

## FM443 solar module

For users

Read carefully  
before use

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# 1 Safety

## 1.1 About these instructions

This chapter contains general safety instructions that you should observe when operating the FM443 function module.

Also closely observe the further safety instructions that you will find in other chapters of these operating instructions. Carefully read the safety instructions before commencing the following measures.

Severe injury and even death, as well as damage to property and environmental damage, may follow if you ignore safety instructions.

## 1.2 Correct use

You can fit the FM443 function module into control units that are part of the Logamatic 4000 control system.

## 1.3 Standards and guidelines/directives



The design and operation of this product conform to European Directives and the supplementary national requirements. Its conformity is demonstrated by the CE designation.

You can view the Declaration of Conformity on the internet at [www.buderus.de/konfo](http://www.buderus.de/konfo) or request a copy from your local Buderus sales office.

## 1.4 Symbol key

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



**WARNING!**

### **RISK TO LIFE**

Identifies possible risks associated with a product that might lead to serious injury or death if appropriate care is not taken.



**CAUTION!**

### **RISK OF INJURY/SYSTEM DAMAGE**

Indicates a potentially dangerous situation which could lead to minor or moderately serious injuries or to damage to property.



### **USER INFORMATION**

User tips for the optimum utilisation and setting of the appliance plus useful information.

## 1.5 Please observe these notes

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

However, damage to property resulting from inappropriate operation cannot be completely prevented.

Read these operating instructions carefully before you attempt to operate the FM443 function module.



**WARNING!**

### **RISK TO LIFE**

from electric shock.

- Ensure that all electrical work is carried out by an authorised electrician.



**CAUTION!**

### **RISK OF INJURY/SYSTEM DAMAGE**

from operator error.

Operator errors can result in injury and/or damage to property.

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

## 1.6 Disposal

- Electronic components must not be disposed of with general domestic waste. Dispose of old modules correctly through an authorised disposal site.

## 2 Product description

The FM443 function module is exclusively designed for use in the modular Logamatic 4000 control system.

Using the FM443 function module, you can regulate one solar thermal system with one or two solar consumers (e.g. cylinders).

Installing the FM443 function module makes the following functions available:

- Changing the solar control unit operating mode
- Requesting operating values from the solar consumers "1" or "2", from the heat meter and the collector array
- Scanning the yield over recent days, weeks and years

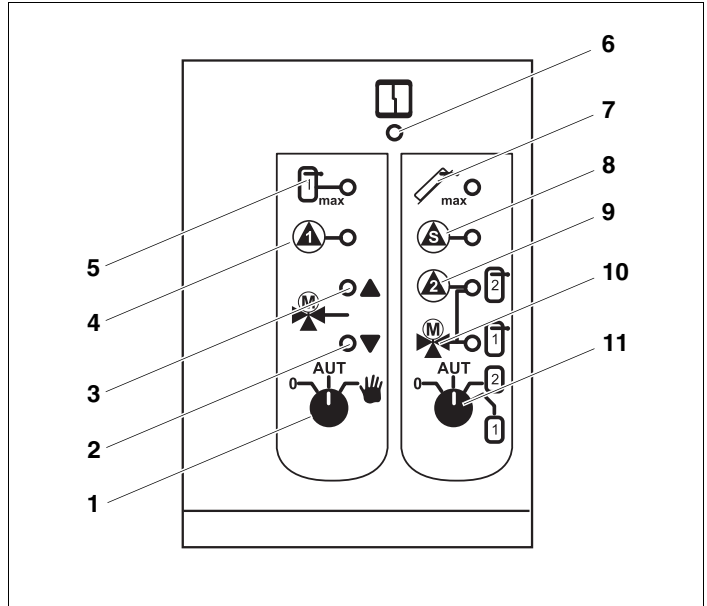


Fig. 1 Front panel – FM443 function module

- 1 Manual switch (solar circuit 1)
- 2 "Diverter valve" LED for buffer bypass circuit (central heating backup via cylinder)
- 3 "Diverter valve" LED for buffer bypass circuit (no central heating backup via cylinder)
- 4 Solar circuit pump 1\*
- 5 Cylinder 1 maximum temperature
- 6 "Module fault" LED (red) – general module fault
- 7 Maximum collector temperature
- 8 Secondary solar circuit pump 2 or transfer or transfer pump enabled\*
- 9 Solar circuit pump 2 or diverter valve 2 in position solar circuit 2\*
- 10 Diverter valve in place of solar circuit 1
- 11 Manual switch (solar circuit selection)


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

## 2.1 Manual switch positions



**CAUTION!**

### SYSTEM DAMAGE

Incorrect use of switch positions 0 and  can damage the solar thermal system, and may even destroy individual system components.


