

# Weather-compensated controller with solar control **FW 120** for heating appliances with BUS-enabled Heatronic 3



Installation and operating instructions

## **Overview of controls and symbols**



Co	Controls				
1	Turning the rotary selector $1 \odot$ in + direction: Selects menu/information above or increases setting value				
	Turning the rotary selector $1  extsf{O}$ in - direction: Selects menu/information below or decreases setting value				
	Pushing the rotary selector $\frac{\mathbf{x}}{\mathbf{x}}$ : Opens menu of confirms setting/value				
2	Operating	mode selector for heating:			
	auto	Automatic mode			
	*	Constant Comfort			
	Constant Economy				
	蘂	Constant Frost			
3	Key 介聞: To bring the next switching time and the associated operating mode 子 = Comfort G = Economy 亲 = Frost1 for central heating forward to the current time				
4	Key 👆 To activate DHW heating immediately. The DHW cylinder is heated to the required temperature for 60 minutes or, with combi boilers, comfort mode is activated for 30 minutes.				
5	Key <sup>menu</sup> SETTINGS	: Open/close menu INSTALLER open: hold down for approx. 3 seconds			
6	Key:	Display values			
7	Key 🖆 :	: Delete/reset value			
8	Key 📩 :	Return to next menu level up			
Tal	Tab 1				

140.1



To make the further description easier

- controls and operating modes are sometimes only depicted with symbols, e.g. <u>†</u>○ or .
- menu levels are separated by the
   > symbol, e.g. Holiday > Start.

Symbols	
23 <b>.</b> 5°	Current room temperature (only with wall mounting)
12h	Flashing segment: Current time ( <b>13:45</b> to <b>14:00</b> )
15	Solid segments: Period for operating mode 🔆 = Comfort today (1 segment = 15 min)
	Empty segments: Period for operating mode (( = Economy today (1 segment = 15 min)
- >	No segments: Period for operating mode 🍄 = Frost today (1 segment = 15 min)
*	Operating mode Comfort
(	Operating mode Economy
繎	Operating mode Frost
<b>()</b>	Automatic mode
	Holiday mode
٥	Burner operation in the display
+	Scroll menu/info text up or increase value
-	Scroll menu/info text down or decrease value
ok	Open menu, confirm setting/value
3	Return to next menu up
6	Delete/reset value
£ <sup>™</sup>	Bring the next switching time and the associated operating mode = Comfort = Economy = Frost for central heating forward to the current time.
÷	Activate DHW heating immediately. The DHW cylinder is heated to the required temperature for 60 minutes or, with combi boilers, comfort mode is activated for 30 minutes.

Tab. 2

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## 1 Key to symbols and safety instructions

## **1.1** Explanation of symbols

### Warnings



Warnings in this document are framed and identified by a warning triangle printed against a grey background.



If there is a danger due to electricity, the exclamation mark in the warning triangle is replaced by a lightning symbol.

Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

- NOTE indicates that material losses may occur.
- **CAUTION** indicates that minor to medium injury may occur.
- WARNING indicates that severe injury may occur.
- DANGER indicates a risk to life.

### Important information



Important information where there is no risk to people or property is indicated with the adjacent symbol. It is bordered by lines above and below the text.

### Additional symbols

Symbol	Explanation	
•	Action step	
→ Cross-reference to other parts of t		
	document or to other documents	
•	List/list entry	
-	List/list entry (second level)	

Tab. 3

## Conventions used in these for representing the menu structure:

- Individual menu levels are separated by the
   > symbol, e.g. Holiday > Start
- Parameters that can be set/selected on a menu are marked with a bullet point .
- The operation of control elements is indicated by the symbol for the control:
  - 10 means turn rotary selector
  - $\underline{\underline{x}}_{ok}$  means press rotary selector
  - menu means press and release menu key
  - info means press and release info key
  - means press and release delete/reset key
  - 👏 means press and release menu up key
  - — 
     — 
     — means press and release advance
     switching time key
  - means press and release immediate
     DHW key

## 1.2 Safety instructions

- These instructions must be observed to ensure correct operation.
- Install and commission the heating appliance and all accessories in accordance with the instructions provided.
- This accessory must only be installed by suitably qualified installers.
- Only use these accessories in conjunction with the heating appliances listed. Follow the connection diagram!
- Do not connect this accessory to the 230 V mains electricity supply.
- Prior to the installation of this accessory: Isolate the heating appliance and all other BUS subscribers from the power supply (220 to 240 V AC).
- For wall mounting: never install this accessory in wet areas.
- Instruct customers about the functions and operation of the accessories.
- Risk of scalding during thermal disinfection: Supervise short periods of operation with water temperatures over 60 °C or fit a thermostatic DHW mixer.
- When there is a risk of frost, leave the heating appliance switched on and follow the frost protection information.

## 2 Technical data for the accessory item



The FW 120 can only be connected to a heating appliance with BUSenabled Heatronic 3.

- This controller is used to display appliance and system information and to change the settings shown.
- The controller is a weather-compensated controller for central heating and DHW heating with time programs:
  - Central heating III: 3 seven-day heating programs with 6 switching times per day are available (one program is active).
  - Domestic hot water : weekly DHW program with 6 switching times per day.
- Options:
  - Remote control FB 100 or FB 10.
  - Module IPM 1 for controlling one mixed or non-mixed heating circuit.
  - ISM 1 module for solar DHW heating.
- The controller has a power reserve sufficient for at least 6 hours of operation. If the controller is without power for a period longer than the power reserve then the time and date will be deleted. All other settings are saved.
- Installation options:
  - In heating appliance with BUS-enabled Heatronic 3
  - Wall-mounted with BUS connection to heating appliance with BUS-enabled Heatronic 3

## 2.1 Standard delivery



Fig. 2 Standard delivery

- 1 Controller top section
- 2 Base for wall mounting
- 3 Slide cover
- 4 Installation and operating instructions
- 5 Outside temperature sensor with fixing materials

## 2.2 Specification

Dimensions	Fig. 8, page 13	
Rated voltage	1024 V DC	
Rated current	6 mA	
(excluding illumination)		
Controller output	2-wire BUS	
Permiss. ambient temp.	0 +50 °C	
IP rating	Ш	
Protection:		
- Built into the Heatronic 3	IPX2D	
- Wall mounting	IP20	

Tab. 4 Specification

°C	$\Omega_{AF}$	°C	$\Omega_{AF}$
- 20	2392	4	984
- 16	2088	8	842
- 12	1811	12	720
- 8	1562	16	616
- 4	1342	20	528
± 0	1149	24	454

Tab. 5 Actual values, outside temperature sensor

## 2.3 Cleaning

 If required, use a damp cloth to wipe the controller casing. Never use aggressive or acidic cleaning agents for this.

## 2.4 Supplementary accessories

See also the pricelist.

- **IPM 1**: Module for controlling one mixed or one non-mixed heating circuit.
- **ISM 1**: Module for controlling solar water heating.
- **IUM 1**: Module for controlling external safety equipment.
- **FB 10**: Remote control for the mixed or nonmixed heating circuit.
- **FB 100**: Remote control with plain text display for the mixed or non-mixed heating circuit.
- No. 1143: Cable set for fitting one module (e.g. IPM 1) inside the heating appliance.

## 2.5 Sample system



Fig. 3 Simplified system scheme (see technical guides for installation illustration and further options)

AF	Outside temperature sensor	Р	Circulation pump for heating circuit
FB 10	Remote control	SP	Solar circuit pump
FB 100	Remote control	Ssolar	Solar combi cylinder
FK	Flat-plate collector	SF	Cylinder temperature sensor (NTC)
FW 120	Weather-compensated controller with	T <sub>1</sub>	Collector temperature sensor
	solar control	T <sub>2</sub>	Cylinder temperature sensor on the
НК	Heating circuit		heating water side, bottom
HP	Heating circuit pump	тв	Temperature limiter
HW	Low loss header	TWM	Thermostatic DHW mixer
IPM 1	Module for one heating circuit	VF	Common flow sensor
ISM 1	Module for solar DHW heating	ww	DHW connection
KW	Cold water connection	1)	The FW 120 can be mounted in the
Μ	Mixer servomotor		heat source or on the wall.
MF	Flow temperature sensor, mixed	2)	Either FB 10 or FB 100
	heating circuit		

## 3 Installation (for contractors only)

The detailed system scheme for installing the hydraulic components and associated control devices can be found in the technical guides or tender documentation.



DANGER: Risk of electric shock!

 Prior to the installation of this accessory: Isolate the heating appliance and all other BUS subscribers from the power supply (220 to 240 V AC).

## 3.1 Installation

## 3.1.1 Installation in heating appliance

- Detailed description of heating appliance components, see heating appliance installation instructions.
- Remove outer casing.



Fig. 4

• Remove cover and dummy cover.



Fig. 5

Insert top section into slots.



• Click top section into place and mount cover.



### 3.1.2 Wall mounting

The control quality of the controller is dependent on where it is installed.

The installation location (= lead room) must be suitable for controlling the heating.

Select the installation location.



Fig. 8



The mounting surface on the wall should be level.

 Remove the top section and slide cover from the base.





Fit the base.



Fig. 10

- Make the electrical connections (→ Fig. 14 or 15 on page 16).
- Refit top section an slide cover on base.



## 3.1.3 Installation of outside temperature sensor

Control quality depends on installation location of outside temperature sensor AF.

▶ Select the installation location.





- Remove cover.
- Fix sensor housing to external wall with two screws.





### 3.1.4 Fitting other accessories

 Fit accessories according to the legal requirements and the installation instructions supplied with them.

### 3.1.5 Disposal

- Dispose of packaging in an environmentally responsible manner.
- When replacing components, dispose of the used components in an environmentally responsible manner.

## 3.2 Electrical connections

## 3.2.1 Electrical connection in the heating appliance

► Installation of the controller automatically produces BUS connection via the three contacts (→ Fig. 6 on page 11).



Fig. 14 Controller installed via BUS contacts in BUS-enabled Heatronic 3.



The controller recognises via the third contact that it is installed inside the heating appliance.

## 3.2.2 Electrical connection for wall mounting

► BUS connection from the controller to other BUS subscribers:

Use electrical cable according to local codes and requirements.

Permissible cable lengths from the BUS-enabled Heatronic 3 to the controller:

Cable length	Cross-section
≤ 80 m	0.40 mm <sup>2</sup>
≤ 100 m	0.50 mm <sup>2</sup>
≤ 150 m	0.75 mm <sup>2</sup>
≤ 200 m	1.00 mm <sup>2</sup>
≤ 300 m	1.50 mm <sup>2</sup>

Tab. 6

- To prevent inductive interference: Route all LV leads separately from cables carrying 220 to 240 V or 380 to 415 V (minimum separation 100 mm).
- In case of external inductive interference, shield the cables.

