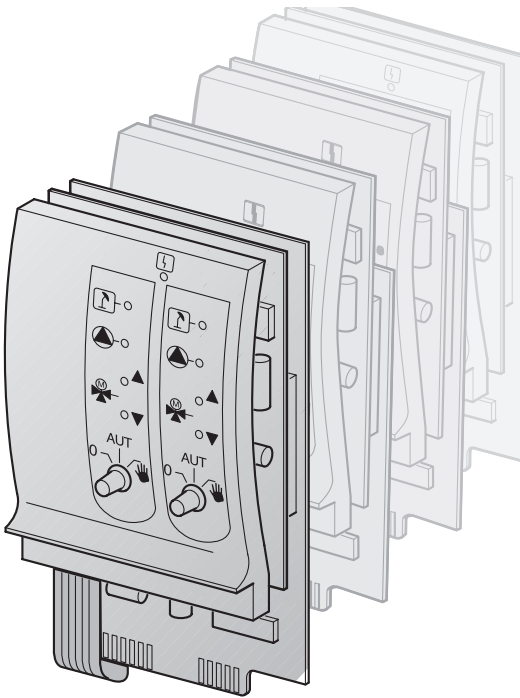


# Installation Manual

## Modules for controls Logamatic 4000



FM 441  
FM 442  
FM 443

FM 445  
FM 447  
FM 448

FM 456  
FM 457

# Buderus

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.

<b>1</b>	<b>Introduction</b> . . . . .	<b>.4</b>
1.1	Definition of the various modules. . . . .	.4
1.2	Modules and their functions . . . . .	.5
<b>2</b>	<b>Safety</b> . . . . .	<b>.6</b>
2.1	Intended use. . . . .	.6
2.2	Please observe these notes . . . . .	.6
2.3	Important instructions for commissioning . . . . .	.7
2.4	Cleaning control . . . . .	.7
2.5	Disposal . . . . .	.7
<b>3</b>	<b>Module installation for Logamatic 43xx controls</b> . . . . .	<b>.8</b>
3.1	Possible module installations for Logamatic 43xx controls . . . . .	.8
3.2	Layout of modules in the control . . . . .	10
3.3	Installation . . . . .	12

## 1 Introduction



### NOTICE

This installation manual can also be used for installing other modules, because the procedure is similar.

### 1.1 Definition of the various modules

Definitions
CM = Controller Module
FM = Function Module
NM = Mains Module
ZM = Central or Additional Module

*Tab. 1 Definition of modules*

## 1.2 Modules and their functions

	Identification	Name
<b>Controller module</b>	CM 431	Controller module
<b>Mains module</b>	NM 482	Mains module
<b>Central module</b>	ZM 432	Burner + boiler loop functions
	ZM 433	External heat generation + 1 heating loop
<b>Function module</b>	FM 441	1 heating loop + 1 DHW loop
	FM 442	2 heating loops
	FM 443	Solar loop
	FM 444	External heat source
	FM 445	LAP/LSP (charging system)
	FM 447	Strategy
	FM 448	Centralized alarm message
	FM 456	KSE 2 (cascade – 2 wall-mounted boilers) with EMS
FM 457	KSE 4 (cascade – 4 wall-mounted boilers) with EMS	

*Tab. 2 Identification (names) of modules. Modules may not be supplied to all markets. Check with your Buderus vendor for availability.*

## 2 Safety

### 2.1 Intended use

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

### 2.2 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.



**WARNING!**

#### **DANGER TO LIFE**

from electric shock.

- Make sure that all electrical work is carried out by a licensed contractor.
- Before opening the control: disconnect unit from electrical power by shutting off the emergency shutoff switch, or the heating system loopuit breaker, and lock to prevent accidental reconnection.



**CAUTION!**

#### **SYSTEM DAMAGE**

freezing.

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

- Protect the 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, one must be installed.

**NOTICE**

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

## 2.3 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 loops in the setup log.

## 2.4 Cleaning control

- Clean the control with a damp cloth only.

