KNX S2
Actuator for drives up/down

Technical specifications and installation instructions

Item number
70541

1. Description

With the **Actuator KNX S2** with integrated facade control, the drives of shutters, awnings, blinds or windows are controlled. The connected drives can be directly operated with the switch pairs of the actuator.

With the potential-free design of the outputs, drives of up to 30 VDC and 230 VAC can be controlled, as well as other systems (e.g. manual switch input of a motor control unit).

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

Functions:

- **2 potential-free outputs** for drives of shading or windows.
- Switch panel with **switch pairs** and status LEDs
- **Position feedback** (movement position, also slat position for shutters)
- **Position storage** (movement position) via 1-bit object (storage and call-up e.g. via buttons)
- Control via **internal or external automation functions**
- Integrated **shade control** for each drive output (with **slat tracking** according to sun position for shutters)
- Integrated **window ventilation control**
- **Scene control** for movement position with 16 scenes per drive (also slat position for shutters)
- Mutual **locking** of two drives using zero position sensors prevents collisions e.g. of shade and window (master–slave)
- **Blocking objects and alarm reports** have different priorities, so that safety functions always take precedence (e.g. wind block)
- **Manual or automatic control configuration** per time or communication object
- **5 security objects** for each channel
- **Brief time limit** (movement command blocked) and **2 movement limits**

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

1.0.1. Deliverables

- Actuator

1.1. Technical specifications

Housing	Plastic
Colour	White
Assembly	Series installation on mounting rail according to DIN 43880
Protection category	IP 20 (after installation in distributor)
Dimensions	approx. 53 x 88 x 60 (W x H x D, mm), 3 modules
Weight	approx. 150 g
Ambient temperature	Operation -5…+45°C, storage -55…+90°C
Ambient humidity	max. 95% RH, avoid condensation
Operating voltage	bus voltage
Current at the bus	approx. 22 mA
Outputs	2 × output up/down potential-free, up to 30 V DC or 230 V AC, max. 4 A per output with resistive load
Load/load capacity per output	up to 4 A resistive at 30 V DC up to 500 VA at 230 V AC
Data output	KNX +/- bus plug terminal
Group addresses	max. 1024
Assignments	max. 1024
Communication objects	207

The product is compliant with the provisions of EC guidelines.

2. Installation and commissioning

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

DANGER!
Risk to life from live voltage (mains voltage)!
There are unprotected live components inside the device.
- Inspect the device for damage before installation. Only put undamaged devices into operation.
- Comply with the locally applicable directives, regulations and provisions for electrical installation.
- Immediately take the device or system out of service and secure it against unintentional switch-on if risk-free operation is no longer guaranteed.

Use the device exclusively for building automation and observe the operating instructions. Improper use, modifications to the device or failure to observe the operating instructions will invalidate any warranty or guarantee claims.
Operate the device only as a fixed-site installation, i.e. only in assembled condition 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.

2.1. 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.

2.2. Connection

When installing and laying the cables for the KNX connection, the regulations and standards governing SELV current circuits must be observed!

2.2.1. Overview

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

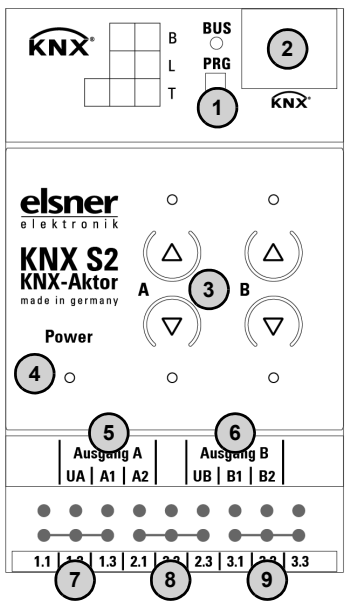


Fig. 1
1 Programmable LED and programmable buttons (PRG)
2 Bus terminal socket (KNX +/-)
3 Up/Down button pairs and LEDs channel A-B
4 Power LED, operation status indicator. See “Display of operating status with the power supply LED”.
5 Output A: UA (voltage) / A1 (up) / A2 (down), max. 4 A
6 Output B: UB (voltage) / B1 (up) / B2 (down), max. 4 A
7 Free clamps 1.1 to 1.3 (internally bridged), maxi. 10 A per clamp
8 Free clamps 2.1 to 2.3 (internally bridged), maxi. 10 A per clamp
9 Free clamps 3.1 to 3.3 (internally bridged), maxi. 10 A per clamp

Insulation properties of the clamp groups:

The **Actuator KNX S2** is assigned to Overvoltage category III and Pollution degree 2 according to EN60664-1. According to this classification,
between 230 V power cables and FELV 4 kV surge voltage resistance and
between 230 V power cables and SELV 6 kV surge voltage resistance
must be provided. This provision must be observed during the installation.

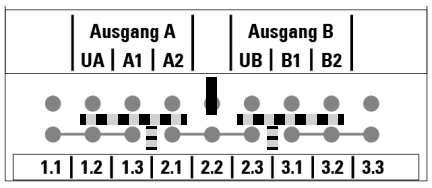


Fig. 2 Insulation properties of the clamp groups
Insulation 6 kV (increased insulation)
Insulation 4 kV (single insulation)

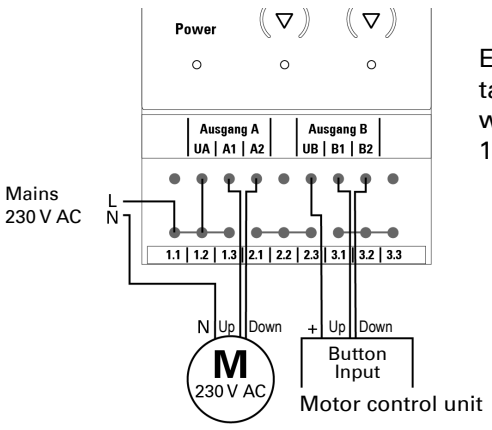
Non-labelled clamps may not be used, to avoid influencing the insulation properties!

Neighbouring clamp groups [1.1 to 1.3], [2.1 to 2.3] and [3.1 to 3.3] may not be used with mixed voltages, as there is only single insulation between them.

2.2.2. Connection example KNX S2

Output A: Motor 230 V AC, up/down
Output B: External motor control unit. The **Actuator KNX S2** is suitable for the use with direct voltage (12 V DC, 24 V DC) through the potential-free output. In this case, the U-connection is used as “Com”.

Fig. 3



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

2.2.3. Display of operating status with the power supply LED

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

2.2.4. Status display with 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, block active.
Flashes quickly	bottom	Drive in bottom end position, block active.
Flashes quickly	both simultaneously	Drive in intermediate position, block active.
Off	both	Drive in intermediate position.
“Running light" over all LEDs	all channels	Incorrect application version loaded. Use the version compatible with the device!

2.3. 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), it is important to set up periodical monitoring of the safety objects. The ideal 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).

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 in accordance with the legal regulations. Do not dispose of it with the household waste!