This ensures that the cables are shielded from external interference (e.g. heavy current cables, overhead wires, transformer stations, radio and television set, amateur radio stations, microwave ovens etc).



Fig. 15 Controller connected to BUS-enabled Heatronic 3.



If the BUS links feature different cross-sections:

• Connect BUS links via a branch box.



Fig. 16 BUS links connected via branch box (A)

Permissible cable lengths to outside temperature sensor:

Cable length	Cross-section	
≤ 20 m	$0.75 \text{ mm}^2 \dots 1.50 \text{ mm}^2$	
≤ 30 m	$1.00 \text{ mm}^2 \dots 1.50 \text{ mm}^2$	
≥ 30 m	1.50 mm <sup>2</sup>	

Tab. 7

## 4 Commissioning (contractors only)

- Set DIP switch at IPM 1 to 1.
- ► Switch ON the system.
- Set FB 10 or FB 100 to **1**.



Description of the controls  $\rightarrow$  page 2.

During commissioning or after a global reset (resetting all settings), the language selected for the factory settings will be displayed.

- Select the language with <sup>±</sup>/<sub>ok</sub> → and confirm with <sup>±</sup>/<sub>ok</sub>.
- Set the date and time if the reserve power supply has run out.
  - Select the hour with  $\frac{1}{2}$  and confirm with  $\frac{1}{2}$ .
  - Select the minutes with  $\frac{1}{2}$  and confirm with  $\frac{\pi}{2}$ .
  - Select the year with  $\frac{1}{2}$  and confirm with  $\frac{x}{2}$ .
  - Select the month with  $\frac{1}{2}$  and confirm with  $\frac{x}{2}$ .
  - Select the day with  $\frac{1}{2}$  and confirm with  $\frac{x}{2}$ .
- The automatic system configuration starts during commissioning (wait for 60 seconds and then follow the instructions displayed).
- Switch off automatic Auto switch between GMT - BST → chapter 6.5.1 from page 34
- Adapting other settings to the current system,
   → chapter 6 from page 25 and chapter 8 from page 39.
- Fill and vent solar thermal system according to its documentation and prepare it for commissioning as described in chapter 8.4 on page 47.
- Adapting other settings to the current solar thermal system, → chapter 8.5 from page 48.
- Commission the solar thermal system,
   → chapter 8.5.4 on page 51.

## 5 Operation

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The controller provides the option of setting the required room temperature for the operating mode concerned. The temperature given is not the actual room temperature. It is an orientation value that influences the required flow temperature.



The functions of the controls and the meanings of the symbols on the display are explained on pages 2 and 3.

# 5.1 Changing the room temperature and operating mode

## 5.1.1 Changing the set room temperature for a limited period

You can also permanently change the required room temperature,  $\rightarrow$  chapter 6.2.2 on page 28.

This function is only available if the heating system is not regulated via remote control FB 100:

- ► Set the required room temperature with <u>†</u>.
  - If the operating mode selector is set to auto:

The new temperature applies until the next switching point. Afterwards, the set temperature applies for the switching period.

If the operating mode selector is set to
 ☆ / ( / 禁: The new temperature applies until the selector position is changed.
 Afterwards, the set temperature applies to the selected operating mode.

## 5.1.2 Advancing heating mode before the programmed time (bringing forward the next switching point)

To permanently change the operating mode,  $\rightarrow$  chapter 5.1.4 on page 19.

_	The function can be used in
i	situations such as going to bed
•	earlier, being away from home
	longer or returning early.

This function is only available if the heating system is not regulated via remote control FB 100 and automatic mode has been activated ①:

 Press ①<sup>III</sup> briefly to bring forward the next switching time and the associated operating mode Comfort ☆ / Economy ( / Frost 發 to the current time.

The display shows the changed details.

Press and hold mand simultaneously turn the rotary selector 1 to change the next switching point. As a maximum, the switching time can be changed between the current time and the switching time after next. If the next switching time of the heating program is exceeded, the function will be reset, and automatic mode will be active again.

Cancelling the function early:

▶ Press ☆<sup>™</sup> briefly again.

### 5.1.3 Changing DHW mode (time-limited)



You can use this function if you need hot water outside the programmed switching times.

- Press and release to activate DHW heating immediately.
  - The DHW cylinder is heated up to the temperature set in the DHW program for 60 minutes.
  - With a combi boiler, comfort mode is activated for 30 minutes.

To undo the change to DHW mode:

Press - briefly again.

#### 5.1.4 Changing heating mode permanently



DHW is heated independently of the position of the operating mode selector in accordance with the DHW program ( $\rightarrow$  chapter 6.3 from page 29).



## Automatic mode (factory setting)

Automatic change between **Comfort**  $\cancel{}$  / **Economy** (() / **Frost**  $\bigotimes$  according to the active heating program. The controller regulates to the room temperatures selected in submenu **Heating levels** ( $\rightarrow$  chapter 6.2.2 on page 28).



The controller constantly maintains the room temperature set for **Comfort**  $\stackrel{\text{def}}{\longrightarrow}$  in submenu **Heating levels** ( $\rightarrow$  chapter 6.2.2 on page 28). The heating program is ignored.



The controller constantly maintains the room temperature set for **Economy** (() in submenu **Heating levels** (→ chapter 6.2.2 on page 28). The heating program is ignored.



## **Constant frost protection**

The controller constantly maintains the room temperature set for **Heating levels** rightarrow in submenu **Heating levels** ( $\rightarrow$  chapter 6.2.2 on page 28). The heating program is ignored.

## 5.2 Display views and menu navigation

The user interface of the weather- compensation controller FW 120 is implemented as a menu system. Within that menu, the various functions are arranged in a hierarchical structure. For greater clarity, the menu is subdivided into three sections (MAIN MENU, INFO, INSTALLER SETTINGS). Each section can be accessed by its own button. For the entire menu tree, see chapters 6.1, 7 and 8.1.

To navigate through the menu:

- Press menu to open MAIN MENU. From any point within the MAIN MENU, press menu to go back to the standard display.
- Press into to open the INFO menu. From any point within the INFO menu, press into to go back to the standard display.
- Hold down menu for at least 3 seconds to open the INSTALLER SETTINGS menu. From any point within the INSTALLER SETTINGS menu, press menu to go back to the standard display.
- The selected menu point/parameter is displayed in **inverse** colours, i.e. white on black.
- Arrows in the left margin indicate that there is more information than can be shown on the display at once. It can be viewed with <sup>1</sup>(<sup>(</sup>)).
- ▲ opens the submenu associated with the selected menu point/parameter or activates editing mode for the parameter (the parameter setting starts flashing).

- A flashing parameter setting (e.g. switching time or operating mode)
  - can be changed with 10.
  - can be deleted (reset to the default) with  $\Box$  .
  - is stored with <sup>▲</sup><sub>ok</sub>○.
  - remains unchanged if any other key apart from  $\frac{\pi}{ok}$  is pressed.
- To return to the next menu up from a submenu:
  - Highlight menu point < Back and confirm with <sup>A</sup>/<sub>ok</sub>(), or
  - press 📩.

## 5.3 Setting programs

## Setting and changing switching times and operating modes

Setting programs and switching times always follows the same pattern.

In the delivered condition, programmes for heating and DHW heating are already stored in the memory. Your heating equipment installer may already have adjusted these programs to your individual requirements.

### 5.3.1 Changing an individual switching point

- The following example shows all programming steps required for changing a switching point in the heating program. If, instead, you want to change a switching point in the DHW program, call up the DHW program concerned (menu path: **Domestic hot water > DHW programme**) and change the switching point in the same way.
- Open flap.

The standard display continues to be shown.



▶ Press menu.

The display lighting switches on and the main menu is displayed.



Press  $\frac{\mathbf{x}}{\mathbf{o}\mathbf{k}}$   $\bigcirc$ . The Heating menu is selected and the title bar shows the current menu name (in this case **HEATING**).



▶ Press <sup>★</sup>/<sub>ok</sub>).

The Programme menu is selected and the header shows the current menu title (in this case **HEATING PROGRAMME**).



► Turn <sup>†</sup> ○ until the required day (or group of days) is highlighted (e.g. Monday). The segment ring always shows you the heating program if you highlight just one specific day (e.g. Monday) or if, on a group of days, all switching times are identical for every day in that group (e.g. all switching times for Mon - Fri are identical).



 Press <sup>\*</sup>/<sub>o</sub> to confirm the menu point Monday.

The next submenu (**EDIT PROGRAMME MON**) showing the programmed switching times and operating modes **P1** to **P6** is displayed.



► Press ♣

The switching point and corresponding segment in the segment ring start to flash.



► Turn <sup>†</sup> until the required switching time is displayed (e.g. 05:30 h).

The segment ring always shows the effect of the switching time change on the heating program.

► Press 💑 🔘.

The switching point is saved. The associated operating mode now starts flashing on the display.



 Turn 1/2 until the required operating mode (e.g. Economy) or temperature is shown.
 The segment ring always shows the effect of the change on the heating program.



► Press ♣ ok The operating

The operating mode is saved. Setting of **P1** is now complete.

- You can now:
  - change more switching times and operating modes in the same way, or
  - finish programming and return to the standard display by pressing menu.

### Using groups of days when programming

In many cases, you may want to programme the same switching times for several days of the week, say for all working days. Equally, you may also want a different program for just one of those days.

Using the groups of days when programming enables you to complete the process in only a few steps.

- For a group of days, e.g. Mon Fri, programme the switching times and operating modes that should apply to the majority of the days in this group of days.
- Then change the switching times for the days that are different.

### 5.3.2 Deleting an individual switching point

- Place the highlight onto the value to be deleted, as described in chapter, e.g. parameter P1 (= switching point 1).
- ► Press 🛓 🔘.

The switching time and the associated segment inside the segmented ring flashes.



▶ Press 🖆.

The deleted switching point flashes. At the same time, the associated segments change.



- ▶ Press <sup>A</sup>/<sub>ok</sub> twice.
- ▶ Deleting **P1** is now complete.

## 5.3.3 Resetting an entire program (overwriting with factory settings)

- Call up menu: Heating > Programme,
   Domestic hot water > DHW programme or
   Domestic hot water > DHW circ pump prog .
- ▶ Turn until menu point is highlighted.
- Press A
   No flashes.
- ► Turn ‡ until **Yes** flashes.
- ► Press ♣○. The program was reset to its standard setting.

