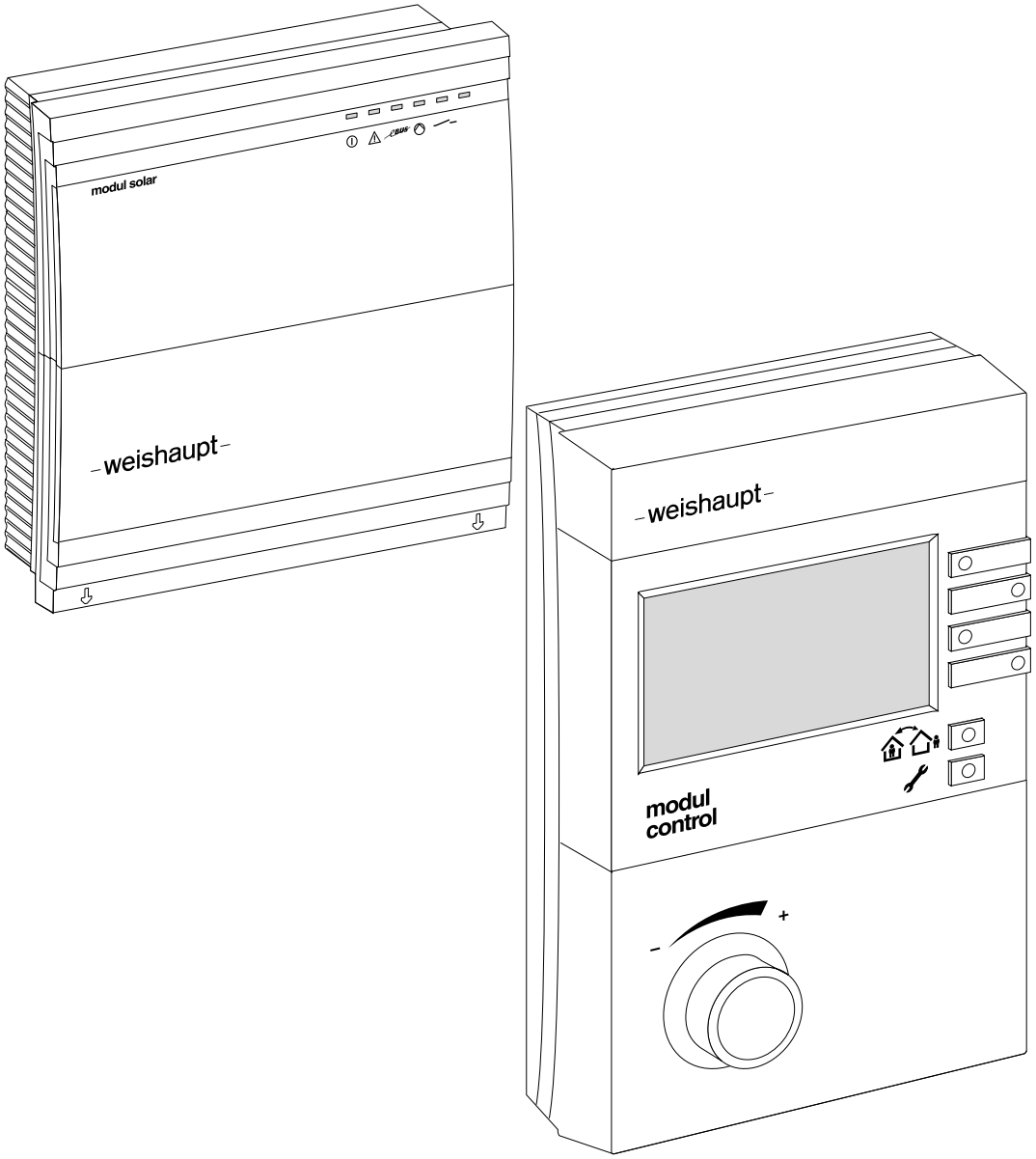
–weishaupt–

manual

Installation and operating instruction



Remote control station WCM-FS 2.0 and solar controller WCM-SOL 1.0 home

83277602 ▪ 3/2012-10

1 User instructions

Translation of original operating instructions

These installation and operating instructions form part of the unit and must be kept on site.

1.1 User guide

1.1.1 Symbols

 **DANGER**	Immediate danger with high risk. Non observance can lead to serious injury or death.
 **WARNING**	Danger with medium risk. Non observance can lead to environmental damage, serious injury or death.
 **CAUTION**	Danger with low risk. Non observance can cause damage to the equipment and injury to personnel.
	Important information.
▶	Requires direct action
✓	Result after an action
▪	Itemisation
...	Range

1.1.2 Target group

These installation and operating instructions are intended for the operator and qualified personnel. They should be observed by all personnel working on the unit.

Work on the unit must only be carried out by personnel who have the relevant training and instruction.

Persons with limited physical, sensory or mental capabilities may only work on the unit if they are supervised or have been trained by an authorised person.

Children must not play near or on the unit.

1.2 Guarantee and Liability

Guarantee and liability claims for personal and equipment damage are excluded, if they can be attributed to one or more of the following causes:

- Non approved application of the remote control station,
- non observance of the operating instructions,
- continual operation despite a fault,
- repairs, which have been carried out incorrectly,
- the use of non original Weishaupt parts,
- acts of God.

2 Safety

2.1 Permissible application Solar

The remote control station WCM-FS 2.0 and the solar module WCM-SOL 1.0 home are suitable for control of a solar system. A heating system with up to 8 heating circuits (one direct heating circuit and 7 mixed heating circuits) and a Weishaupt condensing boiler can thus be supported by solar energy (heating and domestic hot water operation).

This device is not intended for use by persons (including children) with reduced physical, sensory or mental capability or by persons lacking experience and/or knowledge, unless they are supervised by a person responsible for their safety or receive from this person instruction in how the device is used. Children should be supervised to ensure they do not play with the device.

Any use other than that described above shall be deemed improper. Weishaupt cannot be held responsible for any damage resulting from such use. The risk of such misuse lies entirely with the user. Correct use also includes compliance with the installation and operating manual and all other documents, which are included in the delivery in addition to these instructions.

The device described in these instructions conforms to the recognised level of technology and safety relevant regulations. Improper or inappropriate use could endanger the health and safety of the user or third party and impair the device function.

2.2 Safety measures

Safety relevant fault conditions must be eliminated immediately.

2.3 Electrical connection

For all work carried out on live parts:
- Observe the accident prevention instructions BGV A3 and adhere to local directives,
- tools in accordance with EN 60900 should be used.

2.4 Disposal

The remote control station WCM-FS and the solar controller WCM-SOL must not be disposed of with household waste. Ensure the devices are disposed of in the correct manner.

The units are subject to the Act Governing the Sales, Return and Environmentally Sound Disposal of Electrical and Electronic Equipment (Electrical and Electronic Equipment-WEEE). Therefore free removal is provided at communal waste collection facilities.

3 Product description

3.1 Type key

WCM	Type: Weishaupt Condens Manager
-FS	Type: Remote control station
2.0	Construction
WCM	Type: Weishaupt Condens Manager
-SOL	Type: Solar module
1.0	Construction
home	Development stage

Compatibility

The compatibility of each WCM component to one another is shown in the table below.

	WCM-FS 1.0	WCM-FS 2.0	WCM-EM 1.0	WCM-EM 2.0	WCM-EM 2.1	WCM-SOL 1.0	WCM-KA 1.0	WCM-KA 2.0	
WCM-FS 1.0		C	A	A	B	B	A*	A*	
WCM-FS 2.0	C		A	A	A	A	A	A	
WCM-EM 1.0	A	A		C	C	B	A	A	
WCM-EM 2.0	A	A	C		C	B	A	A	
WCM-EM 2.1	B	A	C	C		A	A	A	
WCM-SOL 1.0	B	A	B	B	A	D	D	D	
WCM-KA 1.0	A	A	A	A	A	D	D	D	
WCM-KA 2.0	A	A	A	A	A	D	D	D	

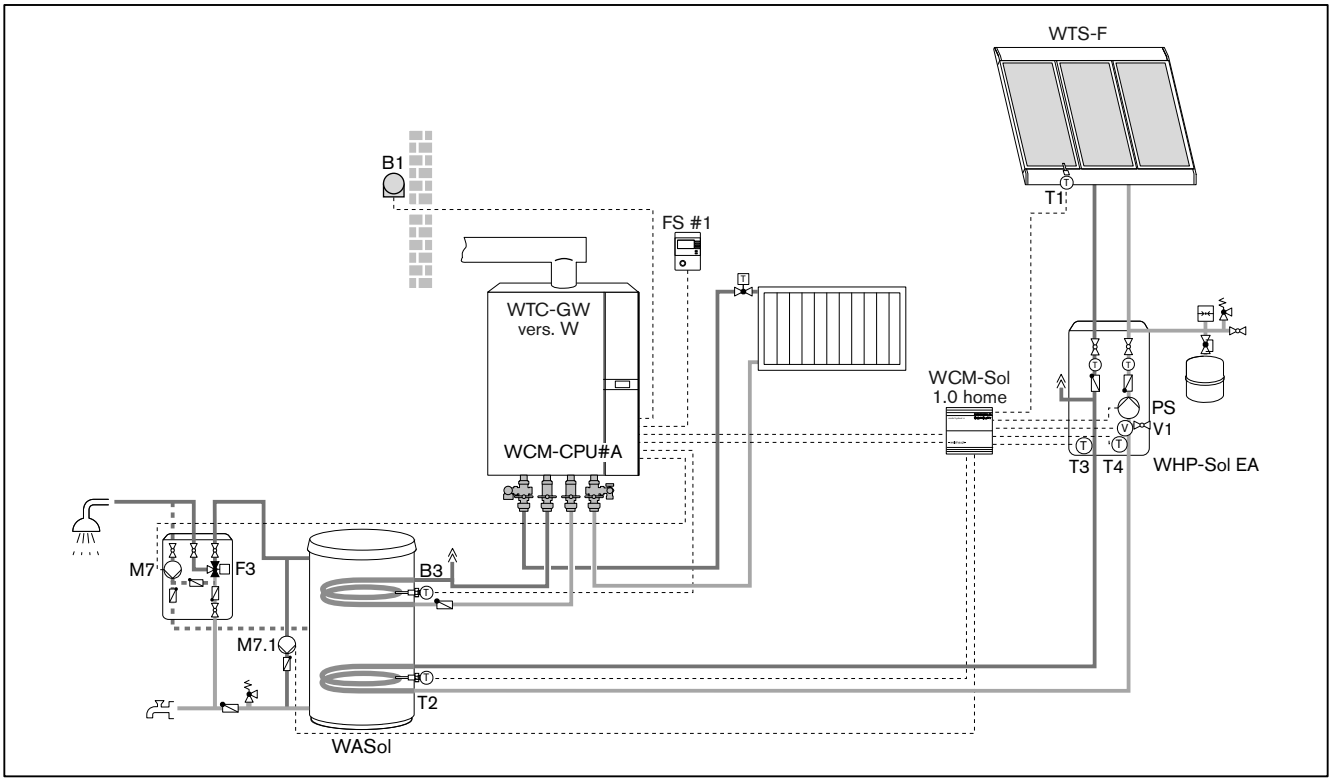
A	Full functionality
A*	Full functionality (from version WCM-FS 1.0 V196.27)
B	Compatible, the older component version limits the functionality
C	Can be used together in one system
D	Cannot be used in multiples/combined in one system

3.2 Variations

3.2.1 Solar supported water heating

In the system example, the solar controller is operated via the WCM-FS, address #1.
The external sensor is connected to WTC address #A.
DHW operation is carried out via WTC address #A.

The solar controller is operated via the FS which, according to the address setting, has the functions DHW program, time master and circulation program. The following addresses are possible: Control centre#L, WTC-HC#1, WTC-HC#1 + EM-HC#2 and EM-HC#2. The WTC should be set to address #A.



Legend:

FS:	Remote control station WCM-FS
B1:	External temperature sensor
B3:	DHW temperature sensor
M7:	Circulation pump
M7.1:	Bypass pump
T1:	Collector sensor
T2:	Thermal store sensor bottom
T3:	Solar flow sensor
T4:	Solar return sensor
V1:	FlowRotor
PS:	Solar pump
F3:	Thermostatic mixer valve

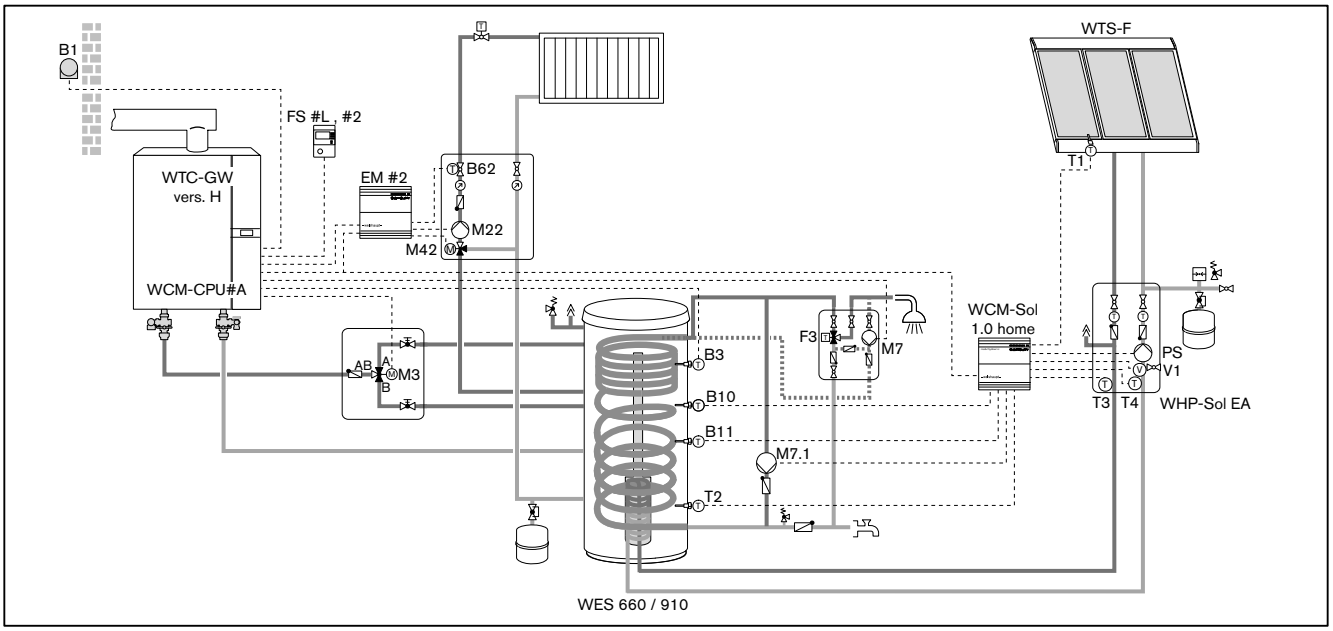
Note:

1. WCM-Sol: P317 = WASol
2. WCM-Sol: P801 = Bypass
3. WTC address: P12 = A
4. WTC P13 = 6 (DHW circulation pump)

3.2.2 Solar supported DHW supply as well as heating support

In the system example, the solar controller is operated via the WCM-FS, address #L or #2. The external sensor is connected to WTC address #A.
DHW operation is carried out via WTC address #A.

The solar controller is operated via the FS which, according to the address setting, has the functions DHW program, time master and circulation program. The following addresses are possible: Control centre#L, WTC-HC#1, WTC-HC#1 + EM-HC#2 and EM-HC#2. The WTC should be set to address #A.



