

Solar protection actuator N 543D31, 4 x AC 230 V, 6 A
 Solar protection actuator N 543D51, 8 x AC 230 V, 6 A





Main characteristics

- Control of solar protection, door, window or ventilation flap drives with AC motor up to AC 230 V
- End position detection by current sensing for automatic move time determination.
- Direct operation for efficient installation displaying the direction of travel and active overrides via LED.
- Maintenance-free terminals for connecting and looping through solid, stranded and fine-stranded conductors. Every L - conductor connection feeds two channels.

Functions with configuration with ETS

- Extensive control, override functions and status messages for each channel
- On-site control of the drives
- Direct moving to element or slat positions.
- Automatic control of the drives with configurable behavior when the sun is shining (sun tracking control)
- Scene control for calling up and storing defined element positions
- Safety functions through overrides in case of wind, rain, frost, moving blocks etc.

Type	Description	Article number	KNX PL-Link
	Solar protection actuator N 543D31, 4 x AC 230 V, 6 AX	5WG1 543-1DB31	Yes
	Solar protection actuator N 543D51, 8 x AC 230 V, 6 AX	5WG1 543-1DB51	Yes

Characteristics

The solar protection actuators are used to control blinds, shutters, awnings or ventilation flap drives with up to AC 230 V. They are used in building automation. Device control is conducted via KNX.

Through the selection of various operating modes such as manual and automatic mode, solar protection is controlled both locally and centrally. Automatic commands from a weather station enable sunlight tracking control with shade edge tracking.

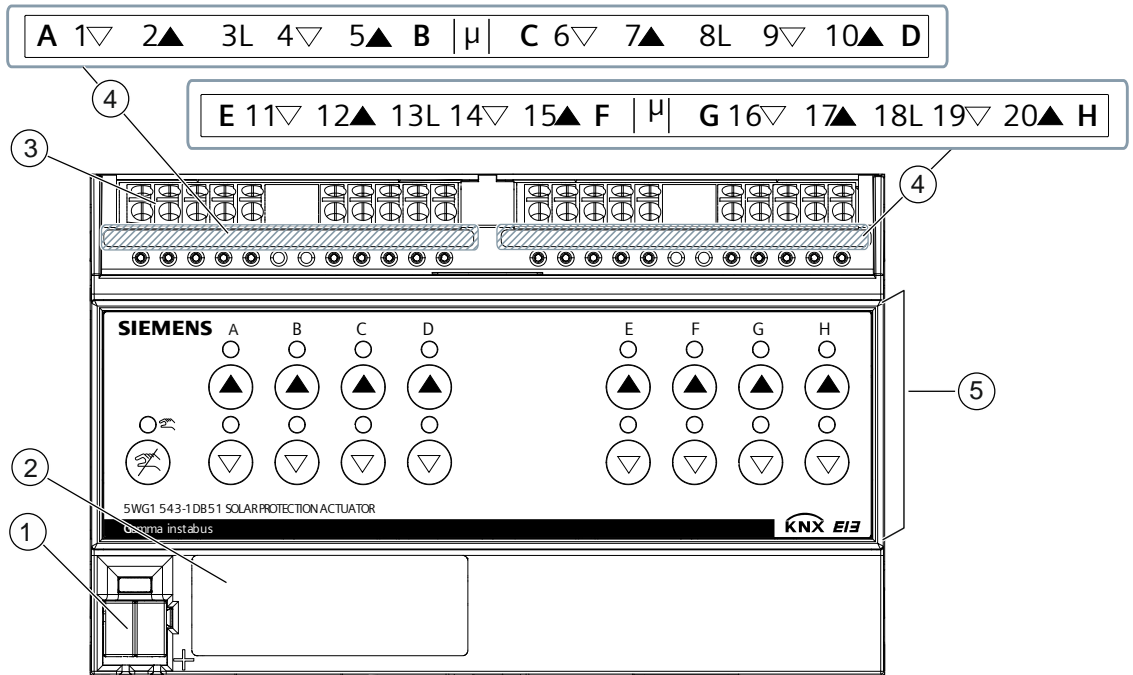
The device is a rail-mounted device in N dimension for installation in arrangements and installation on 35 mm rails as per standard IEC 60715.

The bus connection of the device uses a bus terminal block. The electronics of the device are supplied via the bus voltage (no additional supply voltage required). A neutral conductor connection is not required.

The maintenance-free terminals are for connecting solid, fine-stranded and stranded conductors with conductor cross-sections from 0.5 to 2.5 mm² to the relay output channels. Stranded and fine-stranded conductors can be plugged into the terminals without ferrules. Every L-conductor connection feeds two channels.

