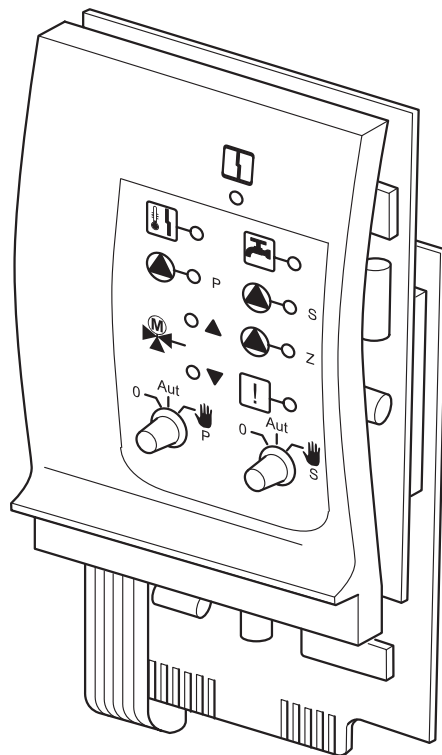


Operating instructions

FM 445 function module



bruderer

These operating instructions contain important information for the safe and intended operation of your heating system with the Logamatic 4000 controls.

Read these operating instructions thoroughly before start-up. All work which involves opening the controls must be carried out by a trained technician. There are no user-servicable parts inside this controls.

Disconnect the heating system and controls from the main power by shutting off the emergency shutoff switch or by disengaging the heating system circuit breaker and lock to prevent from accidental reconnection.

Have malfunctions repaired immediately by a trained technician.



WARNING!

WARNING: Hot water can scald. A thermostatic or tempering valve is strongly recommended on the DHW for anti scald protection.

This product has been tested and is certified for both the U.S. and Canadian markets, to the applicable U.S. and Canadian standards.



It is the installer's responsibility to ensure that the heating system and all of its components meet all applicable local and national codes.

The right to make technical changes is reserved.

Illustrations, function steps and specifications may vary slightly as a result of continuous development.

Updating documentation

If you have any suggestions for improvement or if you have discovered any errors, please contact us.

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1 Safety

1.1 Correct use

The Logamatic 4000 controls are only for controlling heating systems in apartment buildings, residential buildings and other buildings.

1.2 Please observe these notes

- Only use the controls for the purposes for which they are intended and only use if they are in perfect working order.
- Read the service manual carefully before starting work on the control.



DANGER TO LIFE

from electric shock.

WARNING!

- Make sure that all electrical work is carried out by a licensed contractor.
- Before opening the control: disconnect electrical power completely and lock to prevent accidental reconnection.



SYSTEM DAMAGE

from freezing.

The heating system can freeze up in cold weather if it is shut down.

CAUTION!

- Protect a disabled heating system from freezing by draining the boiler and water pipes at the lowest point.



NOTICE

Make sure that a circuit-breaker for disconnecting all poles from the mains is present. If there is no circuit-breaker, you will need to install one.



NOTICE

Only use original Buderus spare parts. Losses caused by the use of parts not supplied by Buderus are excluded from the Buderus warranty.

1.3 Important instructions for commissioning

- Before switching on the control check that the manual switches on the control and the function modules are set to "AUT".
- A setup log is included in the operating instructions for information of the system operator. Record the settings made during initial setup and the layout of the heating circuits in the setup log.

1.4 Cleaning control

- Clean the control with a damp cloth only.

1.5 Disposal

- Dispose of the controller packaging in an environmentally responsible manner.
- Dispose of a discarded control in an environmentally responsible manner through an approved organization. The lithium battery on the CM431 module must be removed from the control and disposed of separately.

2 FM 445 function module

The FM 445 module controls the DHW supplies, pool heating or snowmelt systems using an external heat exchanger (LAP/LSP).

It operates in connection with two pumps on either side of a heat exchanger (primary and secondary pump).

The FM 445 can be used with floor-standing or wall-mounted boilers with three sensors (On/Off and heat exchanger sensors).


This module has

- connections for two pumps,
- connection for one recirculation pump,
- potential-free output,
- actuation of a three-way motorized mixing valve,
- protection from scale built-up,
- thermal disinfection.

It must be in the first slot from the right of the controller. This is the only way to ensure power supply to the other modules. This module can be installed in the Logamatic 4112 and Logamatic 4311 controls only if an FM 441 is not already installed.

The FM 445 is operated from the MEC 2 control panel. Plain-text messages on the operation or faults of the FM 445 are displayed on the MEC 2 control panel (see control operating manual).

The manual switches on the module are for service and maintenance only and affect 120V outputs only.

If the manual switches are not in automatic position, the MEC 2 shows a message to this effect and the  fault display lights.

Never use the manual switches to shut off the installation for temporary absence.

Please use the holiday function for this purpose (see controller operating manual).

The control functions continue to operate in manual mode.

