary pump to R3)			x							x						
Additional function			x													
Function block 2						x										
Parallel relay						x										
Bypass						x					x					
Function block 3							x							x	x	
Central fault message							x									
Reheating suppression[1]							x									

Note
The pump connected to R5 must not be a PWM pump.

[1] *Only if this function is achieved via contact control (see page 44).*

Solar heating of consumers

The solar circuit pump is switched on and solar heating of the consumer starts:
- Temperature differential between cylinder temperature sensor S2 and collector temperature sensor S1 exceeds the start temperature differential **" ΔTon"**.
- The selected minimum collector temperature **"Tcolmin"** is exceeded.

The solar circuit pump is switched off; solar heating is stopped:
- Temperature differential between cylinder temperature sensor S2 and collector temperature sensor S1 falls below the stop temperature differential **" ΔToff"**.
- Set temperature (maximum temperature) **"Tcylset"** has been reached.
- The corresponding consumer is blocked (sensor faulty or high limit temperature of 95 °C is reached).
- The collector array concerned is blocked (collector temperature sensor faulty or the temperature for an emergency collector shutdown **"Tcolemoff"** has been reached).

Main menu **"Solar"**
- **"Solar setting:"**
  - **" ΔTon"/" ΔToff"**
    Delivered condition: 8 K/4 K
  - **"Tcylset"**
    Delivered condition: 60 °C

Limiting the maximum temperature

The corresponding circulation pump is switched off when the set temperature **"Tcylset"** is exceeded (see previous chapter). This prevents the consumer overheating.
If the consumer cools down by more than **" ΔTcylset"**, it will again be heated by the solar thermal system.
Sensor S2 has been preset to capture the maximum temperature.

Main menu **"Solar"**
- **"Solar contractor:"**
  - **" ΔTcylset"**
    Delivered condition: 2 K
  - **"Sen cyl.set"**
    Delivered condition: 2
    Selectable S1 to S12

Note
The temperature can also be limited by a separate high limit safety cut-out or a temperature limiter (settings must be matched). In the case of consumers with low maximum limits (e.g. swimming pool), an incorrect setting can result in material losses.

Collector emergency stop

The solar circuit pump will be switched off if the temperature **"Tcolemoff"** is exceeded. The solar thermal system enters stagnation. Heating of consumers is then no longer possible.

Main menu **"Solar"**
- **"Solar setting:"**
  - **"Tcolemoff"**
    Delivered condition: 130 °C

Note
Excessive temperatures can result in material losses. Observe the maximum operating temperatures of all components of the solar thermal system.

Minimum collector temperature limit

Minimum start temperature **"Tcolmin"** that must be exceeded before the solar circuit pump can start. This prevents the solar circuit pump starting too frequently.

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Service

Solar heating of consumers (cont.)

Main menu **"Solar"**
- **"Solar contractor:"**
  - **"Tcolmin"**
    Delivered condition: 10 °C

Priority control/cyclical heating

Only in systems with **at least** 2 consumers (not for consumers for absorbing excess heat).

Note
*Consumers with the same priority value are heated up simultaneously. We **cannot** recommend this setting.*

Main menu **"Solar"**
- **"Solar setting:"**
  - **"Priority Cyl1"** to **"Priority Cyl4"**

- When the start temperature differential **" ΔT...on"** is exceeded, the consumer with priority 1 is heated until the stop temperature differential **" ΔToff"** is reached.
- If the start temperature differential **" ΔT...on"** of the consumer with lower priority is exceeded, this will be heated for a selectable cyclical heating time **"t-circ."**.
- The cyclical heating time is followed by a pause **"t-st"** (cyclical pause time).
- During the cyclical pause time, the solar control unit checks the collector temperature rise **" ΔT col"**.
  - Collector temperature rises by **" ΔT col"** during the cyclical pause time:
    The cyclical pause time starts again. It will be continued until **" ΔT...on"** is exceeded for the consumer with priority 1.
  - Collector temperature does **not** rise by **" ΔT col"** during the cyclical pause time:
    The consumer with lower priority is heated for the selected cyclical heating time.
- Cyclical heating between the two first consumers continues until the consumer with priority 1 reaches its set value **"Tcylset"**. It will now no longer be considered for cyclical heating. Cyclical heating continues between the remaining consumers according to their priority.

Main menu **"Solar"**
- **"Solar setting:"**
  - **"Tcylset"** to **"Tcyl4set"**
    Delivered condition: 60 °C
- **"Solar contractor:"**
  - **"t-st"**
    Delivered condition: 2 min
  - **"t-circ"**
    Delivered condition: 15 min
  - **" ΔT col"**
    Delivered condition: 2 K

Heating to a second set value

If all consumers have reached their set value, heating to a **second set value "Tcyl...set2"** can take place. This function can be enabled for each consumer.

Main menu **"Solar"**
- **"Solar contractor:"**
  - **"Cyl.set"** to **"Cyl4set"**
    Select **"Yes"** for the consumer that this function should affect.
  - **"t-st"**
    Delivered condition: 2 min
  - **"t-circ"**
    Delivered condition: 15 min
  - **" ΔT col"**
    Delivered condition: 2 K
- **"Solar setting:"**
  - **"Tcylset1"** to **"Tcyl4set1"**
    (1st set temperature for the consumers)
    Delivered condition: 60 °C
  - **"Tcylset2"** to **"Tcyl4 set2"**
    (2nd set temperature for the consumers)
    Delivered condition: 60 °C

Setting the pump type

Main menu **"Contractor"**
- **"Control1"** to **"Control4"**
  Select the setting according to the connected pump type (see table below).

Service

Setting the pump type (cont.)

Pumps	Parameter "Control"
Standard solar circuit pumps	
▪ Without individual speed control	**"Pulse"**
▪ With individual speed control	**"On/Off"**
High efficiency circulation pumps	**"On/Off"**
Pumps with PWM input	**"PWM"**
Note *Use only **solar circuit pumps**, **not** heating circuit pumps.*	

Relay kick

The relay kick can be enabled for all relay outputs.
They start for 10 s at a selectable time.

Main menu **"Contractor"**
▪ **"Outputs"**
  − E.g. **"Relay kick R1"**, **"Yes"**.
  − **"Time"**
    Select the time for the relay kick.

Enabling speed control

▪ The speed control can only be enabled for the pumps connected to outputs R1 to R4.
▪ These must be multi-stage or pumps with PWM signal.

▪ The speed is adjusted as a function of a control variable (differential temperature or set collector temperature).
▪ When the start condition for speed control has been reached, the pump starts at its minimum speed.

Speed control via differential temperature

The speed results from the minimum speed, the set differential temperature and the rise.
When the start temperature differential **" ΔTon"** has been exceeded for the respective pump, that pump will be started at the minimum speed.
When the start temperature differential rises to **" ΔTset"** (set differential temperature), the speed is increased by 10 % for each increase by the amount set in **"Rise"**.

Example:
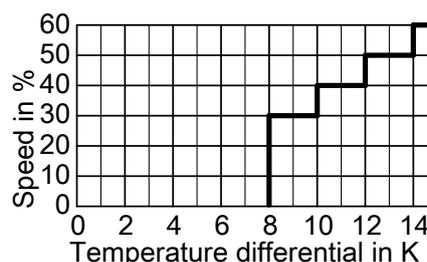Speed control of the solar circuit pump at relay R1

Fig. 36

Main menu **"Contractor"**
▪ **"Outputs"**
  − **"Min speed"**
    Delivered condition: 30 %

Main menu **"Solar"**
▪ **"Solar setting:"**
  − **" ΔTset"** to **" ΔT4set"**
    Delivered condition: 10 K

Enabling speed control (cont.)

Main menu **"System"**
- **"Sys.contractor:"**
  - **"Control unit"**
  - **"Rise"**
    Delivered condition: 2 K

Speed control via set collector temperature

This function makes sense for systems with consumers with high temperatures. Instead of the differential temperature, an adjustable set collector temperature **"Tcolset"** is used as the target temperature.
When the collector temperature rises to **"Tcolset"**, the pump is switched on at its selected minimum speed. With each rise by the amount selected in **"Rise"**, the speed is increased by 10 %.

Main menu **"Contractor"**
- **"Outputs"**
  - **"Min speed"**
    Delivered condition: 30 %

Main menu **"Solar"**
- **"Solar options:"**
  - **"Target temp."**, **"Yes"**.
- **"Solar setting:"**
  - **"Tcolset"**
    Delivered condition: 65 °C

Main menu **"System"**
- **"Sys.contractor:"**
  - **"Control unit"**
  - **"Rise"**
    Delivered condition: 2 K

Setting solar options

Bypass with collector temperature sensor and bypass sensor
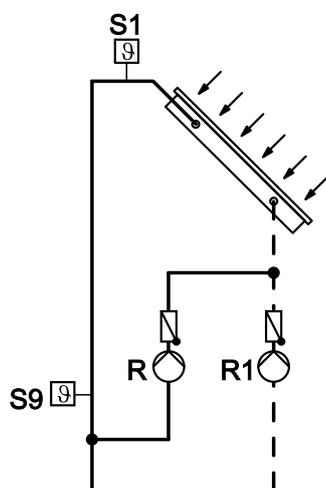
Fig. 37

R1 Solar circuit pump
R   Bypass pump (at R2, R6 or R7)
S1 Collector temperature sensor
S9 Bypass sensor
    NTC sensor, 20 kΩΩ

- With relays R2, R6 or R7 (subject to the selected system and hydraulic type).
- The bypass sensor can be freely selected.
  Note
  If the bypass sensor is positioned where temperatures may exceed 90 °C, it must be connected to S9 (NTC 20 kΩ).

- Bypass pump **on**:
  When the start temperature differential **" ΔTon"** has been exceeded between collector temperature and cylinder temperature.
- Solar circuit pump **on**, bypass pump **off**:
  When the temperature differential between the temperature at the bypass sensor and the cylinder temperature exceeds 2.5 K (permanently set).
- Solar circuit pump **off**, bypass pump **on**:
  When the temperature differential between the temperature at the bypass sensor and the cylinder temperature falls by 1.5 K (permanently set).

Main menu **"Solar"**
- **"Solar options:"**
  - **"Bypass"**, **"Yes"**.
- **"Solar contractor:"**
  - **"Sen. bypass"**
    Delivered condition: 3
    Selectable from S1 to S12
  - **"Bypass"**
    Set **"Pump"**.

Service

Setting solar options (cont.)

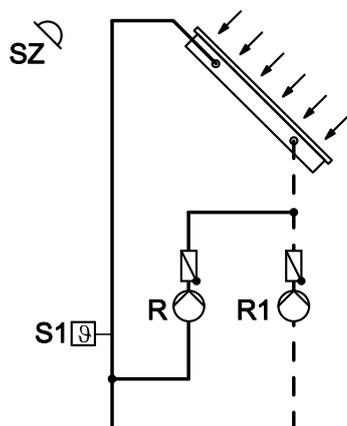### Bypass with solar cell and collector temperature sensor

Fig. 38

SZ Solar cell, for connection see page 12
R1 Solar circuit pump
R   Bypass pump (at R2, R6 or R7)
S1 Collector temperature sensor

■ With relays R2, R6 or R7 (subject to the selected system and hydraulic type).
■ Use collector temperature sensor **S1** as the bypass sensor.
■ The solar control unit records the radiation intensity via the solar cell.
■ Bypass pump **on**:
When the selected insolation threshold **"SC Byp."** is exceeded.
■ Bypass pump **off**, solar circuit pump **on**:
When the start temperature differential **" ΔTon"** has been exceeded between collector temperature and cylinder temperature.
■ Bypass pump also **off**:
Insolation falls below the selected insolation threshold for more than approx. 2 min.