# 5.4 Resetting all settings (for heating contractors only)

This function resets all settings of MAIN MENU and INSTALLER SETTINGS to their factory settings. Following such a reset, your heating contractor will need to recommission the system!

If the standard display is set:

Simultaneously press and hold menu and function until the following warning message appears:



Continue holding <u>menu</u> and <u>6</u> until the following message appears:



► Press <u>♣</u> .

All settings have now been reset to their defaults with the exception of the date and time, which remain unchanged.

## 6 Adjusting the MAIN MENU

- Briefly push the menu key to open or close the main menu.
- Turn the rotary selector to select the required menu point.
- Push the rotary selector to open the selected menu point.

Detailed instructions on navigating through the menu structure, programming, deleting settings and resetting to the factory settings are provided in chapter 5 starting on page 18. The menu points are only shown if the system components are present and/or active, and if no remote control is accessing them. Some menu points are not shown because they are switched off by a setting for another menu point.

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 Always set or skip menu points in order. In that way, subsequent menu points will be automatically adjusted or not shown.

## 6.1 Menu structure





1) Subject to the equipment level of the installed system and the settings made, this menu or not all of its parameters may be displayed.



- 1) Auto switch between GMT BST always switch off (select No)
- 2) Subject to the equipment level of the installed system and the settings made, this menu or not all of its parameters may be displayed.

## 6.2 Heating program

#### Main menu: Heating



Set the flow temperature controller on the heating appliance to the maximum required flow temperature.

### 6.2.1 Time/Temperature level program

### Menu: Heating > Programme

Use this menu if you want to adapt a heating program with your individual time/temperature profile. The heating program is only active if the mode selector is set to .



Fig. 17 Example heating program with time/ temperature level profile

Setting options:

- Up to six switching times per day with three different operating modes (Comfort 茶 / Economy ① / Frost 禁).
- Option of different times for every day or the same times for:
  - Every day (All days)
  - Monday to Friday (Mon Fri)
  - Saturday and Sunday (Sat + Sun)
- The shortest switching interval is 15 minutes (= 1 segment).



If, for example, the programming for **Thursday** differs from the other days of the week, the options **All days** and **Mon - Fri** show

---- from --:-- for all values. That is, there are no common switching times and operating modes for this selection. ► Return the heating program to its factory settings → page 23.

## 6.2.2 Temperature for the operating modes (change temperature permanently)

### Menu: Heating > Heating levels

- Setting the required room temperature for the operating modes:
  - Comfort 1/2 = maximum temperature required (e.g. when the living space is occupied and occupants require a comfortable room temperature).
  - Economy ((= average temperature required (e.g. if a low room temperature is adequate or if everyone is away or asleep and the house should not cool down excessively).
  - Frost <sup>\*</sup>/<sub>4</sub> = minimum temperature required (e.g. when the home is unoccupied or everyone is asleep and it is OK for the house to cool down). Consider any pets and plants.

### 6.2.3 Heat-up rate

### Menu: Heating > Heating up speed

- Set required heat-up rate:
  - **Economy** = The building is heated up slowly, thus saving energy.
  - Normal = The building is heated up at the "normal" rate.
  - Fast = The building is heated up quickly, thus providing maximum comfort.

## 6.3 DHW program

#### Main menu: Domestic hot water

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Set the DHW temperature controller on the heating appliance to the maximum required DHW temperature. If a DHW cylinder is connected to the IPM downstream of a low loss header, turn the flow temperature controller on the heating appliance fully clockwise.

### 6.3.1 DHW program operating modes

## Menu: Domestic hot water > DHW and DHW circulation pump

With this menu you can optionally

- activate your individual DHW program
- -or-
- or combine the DHW program with your heating program.

**As heating programme** (Automatic mode together with the heating program):

- With DHW cylinder:
  - In accordance with the DHW temperature selected under Cylinder temp at heating level Comf.<sup>1)</sup>, if the heating system operates in Comfort 🔆 mode or switches to Comfort 🔆 mode within the next hour.
  - Otherwise according to the DHW temperature selected under Cylinder temp at heating level Eco<sup>1</sup>, if the heating system operates in Economy ((mode.
  - Otherwise DHW Frost (15 °C fixed value).

- With combi boiler:
  - DHW On, if the heating system operates in Comfort 🔆 mode or has operated in Comfort 🌾 mode within the last hour.
  - Otherwise DHW Off
- With DHW circulation pump for DHW cylinder:
  - DHW circulation pump **On** and DHW circulation pump starts according to setting (→ chapter 6.3.5 on page 32), if the heating system operates in **Comfort** mode.
  - Otherwise DHW circulation pump Off.

**Separate programmes** (independent time programs):

- Automatic changeover between DHW On<sup>2)</sup> / Off<sup>2)</sup> or different DHW temperatures <sup>3)</sup>and DHW circulation pump On / Off according to programs entered.
- DHW circulation pump starts according to setting (→ chapter 6.3.5 on page 32).

1) Setting the DHW temperature  $\rightarrow$  chapter 6.3.5 on page 31.

- 2) DHW with combi boiler
- 3) DHW via cylinder

## 6.3.2 Time/temperature level program for DHW via cylinder

#### Menu: Domestic hot water > DHW programme

Use this menu if you want to use a DHW program with user-defined time/temperature profile. The time/temperature level program is only adjustable and active if **Domestic hot water > DHW and DHW circulation pump > Separate programmes** is set.



Fig. 18 Example DHW program with time/ temperature profile

### Setting options

- Up to six switching times per day with DHW temperatures between 15 °C and 60 °C.
- Optionally the same times or different times for every day for All days / Mon - Fri / Sat + Sun.
- The shortest switching interval is 15 minutes (= 1 segment).

## Setting the switching times and DHW temperature



Disable switching points that are not required by deleting them.

Enter or view days of the week, switching times and associated DHW temperatures, as described in chapter 6.2 on page 28.

## 6.3.3 Time program for DHW with combi boiler

#### Menu: Domestic hot water > DHW programme

Use this menu if you want to use a time program for DHW heating.

The time program is only programmable and active if **Domestic hot water > DHW and DHW** circulation pump > Separate programmes is set.

- Automatic changeover between DHW On/ Off in accordance with the time program entered.
- **On**: DHW will be available immediately if the ECO key has not been pressed on the heating appliance.
- **Off**: The heat exchanger inside the heating appliance will remain unheated. Consequently, hot water will only be available after drawing lots of water from a hot tap.

#### Setting options

- Up to six switching times per day with two different operating modes (**On** / **Off**).
- Optionally the same times or different times for every day for All days / Mon - Fri / Sat + Sun.
- The shortest switching interval is 15 minutes (= 1 segment).

### Setting switching times and the operating mode



Disable switching points that are not required by deleting them.

Enter or view days of the week, switching times and associated operating modes (**On** / **Off**), as described in chapter 6.2 on page 28.

## 6.3.4 Time program for DHW circulation pump (only with DHW cylinder)

## Menu: Domestic hot water > DHW circ pump prog

Use this menu if you want to use a time program for the DHW circulation pump.

The time program is only programmable and active if **Domestic hot water > DHW and DHW** circulation pump > Separate programmes is set.

- Automatic changeover between DHW circulation pump **On / Off** in accordance with the time program entered.
  - On: DHW circulation pump starts as per setting (→ chapter 6.3.5 on page 32).
  - **Off**: The DHW circulation pump is stopped.

## Setting options

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- Up to six switching times per day with two different operating modes (**On** / **Off**).
- Optionally the same times or different times for every day for All days / Mon - Fri / Sat + Sun.
- The shortest switching interval is 15 minutes (= 1 segment).

## Setting switching times and the operating mode

Disable switching points that are not required by deleting them.

Enter or view days of the week, switching times and associated operating modes (**On** / **Off**), as described in chapter 6.2 on page 28.

### 6.3.5 Parameters for DHW

## Menu: Domestic hot water > Parameter > Cylinder temp at heating level Comf.

This menu point is only active if **Domestic hot** water > DHW and DHW circulation pump > As heating programme is set ( $\rightarrow$  chapter 6.3.1 on page 29). This is where you set the required DHW temperature for your DHW cylinder.

## Menu: Domestic hot water > Parameter > Cylinder temp at heating level Eco

This menu point is only active if **Domestic hot** water > DHW and DHW circulation pump > As heating programme is set ( $\rightarrow$  chapter 6.3.1 on page 29). This is where you set the required reduced DHW temperature for your DHW cylinder.

## Menu: Domestic hot water > Parameter > DHW priority

This menu point is only active if **Domestic hot** water configuration in the system configuration has been set to Cyl on IPM ident.3...10 (→ chapter 8.1.1 on page 39). Use this menu if your heating is to be left operational during cylinder heating (e.g. for buildings with limited insulation and low outdoor temperatures).

- **Priority**: Central heating stops during cylinder heating. The pump stands still and the mixer is closed.
- **Conditional priority**: If a mixer is installed, central heating continues during cylinder heating ; the pump runs and the mixer regulates to the required heating temperature. If no mixer is installed, central heating will be switched off to prevent rooms getting too hot. Cylinder heating takes longer with **Conditional priority**.

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## Menu: Domestic hot water > Parameter > DHW circ pump cycles

This menu point is only active if a DHW circulation pump is available.

This menu point specifies how many times per hour the DHW circulation pump will start during the DHW circulation pump **On** phase. With the setting:

- **1/h** to **6/h**, each DHW circulation pump cycle lasts for 3 minutes.
- **7/h**, the DHW circulation pump runs continuously during the **On** phase.

The DHW circulation pump stops during the DHW circulation pump **Off** phases.

### 6.3.6 Thermal disinfection of DHW

## Menu: Domestic hot water > Thermal disinfection

This menu is only active if your domestic hot water is provided by a DHW cylinder. We recommend that you carry out thermal disinfection at regular intervals. If you have a combi boiler, observe the information in the boiler documentation.

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## WARNING: Risk of scalding!

Hot water can lead to severe scalding.

- Only carry out thermal disinfection at times when the system is not normally in use.
- Inform occupants of the building of the risk of scalding and always monitor the thermal disinfection process.

#### Operating mode:

- Auto Thermal disinfection starts automatically in accordance with the set start conditions. Thermal disinfection can be started and stopped manually.
- Manual: Thermal disinfection can be started respectively once under Operating status.
- Operating status:
  - Not running: No thermal disinfection in progress at present. Once-only thermal disinfection can be started by selecting Start now.
  - Running: Thermal disinfection currently in progress. Thermal disinfection can be stopped by selecting Stop.
     If Solar sys option E Thermal disinfection is switched on (→ chapter 8.4 on page 47) and thermal disinfection is stopped by selecting Stop, a fault is indicated for 5 minutes if the disinfection temperature in the solar cylinder has not been reached (fault 54, → chapter 9.1 from page 53).
- **Time**: Start time for automatic thermal disinfection.
- **Time interval**: Period until next start time for automatic thermal disinfection.