Legend:

FS:	Remote control station WCM-FS
EM:	Extension module WCM-EM
B1:	External sensor
B3:	DHW sensor
B10:	Buffer sensor top
B11:	Buffer sensor bottom
B62:	Supply sensor heating circuit 2
M3:	DHW change-over valve
M7:	Circulation pump
M22:	Pump heating circuit 2
M42:	Mixer valve heating circuit 2
M7.1:	Bypass pump
T1:	Collector sensor
T2:	Thermal store sensor bottom
T3:	Solar flow sensor
T4:	Solar return sensor
V1:	FlowRotor
PS:	Solar pump
F3:	Thermostatic mixer valve

Note:

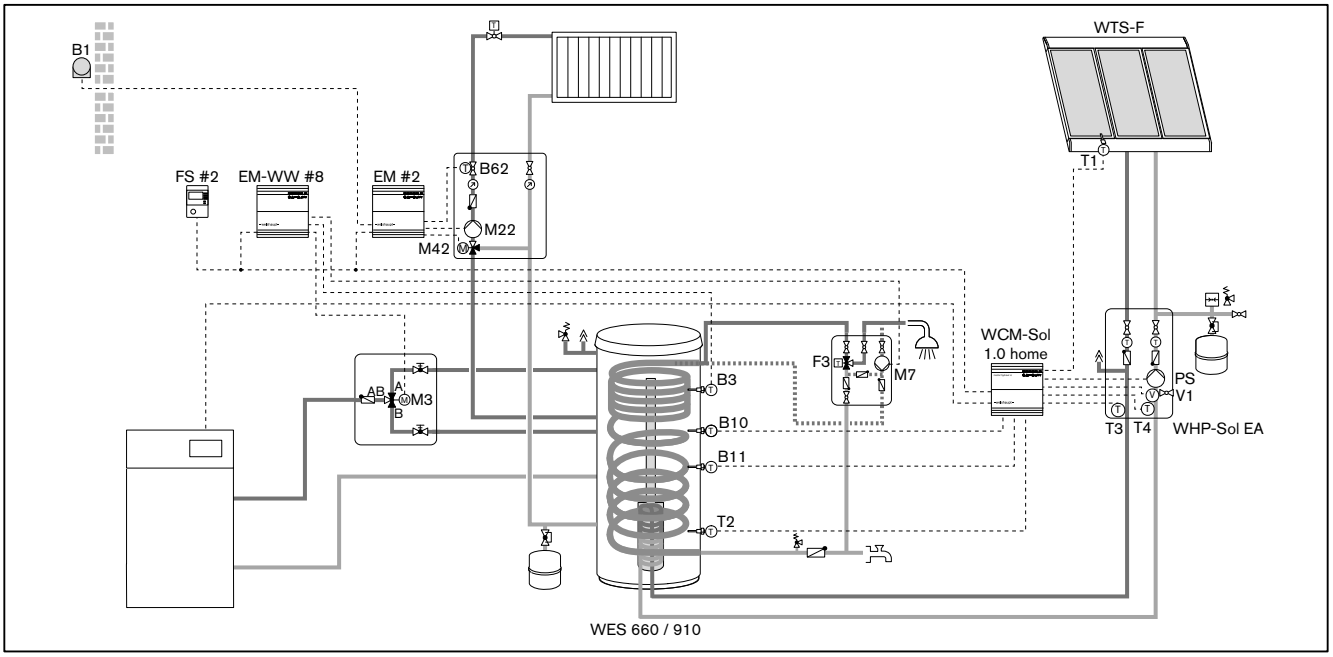
1. WCM-Sol: P317 = WES-C
2. WCM-Sol: P801 = Bypass
3. WTC address: P12 = A
4. WTC P13 = 4 (3 way change-over valve)
5. WTC P14 = 6 (DHW circulation pump)

3.2.3 Independent control with WCM-FS and WCM-SOL

In the system example, the WCM-SOL is operated by the WCM-FS#2. The external sensor is connected to the WCM-EM-HC#2. The external temperature value is transmitted to all heating and DHW circuits connected via eBUS. DHW operation is carried out via WCM-EM-DHW#8. A release control for an external heat exchanger can be switched via output VA 1. The operating conditions of the heat exchanger provided in the instructions from the manufacturer must be adhered to (if necessary by boiler controller supplied by others).

The solar controller is operated via the FS which, according to the address setting, has the functions DHW program, time master and circulation program. The following addresses are possible: Control centre#L, WTC-HC#1, WTC-HC#1+EM-HC#2 and EM-HC#2.

A zone control with a locally connected external sensor to additional extension modules WCM-EM is possible.



Legend:

FS:	Remote control station WCM-FS
EM:	Extension module WCM-EM
B1:	External sensor
B3:	DHW sensor
B10:	Buffer sensor top
B11:	Buffer sensor bottom
B62:	Supply sensor heating circuit 2
M3:	DHW change-over valve
M7:	Circulation pump
M22:	Pump heating circuit 2
M42:	Mixer valve heating circuit 2
T1:	Collector sensor
T2:	Thermal store sensor bottom
T3:	Solar flow sensor
T4:	Solar return sensor
V1:	FlowRotor
PS:	Solar pump
F3:	Thermostatic mixer valve

Note:

1. WCM-Sol: P317 = WES-C
2. WCM-Sol: P801 = ReleaseWEZ

3.3 Technical data

3.3.1 Electrical data

	WCM-FS	WCM-SOL
Supply voltage / frequency	–	230 V/50 Hz
Max. consumption	–	5 VA
Max. prefusing	–	16 A
Internal unit fuse	–	6.3 A
Type of protection	–	IP 31
Protection class	I I (to EN 60730)	I (to EN 60730)
Nominal current output M1	–	max. 5 A* / **
Nominal current output VA1	–	max. 2 A

* for electronic high efficiency pumps max 2 Ampere. Separate relay required for greater power consumptions.

** Current consumption of output M1 and voltage supply output must not exceed 5A.

3.3.2 Approval data

Unit tested	to EN 60730

3.3.3 Ambient conditions

Temperature in operation	0 °C … 50 °C
Temperature during transport / storage	-30 … 70 °C
relative humidity	max. 80 %, no dew point

4 Installation

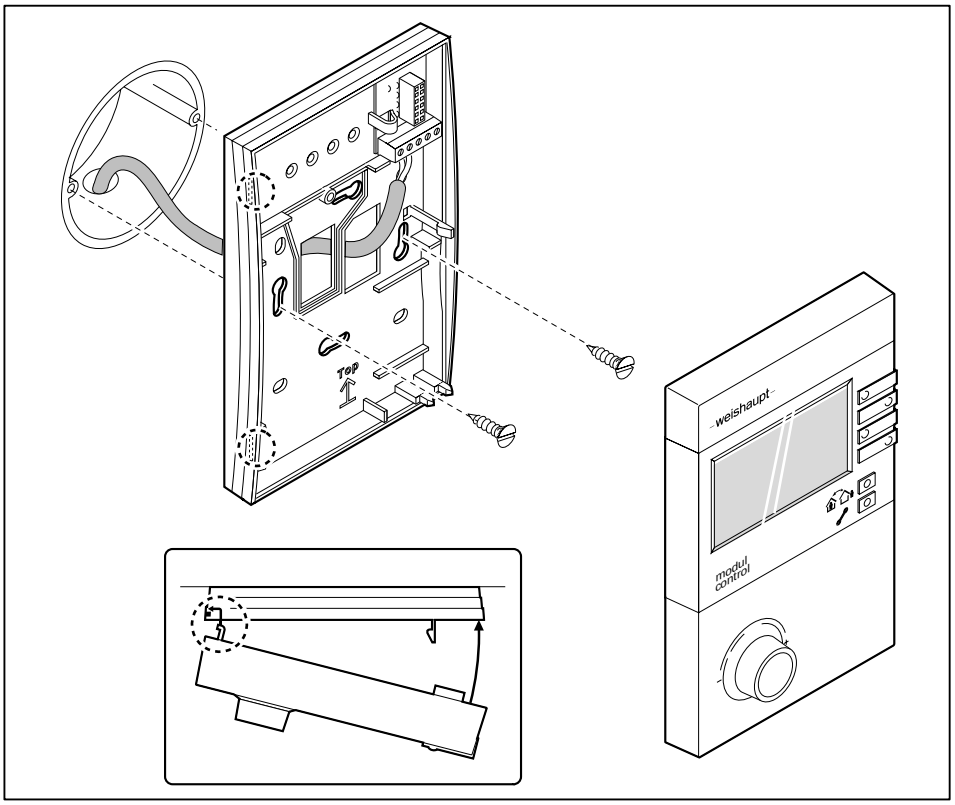
4.1 Remote control station WCM-FS (control module)

The room sensor integrated into the remote control station must not be influenced by:
- additional temperature control in the same room (radiator thermostats),
- other heat sources (direct sun light, chimney etc.).

► Install the remote control station to an inside wall on the opposite side to radiators.

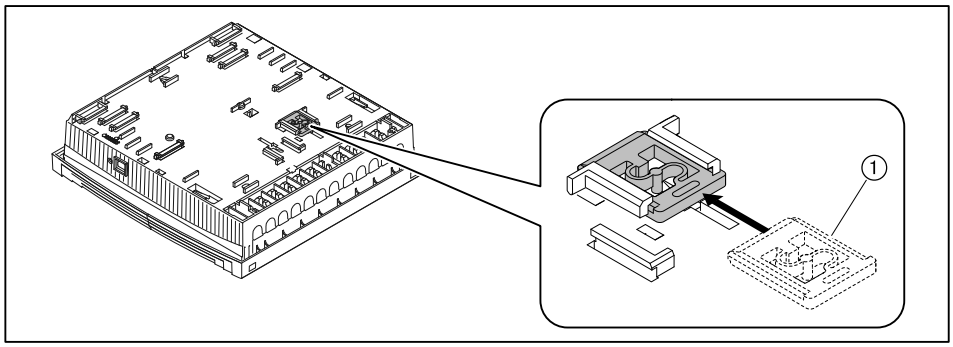
Fitting the wall bracket

► Fix wall bracket to wall.
► Connect wiring (see Ch. 5.1).
► Clip remote control unit into the wall bracket.

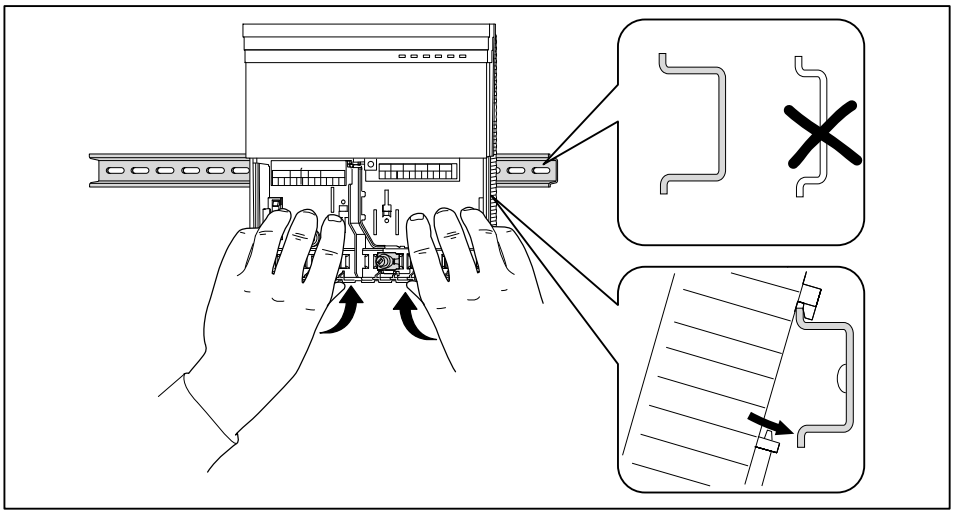


4.2 Solar controller WCM-SOL (solar module)

- ► Fit cap type rail to the wall using suitable fixing material.
- ► Push in locking device ①.



- ► Connect extension module to cap type rail.
- ► Connect cables (see Ch. 5.2).
- ► Close housing cover.

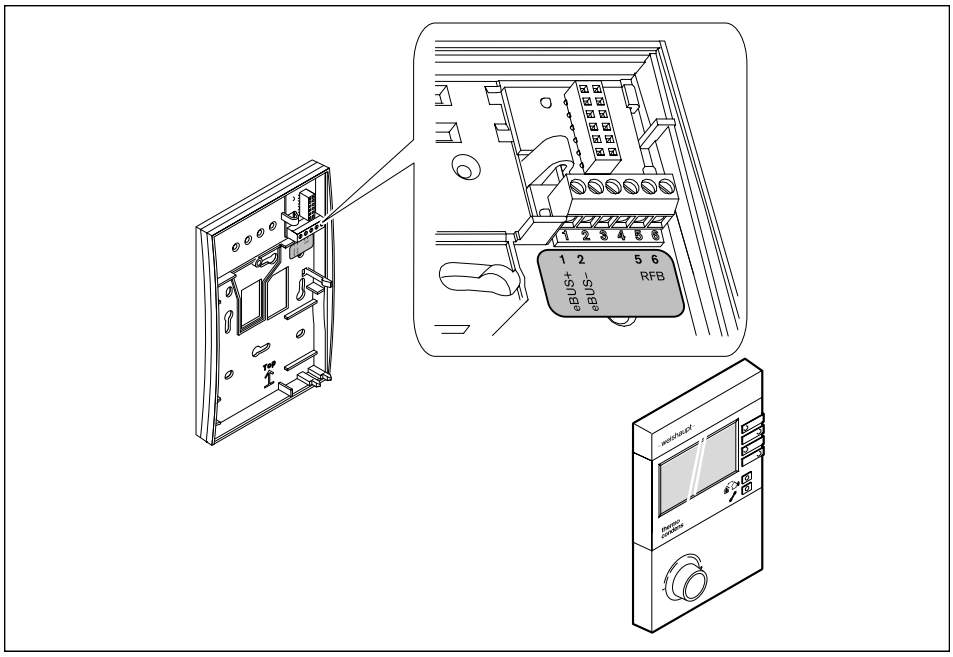


5 Electrical installation

5.1 Remote control station WCM-FS (solar module)

- ► Connect electrical cable to eBUS terminal 1 and 2.
- ✓ Ensure correct polarity of the eBUS.
- ► An external room sensor can be fitted to terminals 5 and 6 if required (accessory).

Cable cross section eBUS	Max. length
1.5 mm²	1260 m
0.5 mm²	420 m

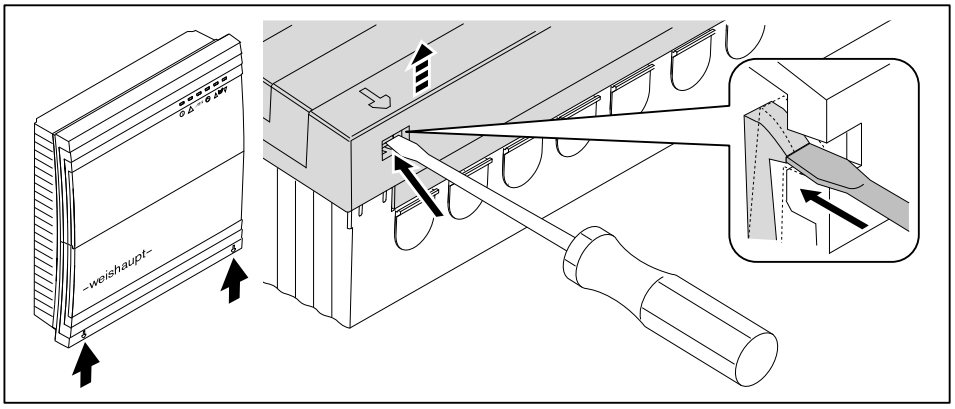


Generally, the use of screened electrical wiring is recommended.