Main menu **"Solar"**
■ **"Solar options:"**
  – **"Bypass"**, **"Yes"**.
  – **"SC bypass"**, **"Yes"**.
■ **"Solar setting:"**
  – **"SC Byp."**
  Delivered condition: 200 W/m^2
■ **"Solar contractor:"**
  – **"Sen. bypass"**
  Delivered condition: 3
  Select 1 for sensor S1.
  – **"Bypass"**
  Set **"Pump"**.

Main menu **"Contractor"**
■ **"Sensors"**
  – **"Solar cell type"**
  Delivered condition: "E"
  Enter the identifying letter found on the solar cell.

External heat exchanger

■ In systems with several consumers, either an individual or all consumers can be heated via the external heat exchanger. The consumers can be assigned via parameter **"HE cylinder"**.
■ The consumers will be heated to at most the selected set temperature **"Tcylset"** (delivered condition 60 °C).

■ With relay assignment subject to the selected system and hydraulic type.
■ The heat exchanger sensor can be freely selected.
Note
If the heat exchanger sensor is positioned where temperatures may exceed 90 °C, it must be connected to S9 (NTC 20 kΩ).

External heat exchanger for all consumers

Heat exchanger relay switches the solar circuit pump (primary pump R_p)			Heat exchanger relay switches the secondary pump R_s		
System	Hyd.type	Heat exchanger relay	System	Hyd.type	Heat exchanger relay
3	2	R3	1	1	R4
4	3	R5	2	1	R4

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Setting solar options (cont.)

Heat exchanger relay switches the solar circuit pump (primary pump R_p)			Heat exchanger relay switches the secondary pump R_s		
5	2	R3	2	2	R3
6	2	R3	3	1, 3	R3
7	2	R3	4	1	R3
			4	2, 4	R5
			5	1	R3
			6	1	R3
			6	3	R7
			7	1	R3

Example: System 3, Hyd. type 2

- When the start temperature differential **" ΔTon"** has been exceeded between collector temperature sensor S1 and cylinder temperature sensor S2 or S4, the solar circuit pump (primary pump R_p) starts.
- When the start temperature differential **"HE ΔTon"** between heat exchanger sensor S9 and cylinder temperature sensor S2 or S4 is exceeded, the relevant circulation pump R1 or R4 starts to heat the consumers.

Example: System 3, Hyd. type 3
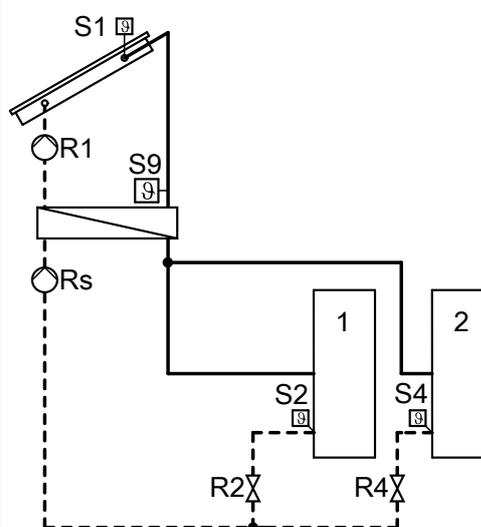
- When the start temperature differential **" ΔTon"** has been exceeded between collector temperature sensor S1 and cylinder temperature sensor S2 or S4, solar circuit pump R1 starts and the relevant valve R2 or R4 is opened to heat the consumers.
- When the start temperature differential **"HE ΔTon"** between heat exchanger sensor S9 and cylinder temperature sensor S2 or S4 is exceeded, secondary pump R_s starts.

Settings

Main menu **"Solar"**
- **"Solar options:"**
  - **"System"**
  - **"Hyd.type"**
  - **"Ext. HE"**, **"Yes"**.
- **"Solar contractor:"**
  - **"HE cylinder"**
    Delivered condition: **"All"**
  - **"Sen.ext.HE FL"**
    Delivered condition: 3
    Selectable from S1 to S12
- **"Solar setting:"**
  - **"HE ΔTon"**/**"HE ΔToff"**
    Delivered condition: 5 K/3 K

Service

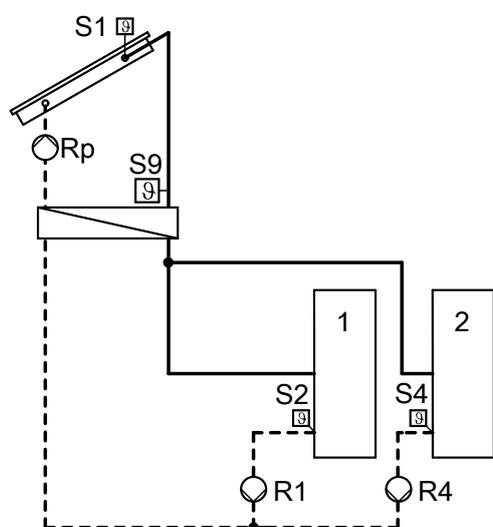## Setting solar options (cont.)

External heat exchanger for one consumer

| Heat exchanger relay switches the solar circuit pump (primary pump R_p)			Heat exchanger relay switches the secondary pump R_s		
System	Hyd.type	Heat exchanger relay	System	Hyd.type	Heat exchanger relay
3	2	R3	3	1, 3	R3
4	3	R5	4	1	R3
5	2	R3	4	2, 4	R5
6	2	R3	5	1	R3
7	2	R3	6	1	R3
			6	3	R7
			7	1	R3

Example: System 3, Hyd. type 2
Consumer 1 is heated via the external heat exchanger.
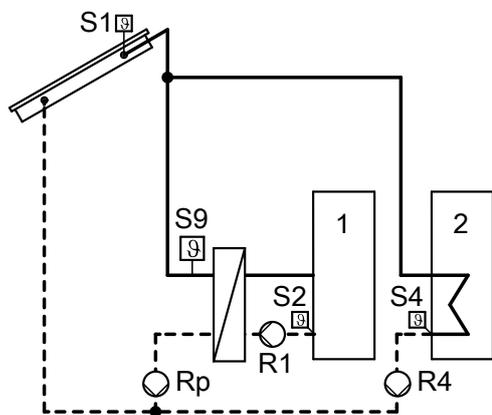
Example: System 3, Hyd. type 3
Consumer 1 is heated via the external heat exchanger.
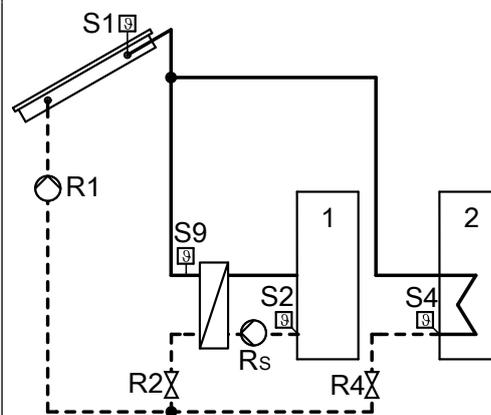
- When the start temperature differential **" ΔTon"** has been exceeded between collector temperature sensor S1 and cylinder temperature sensor S2 or S4, the solar circuit pump (primary pump R_p) or circulation pump R4 starts.
- When the start temperature differential **"HE ΔTon"** between heat exchanger sensor S9 and cylinder temperature sensor S2 is exceeded, circulation pump R2 starts to heat consumer 1.

- When the start temperature differential **" ΔTon"** has been exceeded between collector temperature sensor S1 and cylinder temperature sensor S2 or S4, solar circuit pump R1 starts and the relevant valve R2 or R4 is opened to heat the consumers.
- When the start temperature differential **"HE ΔTon"** between heat exchanger sensor S9 and cylinder temperature sensor S2 is exceeded, secondary pump R_s starts to heat consumer 1.

Settings

Main menu **"Solar"**
- **"Solar options:"**
  - **"System"**
  - **"Hyd.type"**
  - **"Ext. HE"**, **"Yes"**.
- **"Solar contractor:"**
  - **"HE cylinder"**
    Select 1 for consumer 1.
  - **"Sen.ext.HE FL"**
    Delivered condition: 3
    Selectable from S1 to S12
- **"Solar setting:"**
  - **"HE ΔTon"/"HE ΔToff"**
    Delivered condition: 5 K/3 K

Setting solar options (cont.)

Cooling function

- With relay R3 (subject to the selected system and hydraulic type)
- Function for heat transfer
- This function can only be activated for systems **1 and 2**.
- Solar circuit pump and relay R3 **on**:
  When the start temperature differential **" ΔTon" and** the set temperature **"Tcylset"** have been exceeded
- Solar circuit pump and relay R3 **off**:
  When the selected stop temperature differential **" ΔToff"** is undershot

Main menu **"Solar"**
- **"Solar options:"**
  - **"Cooling fct."**, **"Yes"**.

Interval function

- Without relay assignment
- Activation of this function in systems with unfavourably located collector temperature sensor. Consequently delays in capturing the collector temperature are prevented.
- The solar circuit pump is switched on in intervals.

Note
*This function will be suppressed if the collector temperature sensor is faulty or the collector shutdown temperature **"Tcolemoff"** has been reached (see page 34).*

Main menu **"Solar"**
- **"Solar options:"**
  - **"Col.interv."**, **"Yes"**.
- **"Solar setting:"**
  - **"Interval"**
    Delivered condition: 30 min
    Note
    *The first start is delayed by 30 min from the start time **"Int ON"**.*
- **"Solar contractor:"**
  - **"Int time"**
    Delivered condition: 30 s
  - **"Int on"**
    Delivered condition: 07:00 to 19:00 h
  - **"Int off"**
    Delivered condition: 07:00 to 19:00 h
    Note
    *This function is **disabled** from 19:00 to 07:00 h.*

Collector cooling function

- Without relay assignment
- Solar circuit pump **off**:
  On reaching the selected set temperature **"Tcylset"**
- The solar circuit pump will **start** long enough to enable this temperature to fall by 5 K, if the collector temperature rises to the selected maximum collector temperature **"Tcolmax"**. The cylinder temperature can then rise further, but only up to 95 °C.
- You can select the consumer to which the collector cooling function applies.

Note
*Ensure the intrinsic safety of the solar thermal system by accurately sizing the diaphragm expansion vessel, even should the collector temperature continue to rise after the system has reached all temperature limits. The solar circuit pump will be locked out or stopped in case of stagnation or when the collector stop temperature **"Tcolemoff"** (see page 34) is reached. This prevents a thermal overload of the connected components.*

Service

Setting solar options (cont.)

Main menu **"Solar"**
- **"Solar options:"**
  - **"Col.cool.fct."**, **"Yes"**.
- **"Solar setting:"**
  - **"Tcolmax"**
    Delivered condition: 110 °C
- **"Solar contractor:"**
  - **"Colmax cyl."**.
    Delivered condition: This function affects all consumers.

Reverse cooling function

- Without relay assignment
- This function affects only those consumers for which the function **"Col.cool.fct."** is enabled. The function affects the consumers in numerical order.
  Note
  If the collector cooling function has not been enabled, the return cooling function affects consumer 1.
- The collector cooling function leaves the solar circuit pump switched on when the set temperature **"Tcylset"** has been reached, so as to prevent the collector from overheating.
- In the evening, the solar circuit pump will run on for as long as required to cool the consumer via the collector and the pipework down to the selected set temperature **"Tcylset"**.

