



Switch actuator, 4-gang / blinds actuator, 2-gang

Art. No. 2304.16 REG HE

Switch actuator, 8-gang / blinds actuator, 4-gang

Art. No. 2308.16 REG HE

Switch actuator, 16-gang / blinds actuator, 8-gang

Art. No. 2316.16 REG HE

## Operating instructions

### 1 Safety instructions

Electrical equipment may only be installed and fitted by electrically skilled persons.

Failure to observe the instructions may cause damage to the device and result in fire and other hazards.

Danger of electric shock. Device is not suitable for disconnection from supply voltage.

Danger of electric shock on the SELV or PELV installation. Do not connect any loads for SELV, PELV, or FELV together.

For parallel connection of several drives to an output it is essential to observe the corresponding instructions of the manufacturers, and to use a cut-off relay if necessary. There is otherwise risk of irreparable damage to the drives.

Use only Venetian blind drives with mechanical or electronic limit switches. Check the limit switches for correct adjustment. Observe the specifications of the motor manufacturers. Device can be damaged.

Do not connect any three-phase motors. Device can be damaged.

These instructions are an integral part of the product, and must remain with the end customer.

### 2 Device components

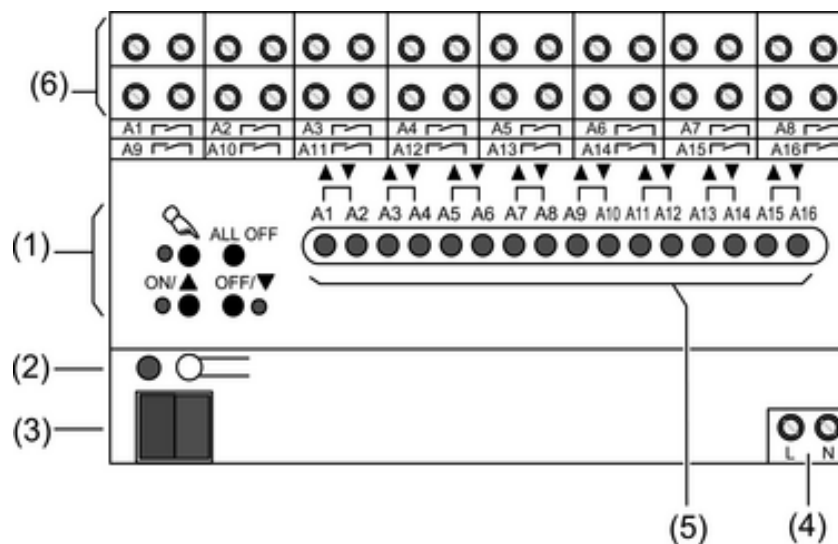


Figure 1

- (1) Button field for manual operation
- (2) Programming button and LEDs
- (3) KNX connection
- (4) Connection for mains supply
- (5) Status LEDs for outputs
- (6) Connection for loads

## 3 Function

### System information

This device is a product of the KNX system and complies with the KNX directives. Detailed technical knowledge obtained in KNX training courses is a prerequisite to proper understanding.

The function of this device depends upon the software. Detailed information on loadable software and attainable functionality as well as the software itself can be obtained from the manufacturer's product database.

Planning, installation and commissioning of the device are carried out with the aid of KNX-certified software. Full functionality with KNX commissioning software version ETS3.0d onwards.

An updated version of the product database, technical descriptions and conversion programs and other auxiliary programs are available on our Internet website.

### Intended use

- Switching of AC 230 V electrical loads with floating contacts
- Switching of electrically-driven Venetian blinds, shutters, awnings and similar hangings
- Mounting on DIN rail in small distributors

### Product characteristics

- Outputs can be operated manually, construction site mode
- Feedback in manual mode and in bus mode
- Scene function
- Disabling of individual outputs manually or via bus

### Characteristics switch operation

- Operation as NO or NC contacts
- Logic and restraint function
- Feedback function
- Central switching function with collective feedback
- Time functions: switch-on delay, switch-off delay, staircase lighting timer with run-on time

