

Device description

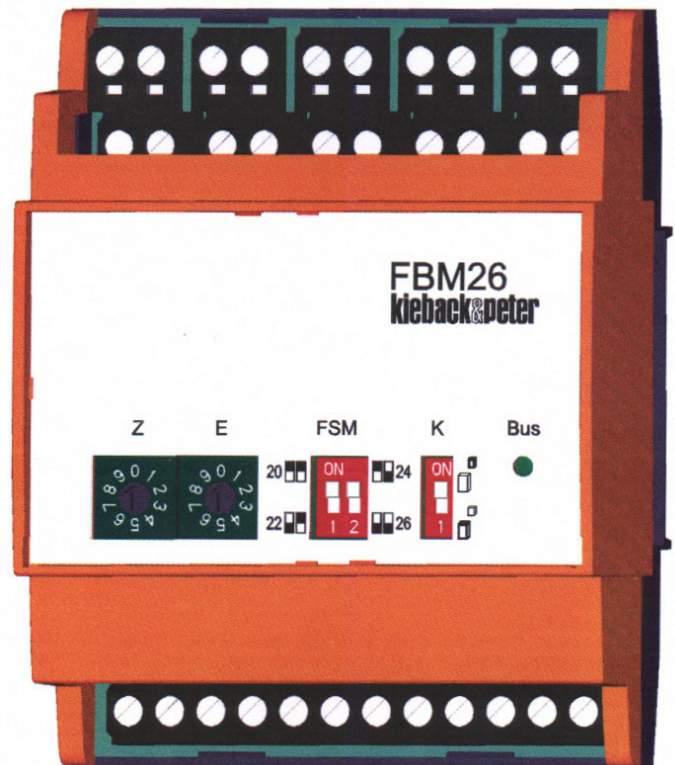
FBM26 Field Bus Modul

with 4 relay outputs and 4 digital inputs as well as connection to a FSM20/22/24/26

FieldBusModule FBM26

With four relay outputs and four digital inputs as well as a connection to a FrontSwitchingModule FSM20, FSM22, FSM24 or FSM26 for manual operation

Current recognition of the switched relay outputs to the connected FSM.



Änderungen vorbehalten

Contents

Notice about the device description	Page 2
Safety precautions	Page 2
Qualified expert personnel	Page 2
Applications	Page 3
Type	Page 3
Technical data	Page 3
Measurements	Page 4
Mounting	Page 4
Installation	Page 4
Connections.....	Page 5
Types of operation	
Remote operation	Page 6
Local operation.....	Page 7
Inverting the inputs IN1..IN4.....	Page 7
Commissioning.....	Page 8

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Notice about the device description

The description contains information on the fields of application and mounting instructions for the field bus module FBM26.

Should there be questions that cannot be answered with the help of the device description, additional information should be obtained from the supplier or manufacturer.

The quoted regulations/guidelines for installation and mounting are valid for the Federal Republic of Germany. If the region of application of the devices in another country then the plant builder or operator is obliged to ensure that the national regulations are observed.

The operating personnel should be trained using the information in these technical data sheets.

Security notice

For the mounting and the implementation of these devices, the currently valid work protection, accident safety as well as the VDE regulations must be observed.

Mounting, installation and commissioning work on the devices may only be carried out by qualified expert personnel, see section "Qualified expert personnel".

Everyone involved with these devices must have read and understood the description in the technical data sheet.

Symbol meanings within the technical data sheet:



Warning of dangerous electric voltage

Danger



General warning, notice must be heeded

Warning



Additional Notices of interest

Notice

Danger means that if ignored, there is a danger to life, massive bodily hurt or considerable damage to machines.

Warning means that if ignored, injury or damage to machines might occur.

Notice means that information is being presented that should be particularly noted.

Qualified expert personnel

Qualified expert personnel in the sense used in the technical data sheet are individuals who are familiar with the devices described and who have adequate qualifications for their job.

Examples of what might belong to this description:

- authorization to make the device connection according to the VDE legal provisions and the local EVU regulations as well as a local plant authorization to turn ON, OFF and the clearing of devices.
 - Knowledge of the safety precautions.
 - Knowledge of the range of applications and functions of the devices within the plant systems.
- Etc.