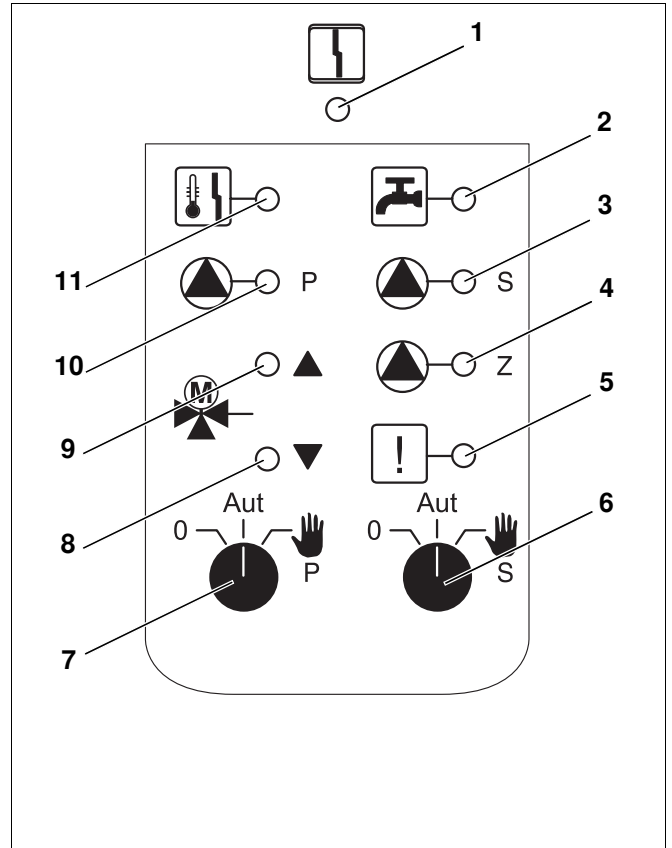


Fig. 1 FM 445 controls

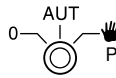
Legend:

- Item 1: General fault
e.g. building fault, sensor fault, external fault, wiring fault, internal module fault, manual mode.
The fault messages are displayed as plain text on the MEC 2 control panel.
- Item 2: Hot water is/remains below the set temperature in off (night) mode.
- Item 3: Secondary tank pump in operation
- Item 4: Circulation pump in operation
- Item 5: Thermal disinfection active
- Item 6: Secondary pump manual switch
- Item 7: Primary pump manual switch
- Item 8: Mixing value opening
- Item 9: Mixing value closing
- Item 10: Primary tank pump in operation
- Item 11: Scale built-up protection active, secondary pump cycling

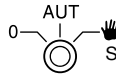
2.1 DHW function

DHW manual switch

for primary circuit:



for secondary circuit:



NOTE!

In normal operation the manual switch should be in the AUT position.



RISK OF SCALDING!

During manual operation people are in danger of scalding. Always turn on the cold-water faucet first and mix in hot water as required.

The **0** and **manual operation** (hand icon) positions are special settings that should only be used by technicians.



Primary/secondary pump is switched on. The mixing valve is disconnected and can be operated manually.

AUT: DHW loading system operates in automatic mode.

0: Primary/secondary pump and recirculation pump are switched off. The mixing valve is disconnected. The control functions continue to operate.

Currently active functions are shown by indicator lights.