### Characteristics blinds operation

- Suitable for 230 V AC motors
- Blind/shutter position directly controllable
- Slat position directly controllable
- Feedback of movement status, blind/shutter position and slat position
- Forced position through higher-level controller
- Safety function: 3 independent wind alarms, rain alarm, frost alarm
- Sun protection function

## 4 Operation

### Operating elements

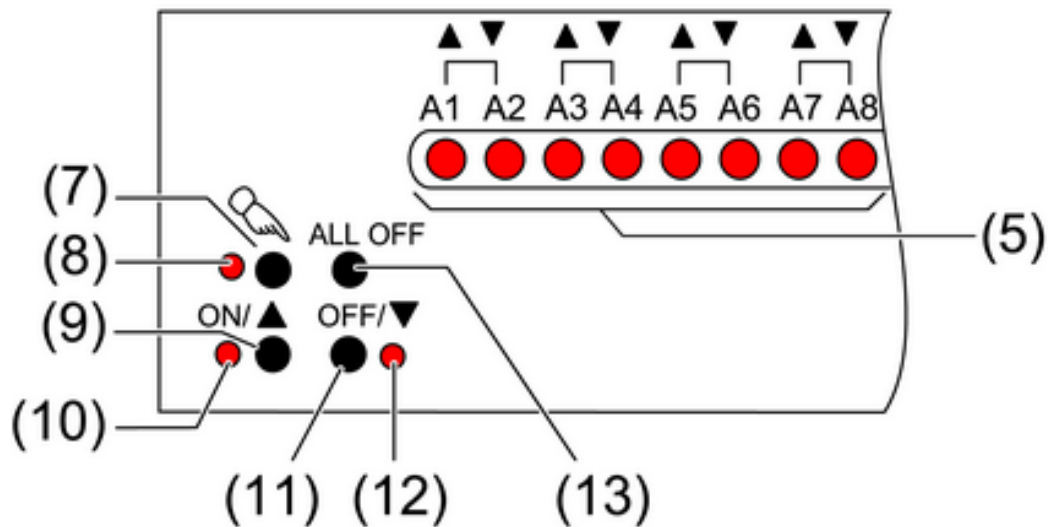


Figure 2

- (5) Status LEDs for outputs
- (7) Button – Manual operation
- (8) LED – On: Continuous manual mode active
- (9) Button **ON/▲** - Switching on or move hanging up / stop
- (10) LED **ON/▲** – ON: Switched on or hanging moves up, manual mode
- (11) Button **OFF/▼** - Switch off or move hanging downwards, manual mode
- (12) LED **OFF/▼** – ON: Switched off or hanging moves down, manual mode
- (13) Button **ALL OFF** – All outputs off and stop drives.

In operation with the button field the device distinguishes between a short and a long press.

- Short: pressing for less than 1 second
- Long: Pressing for between 1 and 5 seconds

#### Status indication

The status LED **A1...** (5) indicate the states of the outputs (figure 1).

- Off: Output switched off
- On: Output switched on
- Flashes slowly: Output in manual mode
- Flashes quickly: Output disabled via continuous manual mode

#### Operating modes

- Bus operation: Operation via push-button sensors or other bus devices
- Short-term manual operation: Manual operation locally with button field, automatic return to bus operation.
- Continuous manual mode: Exclusively manual operation on the device



- No bus operation is possible in manual mode.
- No manual mode is possible in case of bus failure.
- After a bus failure and restoration the device switches to bus operation.
- After a power failure and restoration the device switches to bus operation.
- The manual mode can be disabled in ongoing operation via a bus telegram.


### Priorities for blinds operation

- Highest priority: manual mode
- 2nd priority: forced position
- 3rd priority: safety function
- 4th priority: sun protection
- Lowest priority: bus mode: moving up/down, slat positioning, scenes, positioning

### Switching on the temporary manual control


Operation using the button field is programmed and not disabled.

- Press the  button briefly.  
Status-LET **A1** flashes, LED  remains off.

 After 5 seconds without a button-press, the actuator returns automatically to bus operation.

### Switching off temporary manual operation

The device is in short-term manual mode.

- No button-press for 5 seconds.  
- or -
- Press  button briefly as many time as necessary until the actuator leaves the short-time manual mode.



