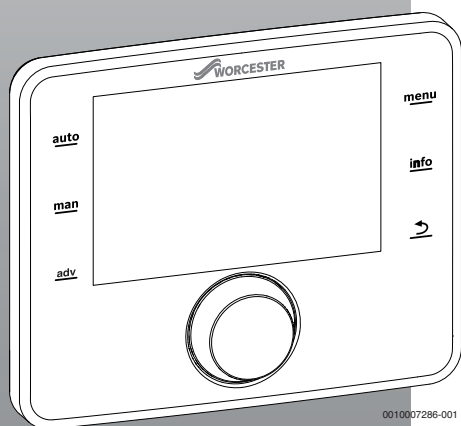


Operating Instructions

Solar controller

CS 200



0010007286-001



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1 Key to symbols and safety instructions

1.1 Explanation of symbols


Warning symbols

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.


The following keywords are defined and can be used in this document:

 **DANGER:**

DANGER indicates a situation that will result in severe injury or death.

 **WARNING:**

WARNING indicates a situation that could result in severe injury or death.


 **CAUTION:**

CAUTION indicates a situation that could result in minor to medium injury.

NOTICE:

NOTICE indicates a situation that could result in damage to property or equipment.

Important information



The info symbol indicates important information where there is no risk to people or property.

Additional symbols

Symbol	Meaning
►	a step in an action sequence
→	a reference to a related part in the document
•	a list entry
–	a list entry (second level)

Table 1

1.2 General safety instructions

⚠ Instructions for the target group

These operating instructions are intended for the heating system user.

All instructions must be observed. Failure to comply with instructions may result in material damage and personal injury, including possible loss of life.

- ▶ Read and retain the operating instructions (heat source, heating controller, etc.) prior to operation.
- ▶ Observe the safety instructions and warnings.

⚠ Determined use

- ▶ Only use the product to control solar heating systems in domestic or light commercial applications.

Any other use is considered inappropriate. We take no responsibility for damage caused through incorrect use.

⚠ Inspection and maintenance

Regular inspection and maintenance are prerequisites for safe and energy efficient operation of the heating system.

We recommend that an annual inspection takes place to ensure optimum Solar system performance.

- ▶ All service work or system faults should be carried out by a competent person.

⚠ Damage caused by frost

The solar system can freeze if it is switched off:

- ▶ Observe the notices regarding frost protection.
- ▶ Due to the additional functions, e.g. DHW heating or pump anti-seizure protection, the system should always be left on.
- ▶ Have faults rectified immediately.

⚠ Risk of scalding at the DHW draw-off points

- ▶ In order to avoid scalding a mixer must be installed in the DHW system. If in doubt, ask your installer.

2 Product Description

The CS 200 solar controller is used to control a solar system.

2.1 Declaration of Conformity



The design and operation of this product comply with European Directives and the supplementary national requirements. Conformity has been

demonstrated by the CE marking.

You can ask for a copy of the Declaration of Conformity for this product. Please refer to the contact address on the back cover of these instructions.

2.2 Operation after a power failure

No parameter settings are lost in the event of a power failure. When the power supply is restored, the solar controller resumes operation. If necessary, the date and time may need to be reset.

3 Overview of controls and symbols

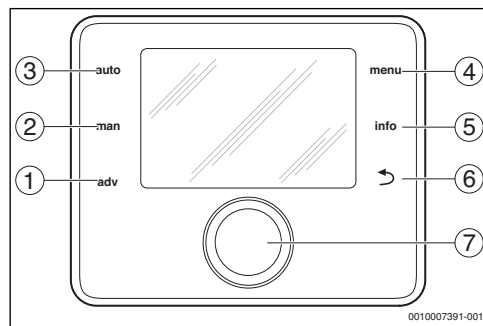


Fig. 1 Control elements

- [1] **adv key** – Lists the favourites
- [2] **man key** – Deactivates the automatic change of the temperature displayed in the standard display
- [3] **auto key** – Activates the automatic change of the temperature displayed in the standard display
- [4] **menu key** – Opens the main menu
- [5] **info key** – Opens the info menu (if standard display is active) or further information about the current selection
- [6] **Back key** – Returns to previous menu or discards a value (press briefly); returns to the standard display (hold down)
- [7] **Rotary control knob** – Selects (turn) and Confirms (press)



If the display lighting is dimmed, any button press activates the light. The user then interacts as required. The instructions in this manual assumes the display is already lit.

