KNX S4-B10 230 V
KNX S2-B6 230 V
KNX S1-B2 230 V
Multifunctional Actuators

Technical specifications and installation instructions

Item numbers 70530 (KNX S4-B10 230 V), 70531 (KNX S2-B6 230 V), 70532 (KNX S1-B2 230 V)

1. Description

The **Actuators KNX S4-B10 230 V, KNX S2-B6 230 V and KNX S1-B2 230 V** with integrated facade control have multifunctional outputs, pairs of buttons and monitoring LEDs. Each of the multifunctional outputs can connect to either a drive with Up/Down control (blinds, awnings, shutters, windows) or two switchable devices (On/Off for light and ventilation). The connected drives and devices can be operated directly on the actuator or via connected hand switches.

The automation can be specified externally or internally. Internally, there are numerous options available for blocking, locking (e.g. master-slave) and priority definition (e.g. manual-automatic). Scenes can be saved and called up via the bus (scene control with 16 scenes per drive).

Binary inputs can be used either for direct operation (e.g. hand switches) or as bus switches (or also for e.g. alarm notifications). The desired behaviour can be defined precisely through selection of the response times in Standard, Comfort or Deadman mode.

Functions:

- **Multifunctional outputs** each for a **230 V drive** (shade, window) or for connecting two **switchable devices** (light, fan)
  KNX S4-B10: 4 outputs | KNX S2-B6: 2 outputs | KNX S1-B2: 1 output
- Keypad with **button pairs** and status LEDs
- **Binary inputs** for use as hand switches or as bus switches with variable voltage (12...80 V DC, 12...240 V AC)
  KNX S4-B10: 10 inputs | KNX S2-B6: 6 inputs | KNX S1-B2: 2 inputs
- **Automatic runtime measurement** of the drives for positioning (including fault notification object)
- Position feedback (movement position, also slat position for blinds)
- Position storage (movement position) via 1-bit object (storage and call-up e.g. via button)
- Control via **internal or external automation**
- Integrated **shade control** for each drive output (with **slat tracking** according to sun position for blinds)
- **Scene control** for movement position with 16 scenes per drive (also slat position for blinds)
- Mutual **locking** of two drives using zero position sensors prevents collisions e.g. of shade and window (master–slave)
- Blocking objects and alarm notifications have different priorities, so safety functions always take precedence (e.g. wind block)
- Manual or automatic priority setting via time or communication object
- 5 Safety objects for each channel
- Short time restriction (movement command blocked) and movement limitation

Configuration is made using the KNX software ETS 5. The **product file** can be downloaded from the ETS online catalogue and the Elsner Elektronik website on **www.elsner-elektronik.de** in the “Service” menu.

1.0.1. Scope of delivery

- Actuator

1.1. Technical Data

Housing	Plastic
Colour	White
Assembly	Series installation on mounting rails
Protection Category	IP 20
Ambient temperature	Operation -20...+45°C, Storage -55...+90°C
Ambient humidity	max. 95% rH, avoid condensation
Operating voltage	230 V AC, 50 Hz
Current	on Bus: 10 mA
Maximum load	Each terminal contact may be loaded with a maximum of 10 A.
Minimum current for runtime measurement	AC effective 200 mA
Max. cable length Binary inputs	50 m
Data output	KNX +/- Bus connector terminal
BCU type	own microcontroller
PEI type	0
Goup addresses	max. 1024
Assignments	max. 1024

KNX S4-B10 230 V (No. 70530):

Dimensions	approx. 107 x 88 x 60 (W × H × D, mm), 6 dividing units
Weight	approx. 360 g
Power consumption	Operation max. approx. 3.5 W Standby max. approx. 0.6 W
Outputs	4 × outputs each with 2 connections for drive up/down or 2 devices, 230 V (PE/N/1/2), total. max 10 A and max. 4 A per connection
Inputs	10 × binary inputs, universal voltage (12...80V DC, 12...240 V AC)
Communication objects	567

KNX S2-B6 230 V (No. 70531):

Dimensions	approx. 107 x 88 x 60 (W × H × D, mm), 6 dividing units
Weight	ca. 360 g
Power consumption	Operation max. approx, 3.5 W Standby max. ca. 0.6 W
Outputs	2 × outputs with 2 connections for drive Up/Down or 2 devices, 230 V (PE/N/1/2), in total max. 10 A and max. 4 A per connection
Inputs	6 × binary inputs, universal voltage (12...80 V DC, 12...240 V AC)
Communication objects	295

KNX S1-B2 230 V (No. 70532):

Dimensions	approx. 53 x 88 x 60 (W × H × D, mm), 3 dividing units
Weight	approx. 170 g
Power consumption	Operation max. approx, 1.2 W
Output	1 × Output with 2 connections for drive Up/Down or 2 devices, 230 V (PE/N/1/2), in total max. 8 A and max. 4 A per connection
Inputs	2 × binary inputs, universal voltage (12...80 V DC, 12...240 V AC)
Communication objects	141

The products are compliant with the provisions of EU guidelines.