Status LEDs **A1**... no longer flash, but rather indicate the output status.

Switching outputs: depending on the programming, the output relays switch to the position that is active after the manual mode is switched off, e.g. to the forced position, logic function.

Blind/shutter outputs: depending on the programming, the hangings move to the position that is active after the manual mode is switched off, e.g. to the forced position, safety or sun protection position.



### Switching on permanent manual control

Operation using the button field is programmed and not disabled.

- Press the  button for at least 5 seconds.  
LED  is illuminated, status LED **A1** flashes, continuous manual mode is switched on.

### Switching off permanent manual control

The device is in continuous manual mode.


- Press the  button for at least 5 seconds.  
LED  is off, bus operation is switched on.

Switching outputs: depending on the programming, the output relays switch to the position that is active after the manual mode is switched off, e.g. to the forced position, logic function.

Blind/shutter outputs: depending on the programming, the hangings move to the position that is active after the manual mode is switched off, e.g. to the forced position, safety or sun protection position.

### Operating the outputs

The device is in continuous or short-term manual mode.

- Press  button briefly as many times as necessary until the desired output is selected.  
The status LED of the selected output **A1**... flashes.  
The LEDs **ON/▲** and **OFF/▼** indicate the status.

- Operate output with **ON/▲** or **OFF/▼** button.  
Switching outputs: switch on or switch off.


Blind/shutter outputs:

Short: Stop hanging.

Long: Move hanging upwards/downwards.

The selected output executes the corresponding commands.

The LEDs **ON/▲** and **OFF/▼** indicate the status.

-  Short-term manual operation: After running through all of the outputs the device exits manual mode after another brief press.


### Switching off all outputs / Stopping all hangings


The device is in continuous manual mode.


- Press the **ALL OFF** button.  
All outputs switch off; all hangings stop moving.

### Disabling individual outputs

The device is in continuous manual mode.


- Press  button briefly as many times as necessary until the desired output is selected.  
The status LED of the selected output **A1...** flashes.
- Press **ON/▲** and **OFF/▼** buttons simultaneously for at least 5 seconds.  
Selected output is disabled.  
The status LED of the selected output **A1...** flashes quickly.
- Activate bus mode (see section Deactivating permanent manual control).

-  A disabled output can be operated in manual mode.

-  When a disabled output is selected in manual mode, the corresponding status LED flashes twice briefly at intervals.

### Re-enabling outputs

The device is in continuous manual mode.

- Press  button briefly as many times as necessary until the desired output is selected.  
The status LED of the selected output **A1...** flashes twice briefly at time intervals.
- Press **ON/▲** and **OFF/▼** buttons simultaneously for at least 5 seconds.  
Selected output is enabled.  
LED of the selected output flashes slowly.
- Activate bus mode (see section Deactivating permanent manual control).

## 5 Information for electrically skilled persons

### 5.1 Fitting and electrical connection



#### **DANGER!**

**Electrical shock when live parts are touched.**

**Electrical shocks can be fatal.**

**Before working on the device, disconnect the power supply and cover up live parts in the working environment.**

#### Fitting the device

Observe the temperature range. Ensure adequate cooling.

- Snap device onto DIN rail to DIN EN 60715. Output terminals must be at the top.

### Connecting the device

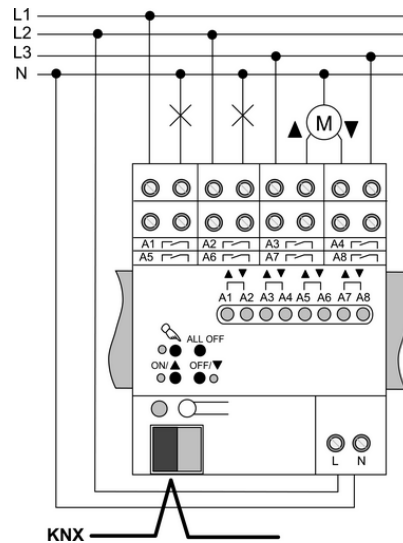


Figure 3

- Connect bus line with connecting terminal.
- Connect mains voltage supply.
- i** Delivery state: Outputs can be operated using button field, construction site mode. All outputs are set as blind/shutter outputs.