Device description

FBM26 Field Bus Modul

with 4 relay outputs and 4 digital inputs as well as connection to a FSM20/22/24/26

Application

In the digital regulating system DDC3000; the field bus module FBM26, with its four relay outputs, has the function of switching the remote devices in the plant technical system (ITS).

Four additional digital inputs permit the acceptance of digital data points from the ITS.

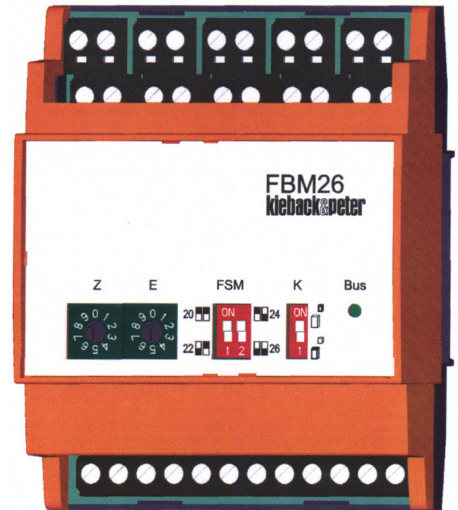
For stand-alone manual operation, the field bus module FBM26 possesses a QBS interface to the connection of a FrontSwitchingmodule FSM.

The FBM26 can be used in two different types of operating modes.

Remote operation: drive of the four relay outputs K1..4 on the field bus of the DDC3000 Central Control Unit.

Local operation: drive of the four relay outputs K1..4 directly with the four digital inputs IN1..4.

In both types of operation, the manual control of the relay outputs K1..4 with a connected FrontSwitchingmodule FSM.. has priority.



Type

FBM26 Field bus modules with four relay outputs (changeover switch) and four digital inputs as well as connection of a FrontSwitchingModule FSM20, FSM22, FSM24 or FSM26 for manual operation.
Current recognition of the switched relay outputs tp connected FSM.

Technical data

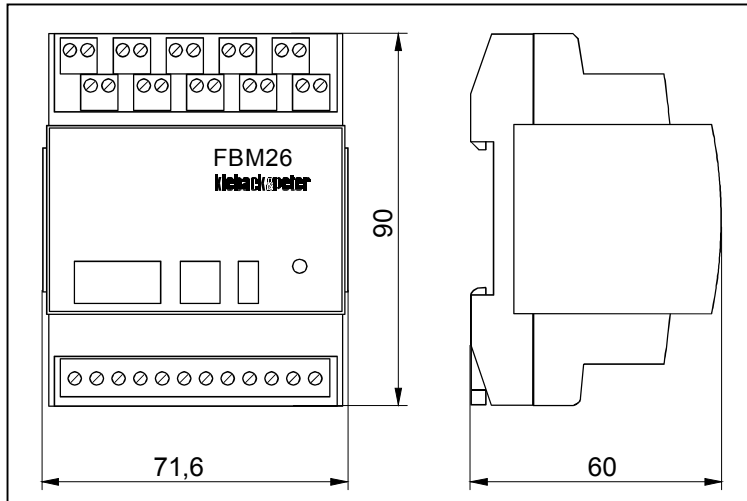
Operating voltage	12 V DC +20%/ -10%, 200 mA, 2.4 VA
Outputs	Four zero-voltage changeover switches K1..K4 with current recognition am connected FSM, contact load: max. 230 V AC, 1,2 A / 24 V DC, 0.6 A
Inputs	Four digital inputs IN1..IN4, function selection with switch K, switching function invertable (closer/opener) with switch K behind the front panel
Field bus connection	Four conductors, max. 2000 m
Interface QBS	Four conductors, max. 30 m to the connection of a FSM20, FSM22, FSM24 or FSM26
Address switch	Field bus addressing 01..63 with 2 rotary switches Z and E Switch Z: setting of the tens place 0x..6x, switch E: setting of the ones place x1..x9
Double switch FSM	For setting the connected FSM types: FSM20, FSM22, FSM24 or FSM26
Switch K	For drive selection of the relay outputs K1..4 Setting (Upper Pos.): remote operation : drive of the outputs K1..4 over the field bus in FSM setting Auto. inputs IN1..4 are available for arbitrary logic operations in the DDC System Setting (Lower Pos.): local operation: drive of the outputs K1..4 with the inputs IN1..4 in FSM setting Auto
LED Bus	Second switch for inverting the inputs IN1..IN4 is located under the front panel Display of the field bus communication – ready for operation: slow blinking 0.5 sec ON/OFF – No bus communication: rapid blinking 0.1 sec ON/OFF – Initialization phase: 5 sec OFF
Degree of enclosure protection	IP20
Ambient temp.	0..45°C, not condensing
Weight	130 g