## 6.4 Holiday program

#### Main menu: Holiday

Use this menu if you want to operate a special program for several days without changing your personal settings in the individual programs and parameters.

With the holiday program, central heating and DHW heating operate according to the operating mode set in the holiday program (frost protection is ensured).

- Start:
  - The holiday program starts immediately if you select the current date as **Start**.
  - The holiday program starts at 00:00 on the selected day if you select the tomorrow's date or later as Start.
- End The holiday program ends at 23:59 h on the selected day.
- **Heating**: Operating mode for central heating during the holiday program.
- **Domestic hot water**: Operating mode for DHW heating during the holiday program.
- DHW circulation pump: Operating mode for DHW circulation pump during the holiday program.
- **Thermal disinfection**: Operating mode for thermal disinfection of the DHW during the holiday program.

When the holiday program is active, the standard display shows and, for example, **HOLIDAY UNTIL** - **30.09.2012**.

Terminating the holiday program early:

- ► Select menu Holiday > Start and press \_\_\_\_\_. The display shows ----.
- ► Press rotary selector <sup>x</sup>/<sub>ok</sub> to store the setting.

## 6.5 General settings

#### Main menu: General settings

#### 6.5.1 Time and Date

#### Menu: General settings > Time and date

Use this menu if you want to correct the date and time.

- **Time**: Resetting the time, if the power supply has been interrupted for more than 12 hours.
- Date: see above Time.

The current day of the week (e.g. **Mo**) is calculated automatically.



#### Auto switch between GMT - BST

- Switch automatic summer/ wintertime changeover off.
- **Time adjustment**: Sets the adjustment factor for the time. The adjustment is carried out once a week.

Example:

- If the time is out by approximately
   3 minutes a year
- 3 minutes a year is equal to
   180 seconds a year
- 1 year = 52 weeks
- 180 seconds ÷ 52 weeks
  - = 3.46 seconds a week
- Correction factor = +3.5 sec/week

### 6.5.2 Display formats

#### Menu: General settings > Display format

Use this menu if you want to customise the display formats to suit your personal preferences.

- Date: Selects either DD.MM.YYYY or MM/DD/YYYY as date display format (D = number for day, M = number for month, Y = number for year).
- **Display contrast**: Sets display contrast to between **25 %** and **75 %**.
- Information at top of display: Sets the required information to be shown on the top line of the standard display.

### 6.5.3 Key lock

#### Menu: General settings > Key lock

Use this menu if you want to prevent unauthorised use of the key functions, e.g. by children.

The corresponding information will be displayed if **Key lock** is active and a locked key on the standard display is pressed.

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Changes of the operating mode selector to a different mode only become active when **Key lock** is reset.

#### Reset Key lock:

► Hold down → and → simultaneously until the corresponding message appears.

#### 6.5.4 Language

#### Menu: General settings > Language

Use this menu if you want to change the language for the display texts.

## 6.6 Solar settings

#### Main menu: Solar

Use this menu if you want to limit the cylinder temperature or optimise the set DHW temperature and the set flow temperature based on the available solar energy in your geographical region.

### Limiting cylinder temperature

Storing as much solar energy as possible requires a high cylinder temperature.

Limiting the cylinder temperature prevents overheating of the DHW. The temperature setting is transmitted by the ISM module during commissioning.



**WARNING:** Risk of scalding!If the cylinder temperature is higher than 60 °C.

- If the cylinder temperature limit is set to > 60 °C, fit the thermostatic DHW mixerTWM 20 (accessory) in the DHW line.
- ▶ Set TWM 20 to max. 60 °C.

**T2: Max. solar cylinder temperature**: Cylinder temperature > 60 °C only in systems if the DHW outlet temperature is limited by thermostatic DHW mixer.

### Solar optimisation

The utilisation of as much solar energy as possible makes it appropriate to reduce the set temperatures called for by the heating appliance. The controller enables this reduction automatically subject to the available solar energy with **Optimizing influence DHW** and with **CH circuit optimizing influence**.

For more information for contractors, see  $\rightarrow$  chapter 8.5.3 on page 49.

- Optimizing influence DHW: Maximum reduction of set DHW temperature by effect of solar thermal system.
   Example:
  - Set DHW temperature = 60 °C
  - Optimizing influence DHW = 15 K
  - Set DHW temperature for the heating appliance = 60 °C - 15 K
  - Provided there is sufficient solar output available, the maximum reduction is set and the heating appliance heats the DHW to 45 °C, with the remaining 15 K being provided by the solar yield.
- CH circuit optimizing influence: Influence of solar output on heat input fed into the heating circuit. At a high value, the heating curve flow temperature is reduced at a correspondingly greater rate (further information for contractors → chapter 8.3 from page 43) to enable greater passive solar energy input through the building's windows. At the same time this reduces a temperature overshoot in the building and increases the comfort level.
  - Increase CH circuit optimizing influence if the heating system heats rooms that have large areas of south-facing windows.
  - Do not increase CH circuit optimizing influence if the heating system heats rooms that have small areas of north-facing windows.

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**Optimizing influence DHW** and **CH circuit optimizing influence** do not start until a calibration phase of at least 30 days has been completed after commissioning of the solar thermal system.

## 7 Viewing information

### Menu: INFO

This menu allows you to view various items of system information.

Detailed instructions on navigating through the menu structure are provided in chapter 5.2 starting on page 20.

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The menu points are only shown if the system components are present and/or active, and if no remote control is accessing them. Some menu points are not shown because they are switched off by a setting for another menu point.

#### **INFO** menu overview

The table below provides:

- An overview of the menu structure (column 1). The menu depth is identified by various shades of grey.
   For example, menu Boiler and Heating system are on the same level.
- An overview of the various display options (column 2).
- Descriptions of the individual information items (column 3).

_			
		Variable display	
M	enu structure INFO	(examples)	Description
Bo	biler	-	-
	Outside temperature	10.0 °C	Current outside temperature.
	Heating mode possible	Yes   No	Shows whether heating appliance is ready for
			operation.
	Current CH flow	55.0 °C	Current heating appliance flow temperature.
temperature			
Burner On   Off		On   Off	Burner status.
	Heating pump On   Off		Status of pump in heating appliance.
	Maximum CH flow 75.0 °C		Maximum flow temperature set on heating appliance.
	temperature		
	Maximum domestic hot	60.0 °C	Maximum DHW temperature set on heating
	water temperature		appliance.
	Service required	Yes   No	Shows whether a heating appliance service/
			inspection is due.

## Viewing information | 37

		Variable display			
Menu structure INFO		(examples)	Description		
He	eating system	-	-		
Operating mode		Auto – Comfort   Auto –	Current operating mode or special mode for the		
		Economy   Auto – Frost	heating system.		
		Comfort   Economy			
		Frost   Holiday – Auto			
		Holiday – Comfort   Holiday			
		– Economy   Holiday –			
		Frost   Floor drying			
		waiting   Floor drying			
		running			
	Required room temp	25.0 °C	Room temperature called for by the controller or the		
			remote control FB 10 (only if "Room influence" is		
			active).		
	Current room temperature	22.0 °C	Room temperature measured at the controller		
			(only with wall mounted controllers).		
	Room temperature FB10	23.0 °C	Room temperature captured by the remote control		
			FB 10.		
	Required CH flow	75.0 °C	Flow temperature calculated and requested by		
	temperature		controller.		
	Current CH flow	47.0 °C	Flow temperature captured in the heating circuit.		
	temperature				
	Heating pump	On   Off	Heating circuit pump switching state.		
	Current mixer setting	85 % open	Current level of opening of the heating circuit mixer.		
Do	omestic hot water	-	-		
	Operating mode	Immediate DHW   Auto On	Current operating mode or special mode for DHW		
		Auto Off   Holiday – Auto	with combi boiler.		
		Holiday On   Holiday Off			
		Immediate DHW   Thermal	Current operating mode or special mode for DHW		
		disinfection  Auto  Holiday	cylinder.		
		– Auto   Holiday 15 °C			
	Required DHW temperature	60.0 °C	DHW temperature required by controller.		
	Current DHW temperature	40.0 °C	Current measured DHW temperature.		
	Domestic hot water status	Running   Off	Current status of DHW heating.		
	Last thermal disinfection	Completed   Cancelled	Result of the last thermal disinfection.		
		Running			
Сι	ustomer service				
	Phone number	(Telephone number)	Telephone number of heating contractor		
			(system installer).		
	Name	(Name)	Name of heating contractor (system installer).		

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		Variable display			
Menu structure INFO		(examples)	Description		
Solar		-	-		
Standard system		-	Menu for basic system component of solar thermal		
			system.		
	T1: Temperature of	80.0 °C	Temperature measured by collector temperature		
	collector group 1		sensor (T <sub>1</sub> ).		
	T2: Temp at bottom of	55.7 °C	Temperature measured by bottom cylinder		
	solar cylinder		temperature sensor (T <sub>2</sub> ) in solar cylinder.		
	SP: Collector grp 1 solar	Running   Off	Status of solar circuit pump (SP).		
	pump status				
	Collector group 1 shut	Yes   No	Shows whether safety shutdown of solar circuit		
	down		pump (SP) due to overheating of the collectors $(T_1)$		
			has occurred.		
	Solar cylinder status	Fully charged   Partially	Charge status of solar cylinder.		
		charged			
	SP: Coll grp 1 solar pump	12463 h	Hours run of solar circuit pump (SP) since		
	running time		commissioning.		
	Thermal disinfection	-	Menu for thermal disinfection part of the system.		
	Thermal disinfection	Running   Off	Current status of thermal disinfection.		
	status				
	PE: Therm disinfect pump	Running   Off	Status of thermal disinfection pump (PE).		
	status				
	Solar optimisation	-	Menu for optimisation of conventional heating system		
			with solar backup.		
	Solar yield in last hour	120 Wh	Solar energy yield in the last hour (a figure is only		
			shown if correct parameters have been set in the		
			solar optimisation menu, $ ightarrow$ chapter 8.5.3 on		
			page 49).		
	Solar yield today	2.38 kWh	Solar energy yield for the current day.		
	Solar yield overall	483.6 kWh	Total solar energy yield since commissioning.		
	DHW temperature	4.7 K	Current reduction of the set DHW temperature		
	reduced by		required by the heating appliance as a result of the		
			available solar energy. Only starts 30 days after		
			commissioning.		
	Required room	1.3 K	Current reduction of required room temperature		
	temperature reduced by		based on the available solar energy. Only starts 30		
			days after commissioning.		
Fa	ults	40 Solar system	List of current faults. More detailed information can		
		03 FW 120	be obtained by selecting with $1 - \infty$ and confirming		
		EA Boiler	with $\frac{1}{2}$ .		