Note
Ensure the intrinsic safety of the solar thermal system by accurately sizing the diaphragm expansion vessel, even should the collector temperature continue to rise after the system has reached all temperature limits. The solar circuit pump will be locked out or stopped in case of stagnation or when the collector stop temperature **"Tcolemoff"** *(see page 34) is reached. This prevents a thermal overload of the connected components.*

Main menu **"Solar"**
- **"Solar options:"**
  - **"Ret.cool.fct."**, **"Yes"**.

Note
Do not enable this function if consumers are additionally heated from other heat sources.

Frost protection function

- Without relay assignment
- To prevent collector damage
- Activate only when using water as heat transfer medium.
- Solar circuit pump **on**:
  Collector temperature **"Tcol"** ≤ +4 °C
- Solar circuit pump **off**:
  Collector temperature **"Tcol"** ≥ +5 °C

Note
Scanning the collector temperature, see **"Actual values"** *on page 55.*

Main menu **"Solar"**
- **"Solar options:"**
  - **"Frost prot."**, **"Yes"**.

Parallel relay

- With relay assignment R5 or R6 (subject to the selected system and hydraulic type)
- Parallel to relay R... (selectable), relay R5 or R6 is switched, e.g. for controlling a diverter valve.

Main menu **"Solar"**
- **"Solar options:"**
  - **"Par. Relay"**, **"Yes"**.

Setting solar options (cont.)

Reheating suppression

System with Vitotronic control unit and KM BUS

Without relay assignment
- Function enabled:
  - The consumer is heated by the solar thermal system.
  - Connection of the KM BUS to the solar control unit and the boiler control unit
- Specify a third set DHW temperature (value must be **below** the first set DHW temperature) at the boiler control unit via coding address "67" in the **"DHW"** group.
- The consumer will only be heated by the boiler if the third set DHW temperature cannot be achieved by the solar thermal system.

1. Possibly replace the PCB in the boiler control unit (see table on page 75).

System with additional Viessmann control unit

- With relay assignment R7
- Function enabled:
  The consumer is heated by the solar thermal system.
- A resistor simulates an actual DHW temperature that is approx. 10 K higher (for connections, see the following table).
- The consumer will only be heated by the boiler if the set DHW temperature is not achieved by the solar thermal system.

2. Connect the KM BUS at input $\boxed{1}\ \boxed{4}\ \boxed{5}$ in the solar thermal system (see page 7).

3. Specify a third set DHW temperature.

    Boiler control unit installation and service instructions

4. Select the consumer (delivered condition 1) which should be affected by this function:

Main menu **"Solar"**
- **"Solar contractor:"**
  - **"Suppr.heat cyl"**
    Delivered condition: 1 for consumer 1

Commissioning

Setting solar options (cont.)

Cylinder temperature sensor as PTC	Cylinder temperature sensor as NTC
ⓒ Resistance 20 Ω , 0.25 W (on site)	ⓒ Resistance 10 kΩ , 0.25 W (on site)
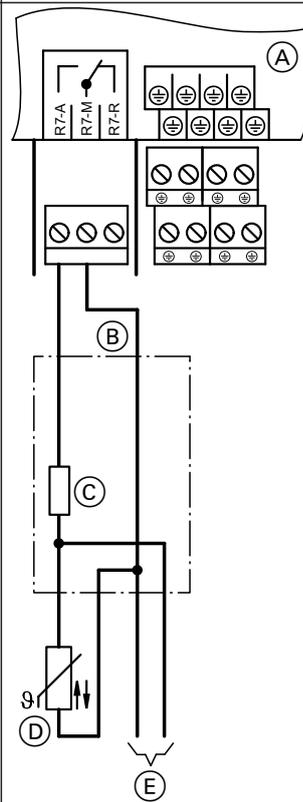
Ⓐ Solar control unit wiring chamber
Ⓑ Junction box (on site)
Ⓔ To the boiler control unit; connection for cylinder temperature sensor
Ⓓ Cylinder temperature sensor of the boiler control unit

Main menu **"Solar"**
- **"Solar options:"**
  – **"Heat.interr."**, **"Yes"**.
- **"Solar contractor:"**
  – **"Suppr.heat cyl"**.
    Delivered condition: 1 for consumer 1

Cylinder 2 (to 4) ON

- Without relay assignment
- With this function a consumer can be connected for solar heating in systems with several consumers (e.g. DHW cylinders and swimming pool).

Main menu **"Solar"**
- **"Solar options:"**
  – **"Cyl2 on"** to **"Cyl4 on"**.
    Delivered condition: **"Yes"**

! **Please note**
Lead break or short circuit of the relevant temperature sensor
will no longer be signalled.

Service

Setting solar options (cont.)

Utilisation of excess heat

- Without relay assignment
- System with several consumers
  A selected consumer will only be heated when all other consumers have reached their set value **"Tcyl-set"**.
- The relevant consumer is not taken into account in the priority logic.

Main menu **"Solar"**
- **"Solar options:"**
  - **"Overheat"**, **"Yes"**.
- **"Solar setting:"**
  - **"Overhtcyl"**.
    Delivered condition: 1 for consumer 1

Setting system options

Additional function for DHW heating

DVGW W 551 specifies that the total water content must be maintained at 60 °C. Preheat stages must be heated to 60 °C once every day.
- Systems with a cylinder capacity, incl. preheat stages, in excess of 400 litres
- Systems with a line content in excess of 3 litres from the DHW cylinder to the draw-off point

We recommend heating up in late afternoon. This ensures that the lower cylinder area or the preheating stage is cold again following the expected draw-offs (evenings and the following morning) and can subsequently be heated up again by solar energy.

System with Vitotronic control unit and KM BUS

- With relay assignment R3 or R5 (subject to the selected system and hydraulic type)
- Connection of the transfer pump to R3 or R5
- Signal for starting the transfer pump via the KM BUS of the boiler control unit. This also heats the lower area of the DHW cylinder to the required temperature.
- Specify a second set DHW temperature on the boiler control unit via coding address "58" in the **"DHW"** group.
  DHW will be heated to that temperature if this function is activated.

1. Possibly replace the PCB in the boiler control unit (see table on page 75).

2. Connect the KM BUS at input 1 4 5 in the solar thermal system (see page 7).

System with additional Viessmann control unit

- With relay assignment R3 or R5 (subject to the selected system and hydraulic type)
- Connection of the transfer pump to R3 or R5
- A resistor simulates a DHW temperature of approx. 35 °C to the boiler control unit.

Note
In detached and two-family houses, this heat-up is recommended. However, it is not compulsory.

3. Specify a second set DHW temperature.

   Boiler control unit installation and service instructions

4. Select a fourth DHW phase at the boiler control unit.
   During this time, DHW will be heated to the second set value if this function is activated.

   Operating instructions, boiler control unit

5. At the solar control unit:

   Main menu **"System"**
   - **"Sys. options:"**
     - **"Add. fct."**, **"Yes"**.

- The transfer pump starts at an adjustable time **"t-start"** if the consumer has not previously reached 60 °C at least once per day.
- Sensor S2 has been preset as the sensor for capturing the temperature. A different sensor can be selected, depending on which consumer should be affected by this function.

Service

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Setting system options (cont.)
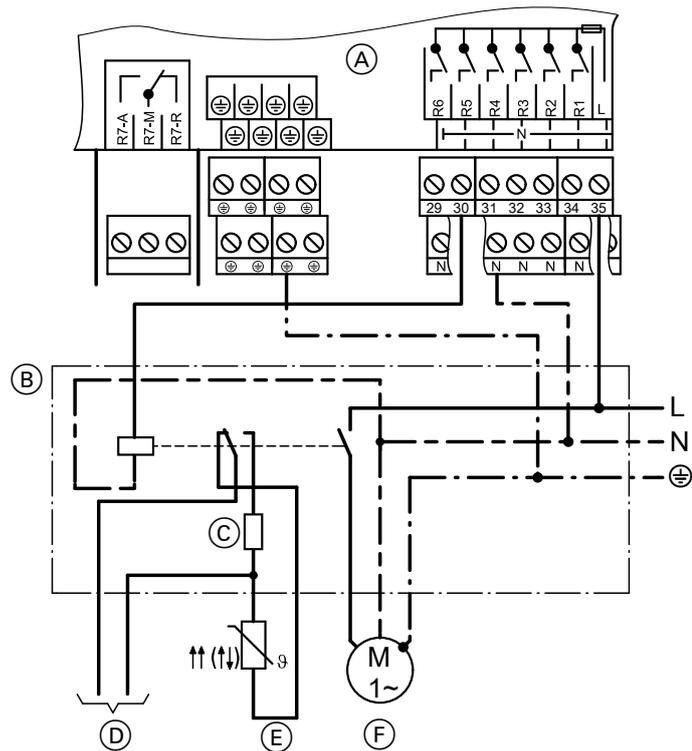
Fig. 39

Ⓐ Wiring chamber of the solar control unit
Ⓑ Contactor relay
Ⓒ Resistor (on site):
   PTC: 560 Ω
   NTC: 8.2 kΩ

Ⓓ To the boiler control unit
Ⓔ Cylinder temperature sensor of the boiler control unit
Ⓕ Transfer pump

Main menu **"System"**
- **"Sys. options:"**
  – **"Add. fct."**, **"Yes"**.
- **"Sys.contractor:"**
  – **"Sen. add.fct."**
    Delivered condition: 2
    Selectable from S1 to S12
- **"System setting:"**
  – **"t-start"**
    Delivered condition: 17:00 h

Cylinder heating

- With relay assignment R6 (subject to the selected system and hydraulic type). Can only be enabled in systems 1 to 5
- Heating of a consumer within a certain range.
- The sensors can be specified via **"Sen.th3"** and **"Sen.th4"**.
- Reference parameters are the start temperature **"Th3on"** and the stop temperature **"Th3off"**.
- Relay R6 **on**:
  When **"Th3on"** is not reached at either sensor.
- Relay R6 **off**:
  When **"Th3off"** is exceeded at both sensors.
- The period for this heating can also be set via the time switch (**"Time switch 2"**, see page 69).

Main menu **"System"**
- **"Sys. options:"**
  – **"Cyl.load."**, **"Yes"**.
- **"Sys.contractor:"**
  – **"Sen.th3"**
    Delivered condition: 5
    Selectable from S1 to S12
  – **"Sen.th4"**
    Delivered condition: 6
    Selectable from S1 to S12
- **"Sys. setting:"**
  – **"Th3on"**
    Delivered condition: 40 °C
  – **"Th3off"**
    Delivered condition: 45 °C

Setting system options (cont.)
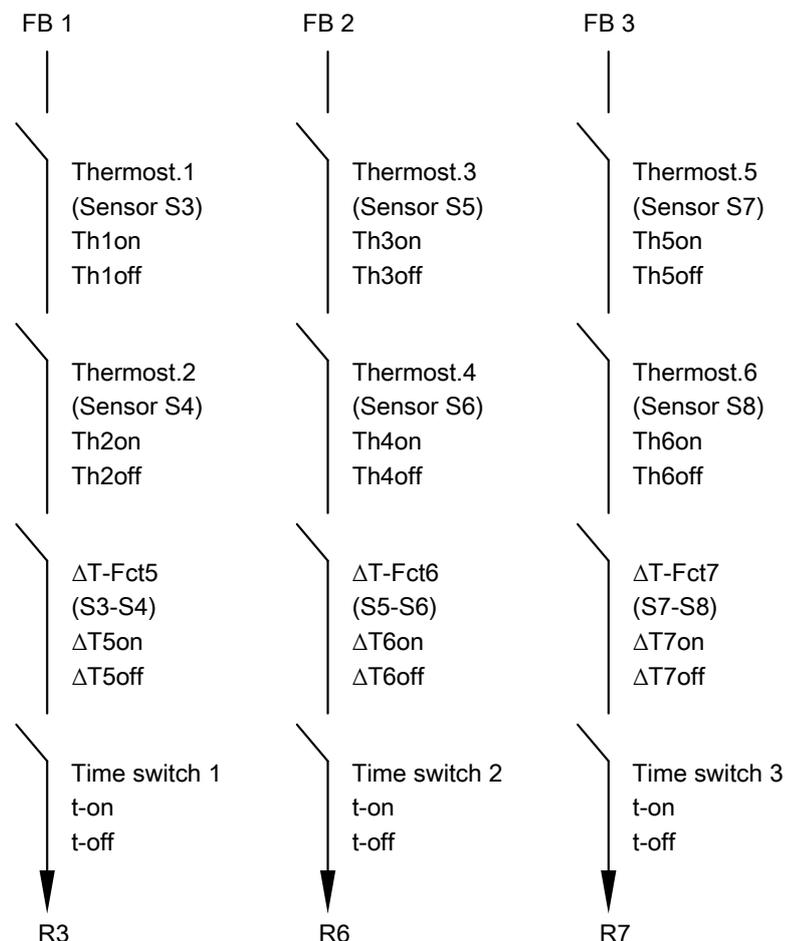
Function blocks

There are 3 function blocks available for functions, e.g. those independent of solar operation.
Relay outputs R3, R6 and R7 (subject to the selected system and hydraulic type) are permanently assigned to these function blocks.
The sensors can be specified.