## 2.5 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 following current regulations..

## 3 Module installation for Logamatic 43xx controls

This section describes the installation of the FM 4xx function module in the Logamatic 43xx controllers.



### NOTICE

Verify that all parts are present according to the packing list.

If this is not the case, please contact BUDERUS.

### 3.1 Possible module installations for Logamatic 43xx controls

		43xx	
		Identification	4311
<b>Modules</b>	CM 431	O	O
	NM 482	O	O
	ZM 432	O	—
	ZM 433	—	O
	FM 441	X	X
	FM 442	X	X
	FM 443	X	X
	FM 444	X	X
	FM 445	X	X
	FM 447	X	—
	FM 448	X	X
	FM 456	X	—
	FM 457	X	—

*Tab. 3 Basic equipment of controls and options Modules may not be supplied to all markets. Check with your Buderus vendor for availability.*

O = basic equipment

X = optional extra

— = combination/installation not possible



**NOTICE**

The FM 441 and FM 445 cannot be installed together in the same control.

**IF BOTH FM 441 AND FM 445 MODULES ARE INSTALLED, THIS WILL RESULT IN AN ERROR MESSAGE ON THE DISPLAY OF THE MEC 2.**

**NOTICE**

The installation position of the modules can be freely selecte, except for the FM 445 and FM 447 modules.

Install the FM 447 module in far left position (Fig. 1, **Item 4**) of the control only.

The FM 445 module can be installed in slot 3 or 4 depending on the number of installed modules (Fig. 1, **Item 3 and 4**).

**NOTICE**

The FM 447 and FM 448 modules must never be installed together in the same control.

**If both modules (FM 447 and FM 448) are installed, this will result in an error message in the display of the MEC 2.**

## 3.2 Layout of modules in the control

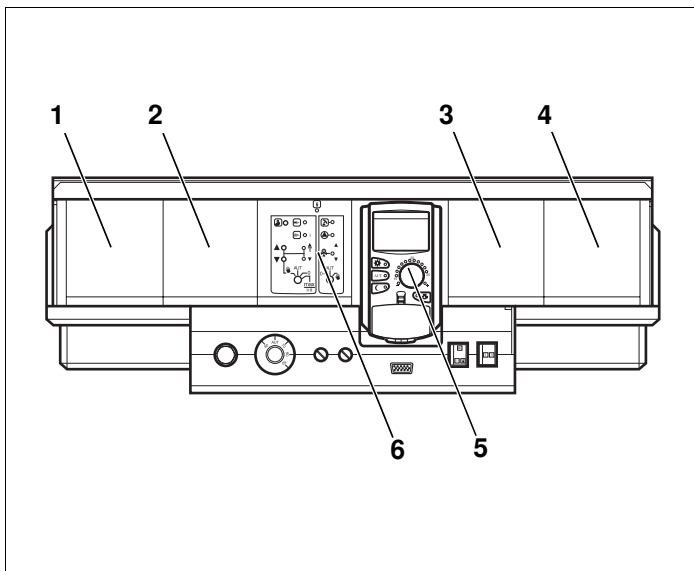


Fig. 1 Layout of slots

- Item 1:** Slot 1 for additional module
- Item 2:** Slot 2 for additional module
- Item 3:** Slot 3 for additional module
- Item 4:** Slot 4 for additional module
- Item 5:** Slot B behind the MEC 2 programming unit
- Item 6:** Slot A for ZM 432 central module (standard model)



### NOTICE

Slot A (Fig. 1, **Item 6**) is permanently assigned with one of the ZM 432 or ZM 433 central modules and slot B (Fig. 1, **Item 5**) is permanently assigned with the CM 431 controller module and the MEC 2 programming unit.

The other modules can be installed in any free slot (1-4). Make sure that the power supply leads reach from module to module. Insert the modules in order from left to right for sequential numbering of the heating loops (slot 1-4).

### Example

Heating loop assignment with two heating loop modules (FM 442) and a heating loop and DHW module (FM 441).