2.2 FM 445 in the Logamatic 4311 control

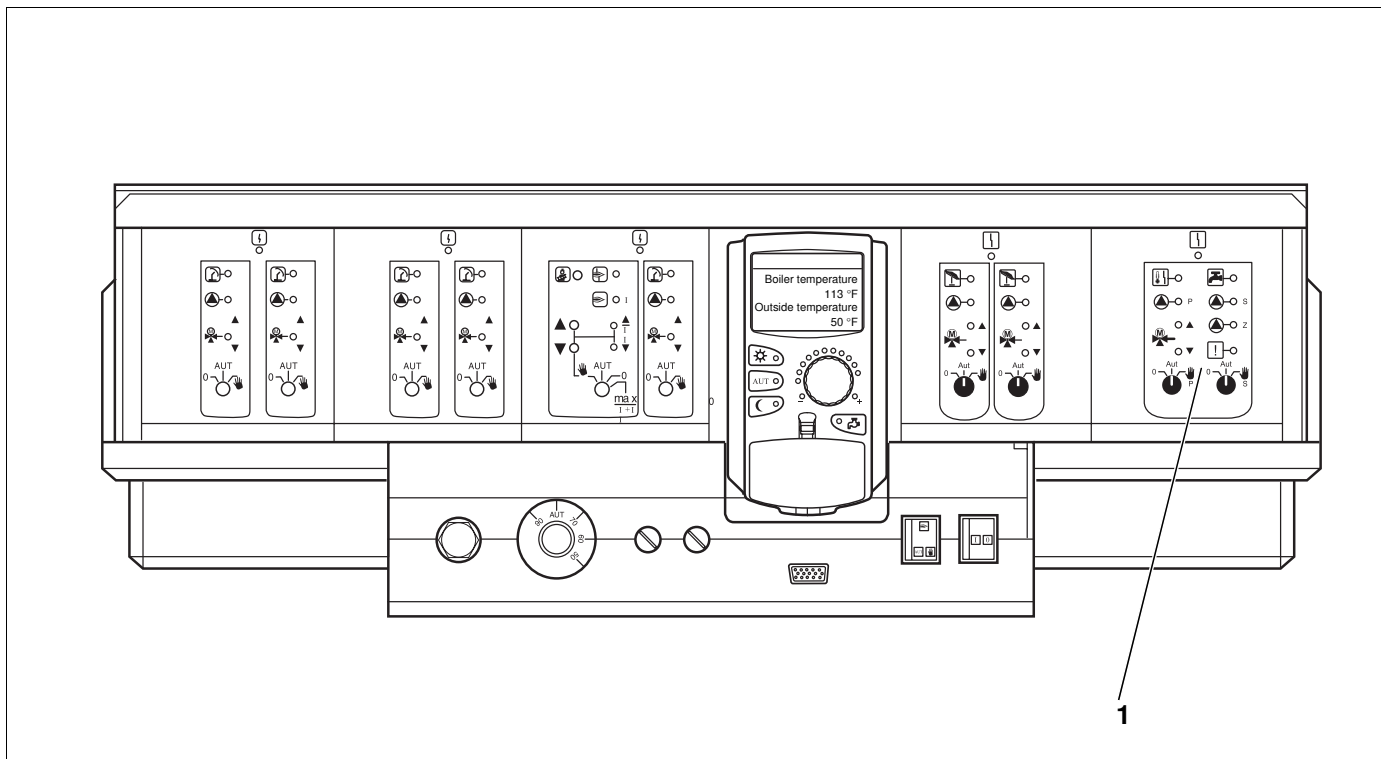


Fig. 2 FM445 in the Logamatic 4311 control

Legend:

Item 1: FM 445 at slot 4

3 Heating in manual switch mode

In most cases faults are displayed in the MEC 2 if they affect the control.

Please notify your heating contractor of errors displayed in the MEC display. The heating contractor can provide fast and specific assistance to correct the fault on the basis of your information.

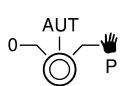
If you are unable to contact the heating contractor immediately, you can set it to manual operation with the manual switch.

To start a pump set the switch to position . The mixing valve remains off and can be adjusted by hand.

Before changing any setting to manual mode, verify that all settings on the FM 445 are correct. If there is a fault presently, you can continue to operate the heating system manually on a temporary basis.

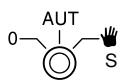
3.1 FM 445 manual operation

- Primary circuit (Fig. 3, **Item 1**) at selector switch



set to manual.

- Secondary circuit (Fig. 3, **Item 2**) at selector switch



set to manual.

- Ensure heat supply at boiler or boiler control.



RISK OF SCALDING!

In manual mode DHW temperature can be scalding hot! Take precautions to prevent people from getting scalded. It is controlled by the boiler temperature control.



CAUTION!

For safety reasons mixing valves must not be completely closed when the system is running in manual mode.

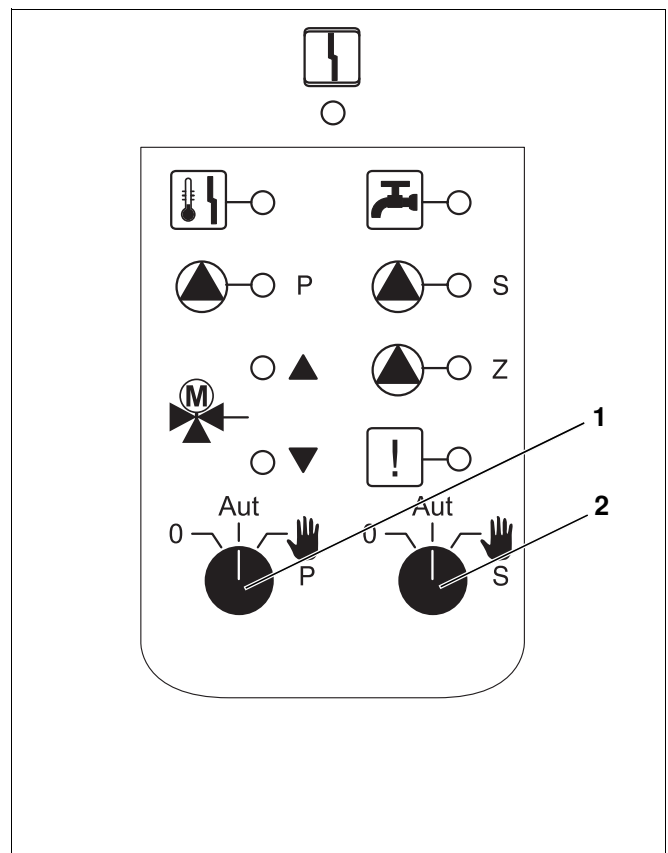


Fig. 3 FM 445 module

4 Troubleshooting

MEC 2 message	Effect	Remedy
DHW remains cold	DHW is too cold.	Set mode switch on the FM 445 module to manual mode. Notify heating contractor.
DHW WT sensor fault ON sensor fault OFF sensor fault	If the DHW sensor is faulty, water is not heated for safety reasons.	Notify heating contractor.

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