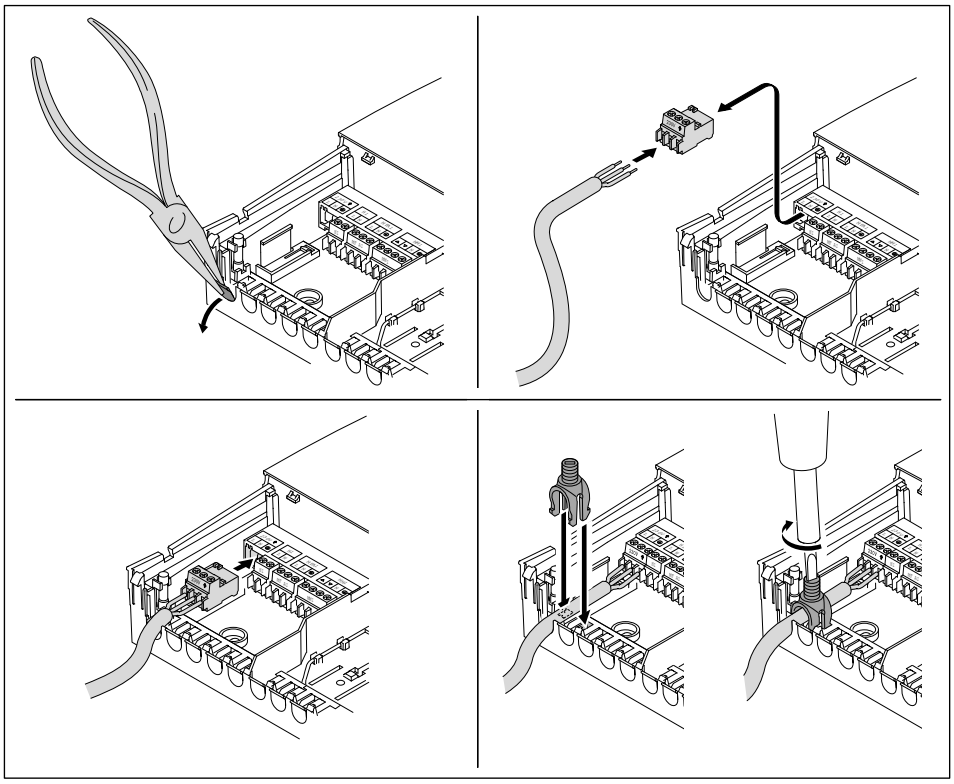
5.2 Solar controller WCM-SOL (solar module)

5.2.1 Open housing cover

- ► Lightly push down lug with screwdriver.
- ► Remove housing cover.

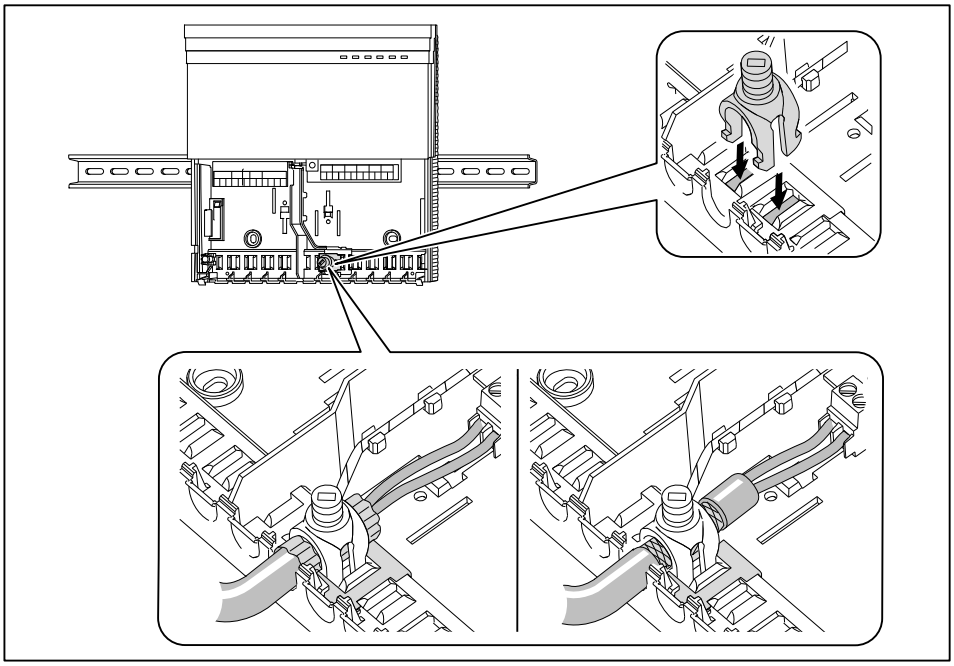


5.2.2 Connecting solar controller WCM-SOL (solar module)



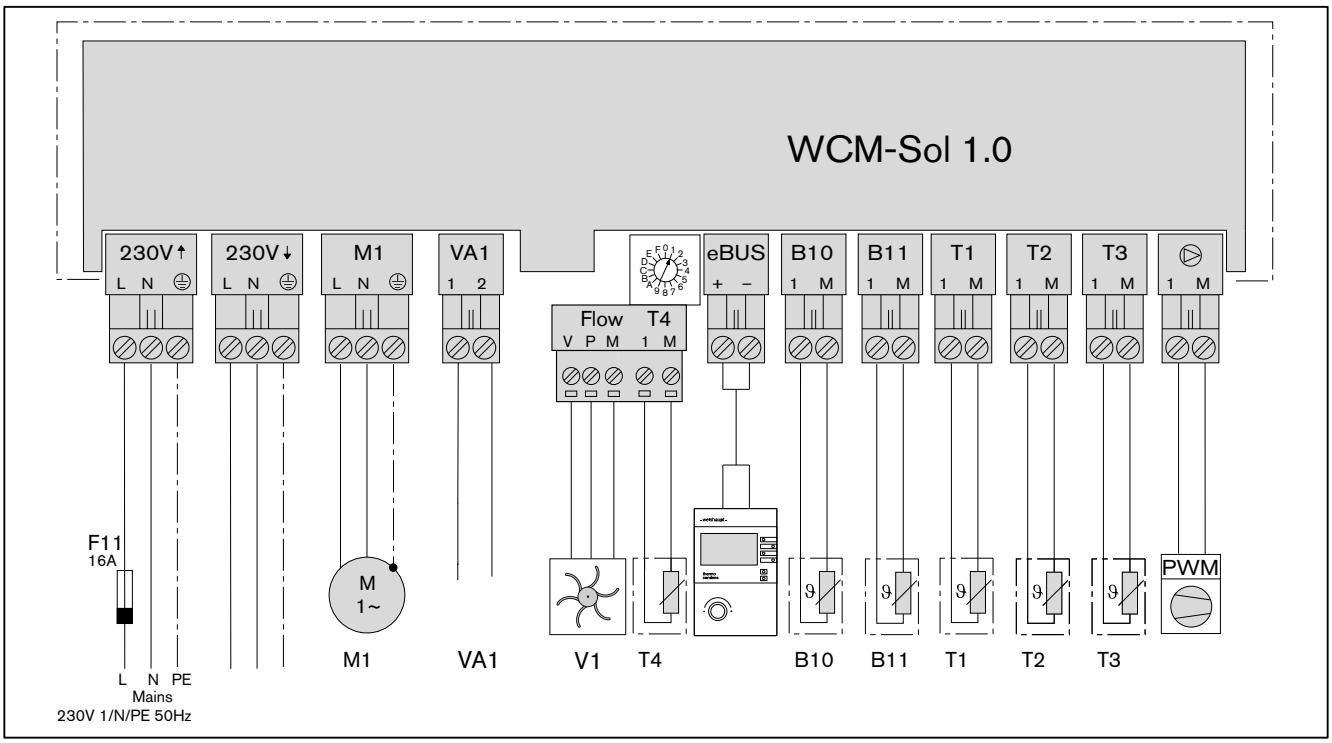
Screened cables

The eBUS and any additional sensors can be connected via the screen plate.



► Ensure correct polarity of the eBUS.

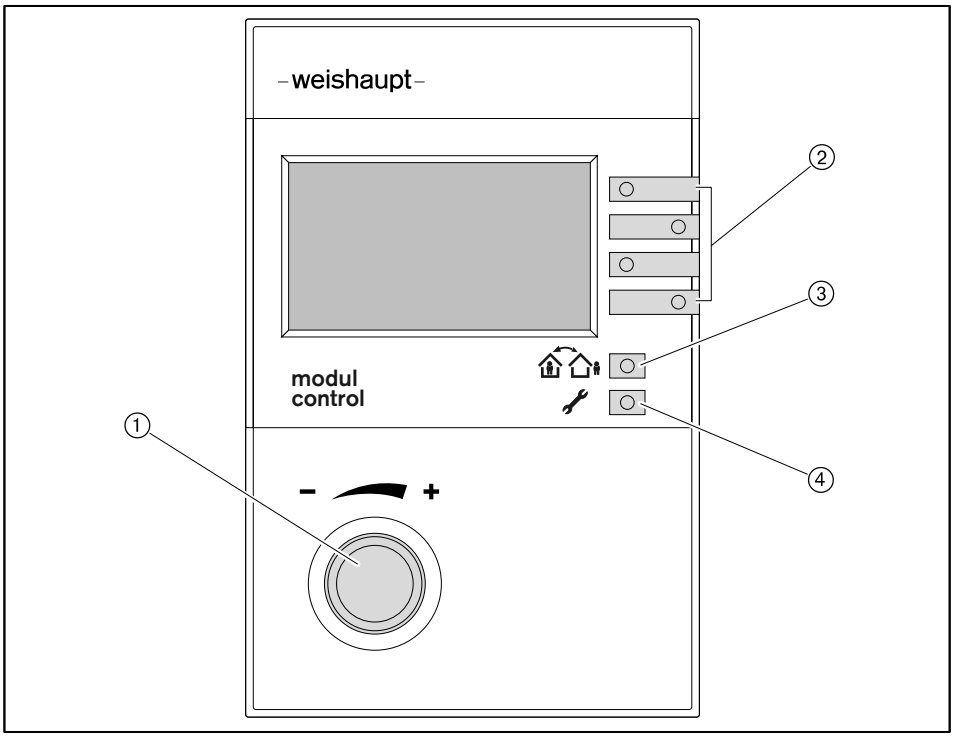
5.2.3 Connection diagram solar controller WCM-SOL (solar module)



Plug	Colour	Connection	Remarks
230 V	black	Supply voltage input 230 V AC/50 Hz	–
230 V	grey	Supply voltage output 230 V AC/50 Hz	Protected by internal fuse
M1	white	Relay output solar pump 230 V AC/ 50 Hz max. 5A (electronic pumps max. 2A)	Switched output solar pump
VA1	brown	Potential free output 230 V AC max. 2A	Configuration-dependent output
FlowRotor	brown	Pole V	WHP Sol return sensor with turbine sensor "FlowRotor"
	white	Pole P	
	green	Pole M	
T4	brown	Pole 1	NTC-5k (STF 222) 0...99°C
	white	Pole M	
eBUS	light blue	eBUS connection	–
B10	white	Temperature sensor buffer top, NTC 5k Ohm	NTC-5k (STF 222) 0...99°C
B11	white	Temperature sensor buffer bottom, NTC 5k Ohm	
T1	grey	Temperature sensor collector sensor, NTC 5k Ohm	NTC5k (STF 225) -40...250°C
T2	grey	Temperature sensor reference temperature, NTC 5k Ohm	NTC-5k (STF 222) 0...99°C
T3	grey	Temperature sensor collector supply, NTC 5k Ohm	
⏩	blue	PWM control	Modulation of heating circuit pump speed control

6 Operation

6.1 Operating panel remote control station WCM-FS 2.0 (control module)

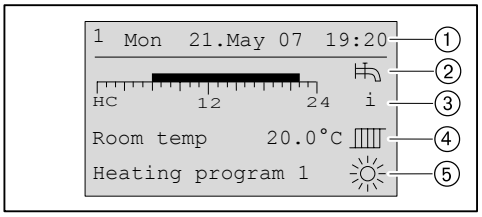


①	Dial knob	Navigation through levels and parameters, change values, switch on illumination.
②	Function keys 1 … 4	Used to activate functions.
③	Presence and absence key	Used for short term interruption or extension of the heating program.
④	Menu key	Used to activate or exit end user level. Used to access or exit heating engineer level.

6.2 Standard display

Factory presetting

Display of allocated factory pre-settings (standard).

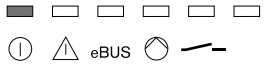
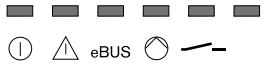
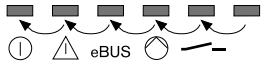
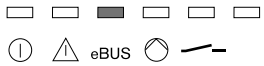
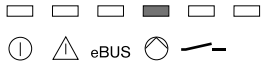
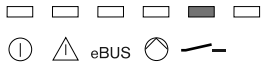
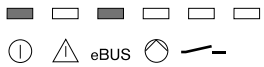
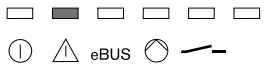


① eBUS address, weekday, date, time
② Symbol DHW heating
③ Information
(Time program bar, status, external temperature, DHW temperature)
④ Current room temperature,
if applicable current supply temperature
⑤ Type of operation with symbol

Symbols for type of operation

☼	Normal operation
☾	Night setback operation
	Summer (DHW operation only)
⏻	Standby
A	Automatic adaption

6.3 Operating displays solar controller WCM-SOL (solar module)

WCM-SOL display	Display status	Meaning
	Mains LED ON	Mains voltage applied
	Mains LED OFF	No mains voltage applied
	Mains LED flashing 50 % ON, 50 % OFF	Mains voltage applied, fault condition (e.g. sensor failure)
	All LED's flashing	eBUS address A set, after 10 seconds standard values are loaded (Reset)
	LED's turn on in sequence	Progress of loading process for standard values when resetting the WCM-SOL
	eBUS LED flashing50 % ON, 50 % OFF	Start phase of unit
	eBUS LED flashes irregularly 5 % ON, 20 % OFF 5 % ON, 70 % OFF	Unit address is set correctly, Bus connection is made, Bus supply is correct
	eBUS LED continually OFF	BUS open circuit, no BUS connection or BUS is under-supplied
	eBUS LED continually ON	BUS is overloaded eBUS voltage > 100 mA
	eBUS LED flashing50 % ON, 50 % OFF	Incorrect eBUS address set
	Pump LED ON	Relay output solar pump M1 connected
	Contact LED ON	Relay output variable output VA1 connected
	eBUS LED and Mains LED flashing	eBUS address F set, manual operation active
	Error LED flashes	Display of error via error code on WCM-FS.

6.4 End user level

6.4.1 Menu structure end user level

Menu points and parameters are hidden or displayed depending to the scope of the system.

Solar specific menu points and parameter are displayed on the FS which, according to the address setting, has the functions DHW program, time master and circulation program. The following addresses are possible: Control centre#L, WTC-HC#1, WTC-HC#1 + EM-HC#2 and EM-HC#2.