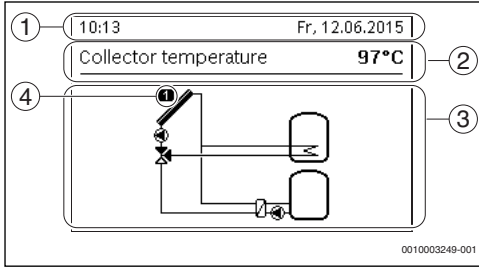


Fig. 2 Examples of symbols in the standard display

- [1] Information line – time, day of the week and date
- [2] Text information – Temperature sensor description and current, measured temperature If a fault is present, corresponding information will be displayed here until the fault has been rectified.
- [3] Graphic illustration of the system
- [4] Number and position of temperature sensors

4 Getting started

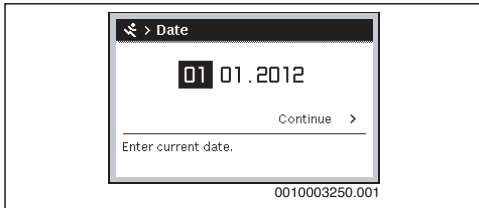
Setting the temperature display in the standard display

- ▶ Press the auto key to activate the automatic display change. The display automatically changes between the temperatures activated in the favourites menu.
- ▶ Press the **man key** to turn off the automatic temperature display change.

Setting the date and time

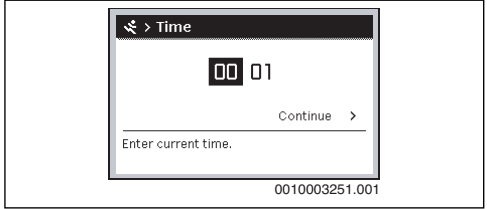
If the solar controller has been disconnected from the power supply for a prolonged period, the display will prompt the user to enter the date and time before reverting back to normal operation.

- ▶ Restore the power supply.
The solar controller displays the setting for the date.



- ▶ Turn the rotary control knob to set the day, month and year.
Continue is highlighted in the display.
- ▶ Press the rotary control knob.

- ▶ Set the time in the same way as the date.



Continue is highlighted in the display.

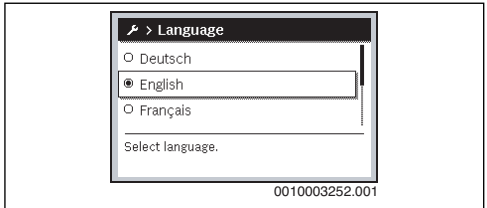
- ▶ Press the rotary control knob.
The solar controller operates with the modified settings. No other settings are required to recommission the solar controller.

Start/Stop key lock (child lock)

- ▶ Press and hold down the auto key and the rotary control knob for a few seconds to activate or deactivate the key lock.
When the key lock is enabled, the key symbol appears in the display.

Setting the language

- ▶ Press the menu key to open the main menu.
- ▶ Press the rotary control knob to open the **Settings** menu.
- ▶ Press the rotary control knob.
- ▶ Turn the rotary control knob to select a language.



- ▶ Press the rotary control knob.
The solar controller operates with the modified settings.

Opening the Favourites menu



The **adv key** allows the direct access to select the temperature sensor and elapsed times that are displayed on the standard display in case of automatic change.

- ▶ Press the **adv key** to open the Favourites menu.
- ▶ Turn the rotary control knob to select temperatures, elapsed times or all.
- ▶ Change the settings (procedure is the same as when making a setting in the main menu).

