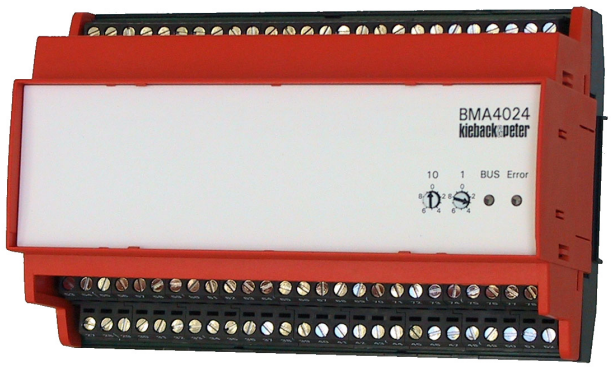
BMA4024 Input/output module



Application

The input/output module BMA4024 with 24 analog inputs or outputs receives DDC4000 automation and control system analog signals and activates analog control functions.

The function can be individually selected as an input or output for each of the 24 connections by means of DDC configuration.

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Important Information Regarding Product Safety

Safety Instructions

This data sheet contains information on installing and commissioning the product "BMA4024". Each person who carries out work on this product must have read and understood this data sheet. If you have any questions that are not resolved by this data sheet, you can obtain further information from the supplier or manufacturer.

If the product is not used in accordance with this data sheet, the protection provided will be impaired.

Applicable regulations must be observed when installing and using the device. Within the EU, these include regulations regarding occupational safety and accident prevention as well as those from the VDE (Association for Electrical, Electronic & Information Technologies). If the device is used in other countries, it is the responsibility of the system installer 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 due to technical training, knowledge and experience as well as knowledge of the appropriate regulations.

Legend

WARNING

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

CAUTION

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

CAUTION

Indicates a hazard of medium risk which can result in material damage or malfunctions if it is not avoided.

NOTE

Indicates additional information that can simplify the work with the product for you.

Notes on Disposal

For disposal, the product is considered waste from electrical and electronic equipment (electronic waste) and must not be disposed of as household waste. Special treatment for specific components may be legally binding or ecologically sensible. The local and currently applicable legislation must be observed.

Item

BMA4024	Input/output module

Technical Data

Nominal voltage	AC 24 V ± 10%, 50..60 Hz, 280 mA
Inputs and outputs	■ 24 AIs/AOs can be independently configured as: - Analog output DC 0(2) V..10 V; max. 2.5 mA - Analog input See table “Sensor types”, page 4. ■ Separate auxiliary power (terminal 53, 54) DC 10 V; 20 mA for connecting external setting knobs
Indicators and Controls	2 LEDs for indicating bus communication behind the transparent cap. See the "LED displays" section on page 8.
Address switch	Two rotary switches for addressing from 01 to 16
Interfaces	Switch cabinet bus, SBM bus: 16 switch cabinet bus modules (SBM or BMA/BMD); 200 m; 40 kBd, CAN
Housing	Plastic housing
Overvoltage category	III
Rated impulse voltage	800 V
Level of contamination	2
Method of operation	Type 1
Degree of protection	IP20
Ambient temperature	0 °C..45 °C
Ambient humidity	20..80 % r.h.; non-condensing
Installation	Switch cabinet installation on TH 35-7.5 top hat rail
Weight	0.315 kg
Dimensions	WxHxD: 143.5 x 90 x 60 mm

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	-50 °C..+850 °C
PT1000	-50 °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