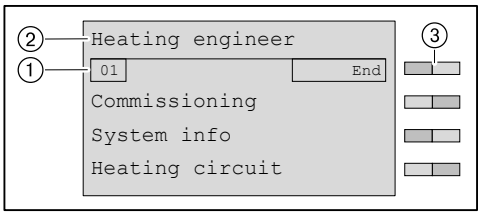
Menu point	Parameters	Description	Factory pre-setting	Set
Level info	001	External max	–	
	002	External min	–	
	003	Yield counter		
	004	Total yield		
	005	Statistic		
Remote control	101	Room sensor corr	0.0K	
	102	Contrast	04	
	103	Illumination	30	
Settings#1	112	Normal room temp	21.5°C	
	113	Setback room temp	16.0°C	
	114	Acceptance room	Off	
	115	Normal supply setpoint	75.0°C	
	116	Setback supply setpoint	45.0°C	
	117	Gradient	–	
	118	Room frost temp	10.0°C	
	119	Su/Wi change	20.0°C	
Settings#2	121	Normal supply setpoint	75.0°C	
	122	Setback supply setpoint	45.0°C	
	123	Gradient	-	
	124	Su/Wi change	20.0°C	
DHW	132	Normal DHW setpoint	50.0°C	
	133	Setback DHW setpoint	40.0°C	
	134	Acceptance DHW	Off	
Holiday	141	Duration	–	
	142	Temp level	Frost	
Time-Date	151	Date	–	
	152	Time	–	
	153	Summertime start	25.Mar	
	154	Summertime end	25.Oct	

Menu point	Parameters	Description	Factory pre-setting	Set
Time program		Heating program 1	–	
		Heating program 2	–	
		Heating program 3	–	
	161	Advance #2	Off	
		DHW program	–	
		Circ. program	–	
Access HC without FS		new config	–	
		List of all WCM-EM´s without WCM-FS assigned EM-HC#2 or EM-DHW#2 … EM-HC#8 or EM-DHW#8	–	

6.5 Heating engineer level

Activate heating engineer level

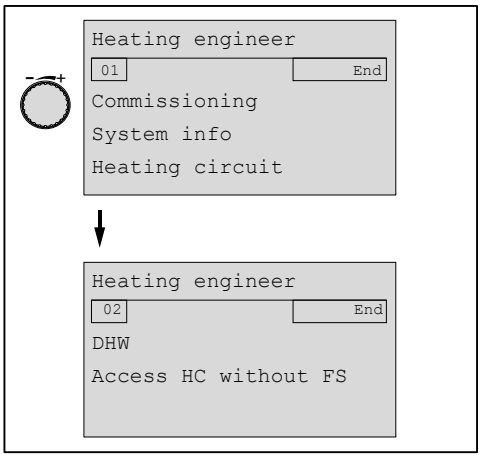
► Press and hold menu key for 3 seconds.
✓ Heating engineer level is displayed.



① Page number
② Heating engineer level
③ Function key for menu selection

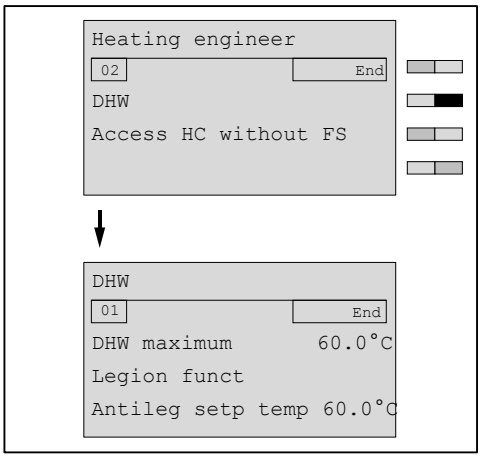
Display further pages

► Turn the dial knob.
✓ Further pages of the menu are displayed.



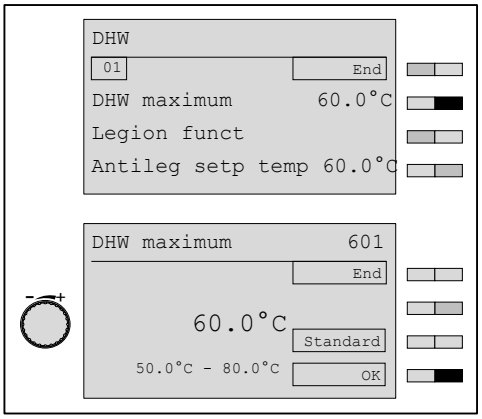
Selecting a menu

► Select menu and press the relevant function key.
✓ Menu is displayed.



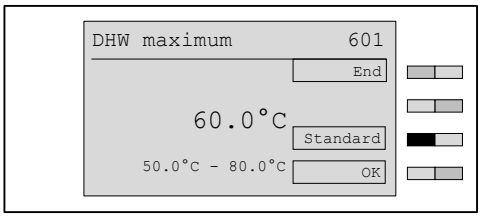
Selecting and setting parameters

► Select parameter and press the relevant function key.
✓ Parameter is displayed.
► Make a selection using the dial knob and save setting with function key OK.



Resetting parameters to factory presetting

► Press function key Standard.
✓ Factory presetting is displayed.
► Press function key OK.
✓ Factory presetting is saved.



Exit heating engineer level

► Press function key End repeatedly – or – briefly press menu key.
✓ Standard display appears.

6.5.1 Menu structure heating engineer level

Menu points and parameters are hidden or displayed depending to the scope of the system.

Solar specific menu points and parameter are displayed on the FS which, according to the address setting, has the functions DHW program, time master and circulation program. The following addresses are possible: Control centre#L, WTC-HC#1, WTC-HC#1 + EM-HC#2 and EM-HC#2.

Menu point	Parameter	Description		Factory pre-setting
Commissioning	311	Language		German
	313	HC-Type#1 ... 8		Universal
	314	HC-Type#2		Universal
	315	Type of control#1 ... 8		External
	316	Type of control#2		External
	317	Sol procedure		WASol
	318	Application B3		CPU/KA
	319	Collector field		01
	320	Type WHPSol		20-7EA 1.0
	321	OP Max		–
	322	OP Min		–
System info	331	External	current	
			dampened	
			mixed	
	332	Config WTC-G		
	333	Config Sol		
	334	Config user		
	335	Config FS		
	336	Config EM		
	337	Setpoint temp system		
	338	Error history		
	339	Version WCM-FS		
	340	Version WTC		
	341	Version EM-HC		
Heating circuit	Extension module #2			
	Settings#1			
	Settings#2			
	Control behaviour			
	Heating circuit info			

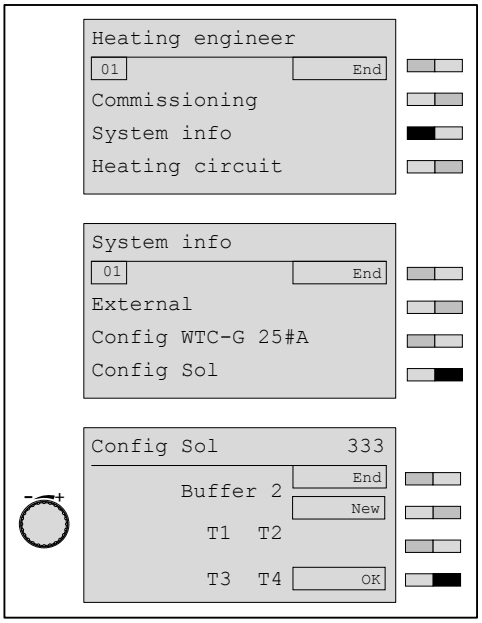
Menu point	Parameter	Description		Factory pre-setting
DHW	P601	DHW maximum		60°C
	Please refer to *Manual Remote control station WCM-FS 2.0 and extension module WCM-EM 2.1* for the menu structure of the WCM-EM.			
Solar	Inputs/outputs		P801 Output VA1	Lockout
			P802 Output test	
	Buffer/de-couple		P821 Buffer switch diff	2K
			P822 Buffer boost	1K
			P823 P2/P1 T-change	Off
	Collector		P841 Min sup. flow	0.6l/min
			P842 Max sup. flow	15.0l/min
			P843 Collector Frost	-12°C
			P844 Tyfocor	30%
			P845 P min a collector	20W
	DT controller		P861 Min collector	20°C
			P862 Switch diff ON	7K
			P863 Control differential	12K
			Switch diff OFF	4K
	Energy management		P881 Sol excess	70 °C
			P882 re-cooling	Off
			P883 Solar prio HC	Off
			P884 Solar Prio DHW	Off
	Info Solar		P901 Buffer/de-couple	
			P902 Status DTR	
			P903 DTR temperatures	
			P904 WHP temperatures	
			P905 Collector circuit	
			P906 Yield counter	
			P907 Total yield	
			P908 Statistic	
Access HC without FS			new config	
			List of all WCM-EM´s without WCM-FS assigned on EM-HC#2 or EM-DHW#2 ... EM-HC#8 or EM-DHW#8	

6.5.2 Configuration WCM-SOL

This parameter is used to transfer the configuration information from the WCM-SOL to the WCM-FS.

Control variation	`Buffer 1`	Control with one buffer sensor B10
	`Buffer 2`	Control with two buffer sensors B10+B11
	`De-couple`	Control of hydraulic de-couple with B11
Collector circuit sensor	`T1 T2`	Sensor T1 T2 of collector circuit
WHPSol EA sensor	`T3 T4`	Sensor T3 T4 of pump assembly

- ► Activate heating engineer level (see Ch. 6.5).
- ► Press function key `System info`.
- ✓ Menu `System info` is displayed.
- ► Press function key `Config SOL`.
- ✓ Parameter `Config SOL` is displayed.
- ► Check configuration displayed.
- ► If the configuration is not the same, press function key `New`.
- ✓ The message `search config` appears briefly, then the current configuration is displayed.
- ► Save new configuration with `OK`.



6.5.3 Set output VA1

Assignment of variable function of output VA1.

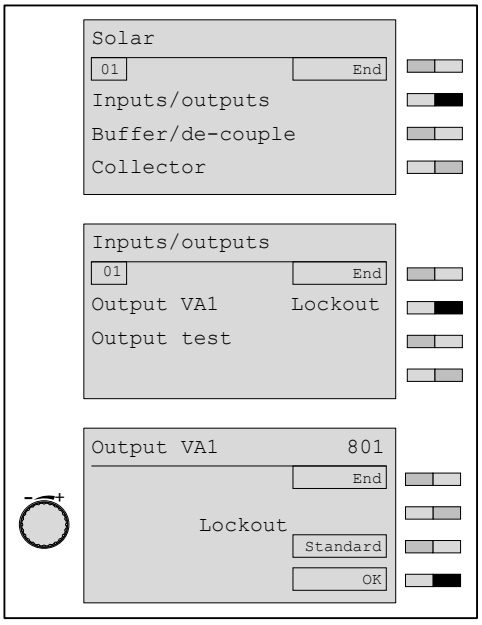
Setting range VA1

`Lockout`	Fault message lockout to WCM-SOL 1.0 home
`ReleaseWEZ`	Release contact for external heat exchanger
`Bypass`	Bypass pump operating during Legionella disinfection (complete thermal store disinfection) and re-cooling function (see Ch. 6.5.18)
`P2/P1`	Switching procedure with activated control variation P1 (see Ch. 6.5.7)
`Excess`	Switching procedure with activated status Excess (see Ch. 6.5.17)
`Solar Prio`	Switching procedure with activated status ▪ `Solar Prio HC` (see Ch. 6.5.19) ▪ `Solar Prio DHW` (see Ch. 6.5.20)

► Activate heating engineer level.
► Press function key `Solar`.
✓ Menu `Solar` is displayed.

► Press function key `Input/Output`.
► Press function key `Output VA1`.
✓ Menu `Output VA1` is displayed.

► Set required value using the dial knob.
► Confirm with function key `OK`.



6.5.4 Output test

Testing the consumers connected to VA1 and M1, using a temporary manual switching process.

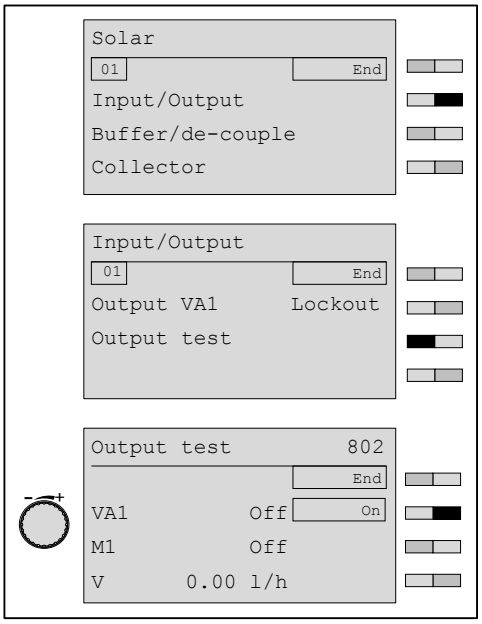
Setting range VA1

`On/Off`

Setting range M1

`Off/--%`

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Press function key `Input/Output`.
- ► Press function key `Output test`.
- ✓ Parameter `Output test` is displayed.
- ► Use function key to switch on/off.
- ► Set required value using dial knob and function keys.
- ✓ Check if a volume flow is generated when the pump is running.



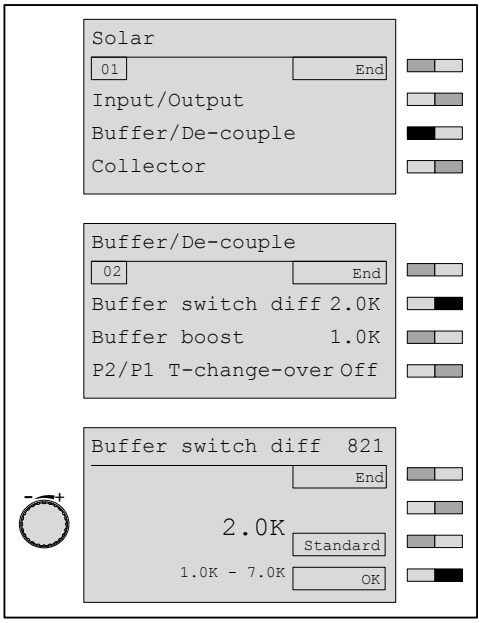
Exit the parameter by pressing function key 1 (End) or by briefly pressing the menu key ⚙ ⊙.
The output test is terminated by exiting the parameter.

Check pump function / FlowRotor.
- ► Switch on solar pump M1 via output test
- ► Observe LED on FlowRotor relative to pump activation
- ► Compare volume flow shown in P802 with OPmin / OPmax

6.5.5 Set buffer switch differential

The parameter is only displayed at the activated control variations buffer 1, buffer 2 and de-couple control (de-couple).

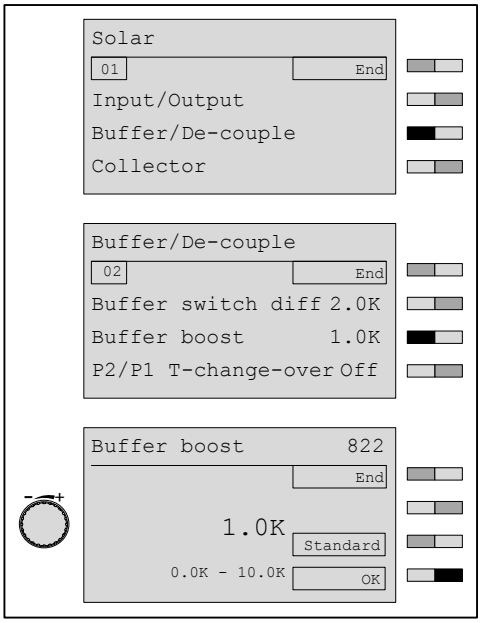
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Press function key `Buffer/De-couple`.
- ► Press function key `Buffer switch diff`.
- ✓ Parameter `Buffer switch diff` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.6 Set buffer boost

The parameter is only displayed at the activated control variations buffer 1, buffer 2 and de-couple control (de-couple).

