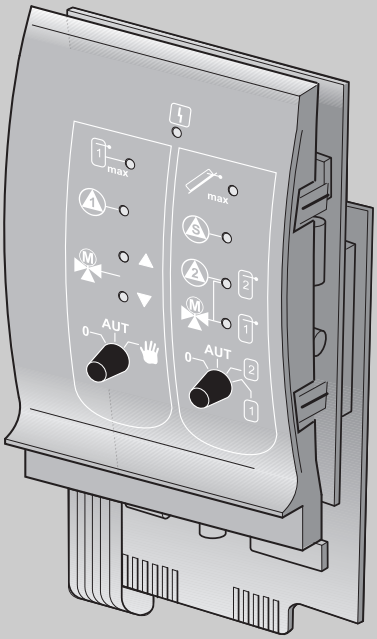
Operating Instructions

Function module



FM443
Solar Module

For the user

Please read carefully before use

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Buderus

Contents

1 Safety

1.1 About this manual

This section contains general safety instructions that you must observe when operating the FM443 function module.

The other sections of the operating instructions contain additional safety instructions that must also be observed. Read the safety instructions carefully before carrying out the activities described below.

If the safety instructions are not observed, serious or even fatal personal injury and damage to property and the environment may be caused.

1.2 Designated use

The FM443 function module can be installed in the controls of the Logamatic 4000 control system.

1.3 Standards, regulations and directives

USER NOTE

Observe all regulations and standards applicable to installation and operation of the system in your country.

USER NOTE

All electrical components must be approved for the USA and Canada!

This product has been tested and certified and meets applicable standards for the US and Canadian markets.

1.4 Key to symbols

Two levels of danger are identified and signified by the following terms:

WARNING!

RISK OF LIFE

Identifies possible dangers emanating from a product, which could cause serious injury or death if appropriate care is not taken.

CAUTION!

RISK OF INJURY/SYSTEM DAMAGE

Indicates a potentially dangerous situation that could cause minor or moderately serious injuries or damage to property.

USER NOTE

Tip for optimum use of equipment and adjustment as well as useful information.

1.5 Please observe these notes

The FM443 function module has been designed and built in accordance with currently recognized standards and safety requirements.

However, damage resulting from improper operation cannot be prevented completely.

Read these operating instructions carefully before operating the FM443 function module.

WARNING!

RISK OF LIFE

due to electric shock!

- Ensure that all electrical work is carried out by a licensed contractor.

CAUTION!

RISK OF INJURY/SYSTEM DAMAGE

due to operator error!

Operator errors can cause injury and damage to property.

- Ensure that children never operate the appliance unsupervised or play with it.
- Ensure that only personnel instructed to operate the appliance correctly have access to it.

1.6 Disposal

- Electronic components do not belong in household waste. Dispose of defunct modules correctly through an authorized disposal site.

2 Product description

The FM443 function module has been designed exclusively for use with the Logamatic 4000 modular control system.

The FM443 function module can be used to control a solar system with one or two solar consumers (e.g. storage tanks).

The following functions can be used after installation of the FM443 function module:

– Changing solar control operating mode

– Querying operating characteristics of solar consumer "1" or "2", the heat meter and the collector field

– Scanning the yield over recent days, weeks and years

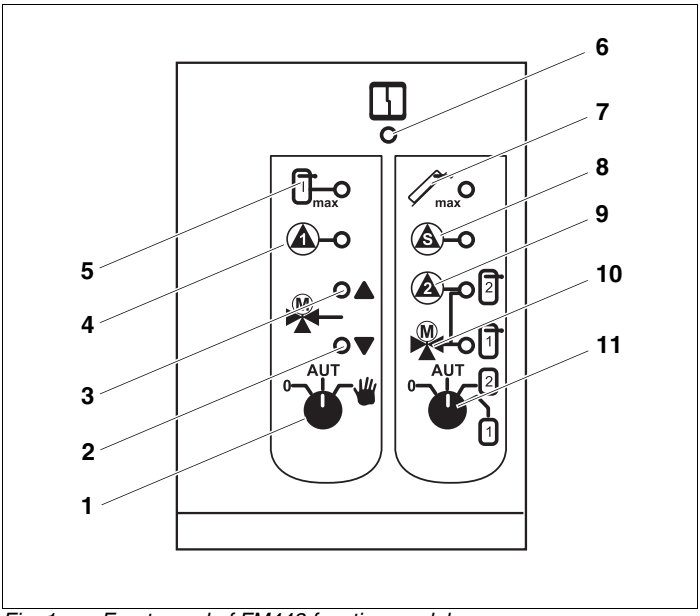

Fig. 1 Front panel of FM443 function module

1 Manual switch (solar circuit 1)

2 LED "Three-way valve" in case of buffer bypass circuit (central heating backup via storage tank)

3 LED "Three-way valve" in case of buffer bypass circuit (no central heating backup via storage tank)

4 Solar circuit pump 1*

5 Maximum temperature storage tank 1

6 "Module Fault" LED (red) – general module fault

7 Maximum temperature of collector

8 Secondary solar circuit pump 2 or transfer pump enabled*

9 Solar circuit pump 2 or 3-way valve 2 in solar circuit 2 position*

10 3-way switching valve in solar circuit 1 position

11 Manual switch (solar circuit selection)

* *LED constantly ON: Pump running (100 %)*
LED "flickers": Pump modulates
LED OFF: Pump OFF

2.1 Positions of manual switches

CAUTION!