Functions within a function block:
- 2 thermostat functions
- 1 temperature differential control
- 1 time switch with 3 adjustable periods

FB 1	FB 2	FB 3
Thermost.1 (Sensor S3) Th1on Th1off	Thermost.3 (Sensor S5) Th3on Th3off	Thermost.5 (Sensor S7) Th5on Th5off
Thermost.2 (Sensor S4) Th2on Th2off	Thermost.4 (Sensor S6) Th4on Th4off	Thermost.6 (Sensor S8) Th6on Th6off
ΔT-Fct5 (S3-S4) ΔT5on ΔT5off	ΔT-Fct6 (S5-S6) ΔT6on ΔT6off	ΔT-Fct7 (S7-S8) ΔT7on ΔT7off
Time switch 1 t-on t-off	Time switch 2 t-on t-off	Time switch 3 t-on t-off
R3	R6	R7

FB Function block

*Fig. 40   A relay assigned to a function block will only switch if the conditions of **all activated** functions are met. These functions act like individual switches in a serial circuit.*

Thermostat function	Differential temperature control (ΔT control)	Time switches
The relevant relay switches subject to the temperature at the sensor (see the following table).	The corresponding relay switches on when the start temperature differential **" ΔTon"** is exceeded and switches off when the stop temperature differential **" ΔToff"** is undershot.	The corresponding relay switches on at the start time **"t on"** and off at the stop time **"t off"** (3 periods can be activated).

Service

Setting system options (cont.)

Different effects can be achieved by specifying the start and stop temperatures:

"Thon" < "Thoff" **For adjusting the values, see from page 69.**	"Thon" > "Thoff" **For adjusting the values, see from page 69.**
E.g. for reheating	E.g. for utilising excess heat
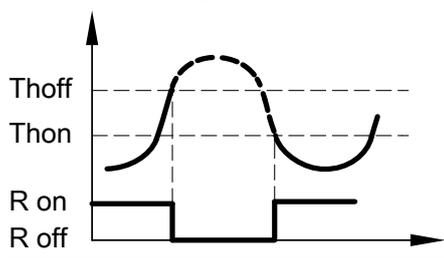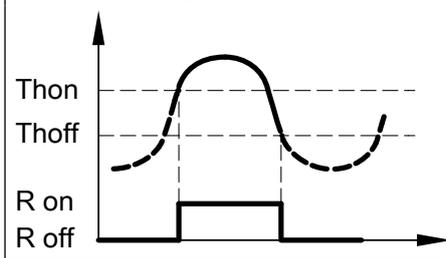
Examples

Controlling the boiler circuit pump of a solid fuel boiler
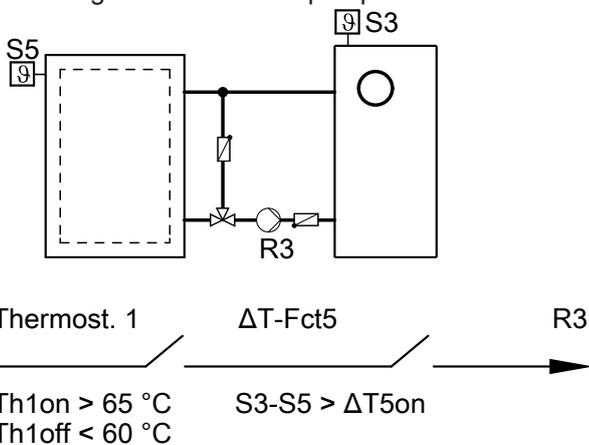
Fig. 41

Used functions:
- Thermostat function 1
- **" ΔT fct5"**

- Boiler circuit pump R3 **on**:
  Temperature differential **" ΔT5on"** is exceeded and **"Th1on"** is reached
- Boiler circuit pump R3 **off**:
  Temperature differential **" ΔT5off"** is undershot or **"Th1off"** is undershot

Main menu **"System"**
- **"Sys. options:"**
  – **"Thermost. 1"**, **"Yes"**.
  – **" ΔT fct5"**, **"Yes"**.
- **"Sys. setting:"**
  – **"Th1on"**
    Set 65.
  – **"Th1off"**
    Set 60.
  – **" ΔT5on"**
    Delivered condition: 5 K
  – **" ΔT5off"**
    Delivered condition: 3 K
- **"Sys.contractor:"**
  – **"Sen2 ΔT5fct"**
    Delivered condition: 4
    Select 5 for sensor S5.

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Setting system options (cont.)

Controlling a DHW circulation pump

Th1on < 50 °C
Th1off > 55 °C
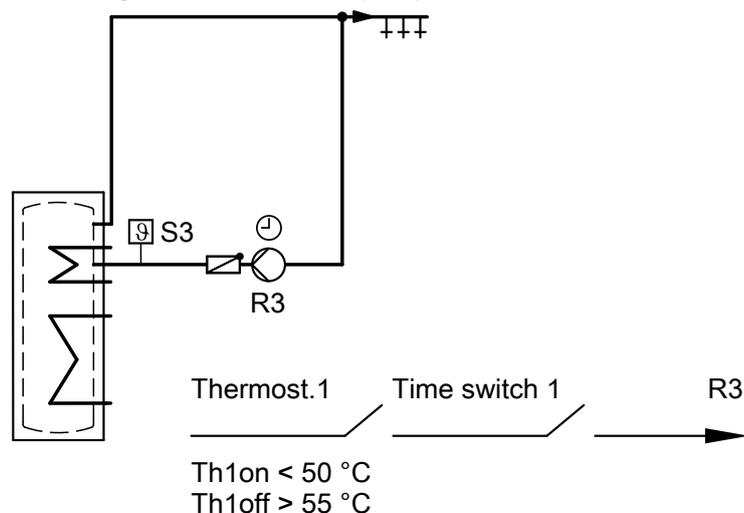
Fig. 42

Used functions:
- Thermostat function 1
- Time switch 1

To switch a DHW circulation pump, activating the time switch is sufficient. The DHW circulation pump can also be started subject to temperature with the sensor S3 in the DHW circulation line.

Main menu **"System"**
- **"Sys. options:"**
  - **"Thermost. 1"**, **"Yes"**.
  - **"Time switch 1"**, **"Yes"**.
- **"Sys. setting:"**
  - **"Th1on"**
    Set 50.
    Set a value.
  - **"Th1off"**
    Set 55.
  - **"Time switch 1"**
    Select period **"t on"** and **"t off"**.

Heat statement

- 2 integral heat meters (HM).
- Heat meters can be equipped with or without a flow meter.
- Temperature capture optionally with existing temperature sensors.
- Accessories: Heat meter extension kit with flow meter.

Statement without flow meter

- Statement:
  2 sensors have to be connected.
  As an estimate through the differential between the flow and return temperature and the set throughput (see the collector service instructions).
- Sensors S1 and S10 are selected as sensors.
  Note
  *If the flow temperature sensor has to be positioned where temperatures may exceed 90 °C, it must be connected to **S1** or **S9** (NTC 20 kΩ).*
- The statement will be calculated if the output set in "**Relay**" is enabled.

Example

Use the pump on R1 and the sensors S1 and S2 for the statement.

Heat statement (cont.)

Main menu **"HM"**
- **"HM options:"**
  - **"HM1"** or **"HM2"**, **"Yes"**.
- **"HM 1 contractor"** or
  "HM 2 contractor"
  - **"Sen. flow"**
    Delivered condition: 1
    Selectable from S1 to S12
  - **"Sen. return"**
    Delivered condition: 10
    Selectable from S1 to S12
    Select 2 for sensor S2.
  - **"Frost prot.type"**
    Delivered condition: Viessmann heat transfer
    medium
  - **"Frost protection"**
    Delivered condition: 40 %
    Select the mixing ratio of the heat transfer medium.
  - **"Flow trans."**, **"Yes"**
  - **"Flow rate"**
    Delivered condition: 5 l/min
    Note
    Reading the flow rate value:
    - *In the main menu **"Manual mode"**, select **"On"** for the relevant actuator (for relay 1 in the example).*
    - *Scan the value at the flow indicator of the Solar-Divicon.*
  - **"Relay"**
    Delivered condition: 1 for relay R1

Heat statement (cont.)

Statement with flow meter
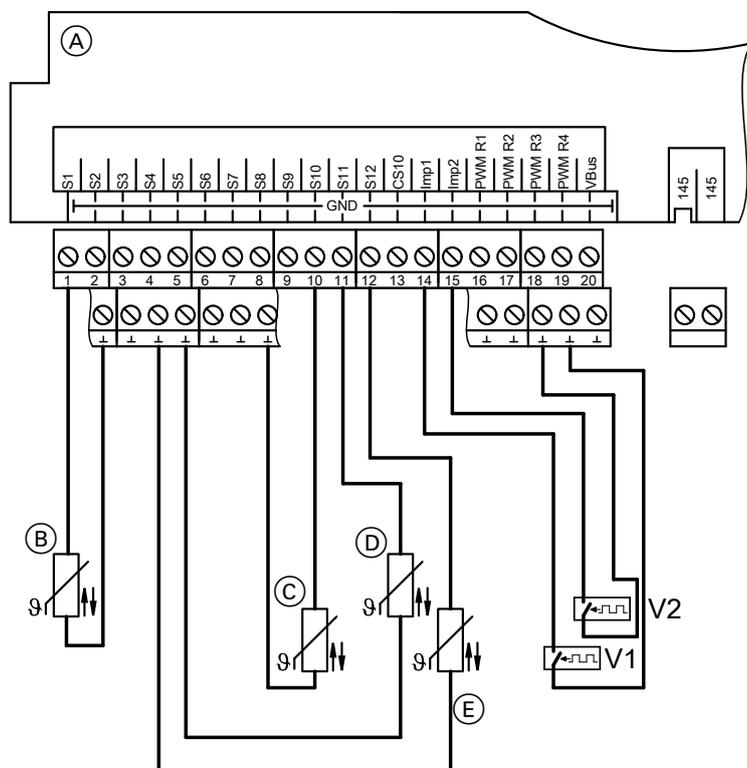
Connection

Fig. 43

V1 Flow meter HM1
V2 Flow meter HM2
(A) Wiring chamber of the solar control unit
(B) Flow temperature sensor HM1
      (collector temperature sensor)
(C) Return temperature sensor HM1
(D) Flow temperature sensor HM2
(E) Return temperature sensor HM2

- Statement:
  Through determining the temperature differential between the flow and return temperature and the throughput captured by the flow meter.
- Sensors S1 and S10 are selected as sensors.
  Note
  If the flow temperature sensor has to be positioned where temperatures may exceed 90 °C, it must be connected to S1 or S9 (NTC 20 kΩ).