5 Working with the main menu

Menu structure of the main menu

Main menu

-  **DHW**
 - Temperature settings
 - DHW
 - Circulation
 - Circulation time
 - Operating mode time prog
 - Start frequency
 - My DHW circln time prog.
 - Circulation pulse
 - Thermal disinfection
 - Start
 - Start now
 - Cancel now
 - Temperature
 - Day
 - Time of day
-  **Settings**
 - Language
 - Time of day
 - Date
 - Autom. time changeover
 - Display contrast
 - Time correction

5.1 Changing the settings for DHW (Domestic Hot Water)

Menu: DHW

These settings are only available if a DHW system is installed in the system. The water can be heated via a cylinder or according to the instantaneous water heating principle.



WARNING:

Risk of scalding!

If thermal disinfection or the daily heat-up has been activated to avoid legionella, the DHW is heated once to in excess of 60 °C (e.g. Tuesday night at 02:00).

- Only carry out thermal disinfection/daily heat-up outside normal hours of use.
- Make sure that a thermal mixer is installed. If in doubt, ask your installer.

There is a factory-set custom time program for circulation (→ Chapter 5.1.2, page 5).

5.1.1 Setting the DHW temperature

The DHW temperature can be set in this menu.

Menu: Temperature settings

Menu item	Description
DHW	Desired DHW temperature (15 to 60 °C). Your installer can change the maximum value in the service menu.

Table 2 Temperature settings for DHW

5.1.2 Settings for the DHW circulation

A DHW circulation pump circulates DHW between the DHW cylinder and the draw-off point (e.g. sink or bath). This makes DHW available at the tap more quickly. Settings can be made determining when, and how often, the DHW circulation pump is activated.

This menu is only available for systems with DHW circulation pump.

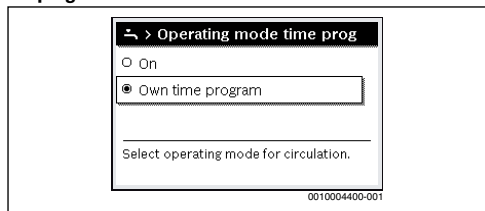
Menu: Circulation

Menu item	Description
Circulation time	If the circulation pump control is time-dependent, the DHW circulation pump runs at regular time intervals according to the settings under Start frequency.
Start frequency	The start frequency determines how often the DHW circulation pump goes into operation for three minutes every hour (1 × 3 minutes/h up to 6 × 3 minutes/h) or if it is constantly in operation. Whatever the case, circulation is only active during the times set in the time program.
Operating mode time prog	<ul style="list-style-type: none"> • Circulation can be switched off permanently (Off). If this setting is set to On, the pump will run according to the settings under "Start frequency". • Using Own time program a time program can be set for the DHW circulation pump.
My DHW circln time prog.	6 switching times (on/off times) can be set for each day or group of days. The DHW circulation pump can be switched on or off at each switching time. The minimum duration between two switching times is 15 minutes.
Circulation pulse	If the circulation control is pulse-dependent, the circulation is switched on for 3 minutes after a hot water usage at the tap.

Table 3 Settings for the circulation

Setting the operating mode

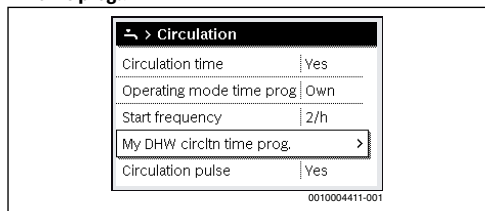
- ▶ If the standard display is active, press the menu key briefly to open or close the main menu.
- ▶ Press the rotary control knob to open the **DHW** menu.
- ▶ Turn the rotary control knob to highlight **Circulation**.
- ▶ Press the rotary control knob to open the **Circulation** menu.
- The **Operating mode time prog** menu item is highlighted.
- ▶ Press the rotary control knob.
- ▶ Turn the rotary control knob to highlight **Own time program**.