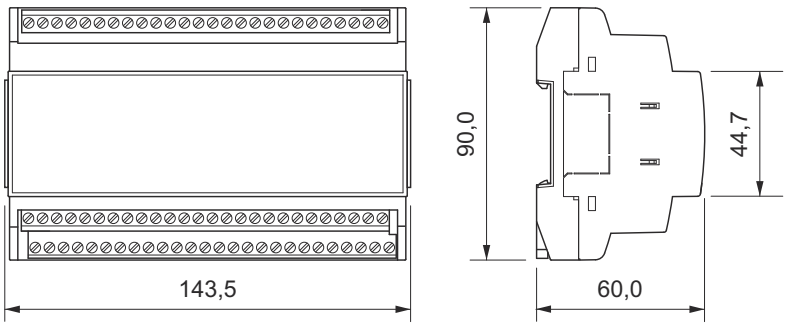
NOTE

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

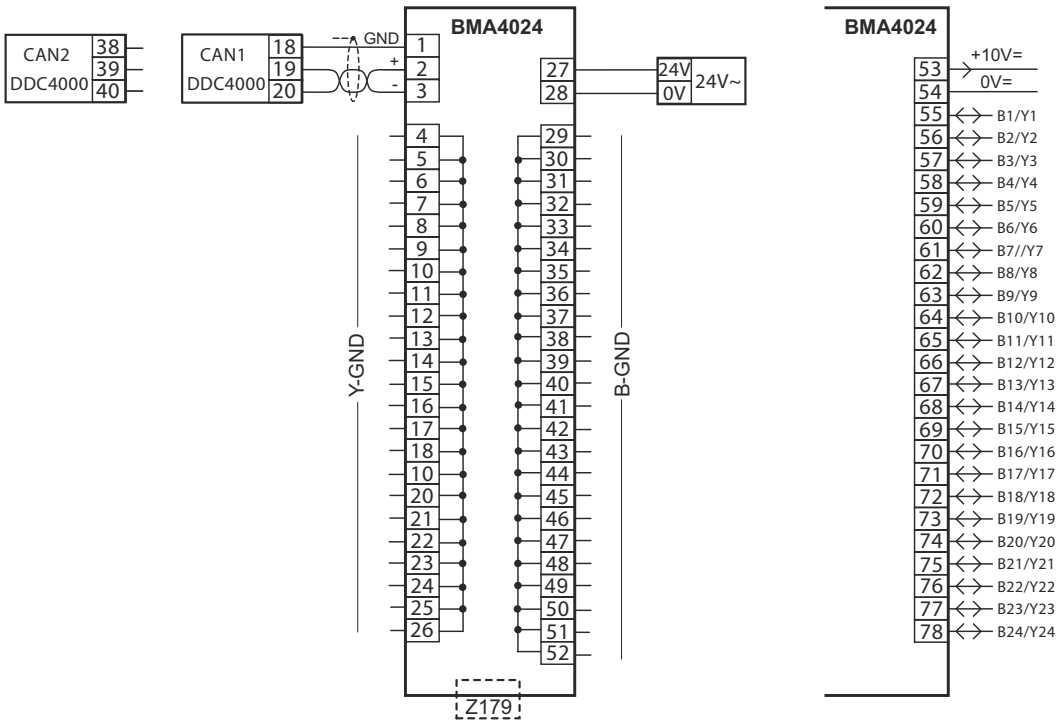
Accessories (not included in delivery)

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.

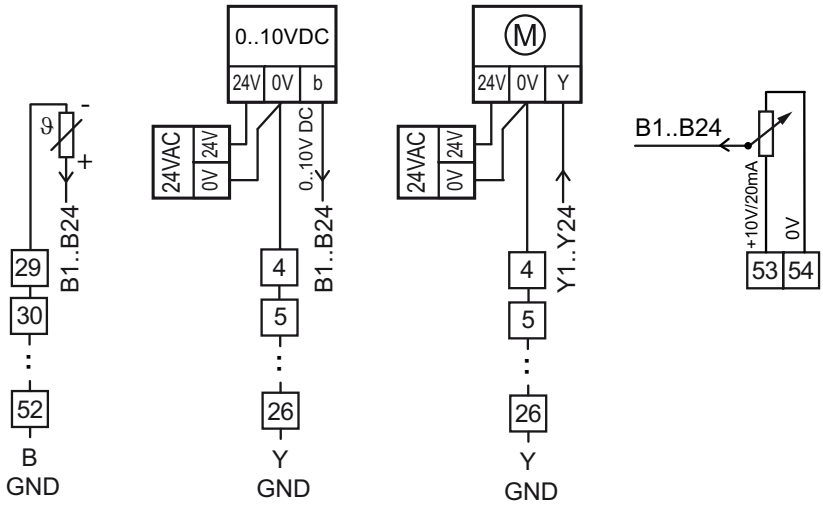
Dimensions



Connection



Sensor and actuator connection



CAUTION

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

Installation

CAUTION

This product description describes specific settings and functions of the BMA4024. 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.

