

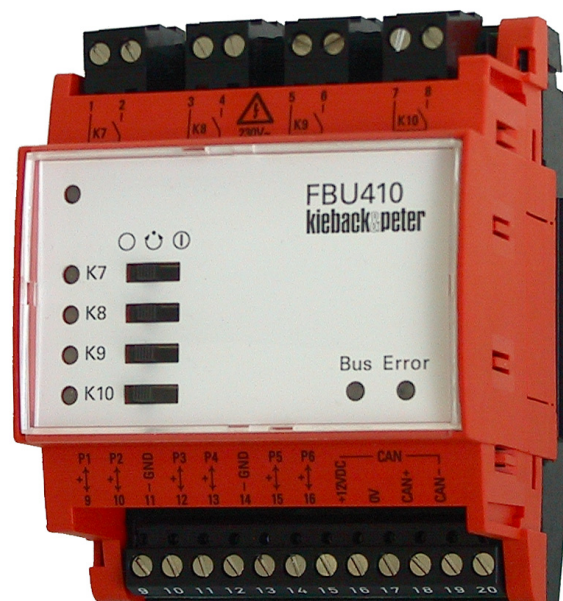
FBU410 Input/ Output Module

Application

The FBU410 Ein-Ausgabe-Modul with 4 relay outputs and 6 universal inputs/outputs controls and records the signals of remote devices in the DDC4000 system and on the BMR.

Data is transferred between the DDC controller and the input/output module via the fieldbus.

The function of the 6 universal inputs/outputs can be individually configured and defined for each connection.



Content	Page
Important Information on Product Safety	2
Item	3
Technical Data	3
Accessories (not included in delivery)	4
Dimensions	4
Installation	5
Connection	6
Mounting	7
Removal	8
Commissioning	8
Function/Operation	9
Setting the Fieldbus Address	9
LED Display for Bus/Error	10



Important Information on Product Safety

Safety instructions

This document contains information on installing and commissioning the product “FBU410”. Each person who carries out work on this product must have read and understood this document. If you have any questions that are not resolved by this document, you can obtain further information from the supplier or manufacturer.

If the product is not used in accordance with this document, the protection provided could be impaired.

The applicable regulations must be observed when installing and using the devices. Within the EU, these include regulations regarding occupational safety and accident prevention as well as those from the VDE (German Association for Electrical, Electronic & Information Technologies). If the device is used outside of the EU, it is the responsibility of the plant engineer or operator to comply with local regulations.

Mounting, installation and commissioning work on the devices may only be carried out by qualified technicians. Qualified technicians are persons who are familiar with the described product and who can assess given tasks and recognize possible dangers based on their technical training, knowledge and experience, as well as their knowledge of the applicable regulations.

Symbol meanings



WARNING

Indicates a hazard of medium risk which can result in death or serious bodily injury if not avoided.



CAUTION

Indicates a hazard of low risk which can result in minor or medium bodily injury if not avoided.



CAUTION

Indicates a hazard which can result in material damage or malfunctions if not avoided.



NOTE

Indicates additional information that can simplify working with the product.

Notes on disposal

In accordance with the applicable laws and directives of the European Union countries, the product should not be disposed of with household waste. This ensures environmental protection and sustainable recycling or raw materials.

Commercial users should contact their supplier and observe the conditions of the purchase agreement. This device may not be disposed of together with other commercial waste.

The local and currently applicable laws must be observed.

Item

FBU410 Input/ output module

Technical Data

Nominal voltage	DC 12 V $\pm$ 20%, 1.8 W	
Inputs and outputs	4 binary outputs; potential-free relay contact max. AC 230 V / 5 (3) A 6 universal inputs/outputs that can be independently configured as:	
	- Binary output	Transistor output DC 24 V; max. 80 mA
	- Binary input	Contact input (potential-free; with pulse counting up to 80 Hz)
	- Analog output	DC 0(2) to 10 V; max. 2.5 mA
	- Analog input	
Interface	CAN	Fieldbus 2000 m; 20 kBd
Address switch	Addressing from 01 to 63 by means of 2 rotary switches (under the front panel)	
Displays and Controls	4 LED	Outputs K7 to K10
	2 LED	Fieldbus
	1 LED	Freely configurable
	4 manual switches	Off / Automatic mode / On
Overvoltage category	III	
Rated impulse voltage	4000 V	
Level of contamination	2	
Automatic action	Type 1	
Degree of protection	IP20	
Housing	Plastic housing, 4 HP	
Ambient temperature	0 to 45 °C	
Ambient humidity	20 to 80% r.h., non-condensing	
Mounting	On standard rail TH 35-7.5	
	Plug-in screw terminal	
	This device is intended for installation in a wall-mounted enclosure/switch cabinet having protection class II.	
Weight	191 g	