## 8 Menu settings INSTALLER SETTINGS (contractors only)



The **INSTALLER SETTINGS** menu is intended only for contractors.

 To open INSTALLER SETTINGS: press and hold menu for approx.
 3 seconds.

Detailed instructions on navigating through the menu structure, programming, deleting settings and resetting to the factory settings are provided in chapter 5.2 starting on page 20.

## 8.1 INSTALLER SETTINGS menu summary and settings

The tables set out below provide:

• An overview of the menu structure (column 1). The menu depth is identified by various shades of grey.

For example, in menu **Solar sys parameters** submenus **1. Standard system** and **Solar optimisation** are on the same level.

- An overview of the factory settings (column 2), e.g. for the purposes of resetting individual menu point to their factory settings.
- An overview of the setting ranges of the individual menu points (column 3).
- Space for making a note of your personal settings (column 4).
- A way to locate detailed descriptions regarding the individual menu points (column 5).

The menu points are only shown if the system components are present and/or active, and if no remote control is accessing them. Some menu points are not shown because they are switched off by a setting for another menu point.

 Always set or skip menu points in order. In that way, subsequent menu points will be automatically adjusted or not shown.

Menu structure	Factory		Personal	Description
System configuration	setting	Setting range	setting	from page
Start automatic system	No	No   Yes		
configuration				
Domestic hot water	Combi boiler	No   Combi boiler   Cyl conn to		
configuration		boiler   Cyl on IPM ident.3 10		
DHW circulation pump	No	No   Present		42
CH system configuration	Unmixed	Unmixed without IPM   Unmixed		43
	without IPM	with IPM   Mixed		
Remote control	No	No   FB 10   FB 100		
ISM 1	No	No   Present		
ISM 2	No	No   Present		

## 8.1.2 INSTALLER SETTINGS: Heating parameters

Menu structure	Factory		Personal	Description
Heating parameters	setting	Setting range	setting	from page
Heating circuit type	Radiators	Foot point/End point   Underfloor		40
		heating   Radiators   Convectors		43
Foot point	25 °C	10 °C 85 °C	°C	45
End point	75 °C	30 °C 85 °C	°C	45
Design flow temp.	75 °C	30 °C 85 °C	°C	45
Maximum CH flow temperature	80 °C	30 °C 85 °C	°C	45
Room influence	30 %	0 % 100 %	%	45
Room influence enabled for	Eco/Frost	Eco/Frost   Comfort/Eco/Frost		45
levels				45
Sensor(s) used for room	Lower	Sensor on FB10   Internal sensor		
influence	temperature	Lower temperature		46
		(only with FB 10)		
Room temperature offset	0.0 K	– 5.0 K 5.0 K	К	46
Heating off until lower level	Yes	No   Yes		46
reached				40
Heating off at outside	20.0 °C	10.0 °C 25.0 °C, 99.0 °C	°C	46
temperature		(= function off)		40
Freezing risk at outside	3.0 °C	– 5.0 °C 10.0 °C	°C	40
temperature				40
Calibrate room temp sensor on	0.0 K	– 3.0 K 3.0 K (only with FB 10)	К	47
FB10				47
Mixer running time	140 s	10 s 600 s	S	47
Minimum outside temperature	– 15 °C	– 30 °C 0 °C	°C	47
Building storage capacity	50 %	0 % 100 %	%	47
Calibrate internal room temp	0.0 K	– 3.0 K 3.0 K	К	47
sensor				41

## 8.1.3 INSTALLER SETTINGS: Solar system config

Menu structure	Factory		Personal	Description
Solar system config	setting	Setting range	setting	from page
Solar sys option E Thermal	No	No   Yes		49
disinfection				49

## 8.1.4 INSTALLER SETTINGS: Solar sys parameters

Menu structure	Factory		Personal	Description
Solar sys parameters	setting	Setting range	setting	from page
1. Standard system	-	-	-	
SP: ON temperature	8 K	3 K 20 K	К	
difference		(not lower than "SP: OFF		
		temperature difference" +1 K)		
SP: OFF temperature	4 K	2 K 19 K	К	
difference		(not higher than "SP: ON		
		temperature difference" – 1 K)		48
T2: Max. solar cylinder	60 °C	15 °C 95 °C	°C	
temperature				
Maximum collector	130 °C	90 °C 135 °C	°C	
temperature				
SP: Collector grp 1 pump	Auto	Auto   Manual On   Manual Off		
mode				
PE: Therm disinfect pump mode	Auto	Auto   Manual On   Manual Off		49
Solar optimisation				
Collector group 1 area	0.0 m <sup>2</sup>	0.0 m <sup>2</sup> 150.0 m <sup>2</sup>	m <sup>2</sup>	
Collector group 1 type	Flat plate	Flat plate collector   Vac tube		
	collector	collector		40
Climate zone	90	0 255		49
Optimizing influence DHW	0 K	0 K (= function off) 20 K	К	
CH circuit optimizing	0.0 K	0.0 K (= function off) 5.0 K	К	
influence				
Run solar system	No	No   Yes		51

## 8.1.5 INSTALLER SETTINGS: Fault history

Menu structure	Factory		Personal	Description
Fault history	setting	Setting range	setting	from page
01.01.2012	-	-	-	
16:11				
Fault EA				
(example for last fault)				
25.09.2012	-	-	-	51
18:45				
FAULT 44 - IPM IDENT. 10				
(up to a maximum of 19				
previous faults)				

## 8.1.6 INSTALLER SETTINGS: Cust service address

Menu structure			Personal	Description
Cust service address	Example	Setting range	setting	from page
Telephone number	012345 6789	Max. 20 characters		
Name	Heating	Max. 20 characters		51
	contractor			

### 8.1.7 INSTALLER SETTINGS: System info

Menu structure			Personal	Description
System info	Example	Setting range	setting	from page
Installation date	22.10.2012	-	-	
	(activated on			
	commissioning)			
Boiler part number	7 777 777 777	-	-	
	(data from heating			
	appliance)			
Boiler date of manufacture	27.06.2012 (data	-	-	
	from heating			51
	appliance)			51
Controller part number and	7 777 777 777	-	-	
model	FW 120 (fixed			
	factory setting)			
Controller date of manufacture	27.06.2012 (fixed	-	-	
	factory setting)			
Controller software version	JF11.12 (fixed	-	-	
	factory setting)			

## 8.1.8 INSTALLER SETTINGS: Floor drying

Menu structure			Personal	Description
Floor drying	Factory setting	Setting range	setting	from page
Cancel floor drying <sup>1)</sup>	No	No   Yes		
Maximum CH flow temperature	25 °C	25 °C 60 °C	°C	
Maintain max CH flow temp for	1 d	1 d 20 d	d	
Total floor drying time	calculated	calculated 60 d (not lower than	-	
		"Maintain max CH flow temp for")		52
Start date		Today 31.12.2099		
		(in year/month/day steps)		
Start time	:	00:00 23:59		
		(in hour/minute steps)		

1) Only available if "Floor drying" is active.

## 8.2 Configuring the heating system

### Installer settings: System configuration

For menu structure and setting ranges  $\rightarrow$  page 39.



For system examples, see the IPM manual. For further systems, see the technical guides.

Use this menu if you want to configure the system automatically or manually. For example, during commissioning or when altering the system.

- Set DIP switch at IPM 1 to 1.
- Switch ON the system.
- Set FB 10 or FB 100 to **1**.
- Start automatic configuration.
- Check the other menu points under System configuration and, if necessary, adjust manually to suit the current system.

## 8.3 Parameters for heating

#### Installer settings: Heating parameters

For menu structure and setting ranges  $\rightarrow$  page 40.



Set the flow temperature controller on the heating appliance to the maximum required flow temperature.

Use this menu if you want to adjust the parameters for the heating system. For example, the heating curve can be calculated with these parameters.

## Menu: Heating parameters > Heating circuit type

- Selecting the heating type:
  - Foot point/End point: Default settings for a level heating curve are used according to the classic base point/end point method.
  - Underfloor heating: Default settings for an uneven heating curve as in an underfloor heating circuit are used.
  - Radiators: Default settings for an uneven heating curve as in a radiator heating circuit are used.
  - Convectors: Default settings for an uneven heating curve as in a convector heating circuit are used.

i

Parameters not used in a particular type of heating system are not shown.



Fig. 19 Default basic setting of heating curve for base point/end point



Fig. 20 Factory setting for heating curve for underfloor heating systems

- AT Outside temperature
- VL Flow temperature



Fig. 21 Default setting for heating curve in radiator heating system



Fig. 22 Default setting for heating curve in convector heating system

### Menu settings INSTALLER SETTINGS (contractors only) | 45

Default setting of parameters for				
heating curve	Foot point/End point	Underfloor heating	Radiators	Convectors
Heating surface exponent (fixed	-	1.1	1.3	1.4
value), curvature of heating curve				
Minimum outside temperature	-	– 15 °C	– 15 °C	– 15 °C
Foot point	25 °C	-	-	-
End point	75 °C	-	-	_
Design flow temp.	-	45 °C	75 °C	80 °C
Maximum CH flow temperature	80 °C	55 °C	80 °C	80 °C
Room temperature offset	0.0K	0.0K	0.0K	0.0K
Heating off at outside temperature	20 °C	20 °C	20 °C	20 °C

Tab. 8

#### Menu: Heating parameters > Foot point

 Set the base point of the heating curve according to the classic base point/end point method.

#### Menu: Heating parameters > End point

 Set the end point of the heating curve in line with the classic base point/end point method.

#### Menu: Heating parameters > Design flow temp.

- Set the design flow temperature to suit the type of heating system:
  - For Underfloor heating e.g. 45 °C set flow temperature.
  - For **Radiators** e.g. 75 °C set flow temperature.
  - For **Convectors** e.g. 80 °C set flow temperature.

## Menu: Heating parameters > Maximum CH flow temperature

- Set the maximum flow temperature to suit the type of heating system:
  - For Underfloor heating e.g. 55 °C maximum set flow temperature.
  - For Radiators e.g. 80 °C maximum set flow temperature.
  - For **Convectors** e.g. 80 °C maximum set flow temperature.

