

## Description

The AD-KAB10 GX provides a remote controllable relay switching contact (changeover contact). Remote control is via the RS-485 bus interface. The device communication is realized using the MODBUS RTU protocol.

The power supply and the RS485 bus connection is possible via the rear DIN rail connector. The device is equipped with two rotary coding switches with which the bus address can be set on the device.

The static contact control is carried out with a control value 0 or 1.

A pulse output function (with 1 Hz) is triggered with a control value of 1 to 255 and can be modified or stopped at any time with other values. An optical search function allows the localization of a single device in a device network when in a cabinet several devices are on a top hat rail. For this purpose, the green LED is set in a time-limited flashing mode, between 1 and 255 seconds.

For the relay, a defined start state can be set so that when the supply voltage returns after a power failure, a system can assume the desired start state.

The interface settings as well as the device address can be modified during operation by means of Modbus commands. All Modbus register addresses and associated commands are listed in the document attachment.

## Application

Remote control of consumers such as valves or motors in building automation and automation technology.



## Specific characteristics

- RS485 bus / Modbus RTU protocol
- Rotary coding switch for bus address setting
- Presettable contact start state
- Potential-free contact (changer)
- Switching Power Supply
- Pulse and toggle output function
- Pulse summation (1/1000 + 1/100 + 1/10 + 1)
- Optical search function, Modbus master mode

## Business data

**Order number**  
AD-KAB 10 GX

**Accessory**  
Rail connector (5-pin) AD-GX-Connector

## Information

**Downloads**  
Tender text [kab10gx.zip](#)

## Technical specifications

### Relay

Maximum switching load AC	250 V, 2 A
Maximum switching load DC	50 V, 2 A
Contact construction	changeover contact
Switching operations mechanical	10000000
At 230V/2A AC, cos(phi)=1	500000
At 24V/1 A DC	1000000

### Transmission behaviour

Response time max. 15 ms

### RS485-Bus

Software protocol	Modbus-RTU
Data format	19200, e, 8, 1
Max. bus users	99
Bus termination	120 ohms both sides at the end
Max. length of bus	500 m (no spur lines)
Cable	twisted and shielded

### Supply

Supply voltage	18 ... 30 V DC
Max. power consumption	700 mW (24V DC)

### Housing

Dimensions (WxHxD)	6,2 x 92 x 101 mm <sup>3</sup>
Manner of fastening	DIN rail mounting 35mm, EN 50022
Type of protection	IP 20
Connection method	screw clamp
Bolting torque terminals	0,5 Nm
Wire cross section	max. 2,5 mm <sup>2</sup>
Weight	~ 70 g

### Environmental conditions

Permissible ambient temperature	-10 ... +50 °C
Storage and transport	-10 ... +70 °C (no condensation)

### EMC

Product family standard <sup>1)</sup>	EN 61326-1
Emission <sup>2)</sup>	EN 55011, CISPR11 Cl. A, Gr. 1

<sup>1)</sup> During checking, slight signal deviations are possible.

<sup>2)</sup> Warning:

This device is not intended to be used in residential areas and can not ensure adequate protection of radio reception in such environments.

### Technical specifications

#### Electrical safety requirements

Product family standard EN 61010-1

#### Galvanic isolation, test voltages

RS485 bus / power supply 1,5 kV, 50 Hz (1 min)

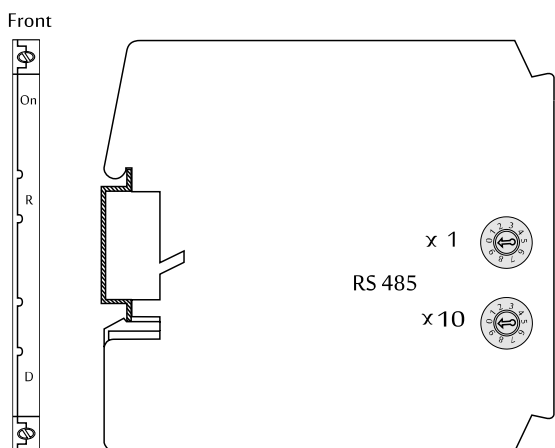
Relay contact 3 kV, 50 Hz (1 min)

#### Protection circuits

RS485-Bus electrical surge protection

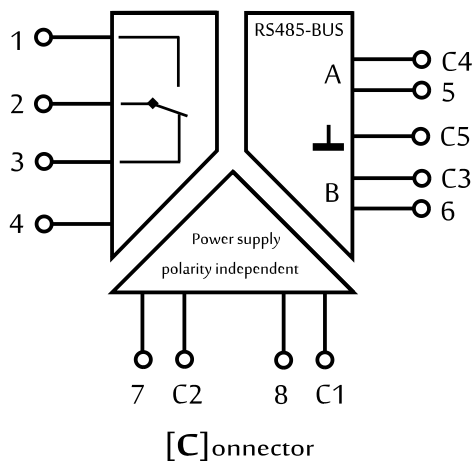
Power supply electrical surge and reverse current protection