- ▶ Press the rotary control knob
- The solar controller operates with the modified settings.
- The switching times (on/off times) can be set separately in the **Circulation > My DHW circcltn time prog.** menu.

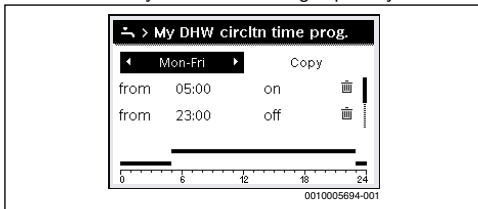
Opening the menu for the time program

- ▶ If the standard display is active, press the menu key briefly to open or close the main menu.
- ▶ Press the rotary control knob to open the **DHW** menu.
- ▶ Turn the rotary control knob to highlight **Circulation**.
- ▶ Press the rotary control knob to open the **Circulation** menu.
- ▶ Turn the rotary control knob to highlight **My DHW circcltn time prog.**



- ▶ Press the rotary control knob.

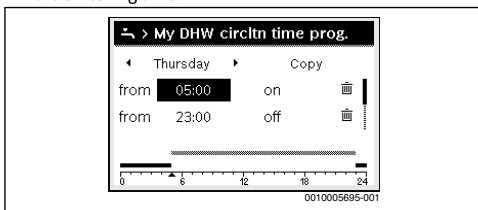
- ▶ Press the rotary control knob again to activate the input field for the day of the week or the group of days.



- ▶ Turn the rotary control knob to select a day of the week or a group of days and press the rotary control knob.
- The changes in this menu only affect the selected day of the week or the selected group of days.

Moving switching time

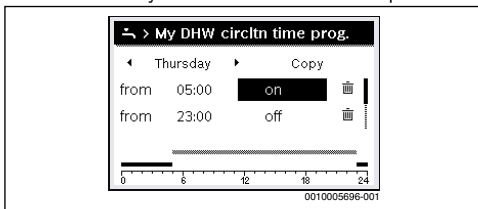
- ▶ Open the menu for adapting a time program for the circulation.
- ▶ Turn the rotary control knob to highlight a switching time.
- ▶ Press the rotary control knob to activate the input field for the switching time.



- ▶ Turn the rotary control knob to move the switching time.
- The modified time slot is displayed in grey in the time program bar chart.
- ▶ Press the rotary control knob.
- The solar controller operates with the modified settings.

Assigning an operating mode to a time slot

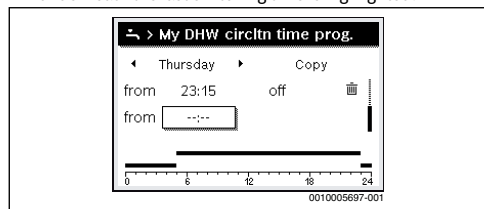
- ▶ Open the menu for adapting a time program for the circulation (→ top).
- ▶ Turn the rotary control knob to highlight the operating mode of a time slot.
- ▶ Press the rotary control knob to activate the input field.



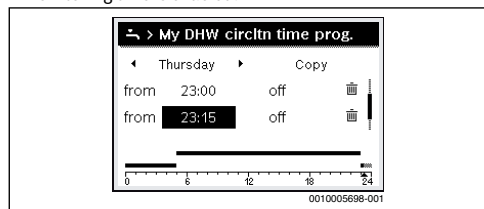
- ▶ Turn the rotary control knob to select and set an operating mode (**on** or **off**).
The modified time slot is displayed in grey in the time program bar chart.
- ▶ Press the rotary control knob.
The solar controller operates with the modified settings.
The DHW circulation pump is always off in the phases with **off**.

Adding time slots in the time program

- ▶ Open the menu for adapting a time program for the circulation.
- ▶ Turn the rotary control knob until the empty input field underneath the last switching time is highlighted.