Main menu **"HM"**
- **"HM options:"**
  - **"HM1"** or **"HM2"**, **"Yes"**.
- **"HM 1 Contractor"** or **"HM 2 Contractor"**
  - **"Sen. flow"**
    Delivered condition: 1
    Selectable from S1 to S12
  - **"Sen. return"**
    Delivered condition: 10
    Selectable from S1 to S12
  - **"Frost prot.type"**
    Delivered condition: Viessmann heat transfer medium
  - **"Frost protection"**
    Delivered condition: 40 %
    Select the mixing ratio of the heat transfer medium.
  - **"Flow trans."**, **"Yes"**
  - **"Vol/pulse"** (pulse rate).
    Delivered condition: 1 l/pulse, set value according to the following table.

Flow meter		06	15	25	35	60
Pulse rate	l/pulse	1	10	25	25	25
Nominal flow rate	m³/h	0.6	1.5	2.5	3.5	6.0

Commissioning

SD card

- All settings can be saved to the SD card. This can be used, for example, to transfer parameters to another Vitosolic 200. In addition, settings made once can be saved and re-loaded onto the Vitosolic 200 if required.
- The data captured is written daily to the SD card as text files in a year and month folder (named according to the format "YYYYMMDD.csv"). Within these text files, a TAB is used to separate individual values.

- The text files can be opened using a spreadsheet program, for example. The values can therefore also be visualised.
- SD card: Memory capacity ≤ 32 GB

Data point	Comment
Date and time	Display of writing time.
"Temperature sensor 1" ... in °C (temperature sensors 1 to 12)	Indicators: 888 Sensor lead break –888 Sensor short circuit
"Insolation" in W/m^2	In conjunction with connected solar cell. Displays 0 if no solar cell is connected.
"Pulse input" ... (1 to 2)	In conjunction with heat meter: Displays the number of pulses. In the case of a power failure, the value is set to 0.
"Sensor lead break mask" (binary format)	Displays the sensor input with lead break. The first bit represents sensor 1, the second bit sensor 2, etc. Example: 4064 Binary code: 111111100000, i.e. the leads of sensor inputs 6 to 12 have a lead *Note* *If a sensor required by the system configuration has a short circuit, a fault is reported at the Vitosolic.*
"Sensor short circuit mask" (binary format)	Displays the sensor input with short circuit. The first bit represents sensor 1, the second bit sensor 2, etc. *Note* *If a sensor required by the system configuration has a short circuit, a fault is reported at the Vitosolic.*
"Sensor use mask" (binary format, size 2 bytes)	Displays the actually connected sensors. The first bit represents sensor 1, the second bit sensor 2, etc. Example: 771 Binary code: 001100000011, i.e. sensor inputs 1, 2, 9, 10 are required according to the system configuration The remaining sensor inputs may be assigned but are not monitored for faults.
"Speed relay 1" ... in %	Relay outputs, e.g. for pumps. Pumps with PWM input, speed in % Standard pumps, pump "Off" 0 %, pump "On" 100 %.

SD card (cont.)

Data point	Comment
"Relay use mask"	Displays the relay outputs that are actually used. The first bit represents relay R1, the second bit relay R2, etc.
"Fault mask" (binary format, size 2 bytes)	Fault messages: Bit 0: Sensor short circuit Bit 1: Sensor lead break Bit 2: EEPROM fault Bit 3: Real-time clock fault Bit 4: Load detection R1 Bit 5: Load detection R2 Bit 6: Load detection R3 Bit 7: Load detection R4
"Warning mask" (binary format, size 2 bytes)	Warning messages: Bit 0: Night circulation Bit 1: ΔT too high
"Controller version"	Software version
"Flow temperature" in °C	In conjunction with heat statement via flow and return temperature sensor
"Return temperature" in °C	
"Flow rate" in l/h *Note* *Display is always 0.*	
"Heat" in Wh	
"Heat" in kWh	
"Heat" in MWh	

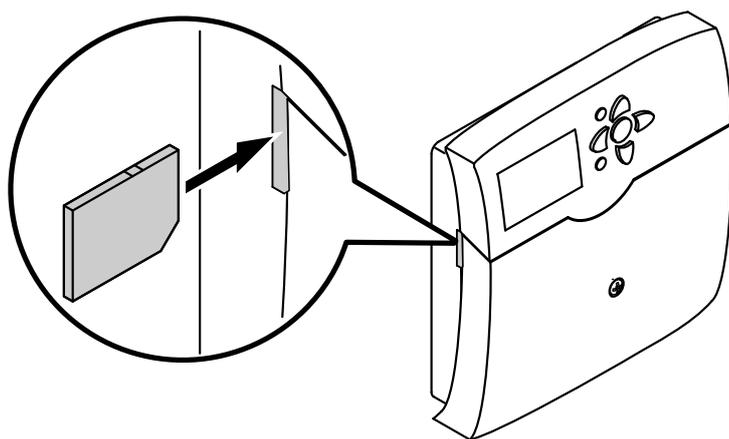### Starting writing

Fig. 44

1. Insert SD card.

2. At the solar control unit:

Main menu **"SD card"**
- Set **"Yes"**.
- **"Interval"**
  Delivered condition: 20 min
- **"Linear log"** (see table below).

SD card (cont.)

Parameter "Linear log"

No (delivered condition):	Yes:
When the card reaches its capacity limit, the oldest data will be overwritten (ring buffer). Writing continues.	Writing stops when the capacity limit of the card has been reached. The display shows **"card full"**.

Terminating writing

1. At the solar control unit:

Main menu **"SD card"**
- **"Safely rem card"**.

2. After the prompt **"-Remove card"**, remove the card from the solar control unit.

Formatting the SD card

At the solar control unit:

Main menu **"SD card"**
- **"Format"**
"Format" is displayed whilst the process runs.

The card content is deleted and the card is formatted as an FAT file system.

Possible displays

Main menu "SD card"

"No SD card"	No card has been inserted or the card is not recognised.
"Records"	Data writing active.
"Time rem"	Number of writing days for which the card still offers enough capacity.

Carrying out a relay test (testing actuators)

The relays can be switched individually or together.

Main menu **"Manual mode"**
- **"All relays"**
  or
- **"Relay 1"** to **"Relay 7"**

Switching states:
- **"ON"**
- **"Auto"** ≙ Controlled operation
- **"OFF"**

After the relay test has been completed, select " **Auto** " for all relays.

Note
If a relay is in manual mode, this will be indicated in the standard display:

```
30.04,2009            10:59
Tcol             47.7 °C
Tcylb            35.4 °C
        Manual mode
```

Fig. 45

Enabling display of messages

The messages to be displayed can be selected:
- The message **" ΔT too high"** appears when the temperature differential exceeds 50 K for more than 20 min.
  Main menu **"Contractor"**
  - **" ΔT too high"**
    Delivered condition: **"Yes"**
- The message **"Night circ."** (night circulation) appears when the collector temperature exceeds 40 °C between 23:00 and 5:00 h and the consumer is heated.
  Main menu **"Contractor"**
  - **"Night circ."**
    Delivered condition: **"Yes"**

- **"Signal relay"**
  Main menu **"Contractor"**
  - **"Signal relay"**, **"Yes"**.
    In this case, the floating relay output R7 (subject to the selected system and hydraulic type) can be used as **central fault message** output.
- The message **"Load det. R1"** to **"Load det. R4"** appears, when the relay output is enabled but there is no current.
  Main menu **"Contractor"**
  - **"Load det. R1"**
    Delivered condition: **"No"**

Scanning temperatures and operating conditions

Subject to system configuration, the following values can be scanned with ▲ / ▼:

Main menu **"Actual values"**

"Actual values:"		Explanation
"Tcol"	°C	Collector temperature
"Tcol2"	°C	Collector temperature, collector array 2
"Tcylb"	°C	Cylinder temperature, bottom
"Tcyl2b"	°C	Cylinder temperature, consumer 2, bottom
"Tcyl3b"	°C	Cylinder temperature, consumer 3, bottom
"Tcyl4b"	°C	Cylinder temperature, consumer 4, bottom
"Tby"	°C	Bypass temperature
"T-HE"	°C	Temperature external heat exchanger
"Cyl. add."	–	Additional function for DHW heating is active.
"Time"	–	
"Date"	–	
"Relay"		
"Relay 1" **"Relay 2"** **"Relay 4"** **"Relay 5"**	%	Speed relay R1, R2, R4 and R5
"Relay 3" **"Relay 6"** **"Relay 7"**	On/Off	Switching state relay R3, R6 and R7
"Sensors"		
"Sen.1" to **"Sen.12"**	°C	Temperature sensors 1 to 12 Display when there is a sensor lead break: 888.8 Display when there is a sensor short circuit: −888.8 *Note* *The temperature can also be displayed in °F (degrees Fahrenheit; setting* **"Temp.units"** *in main menu* **"Contractor"***).*
"Intens."	W/qm	Insolation intensity (actual insolation) in conjunction with the solar cell

Service settings and scans

Scanning the statement values

Subject to system configuration, the following values can be scanned with ▲ / ▼:

Main menu **"Solar"**
- **"Statement"**

To reset the values, except value for days in operation:

Whilst this value is displayed, press the following keys:

1. OK **"Delete?" "Yes"** is displayed.

2. OK to confirm.

"Solar statement:"		Explanation
"Colmax"	°C	Maximum collector temperature, collector array 1
"Col2max"	°C	Maximum collector temperature, collector array 2
"Cylmax"	°C	Cylinder maximum temperature
"Cyl2max"	°C	Maximum cylinder temperature, consumer 2
"Cyl3max"	°C	Maximum cylinder temperature, consumer 3
"Cyl4max"	°C	Maximum cylinder temperature, consumer 4
"Relay 1" to **"Relay 7"**	h	Hours run for relays R1 to R7
"Days"	–	Days in operation, solar control unit

Scanning the heat amount and temperatures

For a description of the heat statement, see from page 49.

Main menu **"HM"**
- **"HM1"** or **"HM2"**
- **"Tflow"** (heat meter flow temperature).
- **"Tretn"** (heat meter return temperature).
- **"Heat"**
  Notes
  - *Add the values for Wh, kWh and MWh together.*
  - *If there is a power failure, a value up to 6 hours old showing the heat amount will be displayed.*

Resetting the heat amount

Whilst this value is displayed, press the following keys:

1. OK **"Delete?" "Yes"** is displayed.

2. OK to confirm.

Scanning messages

Main menu "Messages"

"Messages:"	Explanation
"Loading cyl" ... (only with several consumers)	The display shows which consumer is being heated.
"Pause cyl" ... (only with several consumers)	Only in conjunction with cyclical heating (see page 35): Pause in the heating of the displayed consumer.
"Cyl.set" ...	The consumer displayed has reached its set value.
"Fault"	A fault has occurred at the solar control unit (to check the cause, see page 58).
"SW version"	Software version
"HW version"	Hardware version

Scanning messages (cont.)

Priority of the displayed messages in the standard display

- **"Manual mode"**
- **"Fault"**
- **"Loading cyl"** ...
- **"Pause cyl"** ...