Switch cabinet bus

When connecting the switch cabinet bus, use a cable of at least type JY(St)Y 2x2x0.8 Lg: two x two leads stranded into a pair, plastic insulation and an electrostatic shield with a lead diameter of at least 0.8 mm. Use a stranded pair of leads for the data lines (+ and -) and another free lead for the ground (0).

At the end of the switch cabinet bus (farthest 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

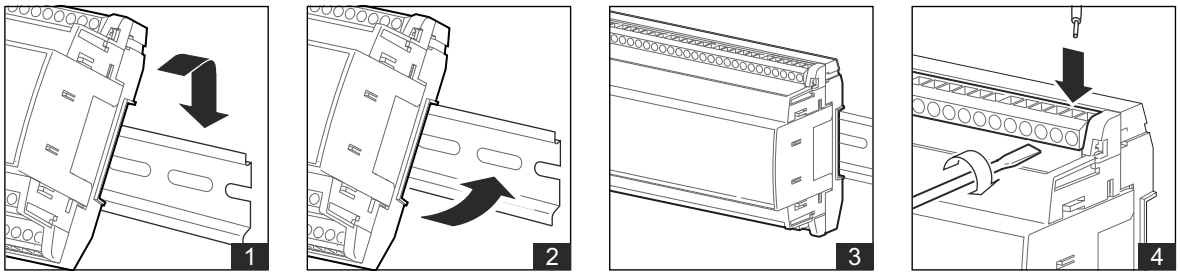
The maximum cable length for the switch cabinet bus is 200 m.