Sensor types

Sensor type	Measuring range
0(2) V..10 V	0%..100%
KP10	-50 °C..+150 °C
KP250	-50 °C..+150 °C
ML2	-50 °C..+150 °C
Ni100	-50 °C..+150 °C
Ni1000 (DIN)	-50 °C..+150 °C
Ni1000 (L&G)	-50 °C..+150 °C
NTC1,8K	-50 °C..+150 °C
NTC5K	-50 °C..+150 °C
NTC10K	-40 °C..+150 °C
NTC10KPRE	-50 °C..+150 °C
NTC20K	-30 °C..+150 °C
PT100	-100 °C..+850 °C
PT1000	-100 °C..+850 °C
Balco500	-40 °C..+150 °C
Satchwell DC1100	-20 °C..+120 °C
Satchwell DC1400	-40 °C..+120 °C
Resistor (potentiometer)	0..10 kΩ



NOTE

You can find more information on the sensor types in the “Temperature Sensor Tables” product description (1.10-90.100-01).

Accessories (not included in delivery)

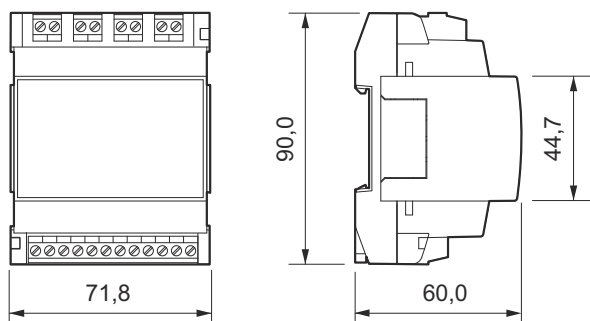
Cascade plug Z179

Different fieldbus or switch cabinet bus modules can be connected using the cascade plug. Modules are supplied even when there are inactive modules within the chain.

Connected lines: all supply voltages, CAN bus (+, -, GND)

A maximum of 5 modules can be connected in cascade.

Dimensions





Installation



CAUTION

This product description describes specific settings and functions of the FBU410. In addition to these instructions, observe the product descriptions of other system components, such as DDC controller DDC4000, BMR or DDC420.



CAUTION

Switching on the power supply of unparameterized products can lead to unforeseen consequences such as malfunctions or material damage.

Switch on the power only after the device has been configured by the commissioning technician.

Fieldbus

When connecting the fieldbus, use a cable of at least type JY(St)Y 2x2x0.8 Lg: two x two wires, twisted to a pair with plastic insulation and an electrostatic shield with a wire diameter of at least 0.8 mm. Use a stranded pair of wires for the data lines (+ and -) and another free wire for the ground connection (0).

At the end of the fieldbus (furthest point from the DDC controller), install a terminating resistor of about 180 ohms between both data lines (+ and -). The terminating resistor is included with the DDC controller.

The maximum cable length for the Fieldbus is 2000 m.