### Display and operating elements

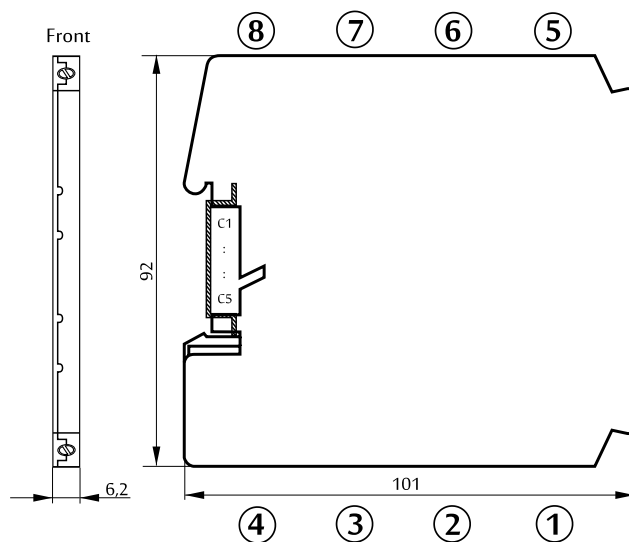


Designation	LED	Meaning
On	green	Power supply
R	red	Relay state
D	yellow	RS485 Communication
RS485		Address switch(01...99)

### Block and wiring diagram



### Dimensions



### Modbus Communication

The AD-KAB 10 GX has an RS485 bus interface on which the Modbus RTU protocol is used. All control functions of the device can be executed via this bus interface. The preset standard data format is 19200,e,8,1. Adaptation to a different data format is possible at any time. The bus address (1...99) is set to the side-mounted rotary switches. The address 0 is not permitted for the bus operation. However, on this zero position the device only via the standard data format (19200, e, 8.1) accessible. The position 0 thus represents a service position, the example can be used during parameterization error.

The AD-KAB 10 GX supports two Modbus functions. These are the functions "Read Holding Registers" (0x03) and "Write Holding Registers" (0x10). With the "Read Holding Registers" function data can be read from the device and written with "Write Holding Registers" data. The individual register width is 16 bits. Please see the Modbus specification for detailed explanations of the Modbus communication. This is online available for free, but can also be purchased from the Adamczewski homepage.

The following Modbus data are accessible via the RS485 bus:

Start address	Reg. number	Name	Datatype	[Code] = Value	read	write
40401	2	Pulse summation / 1	U32	0...4294967295	yes	yes
40403	2	Pulse summation / 10	U32	0...4294967295	yes	yes
40405	2	Pulse summation / 100	U32	0...4294967295	yes	yes
40407	2	Pulse summation / 1000	U32	0...4294967295	yes	yes
40501	1	Address switch	U16	1...99...247	yes	yes
40502	1	Output contact	U16	0/1...255	yes	yes
40503	1	Pulse output	U16	1...255	yes	yes
40504	1	Toggle relay	U16	0/1	yes	yes
40505	1	Flashing function	U16	0/1...255	yes	yes
40901	2	Scaling value	float	float	no	yes
44201	2	OFF limit	float	float	yes	yes
44211	2	ON limit	float	float	yes	yes
47215	2	Switching cycles	U32	0...	yes	no
49102	1	Device reset	U16	0	no	yes
49105	6	Device type	String	KAB10GX	yes	no
49119	1	Firmware version	U16	MSB/LSB	yes	no
42901	1	Baud rate	U16	index, see list below	yes	yes
42902	1	Parity	U16	[0]=even; [1]=odd; [2]=no	yes	yes
42903	1	Modbus Master	U16	0/1	yes	yes
42904	1	Relay start up state	U16	0/1	yes	yes

### Coding baudrate list

Index	0	1	2	3	4	5	6	7	8	9
baud	2400	4800	9600	14400	19200	28800	38400	57600	76800	115200

After changing the interface parameters, a device reset is required.

### Modbus master mode

The device can even work in Modbus master mode to transfer data between any devices within an RS485 line. For Modbus master operation, starting with Modbus register 40611, there are 48 consecutive data transfer sets, with 5 configuration registers each.

Start address	Reg. number	Name	Datatype	[Code] = Value	read	write
40611	1	Source address [1]	U16	1...98	yes	yes
40612	1	Source register [1]	U16	nnnnn	yes	yes
40613	1	Target address [1]	U16	1...99	yes	yes
40614	1	Target register [1]	U16	nnnnn	yes	yes
40615	1	Register count [1]	U16	1/2	yes	yes
40846	1	Source address [48]	U16	1...98	yes	yes
40847	1	Source register [48]	U16	nnnnn	yes	yes
40848	1	Target address [48]	U16	1...99	yes	yes
40849	1	Target register [48]	U16	nnnnn	yes	yes
40850	1	Register count [48]	U16	1/2	yes	yes

For the Modbus master mode, the parameter "Modbus master" must be activated and the address switch set to position 99.

Data transfer begins six seconds after activation or device restart.

A flashing green LED indicates a communication error.