- ▶ Press the rotary control knob.
A new switching time is added automatically 15 minutes after the last switching time. The input field for the new switching time is enabled.

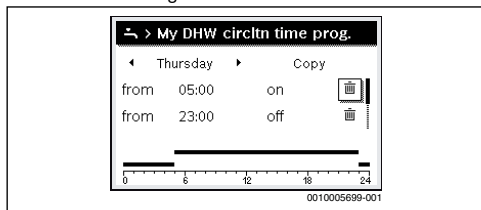


- ▶ Turn the rotary control knob to set the required time.
The new time slot is displayed in grey in the time program bar chart.
- ▶ Press the rotary control knob.
The switching times are automatically sorted in chronological order. The solar controller operates with the modified settings.

Deleting a time slot from the time program

- ▶ Open the menu for adapting a time program for the circulation.

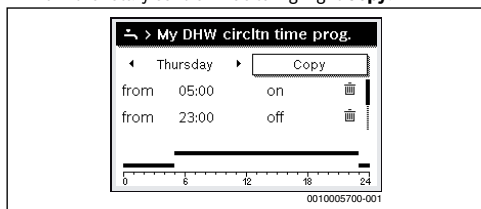
- ▶ Turn the rotary control knob to highlight a symbol for deleting a switching time . The symbol is associated with the switching time on the same line.



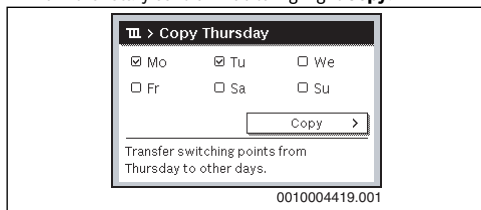
- ▶ Press the rotary control knob.
A pop-up window appears prompting you to confirm that the selected switching time is to be deleted.
- ▶ Turn the rotary control knob to highlight **Yes** and press the rotary control knob.
The switching time is deleted. The previous time slot is extended to the next switching time. The switching times are automatically sorted in chronological order. The solar controller operates with the modified settings.

Copying time programs of a day

- ▶ Open the menu for adapting a time program for circulation and select the day of the week to be copied, e.g. Thursday.
- ▶ Turn the rotary control knob to highlight **Copy**.



- ▶ Press the rotary control knob.
A list of days of the week for which the time program should apply to is displayed for you to make a selection.
- ▶ Turn and press the rotary control knob to select the day of the week, e.g. Monday and Tuesday.
- ▶ Turn the rotary control knob to highlight **Copy**.



- ▶ Press the rotary control knob.
- ▶ The time program that has been copied is displayed in a pop-up window.
- ▶ Press the rotary control knob to close the pop-up window.
The solar controller operates with the modified settings.

5.1.3 Thermal disinfection



WARNING:

Risk to life from legionella!

Legionella can form in domestic hot water at DHW temperatures that are too low.

- ▶ Activate thermal disinfection/daily heat-up.
- ▶ Observe the statutory regulations on drinking water.
- ▶ Have thermal disinfection/daily heat-up set in the service menu by the installer.



WARNING:

Risk of scalding!

If thermal disinfection or the daily heat-up has been activated to avoid legionella, the DHW is heated once to in excess of 60 °C (e.g. Tuesday night at 02:00).

- ▶ Only carry out thermal disinfection/daily heat-up outside normal hours of use.
- ▶ Make sure that a thermal mixer is installed. If in doubt, ask your installer.

Thermal disinfection or daily heat-up safeguards the hygienic quality of the domestic hot water. The domestic hot water is heated regularly to the set temperature. This also kills off legionella for example. Thermal disinfection must be set at the control of the heat source (i. e. boiler).

Following thermal disinfection, the cylinder content slowly cools back down to the set DHW temperature. Consequently, the DHW temperature may briefly be higher than the set temperature.

If a DHW cylinder is connected downstream from a low loss header, it might not be possible to reach the temperature necessary for thermal disinfection. For more information, consult your contractor.