Troubleshooting

Fault messages

If the system develops faults, the display backlighting flashes and **"Fault"** will be displayed.

```
30.04.2009            10:59
Tcol              47.7 °C
Tcylb             35.4 °C
            Fault
```
Fig. 46

Checking and acknowledging faults

Press the following keys:

1. ≡: **"Main menu"** will be displayed.

2. ▼ for **"Messages"**.

3. OK to confirm.

4. ▼ for scanning the fault.

5. OK to acknowledge.

6. ▼ for scanning further faults (see the following table).

Note
If an acknowledged fault is not removed, the fault message will be re-displayed.

Several sensor faults

In this case, only the most recent fault will be displayed. It must be rectified before the previous fault, if this has not yet been rectified, is displayed.

Faults with display

"Messages:"		
"Fault"	Cause	Remedy
"!Interruption" >Sensor<	Lead break at indicated sensor	Check the relevant sensor (see page 60).
"!Short circuit" >Sensor<	The sensor has suffered a short circuit	Check the relevant sensor (see page 60).
"!Rev.volt. SC" >Solar cell<	Solar cell incorrectly connected	Connect the solar cell with correct polarity (see page 13).
"!Short circuit SC" >Solar cell<	Solar cell short circuit	Check the connection of the solar cell (see page 13).
"?Night circ." *Note* *A central fault message facility connected to relay R7 will not be switched on (see also page 10).*	Between 23:00 and 05:00 h: ▪ Recirculation via gravity (collector temperature in excess of 40 °C). ▪ One solar circuit pump starts.	▪ Check the time on the Vitosolic. If using a boiler control unit, also check the time on this (transmitted via KM BUS to the Vitosolic 200). ▪ An incorrect sensor (type NTC, 10 kΩ) is being used as collector temperature sensor. Use type NTC 20 kΩ . ▪ Check any installed check valve (Solar-Divicon) or install one.
"!Load R1" **"!Load R2"** **"!Load R3"** **"!Load R4"**	The load is less than 2 W when the relay is switched. High limit safety cut-out has responded, cable break or faulty pump	Reset the high limit safety cut-out, check the pump connection and pump.
"?ΔT too high" See information above.	Circulation pump faulty. Message only if solar heating takes place for longer than 20 min at a temperature differential between collector and consumer greater than 50 K.	Check pump connection and pump.

Service

Fault messages (cont.)

"Messages:"		
"!EEPROM"	Internal fault.	Switch solar control unit OFF and ON again after a brief interval. Check all settings. If the fault recurs, replace the solar control unit.
"!Processors"		
"!SD card"	To display the cause, see next chapter.	See the following chapter.

Display of cause of fault related to the SD card

"Messages"	Cause	Remedy
"!File system"	Error in the file system.	Format the card.
"! Incorrect card"	Incorrect card type inserted or Memory capacity > 32 GB.	Insert card with memory capacity ≤ 32 GB .
"!Write fault"	Error while writing to the card.	Replace card.
"!Write protect"	The card is write-protected.	Stop the write protection of the card.

Faults without display

The display appears dark

Check the operating voltage (ON/OFF switch, power cable). If voltage is applied to the solar control unit, the fuse has blown.
Switch off the power supply. Replace the fuse (see page 61).

Check all relays one after the other, set **"Manual mode"** to **"On"** (see page 54) until the faulty actuator has been identified. Rectify the fault and set **"Manual mode"** to **"Auto"**.
If the display still appears dark after the fault has been rectified, replace the solar control unit.

Solar circuit pump does not start correctly

Check start temperature differential.	If too high, adjust the setting. If OK, monitor the collector temperature.
Monitor collector temperature.	When the solar circuit has been vented and there is sufficient pressure, the temperature must not rise significantly. Otherwise, enable the interval function (see page 41). If the temperature differential remains too high, check the solar circuit pump and the pump setting.
Check the solar circuit pump.	Start solar circuit pump via **"Manual mode"** (see page 54). Check the flow rate at the flow indicator.

▪ Standard solar circuit pump not running.	Measure operating voltage 230 V~ at the pump connection.
	▪ No operating voltage:
	  Check connection and high limit safety cut-out. The solar control unit is faulty if the relay has no voltage despite being in manual mode.
	▪ Operating voltage is present:
	  The pump has seized or is faulty.

▶▶

Fault messages (cont.)

▪ PWM pump not running.	Measure operating voltage 230 V~ at the pump connection. ▪ No operating voltage: Check connection and high limit safety cut-out. If the relay has no voltage despite **"Manual mode"**, the solar control unit is faulty. ▪ Operating voltage is present: Control voltage 10 V– check at control cable. – Control voltage is present: The pump has seized or is faulty. – Control voltage is not present: Check electrical connection of the pump and pump settings. Switch off the power supply. Transfer pump and PWM signal to a different relay and test in manual mode. Replace the pump if it refuses to run. Otherwise the solar control unit is faulty.
Replace the solar control unit.	Note all settings (see tables in the appendix) and label the connecting cables.

Solar circuit pump does not stop correctly

|	
Check stop temperature differential.	If too low, adjust the setting. If OK, monitor the temperature differential.
Monitor the temperature differential.	If the solar circuit has been vented and there is sufficient pressure, the temperature differential for speed-controlled pump operation may be between 5 and 25 K. If the temperature differential remains too high or too low, check the solar circuit pump and the pump setting.
Check the solar circuit pump.	Start solar circuit pump via **"Manual mode"** (see page 54). Check the flow rate at the flow indicator.

Checking sensors
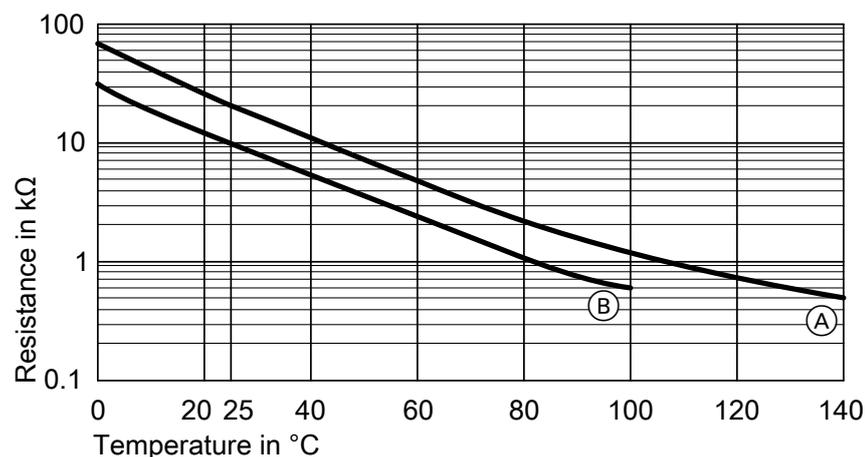
Fig. 47

Ⓐ NTC 20 kΩ at 25 °C
Ⓑ NTC 10 kΩ at 25 °C

1. Disconnect the relevant sensor and measure its resistance.

2. Compare the result with the actual temperature (for scanning, see page 55). In the case of severe deviation, check the installation and replace the sensor if required.

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Checking sensors (cont.)

Specification

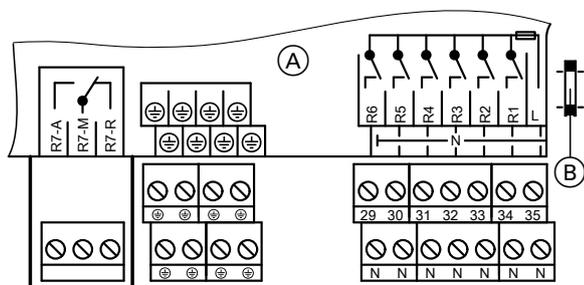| Viessmann sensor NTC	10 kΩ at 25 °C	20 kΩ at 25 °C
IP rating	IP 53	IP 53
Permissible ambient temperature		
▪ During operation	−20 to + 90 °C	−20 to + 200 °C
▪ During storage and transport	−20 to + 70 °C	−20 to + 70 °C
Cable length	3.8 m	2.50 m

Checking relays (actuators)

Replacing the MCB/fuse

Fig. 48

Ⓐ Solar control unit wiring chamber
Ⓑ Fuse, 6.3 A (slow)

Open the solar control unit wiring chamber.
A spare fuse is included in the fuse holder.

Parts list

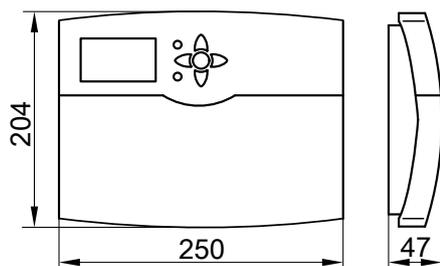| Pos.	Component	Part no.
0001	Vitosolic 200, type SD4	7126410
0010	Collector temperature sensor	7831913
0020	Cylinder temperature sensor	7438702
0030	Strain relief and MCB/fuse	7831417
0040	MCB/fuse 6.3 A (slow) (5 pce)	7822610
0050	Installation and service instructions	5583565
0060	Operating instructions	5605930

Service

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Specification

Fig. 49

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	6 A
Power consumption	6 W (0.9 W in standby mode)
Safety category	II
IP rating	IP 20 to EN 60529; ensure through design/installation
Mode of operation	Type 1 B to EN 60730-1
Permiss. ambient temperature	
▪ During operation	0 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
▪ During storage and transport	−20 to +65 °C
Rated relay output breaking capacity at 230 V~	
▪ Semi-conductor relay 1 to 6	2 to 190 W
▪ Relay 7	900 W
▪ Rated current	max. 6 A

Service

Menu structure overview

Main menu:	
Actual values	Ⓐ
Messages	Ⓑ
Solar	
System	
HM	
SD card	Ⓛ
Manual mode	Ⓚ
Operator code	Ⓗ
Contractor	

Solar:	Ⓒ
back	
Settings	
Statement	Ⓓ
Options	
Contractor	

System:	Ⓔ
back	
Settings	
Options	
Contractor	

HM:	Ⓕ
back	
HM 1	
HM 2	
Options	

Contractor:	Ⓖ
back	
Load det. R1	No
Load det. R2	No
Load det. R3	No
Load det. R4	No
ΔT too high	Yes
Night circ.	Yes
Signal relay	No
Sensors	
Outputs	
h	
Display	
Language	