#### Menu: Heating parameters > Room influence

**Room influence** only appears if the controller is wall mounted.

- Set the room temperature influence on the heating curve:
  - **0 %**: No room temperature influence
  - 100 %: Maximum room temperature influence

### Menu: Heating parameters > Room influence enabled for levels

- Select the operating modes during which room temperature influence should be active:
  - **Eco/Frost**: Room temperature influence is only active in these operating modes.
  - **Comfort/Eco/Frost**: Room temperature influence is always active.

## Menu: Heating parameters > Sensor(s) used for room influence

**Sensor(s) used for room influence** only appears if a remote control FB 10 is connected.

- ► Select Sensor(s) used for room influence:
  - Lower temperature: Of the temperature sensors fitted in FW 120 and in FB 10, the one with the lower captured temperature is used.
  - Internal sensor: The temperature sensor fitted inside the controller FW 120 is used.
  - Sensor on FB10: The temperature sensor fitted inside the remote control FB 10 is used.

## Menu: Heating parameters > Room temperature offset

 Set the constant raising of the required room temperature, e.g. to correct deviations due to the system.

## Menu: Heating parameters > Heating off until lower level reached

- ► Select the cool-down phase:
  - **No**: Heating mode corresponds to the heating curve.
  - Yes: Heating operation according to the heating curve, however no heating operation during the cool-down phase until the current room temperature (e.g.
     Comfort = 21.0 °C) reaches the required room temperature of the next operating mode down for the first time (e.g.
     Economy with 15.0 °C). Afterwards, heating commences in accordance with the next operating mode down (e.g
     Economy with 15.0 °C).

## Menu: Heating parameters > Heating off at outside temperature

- Set the outside temperature at which the heating system should switch off:
  - 10 °C ... 25 °C: Outside temperature at which the heating system switches off.
  - 99 °C: Function switched off, i.e. the heating system can switch on at any outside temperature.

## Menu: Heating parameters > Freezing risk at outside temperature



**NOTICE:** Heating water pipework may freeze if the frost threshold is set too low and there are long periods of outside temperatures below 0 °C.

- Factory setting of the frost threshold (3 °C) must only be adjusted to the system by a heating contractor.
- Don't set the frost threshold too low.

Damage caused by the frost threshold being set too low is not covered by the warranty.

- If the outside temperature exceeds the set frost threshold temperature by 1 K (°C) and there is no heat demand, then the heating circuit pump switches off.
- If the outside temperature does not reach the frost threshold temperature, then the heating circuit pump switches on (system frost protection).
- Set the frost threshold temperature at which the heating system should switch on.

## Menu: Heating parameters > Calibrate room temp sensor on FB10

**Calibrate room temp sensor on FB10** only appears if a remote control FB 10 is assigned.

Use this menu if you want to correct the displayed room temperature.

- Position a precision instrument near FB 10. The precision instrument must not transfer any heat to the FB 10.
- ► Keep away from heat sources such as sunlight, body heat, etc. for 1 hour.
- Adjust the displayed room temperature correction value.

#### Menu: Heating parameters > Mixer running time

► Set the **Mixer running time** to the runtime of the fitted mixer servomotor.

## Menu: Heating parameters > Minimum outside temperature

 Set the minimum outside design temperature for the heating system (standard value → table 9).

A low outside temperature results in a flat heating curve.

	Minimum outside temperature
Location	in °C
Brisbane	4
Canton	15
Chongqing	3
Hong Kong	6
Melbourne	0
Shanghai	-1
Sydney	5

Tab. 9 Minimum outside temperatures for China and Australia

### Menu: Heating parameters > Building storage capacity

- Set the factor for the thermal storage capacity of the building.
  - ≥ 50 %: Building of solid construction (e.g. well insulated brick house).
  - ≤ 50 %: Building of light construction (e.g. wood or steel frame structure).

## Menu: Heating parameters > Calibrate internal room temp sensor

**Calibrate internal room temp sensor** only appears if the controller is wall mounted.

Use this menu if you want to correct the displayed room temperature.

- Position a precision instrument near FW 120. The precision instrument must not transfer any heat to the FW 120.
- ► Keep away from heat sources such as sunlight, body heat, etc. for 1 hour.
- Adjust the displayed room temperature correction value.

# 8.4 Configuring the solar thermal system

#### Installer settings: Solar system config

For menu structure and setting ranges → page 40.

Use this menu if you want to set the thermal disinfection function for the solar thermal system.

 In addition to the 1. Standard system set option Solar sys option E Thermal disinfection.

The pump (PE) is switched via menu **Thermal** disinfection ( $\rightarrow$  chapter 6.3.6 on page 32), and the entire cylinder volume is heated to the required thermal disinfection temperature.

# 8.5 Parameters for solar thermal system



Fill and vent the solar thermal system according to its documentation and prepare it for commissioning as described this chapter.

#### Installer settings: Solar sys parameters

For menu structure and setting ranges  $\rightarrow$  page 41.

The factory settings of the parameters in this menu are generally suitable for most common system dimensions. Use this menu if you want to finely adjust the parameters to suit the installed solar thermal system.



Details shown in brackets are positions that are also used in the connection diagrams with system examples in the installation instructions of the ISM.

## 8.5.1 Parameters for the standard solar thermal system

## Menu: Solar sys parameters > 1. Standard system > SP: ON temperature difference

For the solar circuit pump (SP):

Set a higher value if the pipe runs between the collector array and the solar cylinder are very long (e.g. ≥ 30 m single length).

#### -or-

- Set a lower value:
  - If the pipe runs between the collector array and the solar cylinder are very short (e.g. attic installations).
  - If the thermal connection of the collector temperature sensor (T<sub>1</sub>) is unfavourable (e.g. installation of T<sub>1</sub> outside the collector at the collector flow outlet).

### Menu: Solar sys parameters > 1. Standard system > SP: OFF temperature difference

Same procedure as for the last menu point SP:
 ON temperature difference.

Menu: Solar sys parameters > 1. Standard system > T2: Max. solar cylinder temperature

Detailed description regarding T2: Max. solar cylinder temperature  $\rightarrow$  page 35.

#### Menu: Solar sys parameters > 1. Standard system > Maximum collector temperature

At temperatures above 140 °C and system pressures < 4 bar, the heat transfer fluid in the collector evaporates. The solar circuit pump remains blocked until the collector has cooled to a temperature at which there is no more vapour in the solar circuit.

Measuring point, temperature sensor (T<sub>1</sub>):

Set a higher value if the installed pipe runs, pumps etc. can operate with an operating pressure ≥ 6 bar and are suitable for higher temperatures.

#### -or-

 Set a lower value if the installed pipe runs, pumps etc. can only operate with a very low operating pressure and are only suitable for lower temperatures.

## Menu: Solar sys parameters > 1. Standard system > SP: Collector grp 1 pump mode

- Select the operating mode of the solar circuit pump (SP):
  - **Auto**: Automatically controlled operation according to the set parameters.
  - Manual On: Switches the pump permanently on (e.g. for venting the solar thermal system during commissioning).
  - Manual Off: Switches the pump permanently off (e.g. for servicing the solar thermal system without having to interrupt heating operation).

## 8.5.2 Parameters for thermal disinfection

## Menu: Solar sys parameters > PE: Therm disinfect pump mode

- Select the operating mode for the pump (PE) for thermal disinfection:
  - **Auto**: Automatically controlled operation according to the set parameters.
  - Manual On: Switches the pump permanently on (e.g. for function test during commissioning).
  - Manual Off: Switches the pump permanently off (e.g. for servicing the pump without having to interrupt heating operation).

### 8.5.3 Parameters for solar optimisation

Solar optimisation is performed automatically according to the available solar output. Calculation of the solar output requires a specification of the installed collector area, the collector type and the climate zone where the system is installed.

## Menu: Solar sys parameters > Solar optimisation > Collector group 1 area

 Set the installed surface area of the collector array.

Collector type	Gross area per collector in m <sup>2</sup>
FK 210	2.1
FK 240	2.4
FK 260	2.6
VK 180	1.8
FKT-1	2.4
FKC-1	2.4
FKB-1	2.4

Tab. 10 Gross collector areas

### Menu: Solar sys parameters > Solar optimisation > Collector group 1 type

 Select the installed collector type for the collector array.

### Menu: Solar sys parameters > Solar optimisation > Climate zone

 Set the value for the climate zone of the installation location.



Fig. 23 Map with the climate zones

If the location where the system is installed cannot be found on the climate zone map  $(\rightarrow Fig. 23)$ :

 Do not change the factory-set value for solar optimisation.

-or-

• Use the climate zone value that is closest to the location where the system is installed.

## Menu: Solar sys parameters > Solar optimisation > Optimizing influence DHW

Detailed description regarding **Optimizing** influence DHW  $\rightarrow$  page 35.

### Menu: Solar sys parameters > Solar optimisation > CH circuit optimizing influence

Detailed description regarding CH circuit optimizing influence  $\rightarrow$  page 35.

## 8.5.4 Commissioning the solar thermal system

### Menu: Solar sys parameters > Run solar system

- Fill and vent the solar thermal system.
- Check the parameters for the solar thermal system and, if necessary, finely adjust them to suit the installed system.
- Take the solar thermal system into use:
  - Yes: Solar thermal system is active. The ISM control outputs are enabled for automatic control purposes.
  - No: Solar thermal system is not active. The ISM control outputs are disabled for automatic control purposes but can be switched on manually.

## 8.6 Fault history

### Installer settings: Fault history

For menu structure  $\rightarrow$  page 41.

Contractors can use this option to view the last 20 faults that may have occurred on the system (fault date, source, code and description). The faults shown first may still be active.

# 8.7 Viewing and entering the customer service address

### Installer settings: Cust service address

For menu structure and setting range  $\rightarrow$  page 42.

Contractors can enter their telephone number and address here.



To enter spaces:

 If the selected character is shown with a dark background, delete by pressing (space = \_ )

## 8.8 Viewing system information

### Installer settings: System info

For menu structure  $\rightarrow$  page 42.

To show various items of system information:

- Installation date (automatically activated during commissioning)
- **Boiler part number** (fixed value from the heating appliance)
- **Boiler date of manufacture** (fixed value from the heating appliance)
- Controller part number and model (fixed factory-set value)
- Controller date of manufacture (fixed factory-set value)
- **Controller software version** (fixed factory-set value)

## 8.9 Screed drying function

#### Installer settings: Floor drying

For menu structure and setting range  $\rightarrow$  page 42.