2. Installation and start-up

2.1. Installation notes

Installation, testing, operational start-up and troubleshooting should only be performed by an electrician.

DANGER!
Risk to life from live voltage (mains voltage)!
There are unprotected live components within the device.
- VDE regulations and national regulations are to be followed.
- Ensure that all lines to be assembled are free of voltage and take precautions against accidental switching on.
- Do not use the device if it is damaged.
- Take the device or system out of service and secure it against unintentional use, if it can be assumed, that risk-free operation is no longer guaranteed.

The device is only to be used for the intended purpose described in this manual. Any improper modification or failure to follow the operating instructions voids any and all warranty and guarantee claims.

After unpacking the device, check it immediately for possible mechanical damage. If it has been damaged in transport, inform the supplier immediately.

The device may only be used as a fixed-site installation; that means only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.

Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

2.2. Safety notice for automatic functions

WARNING!
Risk of injury from automatically moving components!
Parts of the system can be started by the automatic controls and be a danger to persons.
- No persons may remain in the travelling range of parts driven by an electric motor.
- Adhere to the relevant building regulations.
- Ensure that the return path/access to the building is not blocked if spending time outside the building (danger of being locked out).
- Correctly decommission the system for maintenance and cleaning work.

If there is a power outage, the system does not work. Therefore, shadings should be moved to a save position if there are anticipated weather conditions, for example, if this has not already been done by the automatic function (product protection).

If the power supply is removed, the connected drive switches off. When the power is restored, the consumer remains switched off until a new movement command is received by the actuator.

2.3. Connection

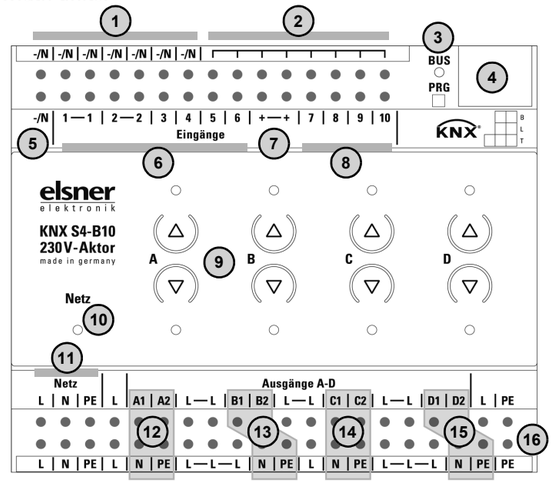
Follow the guidelines and standards for SELV electric circuits while installing and cable laying of the KNX connection and inputs.

Binary inputs:

The connections of the binary inputs including the auxiliary voltage output meet the requirements for SELV electrical circuits. Mixed installation with non-SELV electrical circuits or mixing of different auxiliary voltages is not permitted.

2.3.1. Device Design KNX S4-B10 230 V

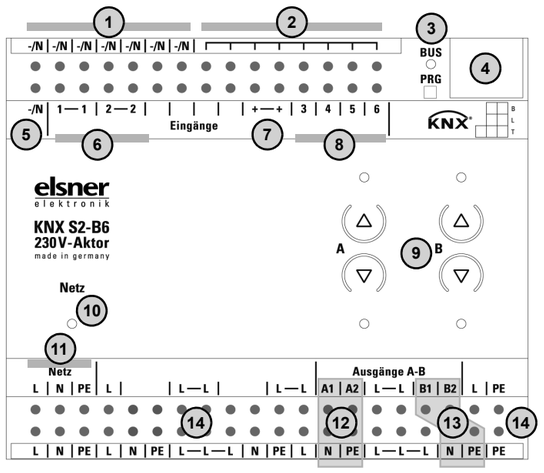
The device is designed for series installation on mounting rails and occupies 6 width units.