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Press function key `Buffer/De-couple`.
- ► Press function key `Buffer boost`.
- ✓ Parameter `Buffer boost` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.7 Summer / Winter change-over

If the average external temperature value exceeds the temperature limit set, reloading is carried out according to buffer control variation P1. This automatically reduces the buffer volume to be heated. In return more buffer volume is provided for solar loading.

Parameter is only displayed when control variation P2 (sensor B10/B11) is recognised and an external sensor is fitted.

Parameter setting is based on external temperature.

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.

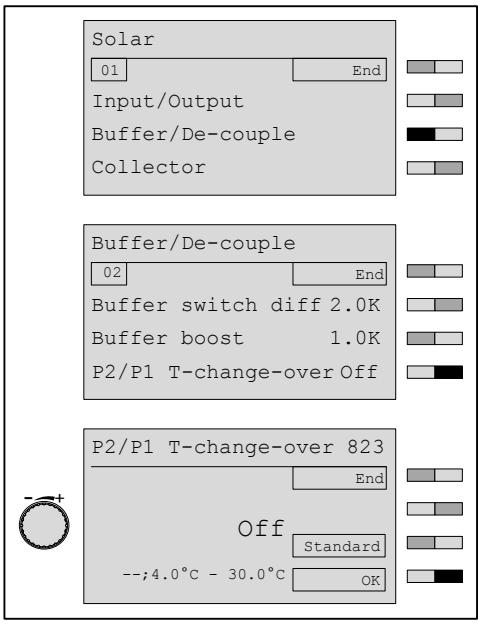
Summer: (External temperature has exceeded the parameter setting)
The WCM-SOL solar controller provides optimum buffering of solar heat. The buffer control strategy controls only with the temperature sensor B10 +/- buffer switch differential. This means more usable buffer volume remains for solar yield.

Winter: (External temperature falls below the parameter setting)
The WCM-SOL solar controller feeds in the solar yield. The buffer control strategy controls with the existing temperature sensors B10 and B11 to heat a defined area in the buffer store, thus minimising rapid cycling of the burner.

- ► Press function key `Buffer/De-couple`.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.

- ► Press function key `Buffer/De-couple`.
- ► Press function key `P2/P1 T-change-over`.
- ✓ Parameter `P2/P1 T-change-over` is displayed.

- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.

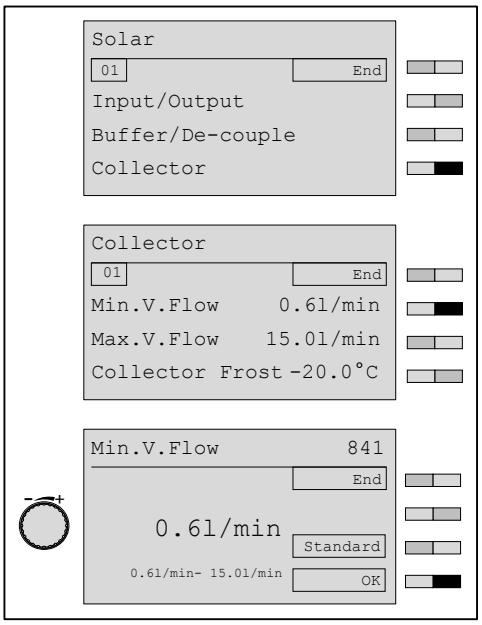


6.5.8 Set minimum volume flow

Minimum volume flow in the collector circuit.

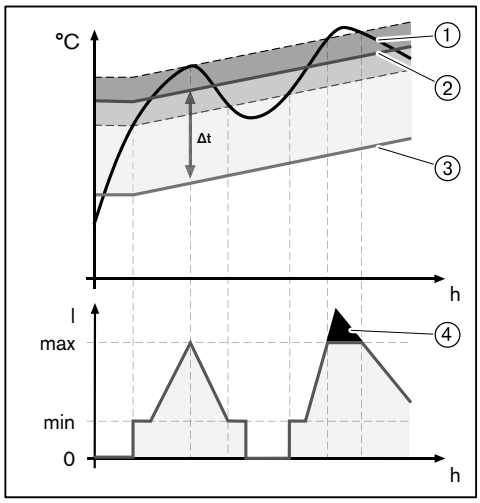
An increase of the volume flow in the collector circuit may be necessary with high pressure losses in the collector circuit or viscous medium.
This can be tested using parameter OP min in the start-up menu.

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Press function key `Collector`.
- ► Press function key `Min.V.Flow`.
- ✓ Parameter `Min.V.Flow` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.9 Set maximum volume flow

By limiting the volume flow, electrical energy can be saved during high yield phases.



①	Actual collector value T1
②	Collector setpoint value
③	Actual DHW value T2
④	Potential savings

To limit the maximum volume flow, the nominal volume flow of the system at average temperature must first be determined (see table). The hydraulic design data of the collector must be observed.

The system specific nominal volume flow of the collector manufacturer must not exceed the value set in `P321 OP Max`. If it does, the system design is flawed.

Example

Solar system (Weishaupt solar system WTS-F2)

Collector type: WTS-F2
Number of collectors: 3
Average temperature (assumed): 50°C

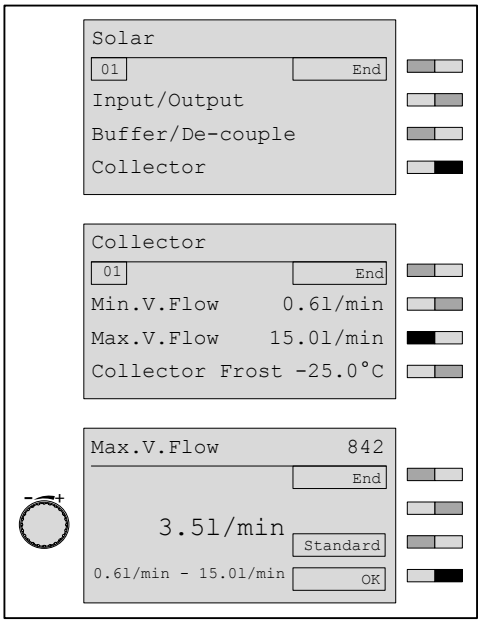
Nominal volume flow from table = 3.50 l/min(1

(1 The value determined must not be greater than the maximum operating point set in `P321`.

average temperature	Nominal volume flow (l/min)															
	Collector type WTS-F1								Collector type WTS-F2							
	Number of collectors								Number of collectors							
	2	3	4	5	6	7	8	9	2	3	4	5	6	7	8	9
0°C	0.75	1.13	1.50	1.88	2.25	2.63	3.00	3.38	1.17	1.75	2.33	2.92	3.50	4.08	4.67	5.25
10°C	0.90	1.35	1.80	2.25	2.70	3.15	3.60	4.05	1.40	2.10	2.80	3.50	4.20	4.90	5.60	6.30
20°C	1.05	1.58	2.10	2.63	3.15	3.68	4.20	4.73	1.63	2.45	3.27	4.08	4.90	5.72	6.50	7.35
30°C	1.20	1.80	2.40	3.00	3.60	4.20	4.80	5.40	1.87	2.80	3.73	4.67	5.60	6.53	7.47	8.40
40°C	1.35	2.03	2.70	3.38	4.05	4.73	5.40	6.08	2.10	3.15	4.20	5.25	6.30	7.35	8.40	9.45
50°C	1.50	2.25	3.00	3.75	4.50	5.25	6.00	6.75	2.33	**3.50**	4.67	5.83	7.00	8.17	9.33	10.5
60°C	1.65	2.48	3.30	4.13	4.95	5.78	6.60	7.43	2.57	3.85	5.13	6.42	7.70	8.98	10.3	11.6

6 Operation

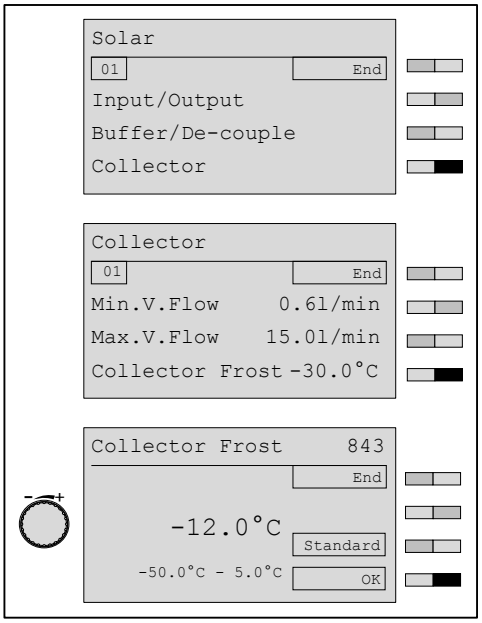
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Press function key `Collector`.
- ► Press function key `Max.V.Flow`.
- ✓ Parameter `Max.V.Flow` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.10 Collector frost protection

Temperature setting for frost protection of the collector circuit. Depending on the frost resistance of the medium.

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Press function key `Collector`.
- ► Press function key `Collector Frost`.
- ✓ Parameter `Collector Frost` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



`Collector Frost` is pre-assigned depending on the setting in `P844 Tyfocor`.

6.5.11 Tyfocor

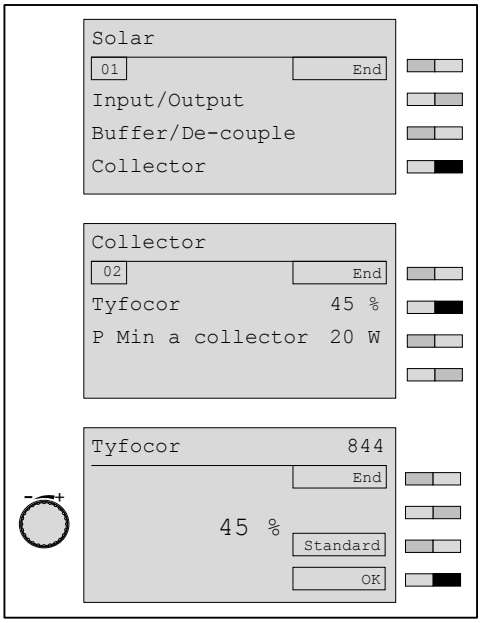
Selection of Tyfocor concentration

The parameter is used to define the correction factor of the heat quantity calculation and to preset the frost protection temperature.

Settings

30%/45%

- ► Activate heating engineer level.
- ► Press function key Solar.
- ✓ Menu Solar is displayed.
- ► Press function key Collector.
- ► Use dial knob to move to the second menu level.
- ► Press function key Tyfocor.
- ✓ Parameter Tyfocor is displayed.
- ► Select the value required using the dial knob.
- ► Confirm with function key OK.



By setting the parameter, P843 (Frost protection) is automatically preset.

P844	P843
45%	-25°C
30%	-12°C

6.5.12 Profitability threshold: Solar yield vs. pump flow

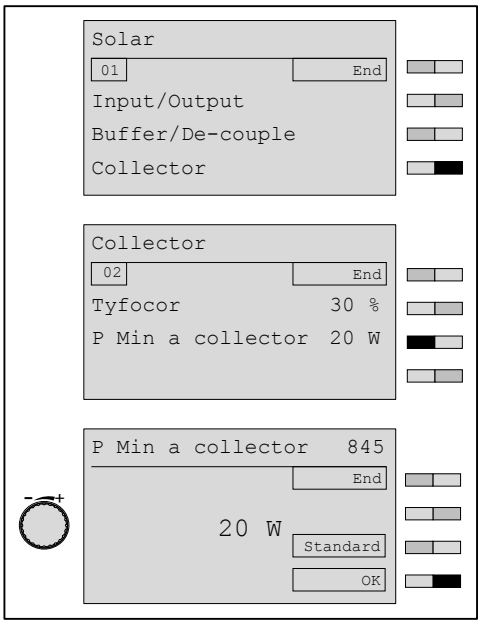
If the capacity limit value is not maintained, the solar pump is switched of.

The capacity limit value set is based on the capacity of each collector.

Settings

`1...150W`

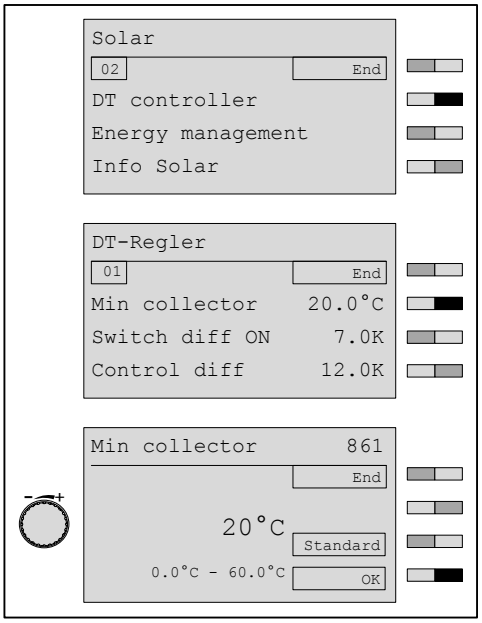
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Press function key `Collector`.
- ► Use dial knob to move to the second menu level.
- ► Press function key `P Min a collector`.
- ✓ Parameter `P Min a collector` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.13 ON threshold of solar pump

Minimum collector temperature for the release of the solar pump.

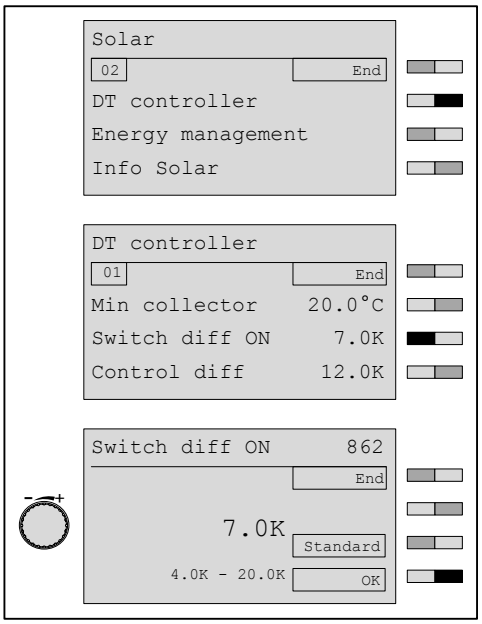
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `DT controller`.
- ► Press function key `Min collector`.
- ✓ Parameter `Min collector` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.14 Switching differential solar pump On

Differential temperature by which the collector temperature T1 must have exceeded the reference temperature T2.

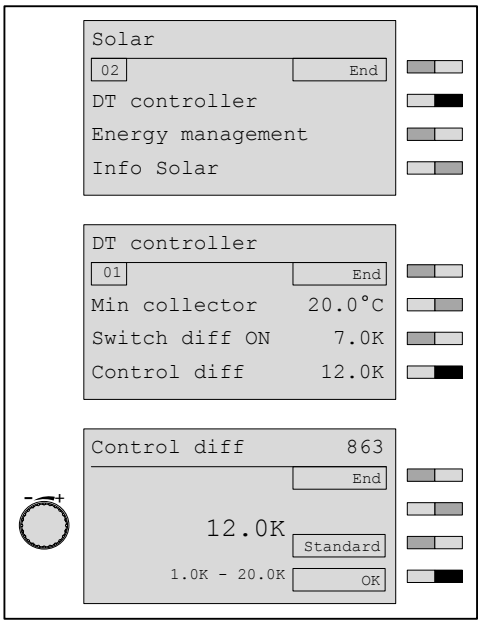
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `DT controller`.
- ► Press function key `Switch diff ON`.
- ✓ Parameter `Switch diff ON` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.15 Volume flow control strategy

Compensated temperature differential between collector flow temperature (T3) and reference temperature (T2).