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Device description

Measurements

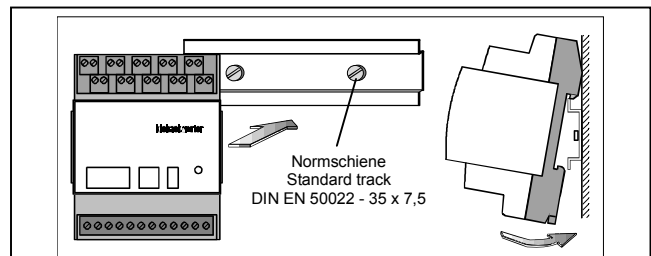


Mounting



The mounting of the FBM26 may only be carried out by qualified expert personnel in a voltage-free control panel!

The FBM26 are snapped onto a hat rail DIN EN 50022 - 35 x 7,5.



Installation



Mains voltage 230 V on the relay outputs is possible!
The electrical installation of the devices connection can only be carried out by qualified expert personnel, e.g. by a trained electrical technician.

The VDE regulations as well as all the local ordinances must be observed.

- lines for the field bus (terminal n 19, 20) and the voltage supply 12 V DC (terminal n 17, 18) should be run together in a shielded cable, cable type is at a minimum: JY(St)Y 2x2x0.8 Lg.
 Lines for power supply must in the form of twisted pairs.
 Lines for field bus must in the form of twisted pairs.

At the end of the field bus (most distant point from the Central Unit, max. 2000 m) a terminating resistance of ca. 180 Ω must be connected between the lines of the field bus (terminating resistor is a part of the Central Unit accessory kit).

- The four conductor control line QBS for the FrontSwitchingModule FSM20/22/24/26 can have a maximum length of 30 m. Twisted pairs are not required.
- If the relay outputs K1..K4 are switched with direct current (max. 24 V DC, 0.6 A), "DC plus" must be connected to the output terminals 12/14, 22/24, 32/34, 42/44 and "DC minus" to the input terminals 11, 21, 31,41 of the changeover switch.