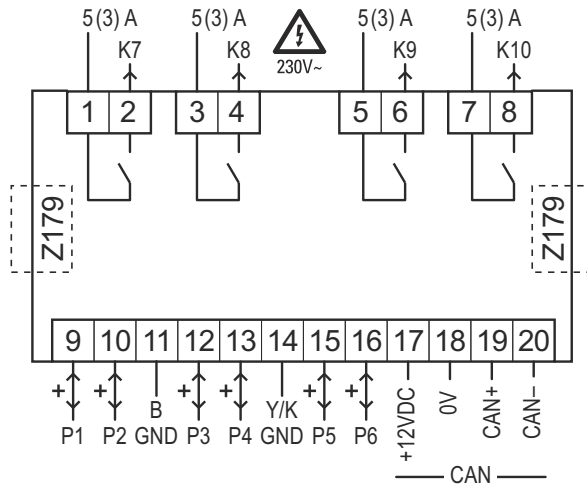


Connection

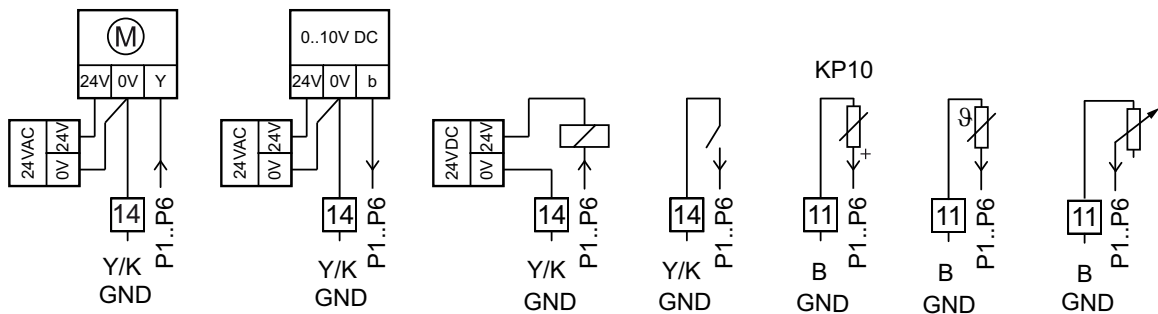


CAUTION

The GND wiring specified in the wiring diagram (Y GND, K GND, B GND) must be observed. Incorrect GND wiring may lead to errors in measurement.