### Connecting switched loads

Output is parameterised as a switching output.



**CAUTION!**

**Overloading the device leads to excessive heating.  
Damage to the device and the connected cables may result.  
Do not exceed the maximum current carrying capacity.**

- Connected switched loads (figure 4).

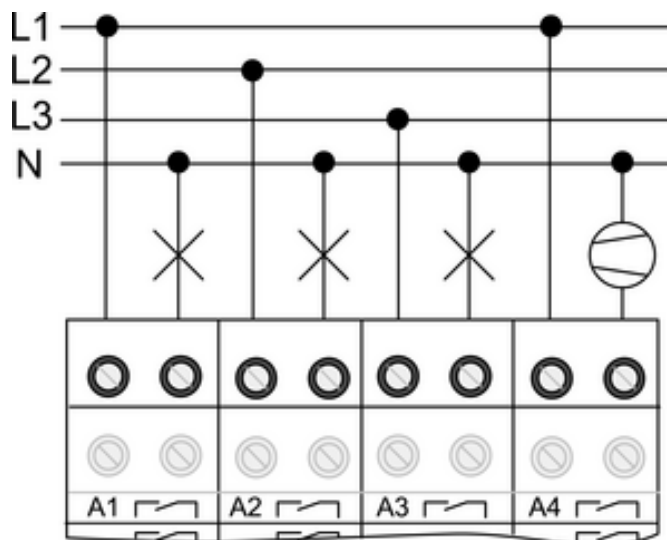


Figure 4

### Connecting blind/shutter drives

For blind/shutter drives, each pair of adjacent relay outputs forms a blind/shutter output. In each case the left-hand relay output **A1, A3...** is intended for the up direction, and the right-hand load output **A2, A4...** for the down direction.

Output is parameterised as a blind/shutter output.



**CAUTION!**

**Overloading the device leads to excessive heating.**

**Damage to the device and the connected cables may result.**

**Do not exceed the maximum current carrying capacity.**

- Connect drives (figure 5).

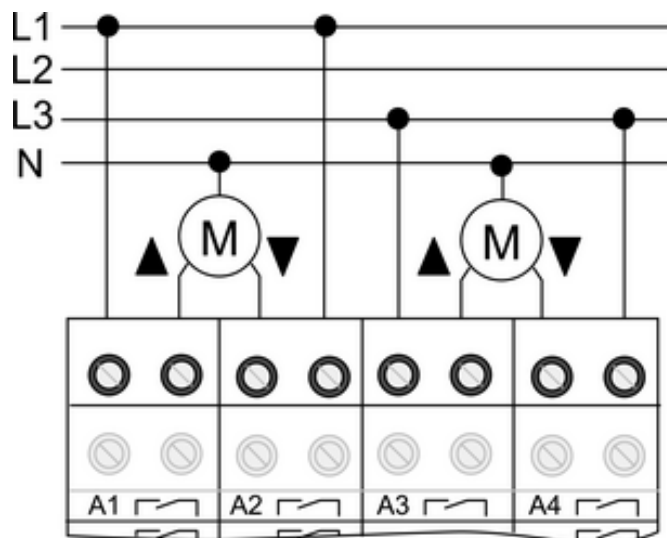


Figure 5

### Installing the cover

It is necessary to install a cover to protect the bus connection against hazardous voltages in the connection area.

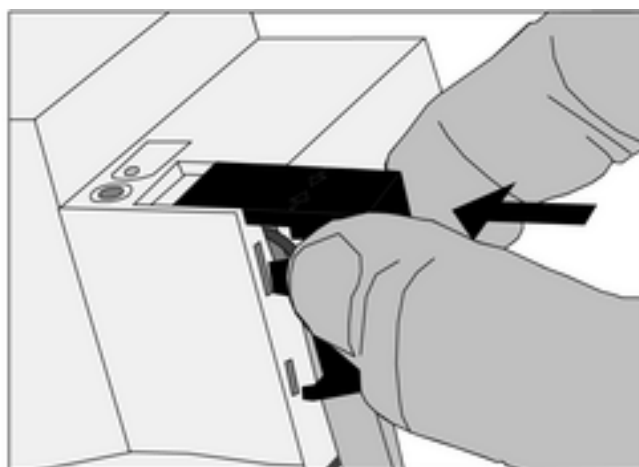


Figure 6: Installing the cover

- Route the bus line towards the rear.