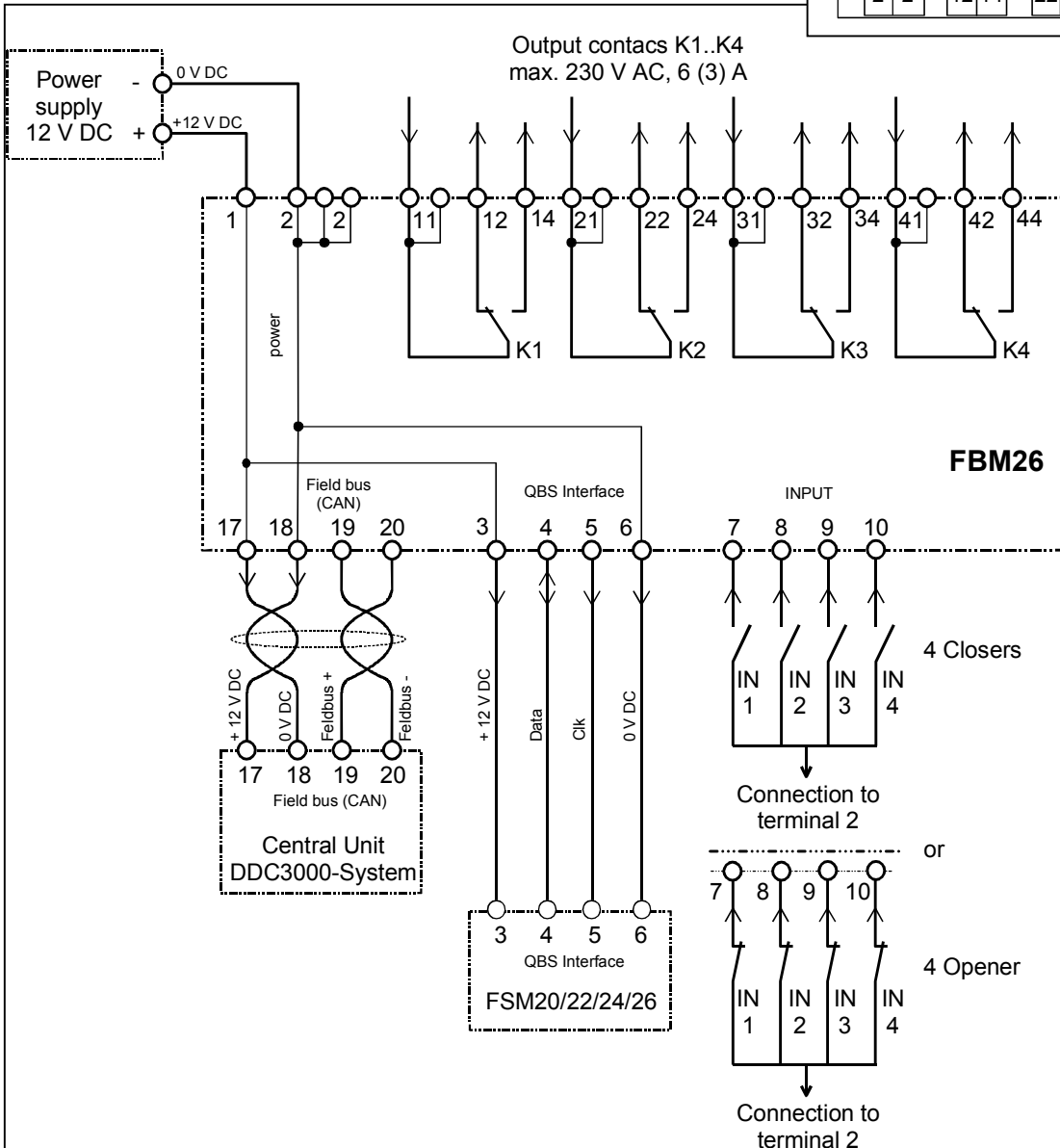
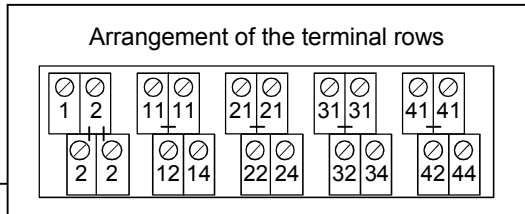


Device description

FBM26 Field Bus Modul

with 4 relay outputs and 4 digital inputs as well as connection to a FSM20/22/24/26

Connection



- The four digital inputs IN1..IN4 can be connected as closer or opener switches.
Initial setting: closer function
The switchover from the closer to the opener function is done with the double switch K under the front panel, see section "Inverting the inputs IN1..IN4", page 7.
- The power supply on terminal 1 - 2 supplies the FBM26, the field bus and the connected FSM



Turn on operating voltage only after the completion of the device setting by the commissioning technician!

Types of operation (setting and function)

The field bus module FBM26 can be run in two different modes of operation. The type of operation is selected with the switch K on the FBM26.

1. Remote operation: drive of the FBM26 with the field bus of the DDC Central Control Unit with/without FrontSwitchingModule FSM.. for automatic/manual control .

- **Set switch K  to (upper Position ON).**

- Without FrontSwitchingModules FSM..

The four relay outputs K1..4 of the field bus module FBM26 are controlled with the field bus of the DDC Central Control Unit.

The digital inputs IN1..4 are made available for arbitrary logic operations in the DDC Central Control Unit.

The digital inputs IN1..IN4 can be connected as closers or openers (initial setting: closer).

The switchover to an opener is carried out with the double switch K under the front panel, see section "Inverting the inputs IN1..IN4".

The function states of the field bus module FBM26 are sent back as internal contacts on the field bus to the DDC Central Control Unit and are available there for further processing and logic operations.

The double switch FSM has no functionality without the connection of a FrontSwitchingModule (initial setting FSM20 not changed).

- With FrontSwitchingModules FSM20, FSM22, FSM24 or FSM26

The four relay outputs K1..K4 of the field bus module FBM26 in FSM automatic operation are controlled with the field bus by the DDC Central Control Unit.