Sensor and actuator connections





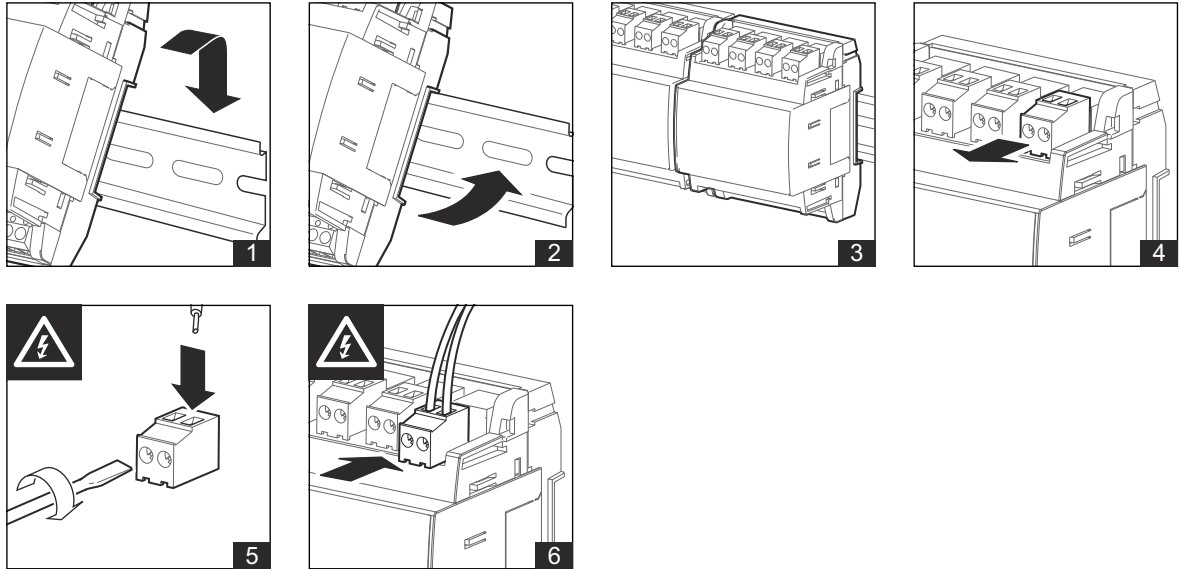
Mounting



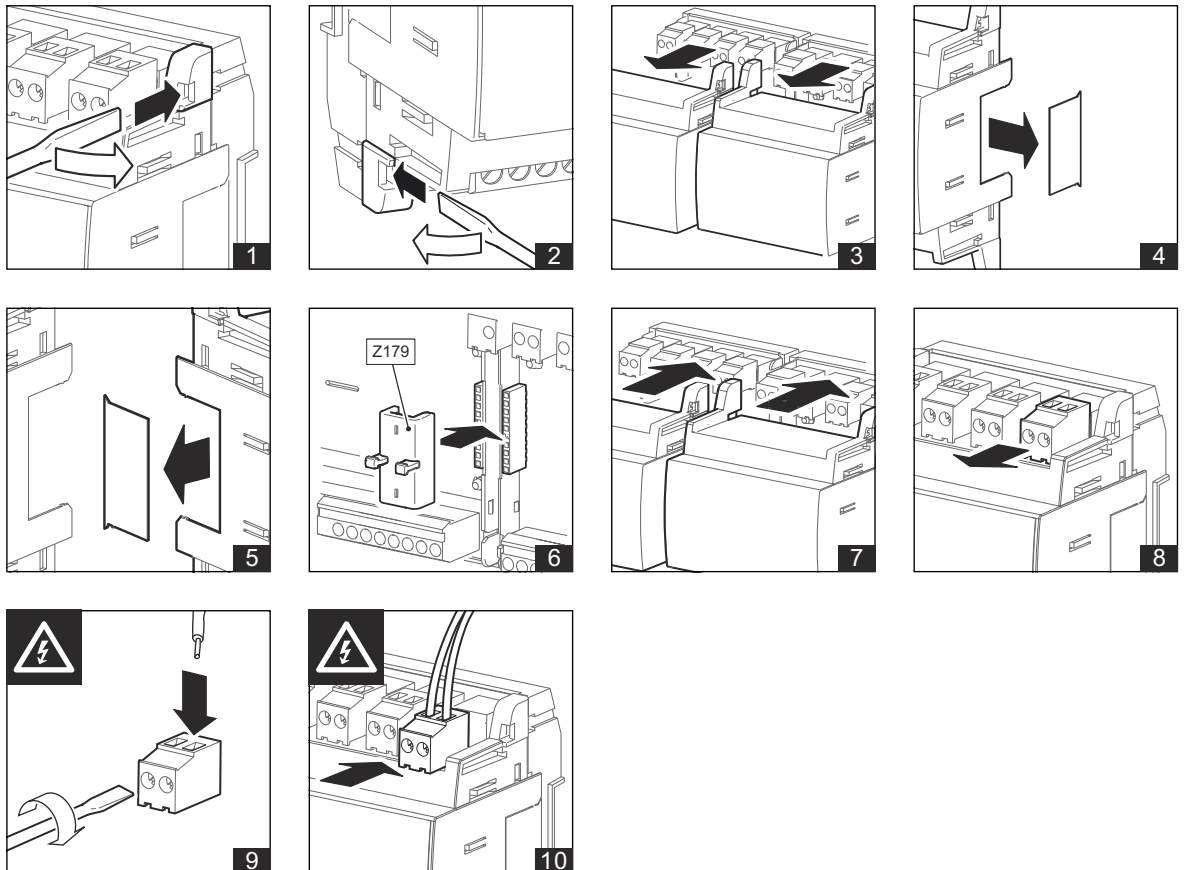
WARNING

Contact with live parts of electrical domestic installation can cause death due to electric shock. Mounting/removal may only be carried out when power is switched off.

Mounting without cascade plug



Installation with Z179 cascade plug accessory (not included in the scope of delivery)



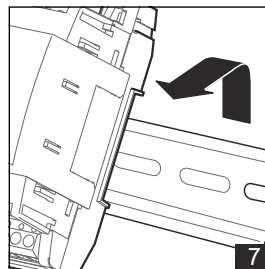
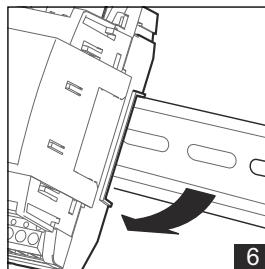
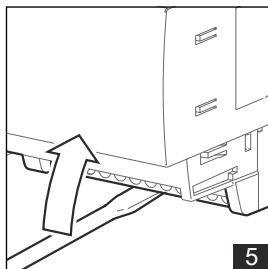
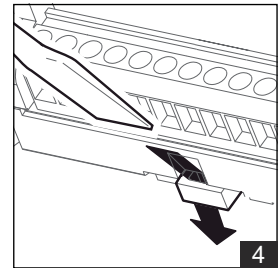
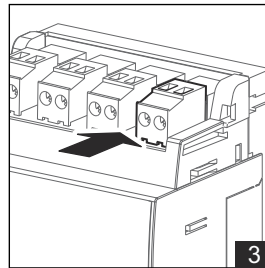
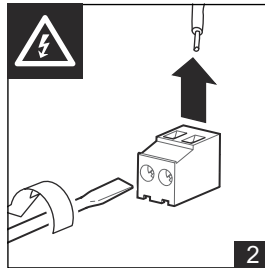
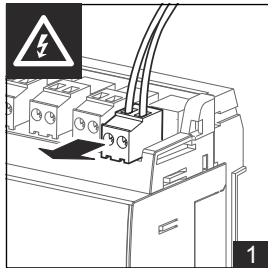