Mounting

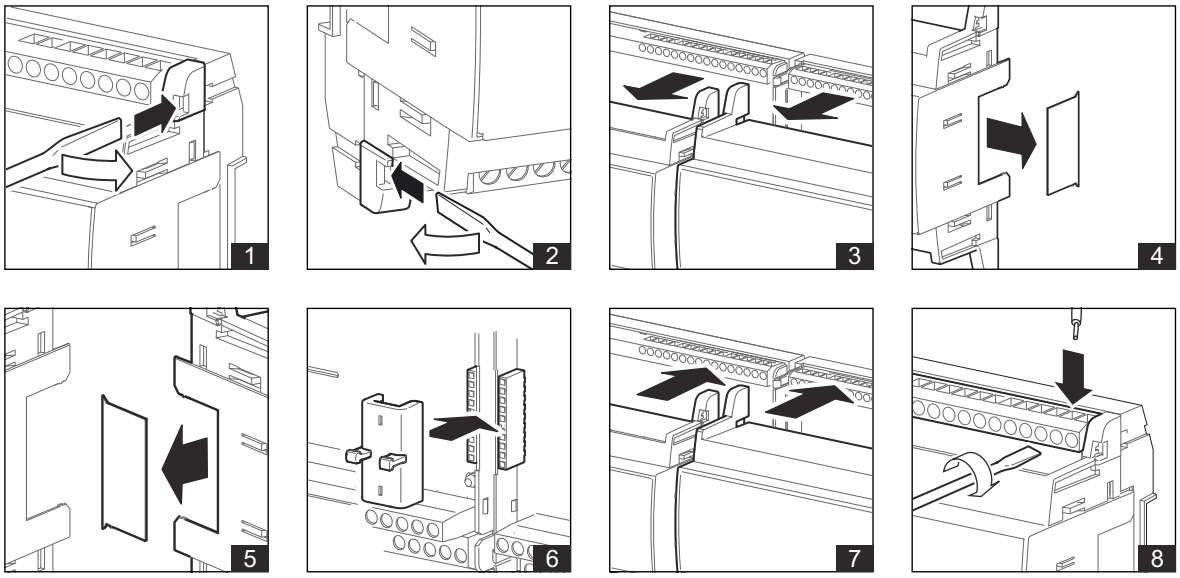
WARNING

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



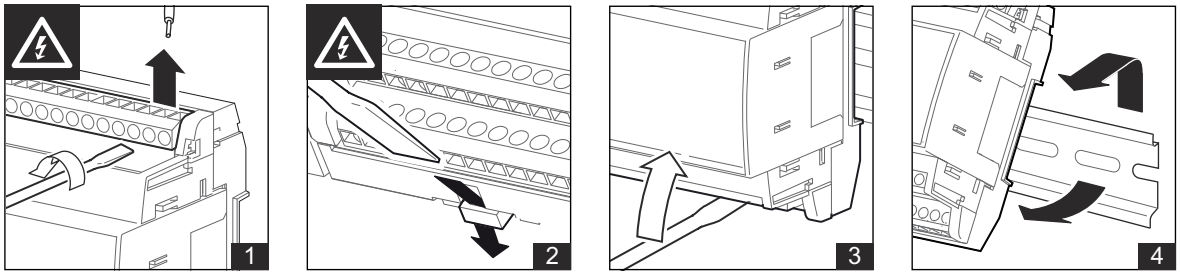
Installation with Z179 cascade plug accessory (not included in the scope of delivery)



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

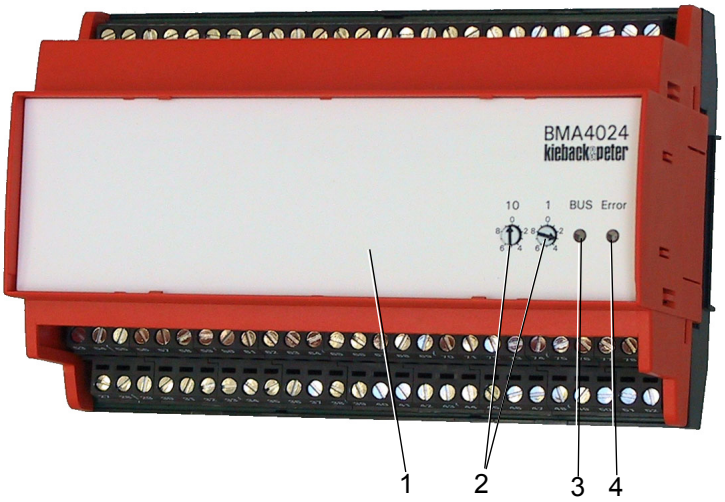
CAUTION

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.

- 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.

Setting the Switch Cabinet Bus Address



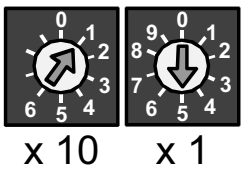
1 Transparent cover
2 Address switch
3 Green “BUS” LED
4 Red “Error” LED

Allowed range for the switch cabinet bus address: 01 to 16.

The rotary switches for setting the switch cabinet bus address are located under the Transparent cover (1).

- Starting from the bottom corner on the side, use a screwdriver (blade width < 3 mm) to lift the Transparent cover (1).
- Set the first digit of the switch cabinet bus address using the first Address switch (2) and the second digit using the second Address switch (2).

  The example shows the address “15”.
- With a little pressure, lock the Transparent cover (1) back into place.



LED Indicators

Green “BUS” LED	Red “Error” LED	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 (between a bus line and either ground or other another bus line) Bus lines mixed up Bus line(s) interrupted
Flashing	Flashing	Address error, no bus activity	Outside of address range #01 to #16 Address assigned multiple times
Flashing	On	Address error	Address not registered in controller
Flashing	Off	Module OK, bus activity	
Flashing, alternating between green and red		Hardware problem	Polarity of the DC 24 V contacts reversed