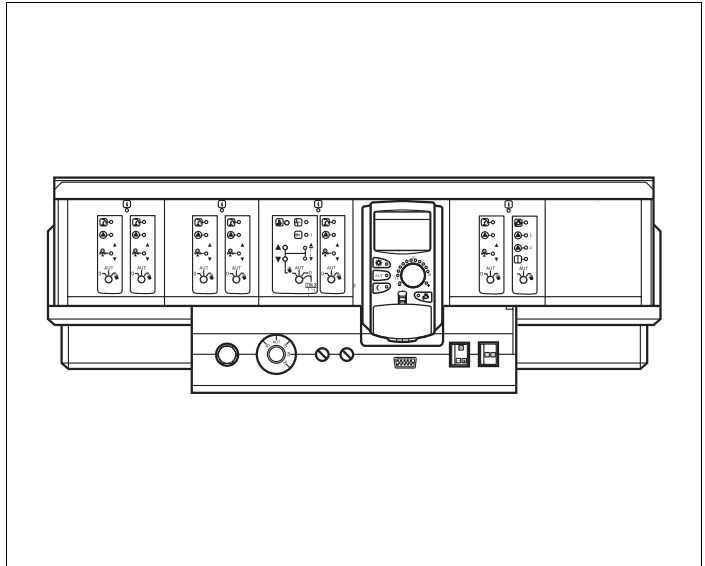


Fig. 2 Example of the layout of function modules

Slot 1	Slot 2	Slot 3
FM 442	FM 442	FM 441
Heat. loop. 1	Heat. loop. 3	Heat. loop. 5
Heat. loop. 2	Heat. loop. 4	DHW loop

## 3.3 Installation

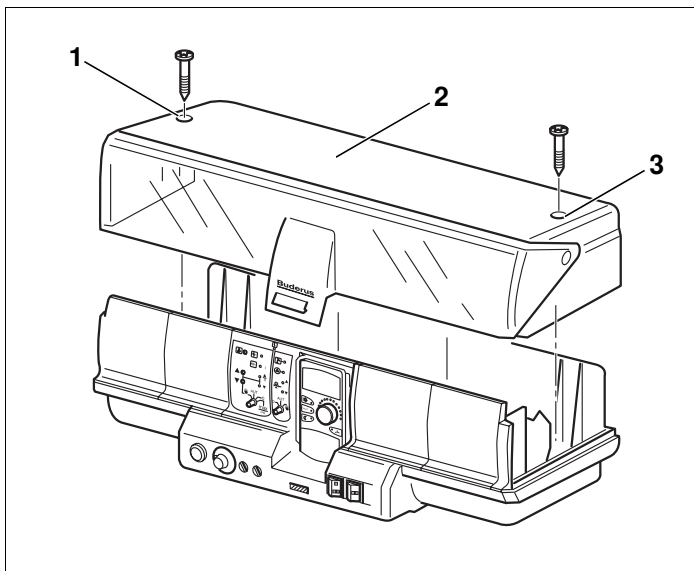


Fig. 3 Removing covers



**WARNING!**

### **DANGER TO LIFE**

from electrical shock when the control is open.

- Before opening the control:  
Disconnect the heating installation from the main power supply by shutting off the emergency shutoff switch, or the heating system circuit breaker, and lock to prevent accidental reactivation.
- Unscrew the two screws on the top of the device (Fig. 3, **Item 1 and 3**).
- Lift cover (Fig. 3, **Item 2**).