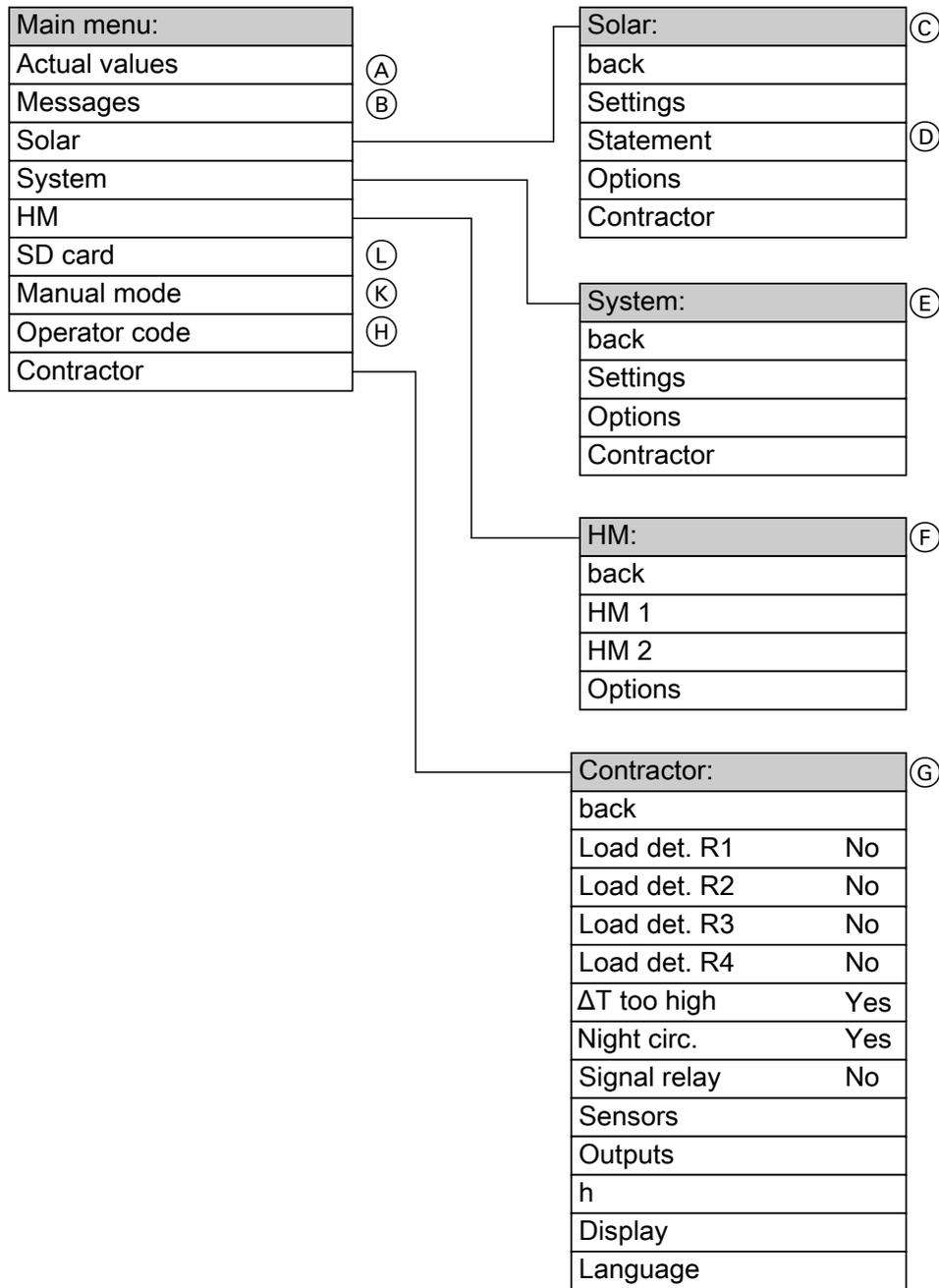*Fig. 50*

Ⓐ See page 55.
Ⓑ See page 56, 58 and 59.
Ⓒ See from page 65.
Ⓓ See page 56.
Ⓔ See from page 68.
Ⓕ See from page 71.
Ⓖ See from page 72.
Ⓗ See page 16.
Ⓚ See page 54.
Ⓛ See page 72.

Service

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Main menu "Solar"

Settings

"Solar setting:"	Description	Delivered con-dition	Setting range	Set value
"Tcylset"	Set temperature consumer	60 °C	4 to 90 °C	
"Tcylset1"	1st set temperature when "Cyl.set" = "Yes" [*2]	60 °C	4 to 90 °C	
"Tcylset2"	2nd set temperature when "Cyl.set" = "Yes" [*2]	60 °C	4 to 90 °C	
"Tcyl2set"	Set temperature consumer 2	60 °C	4 to 90 °C	
"Tcyl2set1"	1st set temperature when "Cyl2set" = "Yes" [*2]	60 °C	4 to 90 °C	
"Tcyl2set2"	2nd set temperature when "Cyl2set" = "Yes" [*2]	60 °C	4 to 90 °C	
"Tcyl3set"	Set temperature consumer 3	60 °C	4 to 90 °C	
"Tcyl3set1"	1st set temperature when "Cyl3set" = "Yes" [*2]	60 °C	4 to 90 °C	
"Tcyl3set2"	2nd set temperature when "Cyl3set" = "Yes" [*2]	60 °C	4 to 90 °C	
"Tcyl4set"	Set temperature consumer 4	60 °C	4 to 90 °C	
"Tcyl4set1"	1st set temperature when "Cyl4set" = "Yes" [*2]	#60 °C	4 to 90 °C	
"Tcyl4set2"	2nd set temperature when "Cyl4set" = "Yes" [*2]	60 °C	4 to 90 °C	
" ΔTon"	Start temperature differential for solar circuit pump[*3]	8 K	1.5 to 20 K	
" ΔToff"	Stop temperature differential for the solar circuit pump[*4]	4 K	1 to 19.5 K	
" ΔTset"	Temperature differential for the start of the speed control	10 K	2 to 30 K	
" ΔT2on"	Start temperature differential for consumer 2[*3]	8 K	1.5 to 20 K	
" ΔT2off"	Stop temperature differential for consumer 2[*4]	4 K	1 to 19.5 K	
" ΔT2set"	Temperature differential for the start of the speed control	10 K	2 to 30 K	
" ΔT3on"	Start temperature differential for consumer 3[*3]	8 K	1.5 to 20 K	
" ΔT3off"	Stop temperature differential for consumer 3[*4]	4 K	1 to 19.5 K	
" ΔT3set"	Temperature differential for the start of the speed control	10 K	2 to 30 K	
" ΔT4on"	Start temperature differential for consumer 4[*3]	8 K	1.5 to 20 K	
" ΔT4off"	Stop temperature differential for consumer 4[*4]	4 K	1 to 19.5 K	
" ΔT4set"	Temperature differential for the start of the speed control	10 K	2 to 30 K	
"Overhtcyl"	Consumer for heat transfer	1	1 to 4	

[*2] Parameter in "Solar contractor".
[*3] " ΔTon" can be at least 0.5 K above " ΔToff" .
 The value for " ΔTon" cannot be set higher than the value for " ΔTset" .
[*4] " ΔToff" can be at least 0.5 K below " ΔTon" .

Service

Main menu "Solar" (cont.)

"Solar setting:"	Description	Delivered condition	Setting range	Set value
"Priority cyl1"	Sequence in which the consumers are to be heated up	1	Subject to the number of consumers from 1 to 4	
"Priority cyl2"		2		
"Priority cyl3"		3		
"Priority cyl4"		4		
"HE ΔTon"	Start temperature differential for secondary pump of ext. heat exchanger[*3]	5 K	1 to 19.5 K	
"HE ΔToff"	Stop temperature differential for secondary pump of ext. heat exchanger[*4]	3 K	1.5 to 20 K	
"SC bypass"	Insolation threshold [*5]	200 W/m^2	100 to 500 W/m^2	
"Interval"	Interval for interval function	30 min	1 to 60 min	
"Tcolset"	Set collector temperature in conjunction with activating the function **"Target temp."** (in **"Solar options"**)	65 °C	20 to 110 °C	
"Tcolmax"	Maximum collector temperature[*6]	110 °C	80 to 160 °C	
"Tcolemoff"	Collector stop temperature[*6] ***Note*** *This function is disabled at 200 °C.*	130 °C	110 to 200 °C	

Options

"Solar options:"	Description	Delivered condition	Set value
"System"	System	1 (1 to 7)	
"Hyd.type"	Hydraulic type	1 (1 to 4)	
"Bypass"	Bypass circuit with collector temperature and bypass sensor/solar cell	No	
"Ext. HE"	Ext. heat exchanger is connected	No	
"Cooling fct."	Cooling function	No	
"Col.interv."	Interval function	No	
"Col.cool.fct"	Collector cooling function	No	
"Ret.cool.fct."	Return cooling function	No	
"Frost prot."	Frost protection	No	
"Target temp."	Target temperature in conjunction with speed control	No	
"Par. Relay"	Parallel relay	No	

[*3] *" ΔTon" can be at least 0.5 K above " ΔToff" .*
 The value for " ΔTon" cannot be set higher than the value for " ΔTset" .
[*4] *" ΔToff" can be at least 0.5 K below " ΔTon" .*
[*5] *Vitosol-F: 210 W/m^2*
 Vitosol-T: 130 W/m^2
[*6] *Never set the maximum collector temperature higher than the collector shutdown temperature. Both values are mutually interlocked to a differential of at least 10 K.*

Main menu "Solar" (cont.)

"Solar options:"	Description	Delivered condition	Set value
"SC bypass"	Bypass circuit with solar cell	No	
"Heat interr."	Reheating suppression by the boiler	No	
"Cyl2 on"	Cylinder 2 on	Yes	
"Cyl3 on"	Cylinder 3 on	Yes	
"Cyl4 on"	Cylinder 4 on	Yes	
"Overheat"	Only in conjunction with systems 3 to 7: Heat transfer if **"Tcylset"** (in **"Solar setting:"**) of selected consumer has been reached.	No	

Contractor

"Solar contractor:"	Description	Delivered condition	Setting range	Set value
"Tcolmin"	Minimum collector temperature, collector array 1	10 °C	10 to 90 °C	
"TCol2min"	Minimum collector temperature, collector array 2	10 °C	10 to 90 °C	
" ΔTcylset"	Hysteresis for set temperature **"Tcylset"**	2 K	0.5 to 5 K	
" ΔT cyl2set"	Hysteresis for set temperature **"Tcyl2set"**	2 K	0.5 to 5 K	
" ΔT cyl3set"	Hysteresis for set temperature **"Tcyl3set"**	2 K	0.5 to 5 K	
" ΔT cyl4set"	Hysteresis for set temperature **"Tcyl4set"**	2 K	0.5 to 5 K	
"Cyl. set"	Heating to the second set temperature, consumer 1	No		
"Cyl2set"	Heating to the second set temperature, consumer 2	No		
"Cyl3set"	Heating to the second set temperature, consumer 3	No		
"Cyl4set"	Heating to the second set temperature, consumer 4	No		
"Sen.cyl set"	Sensor for stopping the solar circuit pump, subject to **"Tcylset"** (no influence on the differential temperature control)	2	1 to 12	
"Sen.cyl2 set"	See above	4	1 to 12	
"Sen.cyl3 set"	See above	5	1 to 12	
"Sen.cyl4 set"	See above	6	1 to 12	
"t-st"	**Cyclical pause time**, interruption time of pump operation	2 min	1 to 60 min	
"t-circ"	**Cyclical heating time**, interval of interruption	15 min	1 to 60 min	
" ΔT col"	Collector temperature rise	2 K	1.0 to 10.0 K	

Main menu "Solar" (cont.)

"Solar contractor:"	Description	Delivered condition	Setting range	Set value
"Int time"	When the interval function **"Col.interv."** has been enabled (in **"Solar options"**): Time when the solar circuit pump runs according to the selected interval and time frame	30 s	5 to 500 s	
"Int on"	When the interval function **"Col.interv."** has been enabled (in **"Solar options"**): Start of interval function	07:00 to 19:00	00:00 to 23:45	
"Int off"	When the interval function **"Col.interv."** has been enabled (in **"Solar options"**): End of interval function	07:00 to 19:00	00:00 to 23:45	
"Suppr.heat cyl"	In the case of activated reheating suppression: Consumer to which this function should apply	Cyl.1	1 to 4	
"HE cylinder"	Consumer that is to be heated via the external heat exchanger	All	1 to 4 / All	
"Sen.ext.HE FL"	Sensor to be used for function **"Ext. HE"**	3	1 to 12	
"Sen. bypass"	Sensor to be used for bypass function	3	1 to 12	
"Bypass"	Hydraulics of bypass circuit	Valve	Valve/pump	
"Colmax cyl"	Selection of the consumer that is affected by the function **"Col.cool.fct."** (in **"Solar options"**)	1, 2, 3, 4	1 to 4	
"Par. Relay"	When **"Par. Relay"** (in **"Solar options:"**) is enabled:) Relay R5 is switched in parallel to the selected actuator. Preferably when switching HE circulation pumps and pumps with PWM input in parallel.	R1	R1, R2, R3, R4, R6, R7	
"Control unit"	Never adjust			
"HE control"	Never adjust			

Main menu "System"

Settings

"Sys. setting:"	Description	Delivered condition	Setting range	Set value
"Time"	—	—	—	—
"Date"	—	—	—	—
"t-start"	Start time for the additional function for DHW heating	17:00	00:00 to 23:45	

Service

Main menu "System" (cont.)