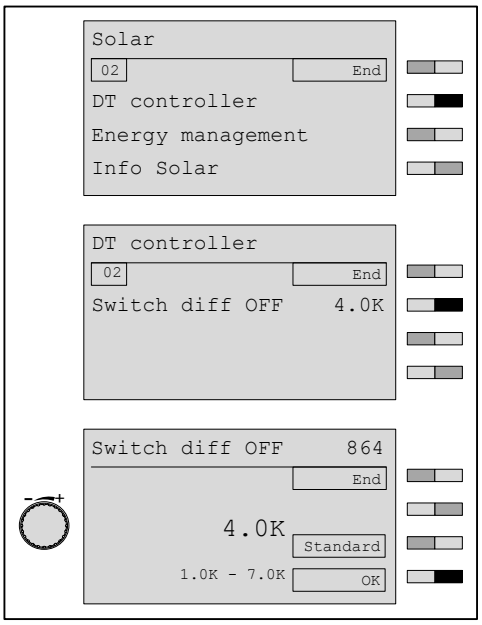
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `DT controller`.
- ► Press function key `Control diff`.
- ✓ Parameter `Control diff` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6.5.16 Switching differential solar pump Off

If the minimum temperature differential between collector flow temperature (T3) and collector return temperature (T4) is not maintained, the solar pump is switched off.

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `DT controller`.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Switch diff OFF`.
- ✓ Parameter `Switch diff OFF` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



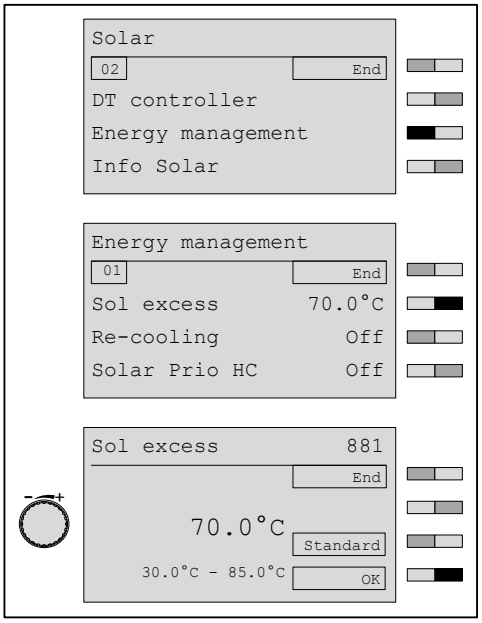
6.5.17 Solar excess (SOL excess)

When a defined thermal store temperature has been reached (status excess) the controller can supply excess solar heat to heating circuits, such as radiators in the basement.

Reactions of the heating circuits can be defined separately in menu Heating circuit `P431/471 SOL Yield HC`.

The reactions of the DHW load circuits can be defined separately in menu DHW `P611 SOL Yield DHW`.

- ▶ Activate heating engineer level.
- ▶ Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ▶ Use dial knob to move to the second menu level.
- ▶ Press function key `Energy management`.
- ▶ Press function key `Sol excess`.
- ✓ Parameter `Sol excess` is displayed.
- ▶ Set required value using the dial knob.
- ▶ Confirm with function key `OK`.



The display of the parameters is dependent on the diagram `P317 Sol procedure` = WES-C.

6 Operation

Example:
In the following example the relationship between the adjustable temperature limit value "Sol excess" and the reaction of the heating and DHW load circuits to status "Excess" is shown.

The reaction of the heating circuit and/or DHW load circuit to the status message `Excess temp` is the same as to the status message `Excess`.
For an explanation of status message `Excess temp` see (see Ch. 10.7).

WCM-Sol 1.0 settings

`P881 Sol excess`	`73°C`

WCM-EM-HC (heating circuit) settings

`P431 SOL yield HC`	`Max. supply`	
	`with excess`	☒
	`with excess temp`	☐

WCM-EM-DHW (DHW load circuit) settings

`P611 SOL Yield DHW`	`DHW maximum`	
	`with excess`	☒
	`with excess temp`	☐

Function

WES-C: B10 > 73°C:	Status message `Excess` to all HC and DHW load circuits.
Heating circuit reaction:	The heating circuit is operated at `Max flow`.
DHW load circuit reaction:	The DHW load circuit is operated at `DHW maximum`.

Function

WES-C: B10 < 63°C	Status message `Excess` is withdrawn.
Heating circuit reaction:	The heating circuit operates as prior to status `Excess`.
DHW load circuit reaction:	The DHW load circuit operates as prior to status `Excess`.

6.5.18 Solar re-cooling

Need-based cooling of the thermal store via the collector circuit between 0:00 hours and 04:00 hrs.

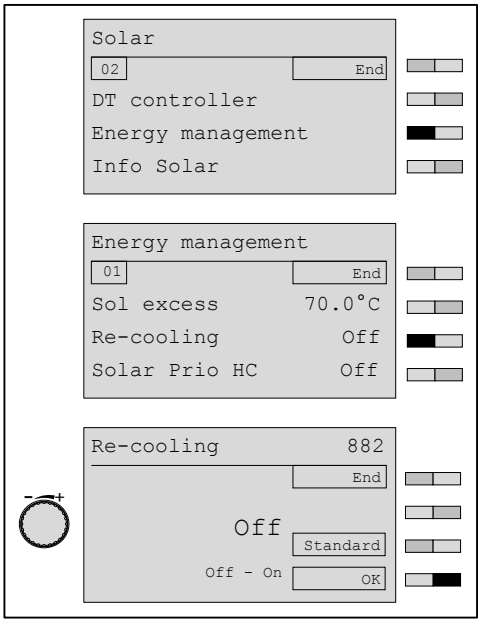
To prevent stagnation after previous overheating, a thermal store can be cooled during the night via the collector circuit.

During re-cooling the thermal store can be circulated via a bypass pump. For this purpose the bypass pump should be connected to output VA1 and the setting `By-pass` should be selected in parameter `Output VA1  801` .

Settings for solar re-cooling

`Off/On`

- ► Activate heating engineer level (see Ch. 6.5).
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Energy management`.
- ► Press function key `Re-cooling`.
- ✓ Parameter `Re-cooling` is displayed.
- ► Select the value required using the dial knob.
- ► Confirm with function key `OK`.



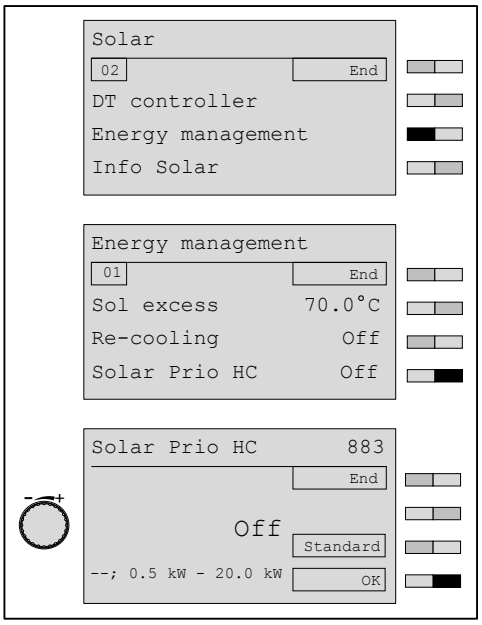
6.5.19 Solar Prio HC

During periods of increased solar yield, e.g. during an Autumn morning, the WCM-SOL solar controller proactively reduces the heat supplied by the conventional heating system, thus saving valuable fossil fuels.

The reactions of the heating circuits can be defined separately in `P114 Acceptance Room`.

The parameter is only displayed, if `P317 SOL procedure` is set to WES-C.

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Energy management`.
- ► Press function key `Solar Prio HC`.
- ✓ Parameter `Solar Prio HC` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6 Operation

Example:
In the following example the relationship between the adjustable yield limit `Solar Prio HC` and the reaction of the heating circuits to the status message `Solar Prio HC` is shown.

Solar controller settings:

`P883 Solar prio HC`	`3kW`

FS (heating circuit) settings:

`P112 Normal room temp`	`22°C`
`P114 Acceptance Room`	`2K`

Function:

damped solar yield > 3kW	Status message `Solar Prio HC` to all heating circuits

The controller continues to try to achieve the room temperature setpoint of 22°C.

Actual room temperature > 20°C `P112 - P114`	Suppression of release for heating operation to the WTC
Actual room temperature < 20°C `P112 - P114`	Release of heating operation to the WTC

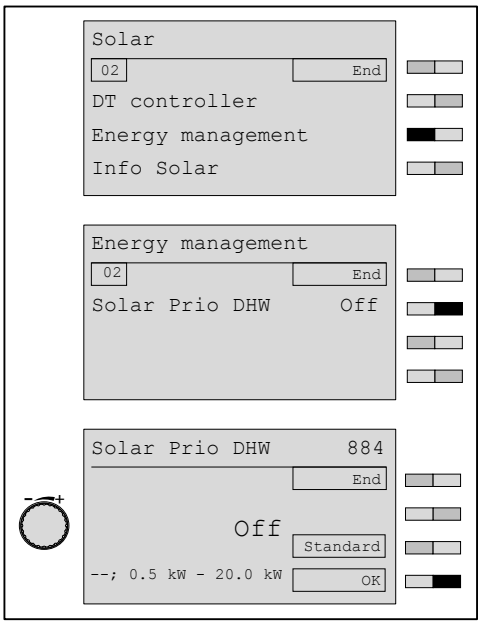
If `P114 Acceptance Room` is set to `Off`, there will be no reaction from the heating circuit to status message `Solar Prio HC`.

6.5.20 Solar Prio DHW

During periods of increased solar yield, e.g. during an Autumn morning, the WCM-SOL solar controller proactively reduces the heat supplied by the conventional heating system, thus saving valuable fossil fuels.

The reactions of the DHW load circuits can be defined separately in `P134 Acceptance DHW`.

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Energy management`.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Solar Prio DHW`.
- ✓ Parameter `Solar Prio DHW` is displayed.
- ► Set required value using the dial knob.
- ► Confirm with function key `OK`.



6 Operation

Example:
In the following example the relationship between the adjustable yield limit `Solar Prio DHW` and the reaction of the DHW load circuits to the status message `Solar Prio DHW` is shown.

Solar controller settings:

`P884 Solar prio DHW`	`3kW`

FS (DHW load circuit) settings:

`P132 Normal DHW setpoint`	`50°C`
`P134 Acceptance DHW`	`12K`

Function:

damped solar yield > 3kW	Status message `Solar Prio DHW` to all DHW load circuits
Actual DHW temperature > 38°C `P132 - P134`	Suppression of release for DHW operation to the WTC
Actual DHW temperature < 38°C `P132 - P134`	Release of DHW operation to the WTC

If `P134 Acceptance DHW` is set to `Off`, there will be no reaction from the DHW load circuit to status message `Solar Prio DHW`.

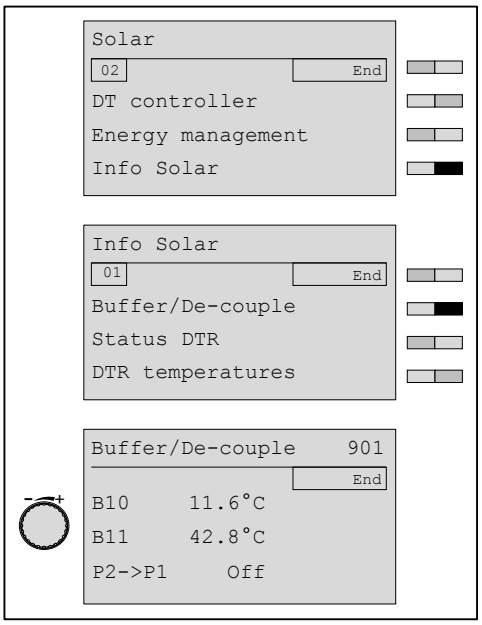
6.6 Information

6.6.1 Buffer/de-couple

Display of the buffer or de-couple temperature and the current control variation of the buffer.

- ▶ Activate heating engineer level.
- ▶ Press function key `Solar`.
- ✓ Menu `Solar` is displayed.

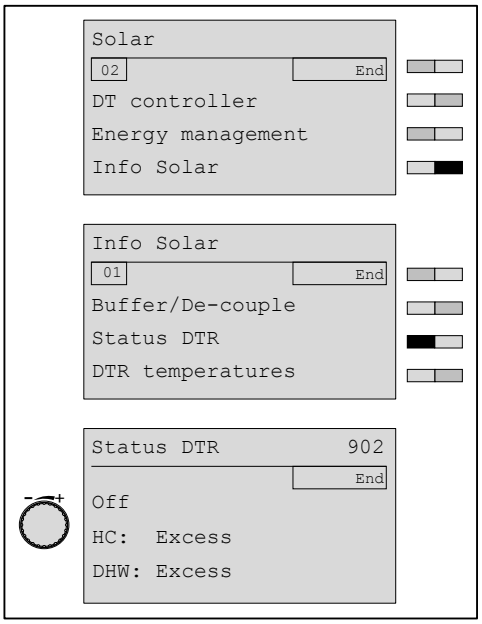
- ▶ Use dial knob to move to the second menu level.
- ▶ Press function key `Info Solar`.
- ▶ Press function key `Buffer/De-couple`.
- ✓ Parameter `Buffer/De-couple` is displayed.



6.6.2 Status display in the WCM-SOL solar controller (solar module)

Display of the current operational condition of the WCM-SOL and the heating and DHW load circuits.

- ▶ Activate heating engineer level (see Ch. 6.5).
- ▶ Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ▶ Use dial knob to move to the second menu level.
- ▶ Press function key `Info Solar`.
- ▶ Press function key `Status DTR`.
- ✓ Parameter `Status DTR` is displayed.



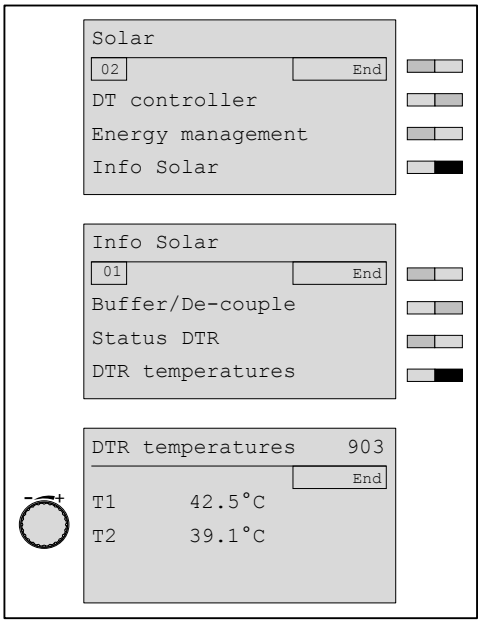
Status WCM-Sol	Meaning
`Off`	No solar energy yield
`Stabilisation`	Solar energy yield: Stabilisation phase Activated following solar pump start-up, until heat is present at the collector flow sensor.
`Control`	Solar energy yield: DTR T3-T4 Ch. 6.5.15
`Special`	Solar energy yield: DTR special phase T1-T4 Control strategy change-over to collector temperature (T1) and collector return temperature (T4).
`Stagnat`	Stagnation: The thermal store has excess temperature
`Cool`	Re-cooling via collector circuit Ch. 10.5 and 6.5.18
`Frost`	Collector frost protection Ch. 10.2 and 6.5.10
`Manual`	Solar controller in manual function Ch. 6.9
`Emergency`	Solar controller in emergency operation Ch. 6.10
`CK-Protect`	Collector protection Ch. 10.5
`Excess`[1]	The comparison sensor in the temperature sink has exceeded the limit temperature set in `P881`.
`Excess temp.`[1]	The comparison sensor in the temperature sink has exceeded WES-max or WASol-max.