Removal



WARNING

Contact with live parts of electrical domestic installation can cause death due to electric shock. Mounting/removal may only be carried out when power is switched off.



Commissioning



CAUTION

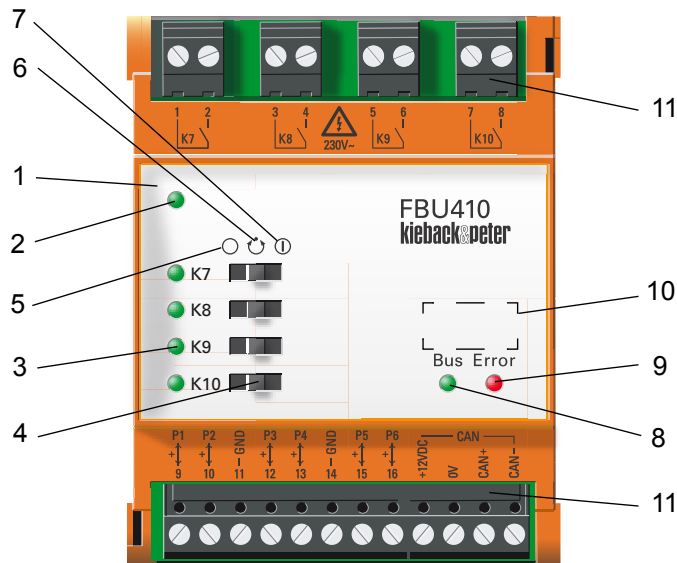
Commissioning by switching on the supply voltage may occur only after the commissioning technician/engineer has finished configuring the DDC and has set the bus address.

- Configuration is described in the DDC controller project planning documentation.
- Before switching on the supply voltage, check the electric installation and the device connections.
- After configuring the device and switching on the supply voltage, check the functions of the module and the connected inputs and outputs.



Function/Operation

Operating and display elements under the transparent cover (transparent cover not shown in the figure)



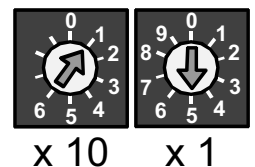
- 1 Front panel
- 2 LED red/green/yellow (solid/flashing), can be freely configured
- 3 4 green LEDs for indicating outputs K7 to K10
- 4 4 manual switches for the digital outputs K7 to K10
Settings: Off / Automatic mode / On
- 5 Off
- 6 Automatic mode
- 7 On
- 8 LED bus
- 9 LED error
- 10 Address switch (under the front panel (1))
- 11 Plug-in screw terminal

Setting the Fieldbus Address

Permitted range for the fieldbus address: 01 to 63.

The rotary switches for setting the fieldbus are located under the Front panel (1).

- ▶ Remove the transparent cover by pulling lightly.
- ▶ Lift off the Front panel (1) using a screwdriver (blade width < 3 mm), laterally at the bottom corners.
- ▶ Set the first number of the fieldbus address on the first rotary switch the second number on the second rotary switch.
The example shows the address "15".
- ▶ Lightly snap the Front panel (1) and the transparent cover back into place.





LED Display for Bus/Error

LED bus (8) Green	LED error (9) Red	Meaning	Cause
Off	Off	Module not in operation	■ No operating voltage or operating voltage too low
On	On	Module in operation, but there is a bus error	■ Bus line short circuit (with respect to ground or each other) ■ Bus lines mixed up ■ Bus line(s) interrupted ■ Module not registered
Flickers	Flashes	Address error	■ Outside of address range (01 to 63) ■ Address multiply assigned
Flickers	On	Module logging on	
Flickers	Off	Module OK, bus activity	