The digital inputs IN1..IN4 of the FBM26 are made available for arbitrary logic operations in the DDC Central Control Unit.

The digital inputs IN1..IN4 can be connected as closers or openers (initial setting: closer).

The switchover to an opener is carried out with the double switch K under the front panel, see section "Inverting the inputs IN1..IN4".

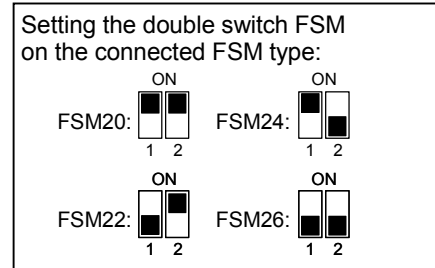
The connected FSM type is selected with the double switch FSM on field bus modules FBM26.

With the FrontSwitchingModule FSM, the relay outputs K1..K4 can be switched for manual operation. The manual operation set by the FrontSwitchingModule FSM.. has priority over the field bus control.

The manual operation works in stand-alone mode so that switching of the relay outputs on the connected FrontSwitchingModule FSM.. is possible at any time even when field bus transmission is interrupted or in case of Central Unit failure.

If not all of the relay outputs are addressed by the FrontSwitchingModule FSM.. (FSM24), then the rest of the outputs remain switched over the field bus control.

Switch and function states of the field bus modules FBM26 as well as of the FSM.. are returned as internal contacts on the field bus to the DDC Central Control Unit and are made available for further processing and logic operations.




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2. Local operation : independent functional unit with/without FrontSwitchingModule FSM20/M22/24/26 for automatic/manual control.

- Set switch K  to (lower Position 1).

- Without FrontSwitchingModule FSM..

The four relay outputs K1..4 are driven directly by the four digital inputs IN1..4.

Input IN1 switches output K1, IN2 switches K2, IN3 switches K3 and IN4 switches K4.

The digital inputs IN1..IN4 can be connected as closers or openers (initial setting: closer).

The switchover to an opener is carried out with the double switch K under the front panel, see section "Inverting the inputs IN1..IN4".

In this type of operation, the FBM26 functions as a contact amplifier, e.g.. for transistor or triac outputs for external systems (connection to FBM inputs IN1..4).

The FBM-relay outputs K1..4 carry out the switching in the plant.

With a field bus connection and with a setting of the field bus address, the FBM26 functions as a gateway to the remote system.

In this case, the digital signal of the remote system as well as the signals of the FBM relay outputs are returned as internal contacts to the DDC Central Control Unit and are therefore made available in the DDC System and in the building management system BMS.

Without FSM connection, the double switch FSM has no effect (initial setting FSM20 unchanged).

- With FrontSwitchingModule FSM20, FSM22, FSM24 or FSM26

In FSM automatic operation, the four relay outputs K1..K4 are directly controlled by the digital inputs IN1..IN4.

Input IN1 switches output K1, IN2 switches K2, IN3 switches K3 and IN4 switches K4.

The digital inputs IN1..IN4 can be connected as closers or openers (initial setting: closer).

The switchover to opener is carried out with the double switch K under the front panel, see section "Inverting the inputs IN1..IN4".

The type of FSM connection is carried out with the double switch FSM on the field bus module FBM26.

With the FrontSwitchingModule FSM.. the relay outputs K1..K4 can be switched for manual operation.

Manual operation with the FrontSwitchingModule FSM.. has priority over commands from the digital inputs IN1..IN4.

If only one part of the relay outputs is being controlled by the FrontSwitchingModule FSM.. (FSM24), then the rest of the outputs remain controlled by the digital inputs IN..