[1] The reactions of the heating and DHW load circuits to the statuses `Excess temp.` and `Excess` can be defined separately in `P431/471 SOL Yield HC` or `P611 SOL Yield DHW` of the relevant WCM-FS.

6.6.3 DTR Temperatures

Display of the collector temperature (T1) and the bottom thermal store temperature (reference temperature, T2).

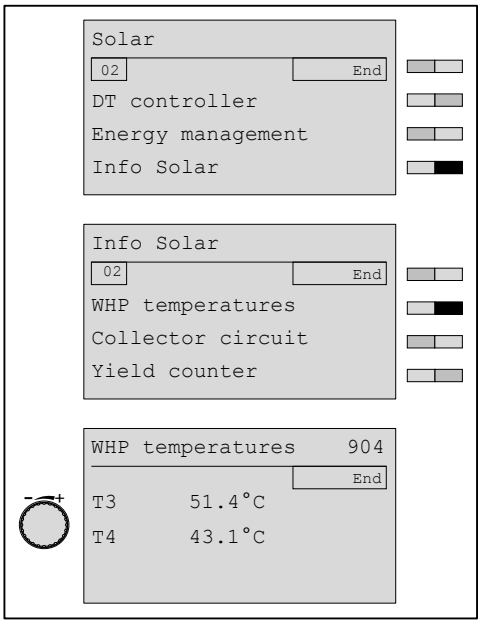
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Info Solar`.
- ► Press function key `DTR temperatures`.
- ✓ Parameter `DTR temperatures` is displayed.



6.6.4 WHP Temperatures

Display of the collector flow temperature (T3) and the collector return temperature (T4).

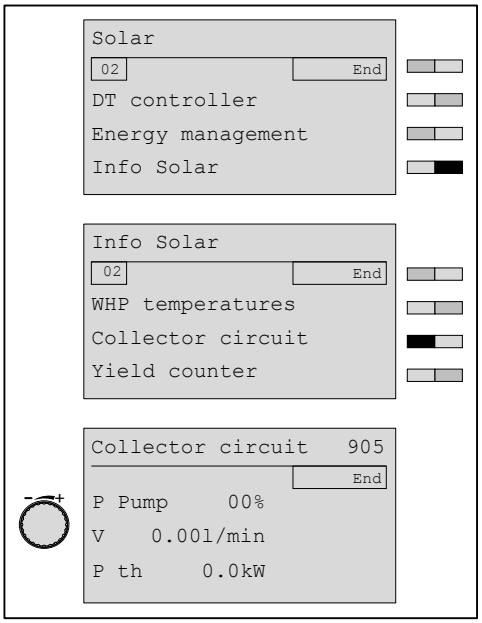
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Info Solar`.
- ► Use dial knob to move to the second menu level.
- ► Press function key `WHP temperatures`.
- ✓ Parameter `WHP temperatures` is displayed.



6.6.5 Collector circuit

Display of the pump speed, the volume flow and the collector capacity.

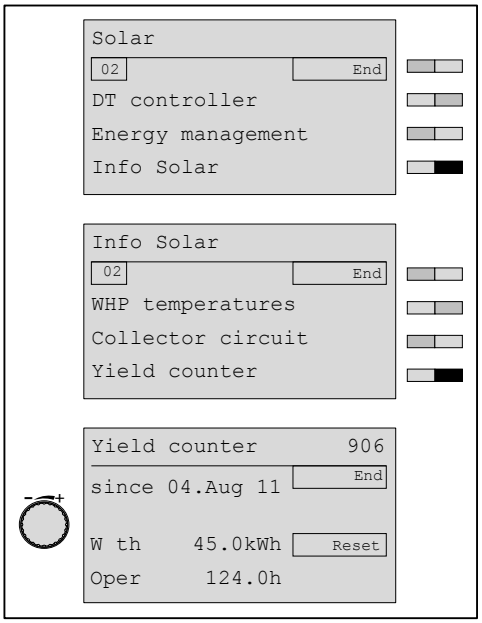
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Info Solar`.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Collector circuit`.
- ✓ Parameter `Collector circuit` is displayed.



6.6.6 Solar yield counter

Solar yield counter reading since last reset and date the counter was reset.

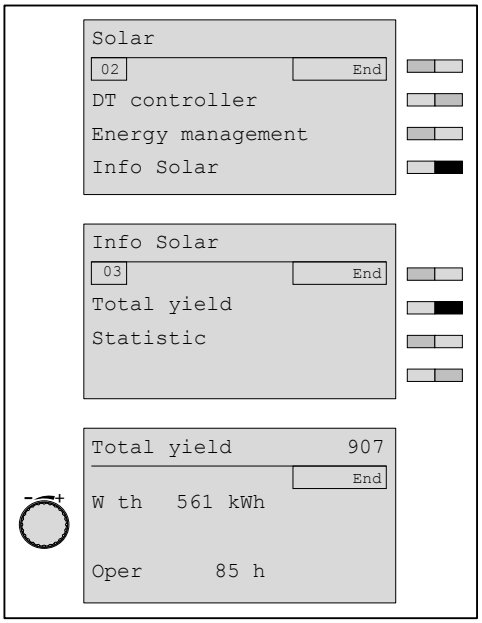
- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Info Solar`.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Yield counter`.
- ✓ Parameter `Yield counter` is displayed.



6.6.7 Total solar yield

Solar yield counter reading since commissioning.

- ► Activate heating engineer level.
- ► Press function key `Solar`.
- ✓ Menu `Solar` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Info Solar`.
- ► Use dial knob to move to the third menu level.
- ► Press function key `Total yield`.
- ✓ Parameter `Total yield` is displayed.

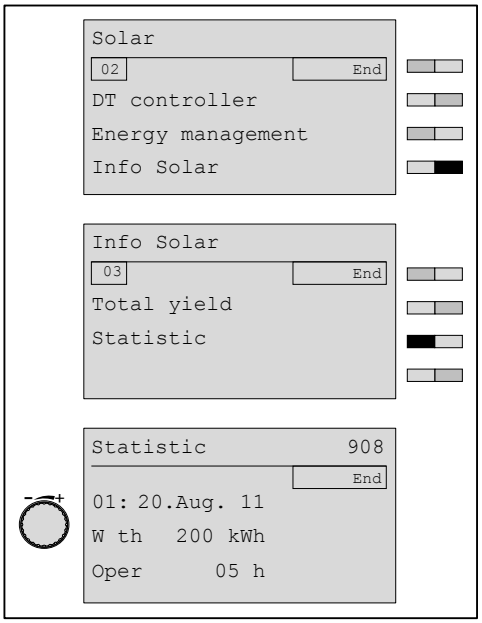


6.6.8 Statistic

Display of solar yields and operating times of the last 14 days.

► Activate heating engineer level.
► Press function key `Solar`.
✓ Menu `Solar` is displayed.

► Use dial knob to move to the second menu level.
► Press function key `Info Solar`.
► Use dial knob to move to the third menu level.
► Press function key `Statistic`.
✓ Parameter `Statistic` is displayed.



► The respective next day can be reached by scrolling.

6.7 Reset WCM-SOL

Reset is used to return the WCM-SOL to the factory settings.

- ► Set address switch on the WCM-SOL to A.
- ✓ All LED's are flashing. After approx. 10 sec. all standard values are loaded and the LED´s go on in sequence (see Ch. 6.3).
- ► Set address on WCM-SOL.
- ✓ WCM-SOL determines all sensors and actuators connected.

6.8 Reconfiguring WCM-SOL for system alterations

- ► Disconnect power supply to WCM-SOL.
- ► Carry out installation modification.
- ► Reconnect power supply to WCM-SOL.
- ✓ It is possible that the WCM-FS assigned signals an error.
- ► Re-identify configuration of WCM-SOL.

6.9 Manual function WCM-SOL

Manual function is carried out via the address switch in the installation area.

Manual operation solar Off

► Set address switch on WCM-SOL to 0.

VA1- output	Off
M1- output	Off
PWM- output	Off (0% capacity)
System (WST)	Continues to operate on the consumer and exchanger side
LED display	Mains LED flashes

Manual operation solar venting

► Set address switch on WCM-SOL to E.

VA1- output	On
M1- output	On(1
PWM- output	On (100% capacity)(1
System (WST)	Consumer and exchanger side functions are not affected
LED display	Mains LED flashes

(1 During stagnation the output is set to Off.

6.10 Emergency operation WCM-SOL

Emergency operation temporarily bridges a fault condition. The WCM-SOL must not be operated in emergency mode for a prolonged period of time. With address setting F the output relay for the solar pump is switched on.

► Sett address switch on WCM-SOL to F (see Ch. 6.9).
✓ Mains LED flashes in impulse/pause ratio 50 % On and 50 % Off (see Ch. 6.3).

Emergency operation

► Sett address switch on WCM-SOL to F.

VA1- output	Off
M1- output	On(1
PWM- output	On (100% capacity)(1
System (WST)	Consumer and exchanger side functions are not affected
LED display	Mains LED flashes

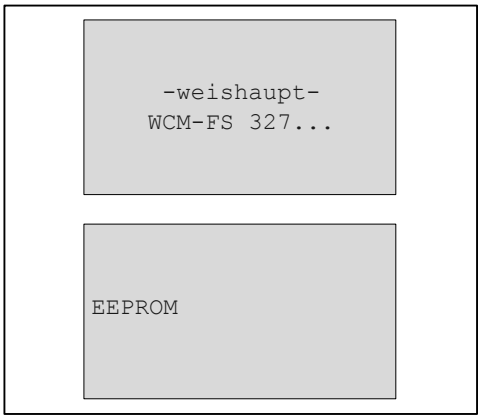
(1 During stagnation the output is set to Off.

6.11 Reset WCM-FS

When resetting the remote control station, all previous setting will be reset to factory settings.

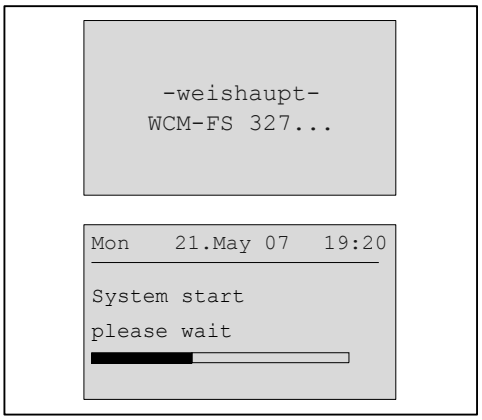
- ► Remove remote control station from its holder.
- ► Press and hold menu key whilst refitting it to the bracket. Press and hold the menu key, until "EEPROM" appears.

✓ Software version and EEPROM appear briefly.



- ► Select language (see Ch. 7.2.1).
- ► Set address (see Ch. 7.2.2).

✓ Remote control station is being reconfigured.



- ► Carry out commissioning (see Ch. 7).

7 Commissioning

You will automatically be guided through the commissioning menu

- during initial commissioning,
- after reset.

7.1 Prerequisite

CAUTION

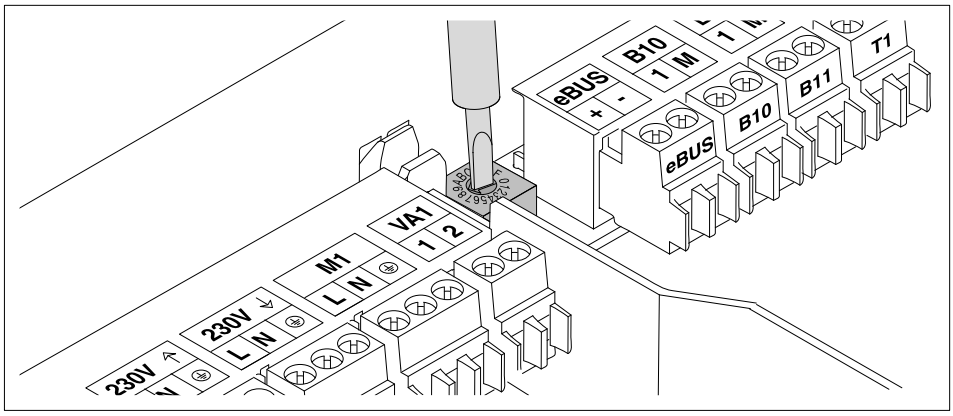
Possible damage to the equipment!
Incorrectly carried out assembly, installation and commissioning can lead to failure of individual devices or the entire heating system. Only correctly carried out commissioning ensures the operational safety of the entire system.

- ► The commissioning may only be carried out by qualified personnel.
- ► Please check that all installation work has ben completed prior to commissioning.

7.1.1 Set address on WCM-SOL

► Check, and if necessary, set eBUS address on WCM-SOL solar controller.

0	Manual operation 1 (Ch. 6.9)
1	**Normal operation**
2-9	Function not defined
A	Reset (see Ch. 6.9)
B-D	Function not defined
E	Manual operation 2 (Ch. 6.9)
F	Emergency operation (temporarily bridges a fault condition)



The WCM-SOL solar controller controls the eBUS supply automatically, not other measures are required.

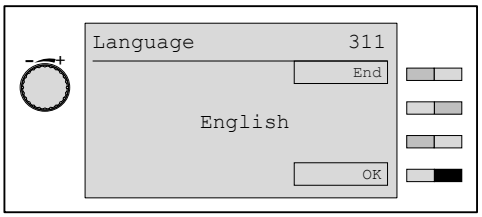
7.2 Commissioning procedures on the WCM-FS remote control station

During commissioning you will automatically be guided through the setting menus required.

7.2.1 Setting the language

When initially applying voltage when switching on the unit and after every reset, parameter `Language` is displayed.

- ► Set language using the dial knob.
- ► Save with function key `OK`.



Selectable languages

Deutsch
English
Français
Italiano
Espanol
Nederlands
Dansk
Svenska
Norsk
Slovenski
Hrvatski
Magyar
Polski
Русский
Cesky
Slovak

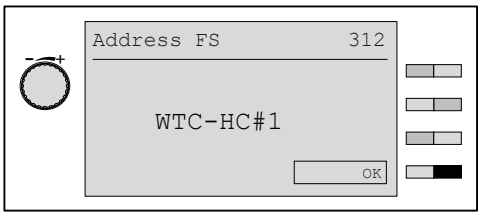
7.2.2 Set address assignment of the WCM-FS control station

The solar controller is operated via the FS which, according to the address setting, has the functions DHW program, time master and circulation program. The following addresses are possible: Control centre#L, WTC-HC#1, WTC-HC#1 + EM-HC#2 and EM-HC#2.

The address can only be set:
- during initial commissioning,
- after every reset.

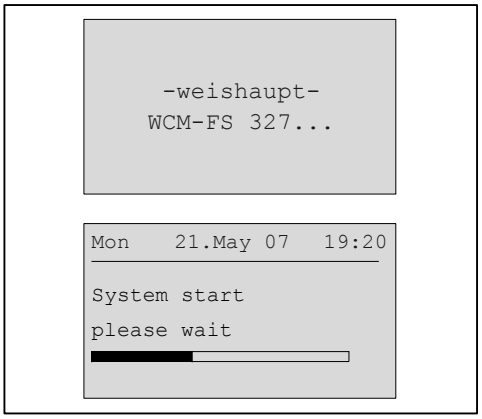
Display	Functional assignment
`Control centre #L`	Control centre function (or WCM-Sol standalone without consumer connected).
`WTC-HC#1`	Operation WCM-Sol and direct pump heating circuit at WTC.
`WTC-HC#1+ EM-HC#2`	Operation WCM-Sol and direct pump heating circuit at WTC and the heating circuit EM-HC#2.
`EM-HC#2`	Operation WCM-Sol and WCM-EM-HC#2.