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

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






### USER INFORMATION

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

Positions 0 and  are special settings reserved for qualified personnel only.





#### 2.1.1 Manual switch (solar circuit 1)

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

Tab. 1 Switch positions



### 2.1.2 Manual switch (solar circuit selection)

Position	Effect
	Solar circuit selection is switched off.
	The FM443 (solar) function module is in automatic mode – this is the standard setting.
	When there is appropriate solar yield, only solar consumer "2" (solar circuit 2) is heated. Automatic changeover is disabled.
	When there is appropriate solar yield, only solar consumer "1" (solar circuit 1) is heated. Automatic changeover is disabled.

Tab. 2 Switch positions



#### USER INFORMATION

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

Notify your heating contractor.

## 3 The FM443 functions

### 3.1 Changing operating mode

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

- Manual ON ("Day mode" key)
- Manual OFF ("Night mode" key)
- Automatic operation ("AUT" key)



#### USER INFORMATION

The collector protection is ensured with the "Manual ON" operating mode ("Day mode" key).

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#### USER INFORMATION

When the flap on the MEC2 programming unit is closed it will generally indicate to which heating circuit the MEC2 programming unit is assigned. If no heating circuit is assigned to the MEC2 programming unit, the lowest installed heating circuit is always shown.

For further details, please see the technical documentation for your control unit.

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Open the flap of the MEC2 programming unit.



Press and hold down "heating circuit".



Turn the rotary selector until "Heating circuit selection – solar" appears in the display.

Release the "Heating circuit" key.

### Different operating modes



Press manual ON ("Day mode" key) to set the solar control unit to "always on".



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



Press manual OFF ("Night mode" key) to switch off the solar control unit.

	Input range	Factory setting
<b>Operating mode</b>	Automatic OFF ON	Automatic

### Manual ON

No control functions are involved when the circuit is running in this mode; however, the solar thermal system will cut out if either the collector array or the cylinder(s) exceed(s) the maximum permissible temperatures.

In constant mode:

- An undesirable heat transfer from a hot cylinder to a cold collector array can occur.
- An undesirable heat transfer from a cold collector array to an already hot cylinder can occur. The cylinder temperature drops, so that reheating must start, for example.



### USER INFORMATION

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

## 3.2 Scanning operating values

You can view the operating values for your solar thermal system or of the two solar consumers on the MEC2 programming unit display.

You can scan the following operating values:

- Collector temperature
- Solar cylinder 1 operating mode
- Solar cylinder temperature 1
- Solar cylinder 1 hours run
- Solar cylinder 1 heat yield
- Solar cylinder 2\* operating mode
- Solar cylinder temperature 2\*
- Solar cylinder 2\* hours run
- Solar cylinder 2\* heat yield
- Daily yield: Current  
Yesterday  
Day before yesterday
- Weekly yield: Current  
One week ago  
Two weeks ago
- Annual yield

\* *only if available and selected on the MEC2 programming unit.*

**USER INFORMATION**

You can only display the solar cylinder heat yield if the heat meter set (accessory) is built into the solar circuit and connected to the FM443 function module.

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Open the flap of the MEC2 programming unit.



Turn the rotary selector until the required values are displayed.

## 4 Troubleshooting



**WARNING!**

### **RISK TO LIFE**

from electric shock.

- Never open the control unit.
- In an emergency, switch off the control unit (e.g. with the heating system emergency stop switch) or isolate the heating system from the mains supply by removing the main fuse.
- Arrange for your local heating contractor to rectify any heating system faults immediately.

All faults in the solar circuit and solar consumers (up to 2) will be displayed by your MEC2 programming unit.



### **USER INFORMATION**

Fault messages continue to be displayed until the associated faults have been rectified.

### Fault display

Open the flap of the MEC2 programming unit if a fault appears on the display on your MEC2 programming unit.



### USER INFORMATION

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



If there are several faults, turn the rotary selector until the faults affecting the solar circuit or one of the two solar consumers are indicated.

The following fault messages can be displayed:

- Collector sensor
- Buffer sensor bypass
- Return sensor bypass
- Flow sensor hear yield
- Return sensor hear yield
- Cylinder 1, bottom
- Cylinder 2, bottom
- Flow metering
- Hysteresis setting

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