Menu: **Thermal disinfection**

Menu item	Description
Start	The entire DHW volume is only heated to the set temperature once a week or daily, if Auto is set here.
Start now/ Cancel now	Immediate start or termination of thermal disinfection independently of the set day of the week
Temperature	Temperature of the entire DHW volume during thermal disinfection (65 ... 80 °C)

Menu item	Description
Day	Day of the week, on which thermal disinfection is automatically carried. Alternatively, set daily thermal disinfection
Time of day	Time of day for the automatic start of thermal disinfection

Table 4 Settings for thermal disinfection

5.2 General settings

No settings are lost in the event of a brief power failure or if power supply is shut down for short periods of time. When the power supply is restored, the solar controller resumes operation. If the shutdown period is prolonged, the date/time settings may have to be reset. All other settings are maintained.

Menu: **Settings**

Menu item	Description
Language	Language of the display texts
Time	The time of the day can be set in this menu.
Date	The date can be set in this menu.
Autom. time changeover	Activate or deactivate the automatic changeover between summer and winter time. If Yes is set, the time of day is automatically changed (from 02:00 to 03:00 on the last Sunday in March and from 03:00 to 02:00 on the last Sunday in October).
Display contrast	Change the contrast (for improved clarity)
Time correction	Time correction of the solar controller's internal clock in s/week (→ see below)

Table 5 General settings

Setting the time correction correctly (Time correction)

Example for calculating the time correction value, with a time of day deviation of approx. – 6 minutes per year (the clock in the solar controller is 6 minutes slow):

- – 6 minutes per year = – 360 seconds per year
- 1 year = 52 weeks
- – 360 seconds: 52 weeks = – 6.92 seconds per week
- Increase the value of the time correction by 7 seconds per week.

6 Calling up information about the system

The current system values and the active operating conditions can be displayed easily via the info menu. No changes can be made in this menu.

The info menu is adapted to your system automatically. Some menu items are only available if the system has been set up accordingly and the solar controller has been set correctly.

Menu structure of the info menu:

Info

- Solar
 - Solar sensors
 - Solar yield
- DHW

Menu: Solar

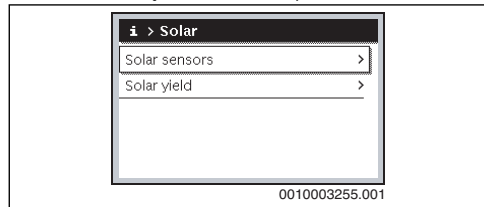
Information is only displayed under the individual menu items if the corresponding parts of the system are installed.

Menu item	Description
Solar sensors (graphics)	Current temperatures and position of the selected temperature sensor
Solar yield	Solar yield for last week, solar yield for current week and total yield of solar system since the solar system was commissioned

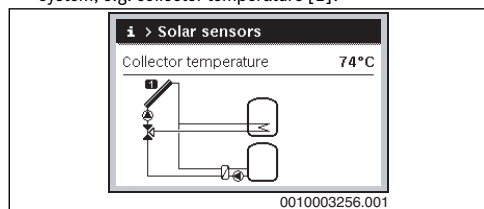
Table 6 Information about the solar system

Calling up information about the solar system

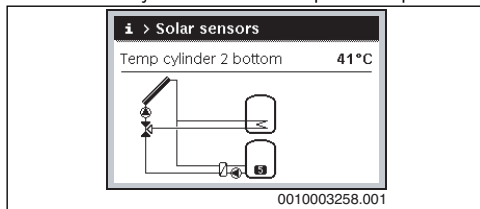
- If the standard display is active, press the info key to open the info menu.
- Press the rotary control knob to open the **Solar** menu.



- Turn the rotary control knob to mark the **Solar sensors** menu item and press the rotary control knob. The current temperature at the temperature sensor with the lowest number is displayed. The number in the graphic indicates the position of the temperature sensor in the system, e.g. collector temperature [1].