Setting of the double switch FSM to the connected FSM type:

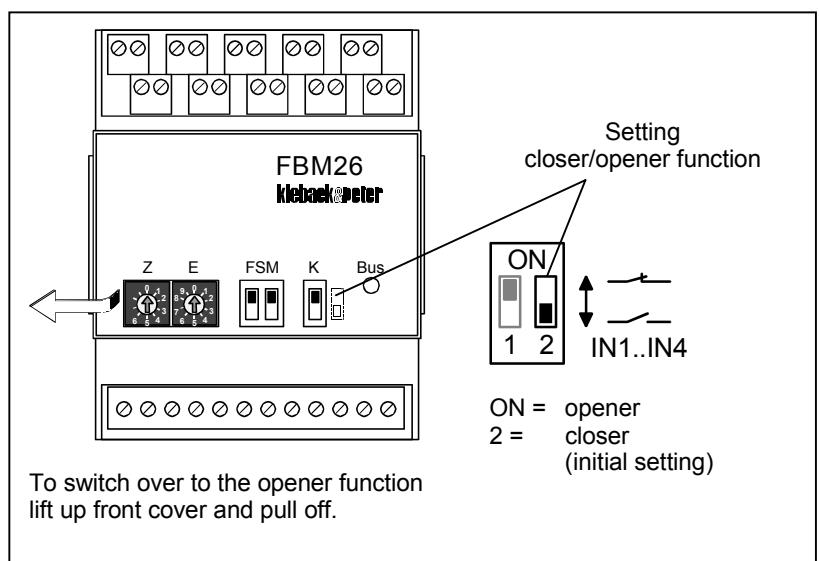


Inverting the inputs IN1..IN4

The four digital inputs IN1..IN4 can be connected as closers or openers; initial setting: function as closer.

The switching function is invertable.

The switchover to an opener function can be carried out with the double switch K under the front panel, see Figure.



Commissioning

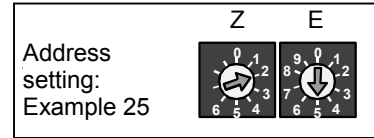


Danger

Mains voltage on the output contacts of 230 V is possible!

The commissioning may only be carried out by qualified expert personnel, e.g. by the commissioning-technician/engineer.

- Check that mounting, installation and device connection are carried out in a voltage-free state.
- Set type of operation (see section types of operation).
- For remote operation (relay control K1..4 on the field bus), set the field bus address. Address range: 01 to 63.
Switch Z for tens place / switch E for ones place.



In the address switching setting 00 (initial setting), the field bus is switched to passive.

For local operation (relay control K1..4 with inputs IN1..4) and without field bus connection leave the address switching setting to the initial setting 00.

For field bus connection for the acceptance of signals from the DDC System, the field bus address 01 to 63 should be set.

- Switch on power supply and test functions including the FSM drive.

Additional notice

An automatic test function is available for the FBM26. The LEDs and drives of the Manual/Auto switch in the connected FSM as well as the relay controls K1..K4 of the FBM 26 can be checked.




Warning

Before activating the test function, make certain that during the cyclical process of the tests and the switching of the relay outputs, no functional damage is done to the connected devices or other plant components. If necessary, the connection lines of the relay outputs should be made voltage-free or disconnected.

- The test function are activated when the address switch is set to 99. After an initialization phase of about 5 sec, the function test can be started by changing the switch K.
The test process can be terminated at any time by leaving the address switch setting 99.

Functions test of the connected FSM20/22/24/26

Set switch K  to (upper Position ON).

In the first test section all LEDs (LED Test) in the FSM light for ca. 3 sec.

In the second test section, the switching controls in the FSM are checked. The function switches are set one after another in all the switching positions.

Every switching setting is displayed by a blinking LED:

LED display for FSM20

Switch setting	Automatic	LED IN2 blinking
	OFF	LED IN1 blinking
	1	LED 1 blinking
	2	LED 2 blinking


LED display for FSM22

Switch setting	Automatic	LED IN2 blinking
	↓	LED IN1 blinking
	Halt	LED ↓ blinking
	↑	LED ↑ blinking

LED display for FSM24/FSM26

Switch setting	Automatic	LED IN and LED I blinking
	OFF	LED IN blinking
	I	LED I blinking

Function test of the FBM26

Set switch K  to (lower Position).

In the following automatic test run, the relay controls of the FBM26 checked. The relay outputs K1 to K4 of the row are switched on and off in cyclic intervals (ON =1 sec, OFF = 1 sec).

The beginning of the test run (relay output K1 = ON) is signaled with the switched off LED bus.

When switching from K2 to K4, the LED bus remains switched on.

After switching from K4, the test run begins again automatically with K1 (LED Bus: OFF).

The test run is concluded when the address switch setting 99 is changed.