SYSTEM DAMAGE

Incorrect use of switch positions 0 and ✋ may cause damage to the solar system or even destroy individual components of the system.

- Ensure that the switch is always in the "AUT" position.

The various positions of the manual switch have different effects on the solar circuit or the two solar consumers.

USER NOTE

The manual switches ✋ should normally be in the "AUT" position.

The 0 and ✋ positions are special settings that should be used by technicians only.

2.1.1 Manual switch (solar circuit 1)

Position	Effect
	Solar circuit 1 (solar circuit pump 1) and the bypass (3-way valve) are switched off.
	Solar circuit 1 and the bypass are in automatic mode – this is the standard setting.
	Manual mode is activated. Solar circuit pump 1 is switched on. The bypass is not being controlled.

Tab. 1 Manual switch positions

2.1.2 Manual switch (solar circuit selection)

Position	Effect
	The selection of the solar circuit is switched off.
	The FM443 (solar) function module is in automatic mode – this is the standard setting.
	If the corresponding solar yield is available, only solar consumer "2" (solar circuit 2) is loaded. The automatic switchover is disabled.
	If the corresponding solar yield is available, only solar consumer "1" (solar circuit 1) is loaded. The automatic switchover is disabled.

Tab. 2 Manual switch positions

USER NOTE

If the manual switch is not in automatic mode, a message to that effect appears on the MEC2 user interface, and the "Module fault" LED on the module illuminates.

Notify your heating contractor.

3 The functions of the FM443

3.1 Changing the operating mode

You can change the operating mode of the solar control. The operating modes are as follows:

– Manual ON ("day mode" button)

– Manual OFF ("night mode" button)

– Automatic operation ("AUT" button)

USER NOTE

With the "Manual ON" operating mode ("day mode" button), the collector protection function is ensured, that is, the pump will not start up if the collector temperature is above the threshold value.

USER NOTE

When the flap on the MEC2 user interface is closed, it will generally indicate to which heating zone the MEC2 user interface is assigned. If the MEC2 user interface is not assigned to any heating zone, then the lowest installed heating zone is always indicated.

For more information see the technical documentation for your control.

Open the flap of the MEC2 user interface.

Press and hold the "heating zone" button.

Turn the dial until "select heat zone – solar" appears on the display.

Release the "heating zone" button.

Different operating modes

Press manual ON ("day mode" button) to set the solar control unit to "permanent on."

Press the "AUT" button to set the solar control to automatic.

Press manual OFF ("night mode" button) to switch off the solar control unit.

	Input range	Factory setting
Operating mode	Automatic OFF ON	Automatic

Manual ON

This operating mode has no control function, but it switches the solar system off if the collector field or the tank(s) have exceeded the maximum allowable temperature.

If this operating mode is activated:

– Hot fluid in the solar system (e.g. glycol water) can flow from the storage tank to the collector field.

– Cold fluid (< 32°F (0°C)) in the solar system (e.g. glycol water) can flow from the collector to the storage tank – the storage tank temperature falls, with the result, for example, that the backup heating is activated.

USER NOTE

The "Manual ON" mode returns automatically to automatic mode after 30 minutes.

3.2 Querying operating characteristics

You can view the performance of your solar thermal system or of the two solar consumers on the MEC2 user interface display.

The following operating values can be viewed:

– Collector temperature

– Solar tank 1 operating mode

– Solar tank 1 temperature

– Solar tank 1 hours run

– Solar tank 1 heat yield

– Solar tank 2 operating mode*

– Solar tank 2 temperature*

– Solar tank 2 hours run*

– Solar tank 2 heat yield*

– Daily yield: Current day
Yesterday
2 days ago

– Weekly yield: Current day
1 week ago
2 weeks ago

– Annual yield

* *Only if available and selected on the MEC2 user interface.*

USER NOTE

You can only display the solar tank heat yield if the heat meter set (accessory) is installed in the solar circuit and connected to the FM443 function module.

Open the flap of the MEC2 user interface.

Turn the dial until the desired values are shown.

4 Correcting faults and troubleshooting

WARNING!

RISK OF LIFE

due to electric shock!

- Never open the controls.
- In an emergency, switch off the controls (e.g. with the heating system emergency shutoff switch) or isolate the heating system from the power supply by disengaging the circuit breaker. Take measures to prevent accidental reconnection.
- Arrange for your heating contractor to rectify any heating system faults immediately.

Faults in the solar circuit and the maximum of two solar consumers are shown on the display of the MEC2 user interface.

USER NOTE

The fault messages remain pending until the faults have been corrected.

Fault display

Open the flap of the MEC2 user interface if a fault appears on the display on your MEC2 user interface.

USER NOTE

Notify your heating contractor if faults occur on the FM443 function module and are displayed on your MEC2 user interface.

If multiple faults are pending, turn the dial until you see the faults that affect the solar circuit or one of the two solar consumers.

The following fault messages may be shown:

- Collector sensor
- Bypass buffer sensor
- Bypass return sensor
- Heat meter supply sensor
- Heat meter return sensor
- Bottom storage tank 1
- Bottom storage tank 2
- Flow rate
- Differential setting

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