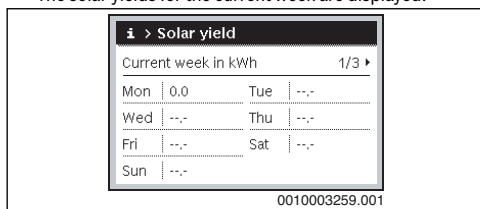
- Turn the rotary control knob to call up more temperatures.



The graphics in the info menu in the solar system show the installed pumps, mixers and valves. When a pump is running the symbol for the pump is rotating. Solid triangles in the symbols for mixers or valves indicate the direction in which the heat transfer fluid is flowing.

Calling up information about the solar yield

- If the standard display is active, press the info key to open the info menu.
- Press the rotary control knob to open the **Solar** menu.
- Turn the rotary control knob to highlight **Solar yield** and press the rotary control knob. The solar yields for the current week are displayed.



- Turn the rotary control knob to switch the display between solar yield for the current week, solar yield for last week and total yield of solar system since commissioning.

Calling up information about the DHW system

These menu items are only available if the system has been set up accordingly. Under these menu items the DHW system is displayed according to the solar system. The temperature sensors are displayed separately.

7 Troubleshooting

- Use Tab. 7 (overleaf) to check if the fault can be fixed.
- If the fault cannot be fixed, contact your installer immediately.

A fault in your solar system is indicated on the display of the solar controller.

If there are multiple faults, the fault with the highest priority will be displayed. Fault codes and sub-codes are displayed. The codes inform your installer about the possible cause. Confirm a fault (press the rotary control knob) to switch to the standard

display. If the fault is still active, it can be restored to the display by pressing the Back key.

The cause can be a fault on the solar controller, in a component, in an assembly or on the heat source.

The solar system keeps operating as far as possible.

If 0 is displayed constantly in the info menu under solar yield even though the solar system is in operation, the solar system is incorrectly commissioned:

- Contact installer to check the settings on the solar controller.

Fault code - sub-code - [cause or fault description]		
Nothing appears on the display		
	Test procedure / Cause	Corrective measure
	System is switched off.	Switch on the system.
	The power supply to the solar controller has been interrupted.	Check that the solar controller is correctly seated in its wall mounting bracket.
	Module is not set to position 10.	Contact your installer.
A11 - 1010 - [No communication via BUS interface EMS 2]		
	Test procedure / Cause	Corrective measure
	–	Check that the solar controller is correctly seated in its wall mounting bracket.
A11 - 1038 - [No communication with solar module]		
	Test procedure / Cause	Corrective measure
	Date/time not yet set	Set date/time.
	Prolonged loss of power supply	Avoid voltage failures.
A11 - 6004 - [No communication with solar module]		
	Test procedure / Cause	Corrective measure
	–	Check that the solar controller is correctly seated in its wall mounting bracket.

Table 7 Fault displays with fault code A11

If a fault persists:

- Contact your installer or Worcester Bosch service department.
- Submit the fault code, sub-code, as well as the ID no. of the solar controller.



Table 8 Your installer must enter the ID no. of the solar controller here during installation.

8 Environmental protection and disposal

Environmental protection is a key commitment of the Bosch Group.

Quality of products, efficiency and environmental protection are equally important objectives for us. Laws and requirements aimed at protecting the environment are strictly observed. In order to protect the environment, we use the best possible technology and materials within the constraints of economic considerations.

Packaging

Where packaging is concerned, we participate in country-specific recycling processes that ensure optimum recycling. All of our packaging materials are environmentally compatible and can be recycled.

Old electrical and electronic appliances



Electrical or electronic devices that are no longer serviceable must be collected separately and sent for environmentally compatible recycling (in accordance with the European Waste Electrical and Electronic Equipment Directive).

To dispose of old electrical or electronic devices, you should use the return and collection systems put in place in the country concerned.

Batteries must not be disposed together with your household waste. Used batteries must be disposed of in local collection systems.



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LITERATURE:	0330 123 9119
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