"Sys. setting:"	Description	Delivered condition	Setting range	Set value
"Th1on"	Thermostat start temperature function block 1	40 °C	−40 to 250 °C	
"Th1off"	Thermostat stop temperature function block 1	45 °C		
"Th2on"	Thermostat start temperature function block 1	40 °C		
"Th2off"	Thermostat stop temperature function block 1	45 °C		
" ΔT"5on	Start temperature differential function block 1	5 K	1.5 to 20 K	
" ΔT"5off	Stop temperature differential function block 1	3 K	1 to 19.5 K	
"Time switch 1" "t1– on"on "t1–off" "t2–on" "t2–off" "t3–on" "t3–off"	Period function block 1	00:00	00:00 to 23:45	
"Th3on"	Thermostat start temperature function block 2	40 °C	−40 to 250 °C	
"Th3off"	Thermostat stop temperature function block 2	45 °C		
"Th4on"	Thermostat start temperature function block 2	40 °C		
"Th4off"	Thermostat stop temperature function block 2	45 °C		
" ΔT6on"	Start temperature differential function block 2	5 K	1.5 to 20 K	
" ΔT6off"	Stop temperature differential function block 2	3 K	1 to 19.5 K	
"Time switch 2" "t1–on" "t1–off" "t2–on" "t2–off" "t3–on" "t3–off"	Period function block 2	00:00	00:00 to 23:45	
"Th5on"	Thermostat start temperature function block 3	40 °C	−40 to 250 °C	
"Th5off"	Thermostat stop temperature function block 3	45 °C		
"Th6on"	Thermostat start temperature function block 3	40 °C		
"Th6off"	Thermostat stop temperature function block 3	45 °C		
" ΔT7on"	Start temperature differential function block 3	5 K	1.5 to 20 K	
" ΔT7off"	Stop temperature differential function block 3	3 K	1 to 19.5 K	

Service

Overview of system parameters

Main menu "System" (cont.)

"Sys. setting:"	Description	Delivered condition	Setting range	Set value
"Time switch 3" "t1–on" "t1–off" "t2–on" "t2–off" "t3–on" "t3–off"	Period function block 3	00:00	00:00 to 23:45	

Options

"Sys. options:"	Description	Delivered condition	Set value
"Add. fct."	Additional function for DHW heating	No	
"Cyl.load"	Cylinder heating	No	
"Thermost. 1"	Thermostat function 1, function block 1	No	
"Thermost. 2"	Thermostat function 2, function block 1	No	
" ΔT fct 5"	ΔT5 differential temperature control, function block 1	No	
"Time switch 1"	Time switch 1, function block 1	No	
"Thermost. 3"	Thermostat function 3, function block 2	No	
"Thermost. 4"	Thermostat function 4, function block 2	No	
" ΔT fct 6"	ΔT6 differential temperature control, function block 2	No	
"Time switch 2"	Time switch 2, function block 2	No	
"Thermost. 5"	Thermostat function 5, function block 3	No	
"Thermost. 6"	Thermostat function 6, function block 3	No	
" ΔT fct 7"	ΔT7 differential temperature control, function block 3	No	
"Time switch 3"	Time switch 3, function block 3	No	

Contractor

Sensors for the required functions can be selected in the following menu. All sensors that already have a function in the system are available for this.

"Sys.contractor:"	Description	Delivered condition	Setting range	Set value
"Sen. add.fct."	Sensor for the additional function for DHW heating	2	1 to 12	
"Sen.th1"	Sensor for thermostat function 1, function block 1	3	1 to 12	

Service

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Main menu "System" (cont.)

"Sys.contractor:"	Description	Delivered condition	Setting range	Set value
"Sen.th2"	Sensor for thermostat function 2, function block 1	4	1 to 12	
"Sen1-Δ "T5fct	Sensor for differential temperature control, function block 1	3	1 to 12	
"Sen2 ΔT5fct"	Sensor for differential temperature control, function block 1	4	1 to 12	
"Sen.th3"	Sensor for thermostat function 3, function block 2	5	1 to 12	
"Sen.th4"	Sensor for thermostat function 4, function block 2	6	1 to 12	
"Sen1 ΔT6fct"	Sensor for differential temperature control, function block 2	5	1 to 12	
"Sen2 ΔT6fct"	Sensor for differential temperature control, function block 2	6	1 to 12	
"Sen.th5"	Sensor for thermostat function 5, function block 3	7	1 to 12	
"Sen.th6"	Sensor for thermostat function 6, function block 3	8	1 to 12	
"Sen1 ΔT7fct"	Sensor for sensor, function block 3	7	1 to 12	
"Sen2 ΔT7fct"	Sensor for differential temperature control, function block 3	8	1 to 12	
" ΔT"5 control	Pump speed control for the ΔT5 control ($\Delta T_{set} = 10$ K)			
▪ "Rise"		2	1 to 20	

Main menu "HM" (heat meter)

Options

"HM options:"	Description	Delivered condition	Set value
"HM 1"	Heat meter with statement	No	
"HM 2"	Heat meter with statement	No	

Contractor

"HM 1 Contractor:"/"HM 2 Contractor:"	Description	Delivered condition	Setting range	Set value
"Sen. flow"	Sensor for capturing the flow temperature	1	1 to 12	
"Sen. return"	Sensor for capturing the return temperature	10	1 to 12	
"Frost prot.type"	0 Water 1 Propylene glycol 2 Ethylene glycol 3 Viessmann heat transfer medium	3	0 to 3	

Overview of system parameters

Main menu "HM" (heat meter) (cont.)

"HM 1 Contractor:"/"HM 2 Contractor:"	Description	Delivered condition	Setting range	Set value
"Frost prot."	Will only be displayed if a heat transfer medium that can be mixed has been entered.	40 %	20 to 70 %	
"Flow trans."	If a flow meter is installed.	No	—	
"Vol/pulse"	Will only be displayed if **"Flow trans."** has been set to **"Yes"**: The flow rate captured by the flow meter.	1l/pulse	1 to 99 l/pulse	
"Flow rate"	Will only be displayed if **"Flow trans"** has been set to **"No"**: Flow rate	5 l	1 to 20 l/min	
"Relay"	Relay to which the corresponding consumer is connected.	1	1 to 7	

Main menu "SD card"

"SD card:"	Description	Delivered condition	Setting range	Set value
"Safely rem card"	End writing.	—	—	—
"Save settings"	Set values are saved to the SD card.	—	—	—
"Load settings"	Load settings from the SD card to the Vitosolic 200.	—	—	—
"Format"	Format the card.	—	—	—
"Interval"	Writing interval	20 min	1 to 20 min	
"Linear log"	Data ring buffer off.	No		

Main menu "Contractor"

"Contractor:"	Description	Delivered condition	Setting range	Set value
" ΔT too high"	See page 55	Yes	—	
"Load det. R1"		No	—	
"Load det. R2"		No	—	
"Load det. R3"		No	—	
"Load det. R4"		No	—	
"Night circ."	See page 55.	Yes	—	
"Signal relay"	See page 55.	No	—	
"Contr. sensors:"				
▪ "Solar cell type"	Identifying letter of the solar cell	E	A,B, C, D, E, G, H, J, K	
▪ "Match solar cells"	Matching can be performed automatically or manually.	Auto	Auto or Manual	—
▪ "SC offset"	Display value, cannot be adjusted.	—	—	—

Service

Main menu "Contractor" (cont.)

"Contractor:"	Description	Delivered condition	Setting range	Set value
▪ **"Temp.units"**	Temperature unit	°C Celsius	°F Fahrenheit	
▪ **"Sensor 1"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 2"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 3"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 4"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 5"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 6"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 7"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 8"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 9"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 10"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 11"**	Sensor matching	0 K	−5 K to 5 K	
▪ **"Sensor 12"**	Sensor matching	0 K	−5 K to 5 K	
"Contr. outputs:"				
▪ **"Min speed1"**	Minimum speed of the pump at R1	30 %	2 to 100 %	
▪ **"Min speed2"**	Minimum speed of the pump at R2	30 %	2 to 100 %	
▪ **"Min speed3"**	Minimum speed of the pump at R3	30 %	2 to 100 %	
▪ **"Min speed4"**	Minimum speed of the pump at R4	30 %	2 to 100 %	
▪ **"Relay kick 1"** ▪ **"Relay kick 2"** ▪ **"Relay kick 3"** ▪ **"Relay kick 4"** ▪ **"Relay kick 5"** ▪ **"Relay kick 6"** ▪ **"Relay kick 7"**	The pumps are started at an adjustable time for 10 s to prevent them from seizing up.	No		
▪ **"Time"**	Time for relay kick			
▪ **"Control 1"**	See table on page 35	On/Off		
▪ **"Control 2"**	See table on page 35	On/Off		
▪ **"Control 3"**	See table on page 35	On/Off		
▪ **"Control 4"**	See the table on page 35.	On/Off		
▪ **"VBus"**	Activating the V BUS	No		
"Contr. time:"				
▪ **"KMBus time"**	Adopting the time from the boiler control unit via KM BUS.	Yes		
▪ **"Auto Summer"**	Automatic changeover summer/wintertime (only if **"No"** is set for **"KMBus time"**).	Yes		
▪ **"Time UTC"** (Time at the zero meridian, i.e. CET minus 1 h)	Time for the summer/wintertime changeover (only if **"No"** is set for **"KMBus time"**).			

▶▶

Service

Overview of system parameters

"Contractor:"	Description	Delivered condition	Setting range	Set value
"Display:"				
▪ **"Inverted"**		White script on a black background	Black script on a white background	
▪ **"Lighting"**	Brightness of the display backlighting	100	50 to 100	
"Language"	See page 16	—		—

Service

PCBs

Replace the PCB in the stated boiler control units in
conjunction with the following functions:
- Suppression of reheating by the boiler
- Auxiliary function for DHW heating, achieved by the
  solar control unit

Control unit	PCB
Vitotronic 200, type KW1, **Part no. 7450 351, 7450 740**	Part no. 7828 192
Vitotronic 200, type KW2, **Part no. 7450 352, 7450 750**	
Vitotronic 300, type KW3, **Part no. 7450 353, 7450 760**	
Vitotronic 200, type GW1, **Part no. 7143 006**	Part no. 7831 930
Vitotronic 300, type GW2, **Part no. 7143 156**	
Vitotronic 333, type MW1, **Part no. 7143 421**	Part no. 7828 194

Service

Certificates

Declaration of conformity

We, Viessmann Werke GmbH & Co KG, Allendorf, confirm as sole responsible body that the product **Vitosolic 200** complies with the following standards:

EN 55 014-1
EN 55 014-2
EN 60 335-1
EN 60 730-1
EN 60 730-2-9

In accordance with the following Directives, this product is designated with CE :

2004/108/EC
2006/95/EC
2011/65/EC

Allendorf, 04 April 2014   Viessmann Werke GmbH&Co KG

Authorised signatory Manfred Sommer

Keyword index

Keyword index (cont.)

Applicability

Serial No.:
7538789

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