- Install cover on top of the bus terminal so that it snaps into place (figure 6).

### Removing the cover

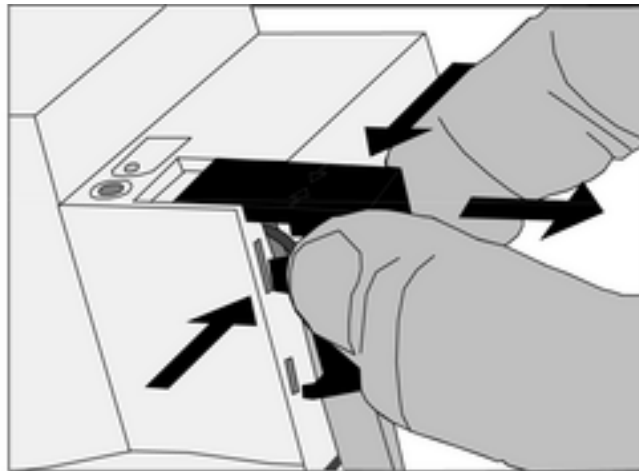


Figure 7: Removing the cover

- Press the cover to the side and pull it off (figure 7).

## 5.2 Commissioning

### Measuring the hanging and slat operation time

The blind/shutter travelling time is important for position and scene runs. For slatted Venetian blinds the slat adjusting time is by design part of the overall blind/shutter travelling time. The opening angle of the slats is therefore set as the operation time between the positions Open and Closed.

The upwards travel generally lasts longer than the downwards travel, and is taken into account as the operation time extension in %.

- Measure upwards and downwards operation time of the hanging.
- Measure slat adjusting time between Open and Closed.
- Enter the measured values in the parameter setting – Downwards travel in seconds and operation time extension in percent.

**i** In the case of automatic operation time detection, no measurement of the hanging operation times is performed.

**i** Automatic measurement of the slat adjusting time is not possible.

### Load the address and the application software

- Switch on the bus voltage.
- Assign physical addresses and load application software into the device.
- Note the physical address on the device label.

## 6 Appendix

### 6.1 Technical data

|                         |                  |
|-------------------------|------------------|
| Supply                  |                  |
| Rated voltage           | AC 230 / 240 V ~ |
| Mains frequency         | 50 / 60 Hz       |
| Power loss              |                  |
| Art. No. 2304.16 REG HE | max. 2 W         |
| Art. No. 2308.16 REG HE | max. 3 W         |
| Art. No. 2316.16 REG HE | max. 4.5 W       |
| Ambient conditions      |                  |