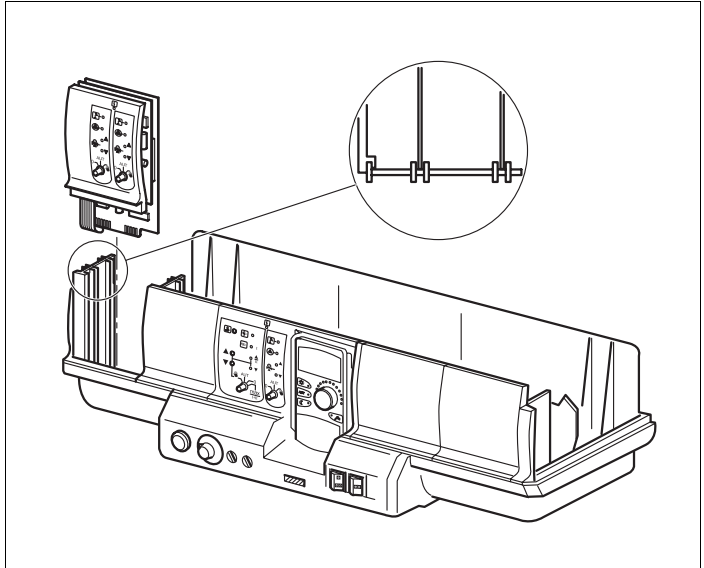


Fig. 4 Module installation and removal

### To install a new module

- Remove blank plate from slot 1 (Fig. 4).
- For easier installation the connections for sensors and pumps should be made **before** installation of the module into the control housing.



**WARNING!**

### DANGER TO LIFE

from shorting out.

- When removing insulation or cutting wires, make sure that pieces of wire do not fall into the electrical system or electronics.
- Push new module into the free slot by pressing on the sensor bar from above (Fig. 4) until you hear it click into place.

### Removing or replacing a module

- Disconnect the wiring from the module and fix in park position (for more information see the installation manual for the Logamatic 4321/4322 controls).
- Pull module from the control.
- Push new module into the free slot by pressing on the sensor bar from above (Fig. 4) until you hear it click into place.

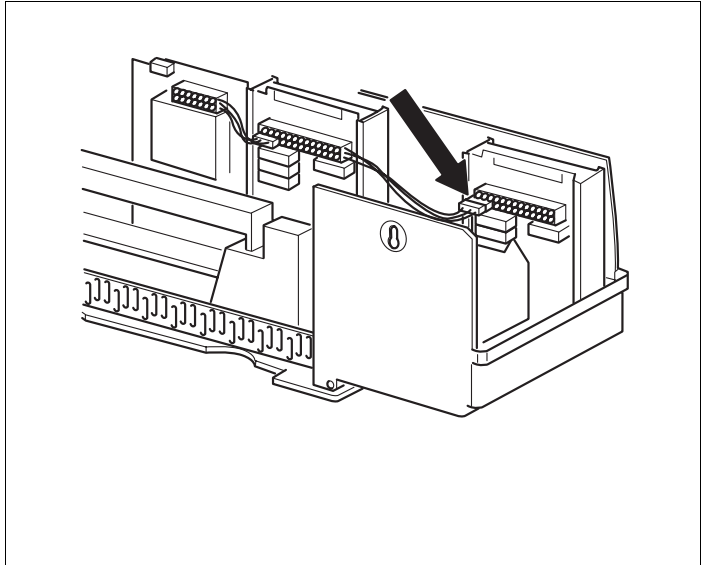


Fig. 5 Connecting the 120-V power supply

- Connect sensor wires or pump terminals to the correct positions on the module.
- Connect the 120-V module terminal connector to the correct position on the terminal strip (for module connection at slot 1 see arrow in Fig. 5).



#### NOTICE

The connector clips are locked to prevent accidental disconnect.

When removing the terminals press the locking plate upwards.

- Replace terminal cover and fasten the screws.
- Test the operation of the modules.

For more information see the operating and service manual for the Logamatic 43xx controls.



### NOTICE

If there is no 120-V power supply for the module or one of its 120-V components (e.g. plug connection has not been made), the relevant components (e.g. pumps) are not activated.

This malfunction **cannot** be detected at the affected module, because the LED and the control functions operate independently of this power supply.









BOSCH Thermotechnology Corporation  
50 Wentworth Avenue  
Londonderry, NH 03053  
U.S.A.  
Tel. 603-552-1100  
Fax 603-584-1681  
[www.buderus.net](http://www.buderus.net)

Products manufactured by  
BOSCH Thermotechnik GmbH  
D-35573 Wetzlar  
[www.buderus.de](http://www.buderus.de)

BOSCH Thermotechnology Corporation reserves the right  
to make changes without notice due to continuing  
engineering and technological advances.

**Buderus**