► Set address using the dial knob.
► Save with function key `OK`.
✓ Remote control station is being configured..



Configuration

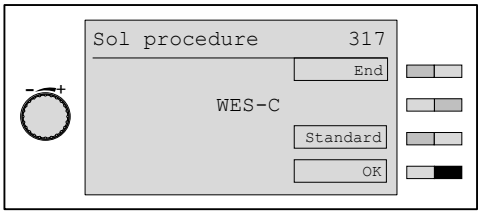
The Software version is displayed briefly, then the remote control station is reconfigured.



7.2.3 Sol procedure

Adjustment of hydraulic variation.

- ► Activate heating engineer level (see Ch. 6.5).
- ► Press function key `Commissioning`.
- ✓ Menu `Commissioning` is displayed.
- ► Use dial knob to move to the second menu level.
- ► Press function key `Sol procedure`.
- ✓ Parameter `Sol procedure` is displayed.
- ► Make selection using the dial knob and save with function key `OK`.



Display	Functional assignment
WASol	Solar supported DHW preparation (see Ch. 3.2.1) with Weishaupt WASol water heater
WES-C	Solar supported DHW preparation as well as heating support (see Ch. 3.2.2) with Weishaupt WES thermal store

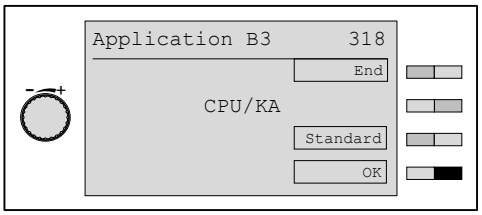
7.2.4 Application B3

This parameter is used to define whether the WCM-Sol uses the store sensor of the WTC or of the EM-DHW#8. This means that a system without WTC can control a DHW consumer and the advantages of an EM-DHW, e.g. circulation sensor, can be utilised.

Settings

CPU/KA; EWW8

- ► Activate heating engineer level (see Ch. 6.5).
- ► Press function key `Commissioning`.
- ✓ Menu `Commissioning` is displayed.
- ► Use dial knob to move to the third menu level.
- ► Press function key `Application B3`.
- ✓ Parameter `Application B3` is displayed.
- ► Make selection using the dial knob and save with function key `OK`.

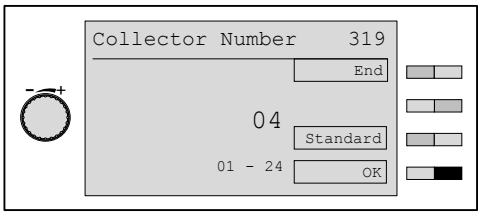


7.2.5 Set number of collectors

Settings

01-24

- ▶ Activate heating engineer level (see Ch. 6.5).
- ▶ Press function key `Commissioning`.
- ✓ Menu `Commissioning` is displayed.
- ▶ Use dial knob to move to the third menu level.
- ▶ Press function key `Collector Number`.
- ✓ Parameter `Collector Number` is displayed.
- ▶ Set number of collectors required using the dial knob and save with function key `OK`.



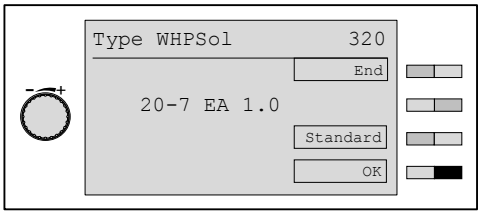
7.2.6 Set type of WHPSol

Selection of the pump assembly.

Settings

20-7 EA 1.0 / 20-11 EA 1.0

- ► Activate heating engineer level (see Ch. 6.5).
- ► Press function key `Commissioning`.
- ✓ Menu `Commissioning` is displayed.
- ► Use dial knob to move to the third menu level.
- ► Press function key `Type WHPSol`.
- ✓ Parameter `Type WHPSol` is displayed.
- ► Select value required using the dial knob and save with function key `OK`.

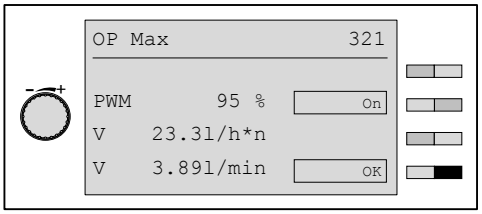


7.2.7 OP Max

This parameter is used to determine the volumetric flow at maximum pump speed. This is used to verify that the required volumetric flow of the collector panel can be achieved. The display shows:

- maximum pump speed
- volumetric flow/hour x number of collectors
- volumetric flow/min

► Activate heating engineer level (see Ch. 6.5).
► Press function key `Commissioning`.
✓ Menu `Commissioning` is displayed.
► Use dial knob to move to the third menu level.
► Press function key `OP Max`.
✓ Parameter `OP Max` is displayed.
► Start the system design check using function key `On`.
✓ Achieving the volumetric flow required for the number of collectors.
► Confirm the system design check with function key `OK` and save the value.



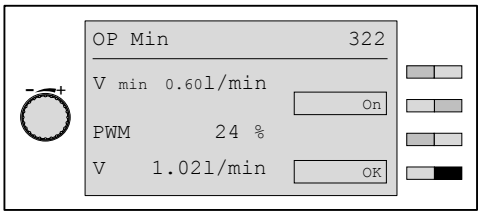
The value entered represents the throughput at maximum pump capacity. The volumetric flow can be limited to the nominal volumetric flow of the system in `P842 Max.V.Flow`. The procedure can be found in (see Ch. 6.5.9).

Limiting the maximum volumetric flow via `P 842 Max.V.Flow` allows savings in electrical energy.

7.2.8 OP Min

The controller determines the minimum possible volumetric flow in the collector circuit.
The parameter is used to check the stability of the minimum operating point (OP Min).

- ► Activate heating engineer level (see Ch. 6.5).
- ► Press function key `Commissioning`.
- ✓ Menu `Commissioning` is displayed.
- ► Use dial knob to move to the fourth menu level.
- ► Press function key `OP Min`.
- ✓ Parameter `OP Min` is displayed.
- ► Start check of lower operating point using function key `On`.
- ► Confirm check of lower operating point using function key `OK`.



During this process, the control LED on the volumetric flow sensor should be observed. This indicates the rotational direction of the FlowRotor as a result of the flow throughput. The constant interval of LED lighting should be checked.

If the measured value is unstable or the sensor does not function correctly,raise minimum volumetric flow (`P841 Min.V.Flow`).

Possible causes of faults could be contaminated or spent Tyfocor, air pockets in the collector circuit, opening pressure of the non return valve is not achieved.

8 Information to optimise the operation of the system

Restricting the maximum volumetric flow saves electrical energy during the high yield phase!

► To do this, limit the max. volumetric flow to the nominal volumetric flow required for energy transportation (see Ch. 6.5.9).

Excess temperatures at the hot water coil of the thermal store can lead to lime scale buildup.

► To avoid excess temperatures in the thermal store during solar energy yield, the energy can be discharged from the thermal store to the heating circuits (see Ch. 6.5.17 Sol Excess).

Reheating of the heat exchanger during the solar yield phase reduces the energy gain of the system.

► Therefore, the reheat process of the WTC can be prevented depending on the solar yield. See examples (Ch. 6.5.19 Solar Prio HC) and (Ch. 6.5.20 Solar Prio DHW).

8.1 A Parameters

In rare cases it may be necessary to adjust the solar control to match the requirements of the system using the A parameters.

A parameters can only be altered using the WCM Diagnostic Software.

Parameters	Description	Factory setting
A21	Minimum de-couple temperature	8°C
A22	Maximum de-couple temperature	78°C
A23	De-couple excess	1K
A24	Modulation B10	Off
A25	Boiler turndown temperature	0
A41	Stagnation switch off threshold: Maximum collector temperature	120°C
A42	Switch off threshold: Maximum FlowRotor temperature	110°C
A43	Maximum WASol temperature	90°C
A44	Maximum WES-C temperature	90°C
A49	min pump capacity WHPSol	15%
A50	max pump capacity WHPSol	95%
A61	V-P control parameter	10
A62	V-I control parameter	120 1/s
A63	DTR-P control parameter	10
A64	DTR-I control parameter	120 1/s

9 Troubleshooting

9.1 Error codes

Error messages from all eBUS participants are displayed. A description of the individual errors can be found in the relevant installation and operating instructions.

The WCM-FS only displays errors, which last 15 minutes or more. Errors and rectified errors are stored in the error history with error source, error code, date and time. Rectified errors are displayed with error code 00. A maximum 10 entries can be saved.

Solar errors

Error code	Cause	Error source	Rectification
125	Control differential not achieved	WCM-SOL	The error messages will automatically reset when the control difference between T3 and T2 is reached. If the error re-occurs, reduce the setting in P841 (min volumetric flow) and P863 (control difference).
126	Despite pump activation no volumetric flow is measured.	Pump/ Flow-Rotor	Check pump operation and volumetric flow sensor (see Info in Ch. 6.5.4).

Sensor faults

Error code	Cause	Error source	Rectification
130	Sensor B10 defective	WCM-SOL	Check sensor and replace if necessary
131	Sensor B11 defective	WCM-SOL	Check sensor and replace if necessary
132	Sensor T1 defective	WCM-SOL	Check sensor and replace if necessary
133	Sensor T2 defective	WCM-SOL	Check sensor and replace if necessary
134	Sensor T3 defective	WCM-SOL	Check sensor and replace if necessary
135	Sensor T4 defective	WCM-SOL	Check sensor and replace if necessary

Hardware fault

Error code	Cause	Error source	Rectification
154	Error EEPROM		Reset unit (see Ch. 6.7)

eBUS communication error

Error code	Cause	Error source	Rectification
181 … 188	Communication error to WCM-FS		▪ Check eBUS connection ▪ Check BUS level with eBUS tester

System error

► Rectify system error.
► Switch system off and on.
✓ System is being reconfigured.

Error code	Cause	Error source	Rectification
200	Bus identification occupied, 2 identical WCM-EM and WCM-FS	WCM-FS WCM-EM	Check address setting
202	WCM-FS address WTC-HC#2+EM-HC#2 has been assigned to a DHW load circuit	WCM-FS WCM-EM	Check address setting Check sensor on WCM-EM
203	SOL Buffer on WE	WTC-XX	Connect buffer sensor to WCM-SOL

10 Protection functions

10.1 Pump idle protection

After a maximum idle time of 24 hours the pump on outputs M1 and VA1 (Bypass) is driven at maximum capacity for a duration of 5 seconds at 12:00 hrs.

10.2 Frost protection collector circuit

The solar pump is operated at maximum capacity when the temperature at collector sensor T1 drops below the frost protection limit value `P843 Collector Frost` set.

10.3 Frost protection Store/Buffer

The sensors B10, B11 and T2 are monitored for the frost protection temperature of 4°C. If this temperature is not maintained, the following controllable heat exchangers are request:

- WTC via temperature and/or load control
- external heat exchanger via VA output

10.4 System frost protection

With SF at WTC:

Via the frost protection system, the pumps of the heating circuits (EM-HC) are activated by the WTC#A at an external temperature B1 < `P23 System frost protection`. The WCM-SOL does not affect this mechanism.

With SF at WCM-EM-HC:

If the system sensor is connected to the WCM-EM-HC#2, the pumps of the heating circuits (EM-HC) are activated at an external temperature B1 < `P466 System frost protection WCM-EM-HC`

10.5 Collector circuit overheat protection

The overheat protection of the collector circuit is divided into two parts:

1. Solar pump at maximum capacity, if
   T1 > `A41 Collector Max Temp` - 10K
2. Solar pump off, if
   T1 > `A41 Collector Max Temp`

10.6 Thermal store overheat protection (procedure 1)

This function protects the thermal store from overheating. If the temperature at store sensor T2 exceeds the limit temperature set in `A43 WASol Max`, the solar pump is switched off.

10.7 Thermal store overheat protection (procedure 2)

This function protects the buffer from overheating. If the temperature at DHW sensor B3 exceeds the limit temperature set in `A44 WES-C Max`, the solar pump is switched off.

11 Technical documentation

11.1 Sensor variables

Return sensor
Flow sensor
Comparison sensor
Ext. room sensor
Immersion sensor

Collector sensor

NTC 5KΩ STF 222		NTC 5KΩ STF 225			
°C	Ω	°C	Ω	°C	Ω
-20	48180	-40	112152	105	400
-15	36250	-35	84076	110	353
-10	27523	-30	63627	115	312
-5	21078	-25	48593	120	276
0	16277	-20	37436	125	264
5	12669	-15	29081	130	219
10	9936	-10	22726	135	196
15	7849	-5	17967	140	175
20	6244	0	14280	145	157
25	5000	5	11429	150	142
30	4029	10	9209	155	128
35	3267	15	7467	160	115
40	2665	20	6092	165	105
45	2185	25	5000	170	95
50	1802	30	4127	175	86
55	1494	35	3424	180	79
60	1245	40	2856	185	72
65	1042	45	2395	190	66
70	876	50	2017	195	60
75	740	55	1707	200	55
80	628	60	1451	205	51
85	535	65	1239	210	47
90	457	70	1062	215	43
95	393	75	914	220	40
100	338	80	789	225	37
105	292	85	684	230	34
110	254	90	595	235	31
		95	520	240	29
		100	455	245	27

12 Key word index

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–weishaupt–

Product		Description	Performance
	**W-Burners**	The compact series, proven millions of times over: Economical, reliable, fully automatic. Gas, oil and dual fuel burners for domestic and commercial applications. The purflam burner gives almost soot-free combustion of oil with greatly reduced NO_x emissions.	Up to 570 kW
	**Monarch and industrial burners**	The legendary industrial burner: Tried and tested, long lived, clear construction. Gas, oil and dual fuel burners for district heat provision.	Up to 11,700 kW
	**multiflam® burners**	Innovative Weishaupt technology for large burners: Minimal emission values particularly at ratings over one megawatt. Oil, gas and dual fuel burners with patented fuel distribution system.	Up to 17,000 kW
	**WK industrial burners**	Modular powerhouses: Adaptable, robust, powerful. Oil, gas and dual fuel burners for industrial plant.	Up to 22,000 kW
	**Thermo Unit**	The Thermo Unit heating systems from cast iron or steel: Modern, economic, reliable. For environmentally friendly heating. Fuel: Gas or oil as desired.	Up to 55 kW
	**Thermo Condens**	The innovative condensing boilers with the SCOT system: Efficient, low in emissions, versatile. Ideal for domestic heating. Floor standing gas condensing boiler with ratings of up to 1200 kW (cascade), for higher heat demands.	Up to 1,200 kW
	**Heat pumps**	The heat pump programme offers solutions for utilisation of heat from air, soil and ground water. The systems are suitable for refurbishment or new builds. It is possible to use several heat pumps in cascade operation.	Up to 130 kW
	**Solar systems**	Free energy from the sun: Perfectly coordinated components, innovative, proven. Pleasantly shaped flat roof collectors to support heating and of domestic water	
	**Water heater / energy reservoir**	The attractive domestic water heating range includes classic water heaters which are supplied through a heating system and energy reservoirs which can be fed through solar systems.	
	**Control technology / building management**	From control panels to complete building management systems – at Weishaupt you can find the entire spectrum of modern control technology. Future oriented, economical and flexible.	