|   |                             |
|---|-----------------------------|
| Ambient temperature                         | -5 ... +45 °C               |
| Storage/transport temperature               | -25 ... +70 °C              |
| Outputs                                     |                             |
| Contact type                                | μ contact, monostable       |
| Switching voltage                           | AC 250 V ~                  |
| Switching current AC1                       | 16 A                        |
| Fluorescent lamps                           | 16 AX                       |
| Current carrying capacity                   |                             |
| Neighbouring outputs                        | Σ 20 A                      |
| Device                                      |                             |
| Art. No. 2304.16 REG HE                     | Σ 40 A                      |
| Art. No. 2308.16 REG HE                     | Σ 80 A                      |
| Art. No. 2316.16 REG HE                     | Σ 160 A                     |
| Loads per output                            |                             |
| Ohmic load                                  | 3000 W                      |
| Capacitive load                             | max. 16 A (140μ)            |
| Motors                                      | 1380 VA                     |
| Switch-on current 200 μs                    | max. 800 A                  |
| Switch-on current 20 ms                     | max. 165 A                  |
| Lamp loads                                  |                             |
| Incandescent lamps                          | 3000 W                      |
| HV halogen lamps                            | 2500 W                      |
| LV halogen lamps with Tronic transformer    | 1500 W                      |
| LV halogen lamps with inductive transformer | 1200 VA                     |
| Fluorescent lamps T5/T8                     |                             |
| uncompensated                               | 1000 W                      |
| parallel compensated                        | 1160 W (140 μF)             |
| Duo circuit                                 | 2300 W (140 μF)             |
| Compact fluorescent lamps                   |                             |
| uncompensated                               | 1000 W                      |
| parallel compensated                        | 1160 W (140 μF)             |
| Mercury vapour lamps                        |                             |
| uncompensated                               | 1000 W                      |
| parallel compensated                        | 1160 W (140 μF)             |
| Connections supply and load                 |                             |
| Connection mode                             | Screw terminal              |
| single stranded                             | 0.5 ... 4 mm <sup>2</sup>   |
| finely stranded without conductor sleeve    | 0.5 ... 4 mm <sup>2</sup>   |
| finely stranded with conductor sleeve       | 0.5 ... 2.5 mm <sup>2</sup> |
| Fitting width                               |                             |
| Art. No. 2304.16 REG HE                     | 72 mm / 4 modules           |
| Art. No. 2308.16 REG HE                     | 72 mm / 4 modules           |
| Art. No. 2316.16 REG HE                     | 144 mm / 8 modules          |
| Weight                                      |                             |
| Art. No. 2304.16 REG HE                     | approx. 250 g               |
| Art. No. 2308.16 REG HE                     | approx. 290 g               |
| Art. No. 2316.16 REG HE                     | approx. 460 g               |
| KNX   |                             |
| KNX medium                                  | TP 1                        |
| Commissioning mode                          | S-mode                      |
| Rated voltage KNX                           | DC 21 ... 32 V SELV         |
| Power consumption KNX                       | typical 150 mW              |
| Connection type for bus                     | Connection terminal         |

## 6.2 Troubleshooting

### Manual control with button field not possible

Cause 1: Manual control has not been programmed.

Program manual control.

Cause 2: Manual control via bus disabled.

Enable manual control.

**Output cannot be operated.**

Cause: Output is disabled.

Cancel disabling.

**None of the outputs can be operated.**

Cause 1: All of the outputs are disabled-

Cancel disabling.

Cause 2: Continuous manual mode active.

Deactivate manual mode (switch off continuous manual mode).

Cause 3: Application software has been stopped, programming LED is flashing.

Perform reset: Disconnect device from bus, switch on again after 5 seconds.

Cause 4: Application software missing or faulty.

Check programming and correct.

**Blind/shutter outputs cannot be operated**

Cause: Forced position, safety function or sun protection is active.

As long as higher-order functions are active for a blind/shutter output, this output cannot be operated.

**Position runs and scene runs are not executed or executed improperly**

Cause 1: Sun protection, safety function, forced position or manual mode is activated.

As long as higher-order functions are active, no position or scene runs are possible.

**Hanging does not move to end position, position and scene runs faulty.**

Cause: Blind/shutter travelling time has been set incorrectly.

Correct blind/shutter travelling time.

**The hanging moves upwards before the positioning and scene run.**

Cause: No position saved, e.g. due to power failure.

Hanging performs reference run. Do not interrupt hanging run.

**6.3 Accessories**

Connection cover

Decoupling relay

Decoupling relay for rail mounting

Decoupling relay, flush-mounted

Art. No. 2050 K  
 Art. No. TR-S  
 Art. No. TR-S REG  
 Art. No. TR-S UP

**6.4 Warranty**

We reserve the right to make technical and formal changes to the product in the interest of technical progress.

We provide a warranty as provided for by law.

Please send the device with a description of the defect to our central customer service office.



Switch actuator / blinds actuator



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**ALBRECHT JUNG GMBH & CO. KG**

Volmestraße 1  
58579 Schalksmühle

Telefon: +49.23 55.8 06-0  
Telefax: +49.23 55.8 06-2 04  
kundencenter@jung.de  
www.jung.de

**Service Center**

Kupferstr. 17-19  
44532 Lünen  
Germany