1) –/N (bridged internally with terminal No. 5). When an external auxiliary voltage is used (12...80 V DC, 12...240 V AC), one of the –/N terminals is to be assigned with – or N
2) Free contacts (bridged internally)
3) Programmer LED and programmer buttons (PRG)
4) Bus terminal slot (KNX +/-)
5) –/N (bridged internally with terminal No. 1).
6) Binary inputs 1-6 (1 and 2: two bridged connections)
7) Internal auxiliary voltage + 24 V DC. Only for binary inputs!
Do not assign any external voltage!
8) Binary inputs 7-10
9) Up/Down button pairs and LEDs channel A-D
10) Power LED, Indication of operation mode. See “Indication of operation mode with the Power LED”.
11) Operating voltage input 230 V AC L/N/PE
12) Output A1 - A2: "Up"-"Down" or "Device1"-"Device2", max. 4 A
13) Output B1 - B2: "Up"-"Down" or "Device1"-"Device2", max. 4 A
14) Output C1 - C2: "Up"-"Down" or "Device1"-"Device2", max. 4 A
15) Output D1 - D2: "Up"-"Down" or "Device1"-"Device2", max. 4 A
N° 12-15 together max. 10 A
16) All terminals L, N, PE of the lower connection strip are bridged internally with „Main L, N, PE“.

2.3.2. Device Design KNX S2-B6 230 V

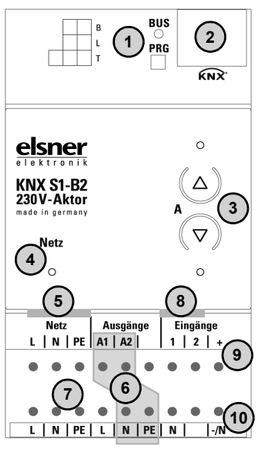
The device is designed for series installation on mounting rails and occupies 6 width units.



1) *–/N (bridged internally with terminal No. 5). When an external auxiliary voltage is used (12...80 V DC, 12...240 V AC), one of the –/N terminals is to be assigned with – or N*
2) *Free contacts (bridged internally)*
3) *Programming LED and programming buttons (PRG)*
4) *Bus terminal slot (KNX +/-)*
5) *–/N (bridged internally with terminals No. 1)*
6) *Binary inputs 1-2 (two bridged connections)*
7) *Internal auxiliary voltage + 24 V DC. Only for binary inputs!* ***Do not assign any external voltage!***
8) *Binary inputs 3-6*
9) *Up/Down button pairs and LEDs channel A-B*
10) *Mains LED (Power), mode status display. See "Indication of operation mode with the Power LED".*
11) *Operating voltage input 230 V AC L/N/PE*
12) *Output A1 - A2: "Up"-"Down" respectively "Device1"-"Device2", max. 4 A*
13) *Output B1 - B2: "Up"-"Down" respectively "Device1"-"Device2", max. 4 A* ***No. 12-13 in total max. 10 A***
14) *All terminals L, N , PE of the lower connection strip are bridged internally with „main L, N, PE".*

2.3.3. Device Design KNX S1-B2 230 V

The device is designed for series installation on mounting rails and occupies 3 width units.



1) *Programming LED and programming buttons (PRG)*
2) *Bus terminal slot (KNX +/-)*
3) *Switch pair Up/Down and LEDs*
4) *Mains LED (Power), mode status display. See "Indication of operation mode with the Power LED".*
5) *Operating voltage input 230 V AC L/N/PE*
6) *Output A1 - A2: "Up"-"Down" respectively "Device1"-"Device2", max. 4 A*
7) *All terminals L, N, PE of the lower connection strip are bridged internally with „Main L, N, PE".*
8) *Binary inputs 1-2*
9) *Internal auxiliary voltage + 24 V DC. Only for binary inputs!* ***Do not assign any external voltage!***
10) *-/N for external auxiliary voltage (12...80 V DC, 12...240 V AC)*

2.3.4. Indication of operation mode with the Power LED

Behaviour	Colour	
On	Green	Normal operation. Bus connection/bus voltage available.
Flashes	Green	Normal operation. No bus connection/bus voltage available.
On	Orange	Device starts up or is beeing programmed via the ETS. No automatic functions are executed.
Flashes	Green (on) Orange (flashing)	Programming mode active.

2.3.5. Status display by the channel LEDs

Behaviour	LED	
To	top	Drive in top end position/device on.
To	bottom	Drive in bottom end position/drive on.
Flashes slowly	top	Drive moves up.
Flashes slowly	bottom	Drive moves down.
Flashes quickly	top	Drive in top end position, blocking active.
Flashes quickly	bottom	Drive in bottom position, blocking active.
Flashes quickly	both simultaneously	Drive in intermediate position, blocking active.
Extend	both	Drive in intermediate position.
Flashes	both alternately	Automatic runtime determination error. If the drive can be moved, drive it into the end position by hand (drive in/drive out completely or open/close) in order to restart the runtime determination. If the drive cannot be moved, check the connections.
"Runlight" above all LEDs	all channels	Incorrect application version was loaded. Use the version compatible with the device!