NOTICE: Screed destruction!
 Connect any non-mixed heating circuit directly to the heating appliance. For this, the heat drawn via the screed to be dried

- must be greater than the minimum output of the heating appliance.
- Program screed drying function in accordance with screed manufacturer's instructions.
- In spite of the screed drying function, visit the system daily and make the prescribed reports.

The screed drying function allows fresh screed on underfloor heating to be dried in accordance with the screed manufacturer's instructions.



DHW heating is not possible from programming to completing the screed drying function.

### Menu: Floor drying > Cancel floor drying

 This function can be switched off with Yes if the screed drying function is activated.

## Menu: Floor drying > Maximum CH flow temperature

 Enter the maximum flow temperature (1) for the screed drying function.

## Menu: Floor drying > Maintain max CH flow temp for

 Set period (2) for the maximum flow temperature.

### Menu: Floor drying > Total floor drying time

The total duration is automatically calculated. For this, the flow temperature increases by no more than 10 K per day. If this temperature rise is incompatible with the specific screed, extend the total duration. This produces a corresponding reduction in the daily increase. The first and last stages of the flow temperature are 25 °C (fixed value).

Example:

Maximum flow temperature (1) = 50 °C Duration of maximum flow temperature (2) = 7 days Max. increase/decrease in temperature per day = 5 K

$$2 d \times \frac{50 °C - 25 °C}{5 K} + 7d = 17d$$

Total duration of screed drying (3) = 17 days

 Set the total duration (3) for the screed drying function.

### Menu: Floor drying > Start date

 Set the start date (4) for the screed drying function.

### Menu: Floor drying > Start time

 Set the start time (4) for the screed drying function.



- **1d** 1 day (fixed value)
- **1** Maximum flow temperature
- 2 Duration of max. flow temperature
- **3** Total duration of screed drying
- 4 Start date and start time
- t Time
- VL Flow temperature

## 9 Troubleshooting

BUS device faults are indicated.

A heating appliance fault (e.g. EA fault) is displayed with the relevant advice.

• Contact your installer.

•	
1	

For the contractor:

 Remedy the fault in accordance with the heating appliance documentation.

## 9.1 Troubleshooting with display (contractors only)



Fig. 25 Fault display

- 1 Fault number
- 2 BUS subscriber which detected the fault and reported it to the controller
- 3 Description of fault
- 4 Code or additional information about fault

The current fault is displayed on the controller and on the remote control (on FB 10 without text):

 Determine the BUS subscribers concerned with the current fault. The fault can only be rectified on the BUS subscriber from which the fault originates.

Information displayed ( $ ightarrow$ items 1, 3 and 4 in Fig. 25)					
Text	Code	Cause	Remedy (by contractor)		
Fault 01 BUS communication fault	10	BUS subscriber FB 100 assigned to IPM no longer responds.	Check BUS subscriber, BUS connection and repair circuit break if necessary.		
	200	Heating appliance no longer reporting.			
	201	Incorrect BUS subscriber connected.	Identify and replace incorrect BUS subscriber.		

Information displayed (→ items 1, 3 and 4	in Fig. 2	25)	
Text	Code	Cause	Remedy (by contractor)
Fault 02	40	Incorrect BUS subscriber	Identify and replace incorrect
Internal fault		connected.	BUS subscriber.
	41	Two identical codes entered at	Switch system off and correct
		IPM.	coding.
	42	DIP switch on IPM in	
		intermediate position.	
	50	Thermal disinfection via IPM	Turn flow temperature
		failed.	controller on heating appliance
			fully clockwise.
	100	ISM not responding.	Check BUS connection and
			repair circuit break if
	054	E 11 01	necessary.
	254	Fault message overflow.	-
Fault 02	205	See display text. "	Check parameter settings and
Some parameters reset to factory settings			and replace faulty controller/
due to FEPROM problem			remote control
Fault 02	255	See display text. <sup>1)</sup>	Identify and replace faulty
Internal fault	200		controller/remote control.
FW 120/FB100 can no longer control CH			,
system			
Fault 03	20	Room temperature sensor built	Identify and replace faulty
Room temp sensor faulty		into FW 120/FB 100/FB 10 has	controller or remote control.
		suffered a break.	
	21	Short circuit on room	
		temperature sensor built into	
		FW 120/FB 100/FB 10.	
Fault 10	195	See display text. <sup>1)</sup>	Check system layout, check
System configuration: invalid Remote			system configuration, and
control detected or set for non-existent			modify if necessary.
	101	Cas diamtau taut 1)	
Fault 11 System configuration: new BUS device	131	See display lext.	
New ISM detected. Power up all ISMs	152		
simultaneously and start automatic system			
configuration.			
Fault 11	134		
System configuration: new BUS device			
New remote control detected. Check and			
modify system configuration.			
Fault 11	135		
System configuration: new BUS device	137		
New IPM detected. Check and modify system	139		
configuration.	170		
Fault 12 System configuration, PLIS device missing	170	See display text. */	
ISM1/ISM2not detected. Check connection.	111		
Fault 02         Internal fault         Some parameters reset to factory settings         due to EEPROM problem         Fault 02         Internal fault         FW 120/FB100 can no longer control CH         system         Fault 03         Room temp sensor faulty         Fault 10         System configuration: invalid Remote         control detected or set for non-existent         heating circuit. Check identification.         Fault 11         System configuration: new BUS device         New ISM detected. Power up all ISMs         simultaneously and start automatic system         configuration: new BUS device         New remote control detected. Check and         modify system configuration: new BUS device         New remote control detected. Check and         modify system configuration: new BUS device         New IPM detected. Check and modify system         configuration.         Fault 11         System configuration: new BUS device         New IPM detected. Check and modify system         configuration.         Fault 12         System configuration: BUS device missing         ISM1/ISM2not detected. Check connection.	254 205 255 20 21 195 131 132 134 134 135 137 139 170 171	Fault message overflow. See display text. <sup>1)</sup> See display text. <sup>1)</sup> Room temperature sensor built into FW 120/FB 100/FB 10 has suffered a break. Short circuit on room temperature sensor built into FW 120/FB 100/FB 10. See display text. <sup>1)</sup> See display text. <sup>1)</sup> See display text. <sup>1)</sup>	- Check parameter settings and readjust as necessary. Identify and replace faulty controller/ remote control. Identify and replace faulty controller/remote control. Identify and replace faulty controller or remote control. Check system layout, check system configuration, and modify if necessary.

1) The display text is shown at the BUS subscriber (e.g. remote control) that has identified the fault. The other BUS subscribers will instead display the code that corresponds to the display text.

Information displayed ( $\rightarrow$ items 1, 3 and 4	Information displayed (→ items 1, 3 and 4 in Fig. 25)							
Text	Code	Cause	Remedy (by contractor)					
Fault 12 System configuration: BUS device missing Previously present IPM for cylinder downstream of low loss header not detected. Check identification.	172	See display text. <sup>1)</sup>	Check and correct code. With IPM isolated from power supply.					
Fault 12 System configuration: BUS device missing IPM for cylinder downstream of low loss header not detected. Check connection and identification.	173	See display text. <sup>1)</sup>						
Fault 12 System configuration: BUS device missing Remote control with identification 1 not detected. Check connection and identification.	175	See display text. <sup>1)</sup>						
Fault 12 System configuration: BUS device missing IPM with identification 1 not detected. Check connection and identification.	178 179	See display text. <sup>1)</sup>						
Fault 13 System configuration: BUS device changed or replaced Check system configuration for DHW or start automatic system configuration.	157	See display text. <sup>1)</sup>						
Fault 13 System configuration: BUS device changed or replaced Check system configuration for heating circuit x and connections on IPM for heating circuit x.	159	See display text. <sup>1)</sup>						
Fault 14 System configuration: incompatible BUS device DHW controlled by boiler. IPM control of DHW has no effect.	117	See display text. <sup>1)</sup>	Identify incompatible BUS subscriber and remove from system.					
Fault 14 System configuration: incompatible BUS device IPM for cylinder must be set to identification 3 or higher.	119	See display text. <sup>1)</sup>						
Fault 15 Outside temperature sensor not connected Outside temperature is not available.	30	See display text. <sup>1)</sup>	Check outside temperature sensor and repair any lead break.					
Fault 19 Unable to save parameter settings	202	BUS subscriber configured but not available at present.	Check system layout, check system configuration, modify if necessary and reset parameter.					
Fault 20 System configuration: invalid	193	Invalid code in remote control for heating circuit.	In conjunction with FW 120 only code 1 is possible in the remote control.					

1) The display text is shown at the BUS subscriber (e.g. remote control) that has identified the fault. The other BUS subscribers will instead display the code that corresponds to the display text.

## 56 | Troubleshooting

Information displayed ( $ ightarrow$ items 1, 3 and 4	Information displayed (+) items 1, 3 and 4 in Fig. 25)							
Text	Code	Cause	Remedy (by contractor)					
Fault 21 System configuration: new BUS device	135 137 139	See display text on remote cont	rol.					
Fault 22	178	IPM not recognised on remote	Check IPM connection and					
System configuration: BUS device missing	179	control with code 1.	code and adjust if required.					
Fault 23 System configuration: BUS device changed or replaced	159	System configuration on remote control for heating circuit 1 and IPM connections for heating circuit 1 not permissible.	Check system configuration for heating circuit 1 and IPM connections for heating circuit 1.					
Fault 24 System configuration: incompatible BUS device	119	See display text on remote cont	rol.					
Fault 28 Remote control is fitted on heat source	155	Remote control fitted inside heating appliance.	Install remote control in living space.					
Fault 29 Unable to save parameter settings	202	BUS subscriber configured but not available at present.	Check system structure, check system configuration, adjust as necessary and reset parameters on remote control.					
Fault 30 Mixer temperature sensor faulty	7	Mixer temperature sensor (MF) connected to IPM faulty.	Check mixer temperature sensor (MF) and replace if necessary.					
Fault 31 External CH flow temperature sensor faulty	6	Common temperature sensor (VF) connected to the IPM faulty.	Check common temperature sensor (VF) and replace if required.					
Fault 32 Cylinder temperature sensor faulty	8	Cylinder temperature sensor (SF) connected to the IPM faulty.	Check cylinder temperature sensor (SF) and replace if required.					
Fault 33 Temperature sensors incorrectly connected	20	Cylinder temperature sensor (SF) and mixer temperature sensor (MF) are connected to the IPM.	Remove one of the temperature sensors (SF or MF).					
	21	Two common temperature sensors (VF) are connected to the IPM.	Remove one of the common temperature sensors (VF).					
	22	Temperature sensor connected to IUM.	Remove temperature sensor and insert a coding plug if necessary.					
Fault 34 Temperature sensors connected and mode of operation do not match	23	Temperature sensor connected to IPM and associated operating mode do not match.	Check temperature sensor and associated operating mode and adjust if necessary.					
Fault 40 Temperature sensor T1 on collector group 1 faulty	101 102	Short circuit on sensor lead (T <sub>1</sub> ). Break in sensor lead (T <sub>1</sub> ).	Check temperature sensor (T <sub>1</sub> ) and replace if necessary.					
Fault 41	103	Short circuit on sensor lead	Check temperature sensor $(T_2)$					
Temperature sensor T2 at bottom of solar		(T <sub>2</sub> ).	and replace if necessary.					
cylinder faulty	104	Break in sensor lead (T <sub>2</sub> ).						

Information displayed ( $ ightarrow$ items 1, 3 and 4 in Fig. 25)								
Text	Code	Cause	Remedy (by contractor)					
Fault 50 Solar pump jammed or air in system	121	Solar circuit pump (SP) sticking due to physical blockage.	Unscrew and remove slotted screw on pump head and use a screwdriver to release pump shaft. Do NOT strike the pump shaft with the screwdriver.					
		Air in solar thermal system.	Vent solar thermal system and top up with heat transfer fluid if necessary.					
Fault 51 Incorrect temperature sensor type connected	122	Collector temperature sensor type used as cylinder temperature sensor (T <sub>2</sub> ).	Use correct type of temperature sensor. → Specification in ISM					
	123	Cylinder temperature sensor type used as collector temperature sensor (T <sub>1</sub> )	installation instructions.					
	132	Temperature sensor type PTC 1000 used as cylinder temperature sensor (T <sub>2</sub> ).						
	133	Temperature sensor type PTC 1000 used as collector temperature sensor (T <sub>1</sub> ).						
Fault 52 Temperature sensors reversed	124	Temperature sensors $(T_1 \text{ and } T_2)$ reversed.	Check temperature sensors and swap connections if necessary.					
Fault 53 Temperature sensor fitted in wrong location	125	Collector temperature sensor (T <sub>1</sub> ) fitted on collector array inlet.	Fit collector temperature sensor ( $T_1$ ) close to collector array outlet.					
Fault 54 Temperature for thermal disinfection not	145	Maximum temperature for solar cylinder too low.	Set higher maximum temperature for solar cylinder.					
reached in solar cylinder		Pump rate of disinfection pump (PE) too low.	Select higher pump stage on disinfection pump (PE) or, if possible, open butterfly valve further.					
		Thermal disinfection terminated manually before required temperature was reached in solar cylinder.	This is not a fault.Message is shown only for 5 minutes.					
Fault 55 Solar system not yet commissioned	146	Solar thermal system is not yet in operation.	Fill and vent solar thermal system according to its documentation and prepare it for commissioning. Then start up solar thermal system.					
Fault 56	147	Pump (SP) in manual mode.	Reset pump parameter to					
At least one pump/valve in manual mode	154	Pump (PE) operated manually.	"Auto".					

## 9.2 Troubleshooting without display

Problem	Cause	Remedy			
Required room temperature	Thermostatic valve(s) set too low.	Set thermostatic valve(s) higher.			
not achieved.	Heating curve set too low.	Set "Heating levels" for "Comfort" higher or arrange for your contractor to correct the heating curve.			
	Flow temperature controller on heating	Set flow temperature controller higher.			
	appliance set too low.	Reduce influence of solar optimisation if necessary.			
	Air lock in heating system.	Bleed radiators and vent heating system.			
Heating lasts too long.	"Heating up speed" set too low.	Set "Heating up speed", for example, to "Fast".			
Required room temperature	Radiators become too hot.	Set thermostatic valve(s) lower.			
greatly exceeded.		Set "Heating levels" for "Comfort" lower or arrange for your contractor to correct the heating curve.			
	Installation location of FW 120 unfavourable, e.g. external wall, close to window, in a draught,	Select a better installation location for FW 120 and ask your heating contractor to reposition it.			
Excessive room temperature fluctuations.	Temporary influence of external heat on the room, e.g. through solar radiation,	Arrange for your contractor to increase "Room influence".			
	lighting, TV, fireplace etc.	Select a better installation location for FW 120 and ask your heating contractor to reposition it.			
Temperature rises instead of falling.	Time incorrectly set.	Check time setting.			
Room temperature too high during "Economy" and/or "Frost" mode.	Building retains a lot of heat.	Set an earlier switching time for "Economy" and/or "Frost".			
Incorrect or nocontrol.	BUS connection of BUS subscribers faulty.	Ask your heating contractor to check the BUS connection against the wiring diagram and correct it if required.			
Controller can only be set to automatic mode.	Operating mode selector faulty.	Have FW 120 replaced by your contractor.			
DHW cylinder does not heat	DHW temperature controller on heating	Set DHW temperature controller higher.			
up.	appliance set too low.	Reduce influence of solar optimisation if necessary.			
	Flow temperature controller on heating appliance set too low.	Turn flow temperature controller on heating appliance fully clockwise.			

If the fault persists:

 Call an authorised contractor or the customer service department and inform them of the fault, quoting the appliance details (from type plate inside flap).

### **Appliance details**

Type:

.....

Part number:

.....

Date of manufacture (FD...):

.....

## 10 Energy saving tips

- With weather-compensated control, the flow temperature is controlled in accordance with the set heating curve: The colder the outside temperature, the higher the flow temperature. Save energy: Set the heating curve as low as possible in accordance with the building's insulation and the system conditions (→ chapter 8.3 from page 43).
- Underfloor heating: Never set the flow temperature higher than the maximum flow temperature recommended by the manufacturer (e.g. 60 °C).
- Make effective use of the temperature levels and switching points by setting them to suit the preferences of the occupants.
  - Comfort 🔆 = Comfortable living environment
  - Economy (( = Active living environment
  - Frost 🗱 = Away from home or asleep
- Set the thermostatic valves in all rooms so that the required room temperature can be achieved. Only increase the temperature levels if the temperature has not reached after some time (→ chapter 6.2.2 on page 28).
- Much energy can be saved by reducing the room temperature via economy phases. Reducing the room temperature by 1 K (°C) enables up to 5 % energy to be saved. It is not recommended to let the room temperature of heated rooms fall below +15 °C during the daytime, otherwise the cooled-down walls continue to radiate cold and the room temperature rises higher, leading to higher energy consumption than if an even heat supply is applied.
- Good thermal insulation of the building: the set temperature for **Economy** is never reached. Nevertheless energy is being saved as the heating system stays off. In that case set the switching point for **Economy** to an earlier time.

- Don't keep windows slightly open for ventilation. This leads to a constant extraction of heat from the room without noticeably improving the ambient air in the room.
- Vent briefly but intensively (open window fully).
- When ventilating, turn off the thermostatic valve or set the mode selector to Frost.
- Make effective use of the temperature levels and switching times for DHW heating by setting them to suit the preferences of the occupants.

#### Solar optimisation

Activate the **Optimizing influence DHW** by setting a value between 1 K and 20 K → chapter 6.6 on page 35. If the influence of the **Optimizing influence DHW** is too great, reduce the value in stages.

Activate the **CH circuit optimizing influence** by setting a value between 1 K and 5 K → chapter 6.6 on page 35. If the influence of the **CH circuit optimizing influence** is too great, reduce the value in stages.

## **11** Environmental protection

Environmental protection is a fundamental corporate strategy of the Bosch Group. The quality of our products, their economy and environmental safety are all of equal importance to us and all environmental protection legislation and regulations are strictly observed. We use the best possible technology and materials for protecting the environment taking account of economic considerations.

## Packaging

Where packaging is concerned, we participate in country-specific recycling processes that ensure optimum recycling.

All packaging materials are environmentally compatible and can be recycled.

## Used appliances

Used appliances contain materials that should be recycled.

The components are easy to separate and the types of plastic are identified. This allows the various assemblies to be appropriately sorted for recycling or disposal.

## 12 Individual time program settings

The factory settings and personal settings for the time programs are summarised below.

## 12.1 Heating program

How to set the central heating program is described in chapter 6.2 on page 28.

		P1		P2		P3		P4		P5		P6
1111	* 0 *	Ŀ	* 0 *	Ŀ	* 0 *	Ŀ	*0 <b>*</b>	Ŀ	*0 <b>*</b>	Ŀ	* 0 *	Ŀ
					Fact	ory settings	5					
Mo - Th	☆	06:00	粼	22:00	-	-	-	-	-	-	-	-
Fr	☆	06:00	攀	23:30	-	_	-	-	-	_	-	-
Sa	☆	07:00	鱉	23:30	-	-	-	-	-	-	-	-
Su	☆	08:00	攀	22:00	-	-	-	-	-	-	-	-
					Pers	onal setting	S					
All days												
Mon - Fri												
Sat + Sun												
Monday												
Tuesday												
Wednesday												
Thursday												
Friday												
Saturday												
Sunday												

## 12.2 DHW program

How to set the DHW program is described in chapter 6.3 on page 29.

		P1		P2		P3		P4		P5		P6
	°C		°C		°C		°C		°C		°C	
					Fact	ory setting	s					
Mo - Th	60	05:00	15	23:00	-	-	-	-	-	-	-	-
Fr	60	05:00	15	23:00	-	-	-	-	-	-	-	-
Sa	60	06:00	15	23:00	-	-	-	-	-	-	-	-
Su	60	07:00	15	23:00	-	-	-	-	-	-	-	-
					Pers	onal settin	gs					
All days												
Mon - Fri												
Sat + Sun												
Monday												
Tuesday												
Wednesday												
Thursday												
Friday												
Saturday												
Sunday												

## 12.3 DHW circulation program

How to set the DHW circulation program is described in chapter 6.3 on page 29.

-		P1		P2		P3		P4		P5		P6
	On <b>/</b> Off		On <b>/</b> Off		On <b>/</b> Off		On <b>/</b> Off		On <b>/</b> Off		On <b>/</b> Off	
					Fac	tory setting	s					
Mo - Th	On	06:00	Off	23:00	-	-	-	-	-	-	-	-
Fr	On	06:00	Off	23:00	-	-	-	-	-	-	-	-
Sa	On	07:00	Off	23:00	-	-	-	-	-	-	-	-
Su	On	08:00	Off	23:00	-	-	-	-	-	-	-	-
					Pers	sonal settin	gs					
All days												
Mon - Fri												
Sat + Sun												
Monday												
Tuesday												
Wednesday												
Thursday												
Friday												
Saturday												
Sunday												

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