2.4. Notes on mounting and commissioning

Device must not be exposed to water (rain). This could result in the electronic being damaged. A relative air humidity of 95% must not be exceeded. Avoid bedewing.

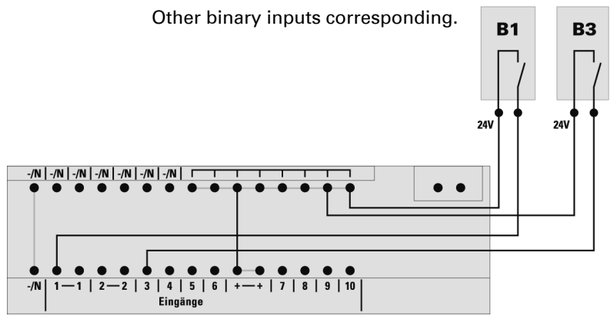
After the operating voltage has been applied, the device will enter an initialisation phase lasting a few seconds. During this phase no information can be received or sent via the bus.

For KNX devices with safety functions (e.g. wind or rain blocks), periodical monitoring of the safety objects must be set up. The optimal ratio is 1:3 (example: if the weather station sends a value every 5 minutes, the actuator must be configured for a monitoring period of 15 minutes).

2.5. Connection examples for binary inputs KNX S4-B10 and KNX S2-B6

2.5.1. Using the internal auxiliary voltage of the actuator

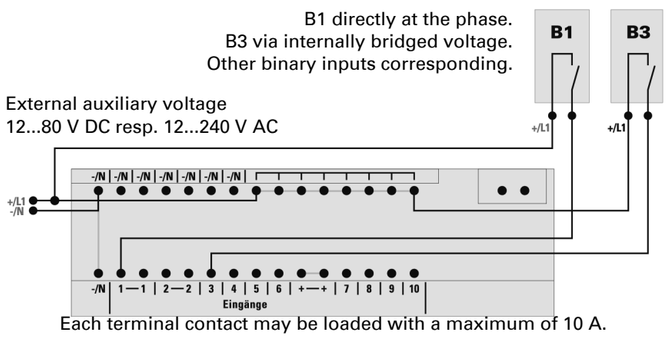
Other binary inputs corresponding.



2.5.2. Using an external voltage

B1 directly at the phase.
B3 via internally bridged voltage.
Other binary inputs corresponding.

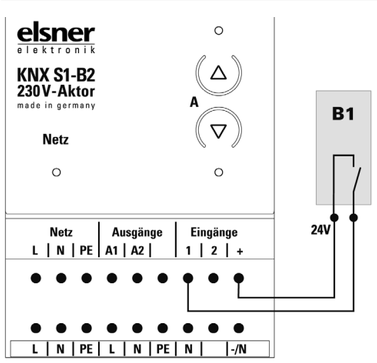
External auxiliary voltage
12...80 V DC resp. 12...240 V AC



Each terminal contact may be loaded with a maximum of 10 A.

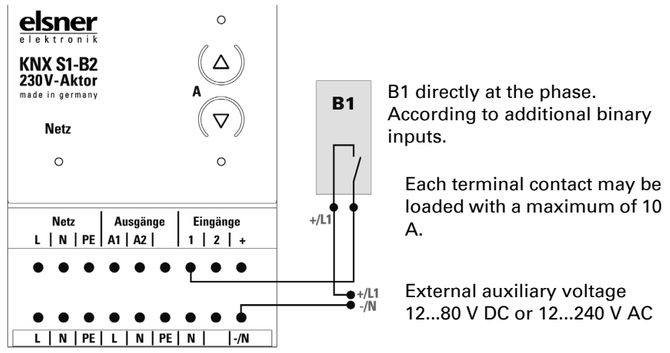
2.6. Connecting example for binary inputs KNX S1-B2 230 V

2.6.1. Using the internal auxiliary voltage of the actuator



According to additional binary inputs.

2.6.2. Using an external auxiliary voltage



B1 directly at the phase.
According to additional binary inputs.

Each terminal contact may be loaded with a maximum of 10 A.

External auxiliary voltage
12...80 V DC or 12...240 V AC

3. Addressing of the device at the bus

The device is supplied with the bus address 15.15.255. You can program another address into the ETS by overwriting the 15.15.255 address or by teaching via the programming button.

4. Disposal

After use, the device must be disposed of or recycled in accordance with the legal regulations. Do not dispose of it with the household waste!