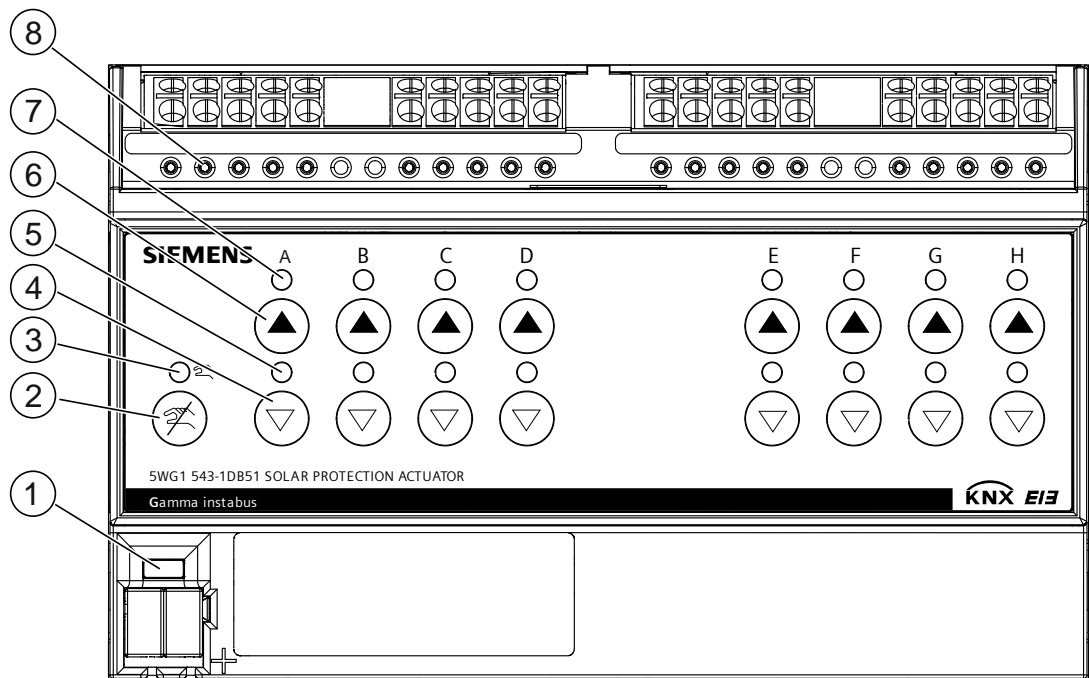
Solar protection actuator N 543 consists of the device (hardware) and the application program (software). Depending on its use, each relay output channel can be assigned different functions

Position and function of the connections and labeling



Example graphic: 8 drive channels

Pos.	Element	Function
1	KNX bus terminal blocks, screwless	Connect KNX bus
2	Label field	Enter physical address
3	Connection terminals of the relay contacts	Connect input and loads
4	Labelling of switching contacts for the drive channels	
5	Membrane keypad	Execute direct operation Display movement direction and override



Example graphic: 8 drive channels

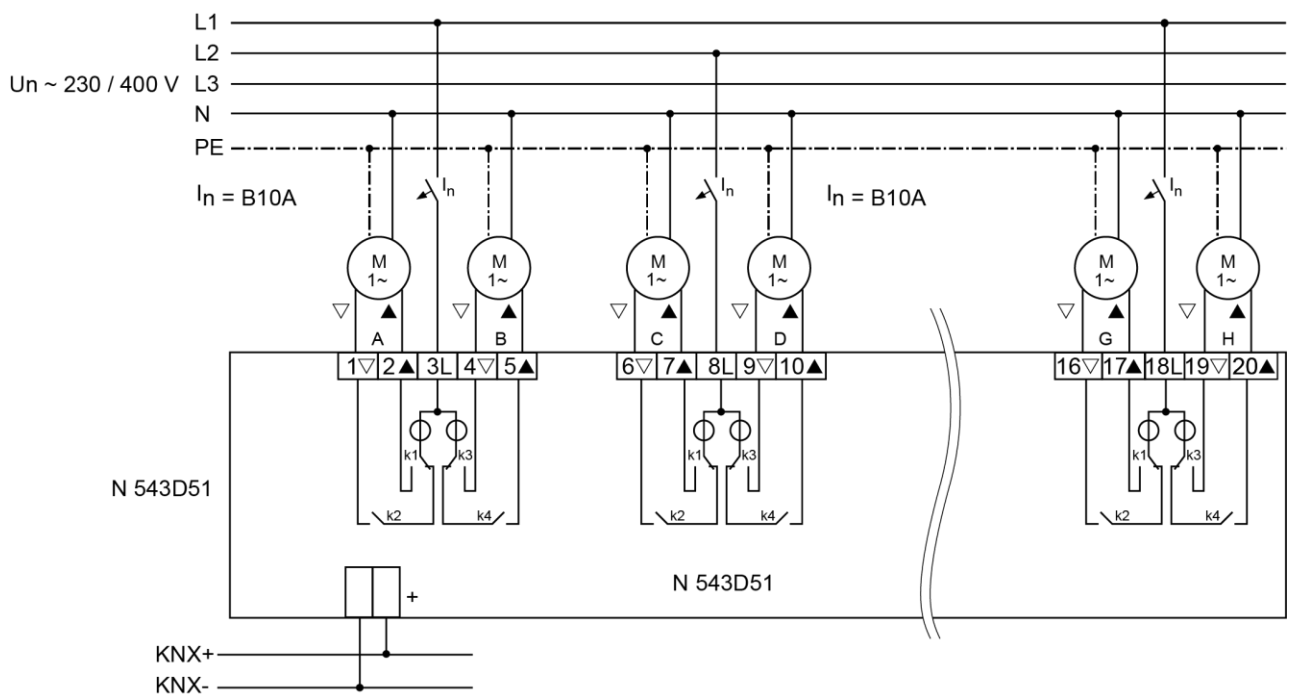
Pos.	Operating or display elements	Function
1	LED (red) Button: Learning mode	Short press of button (< 2 s): → Activate learn mode, display status (LED on = active) Very long press of button (> 20 s) → Reset to delivery state (LED starts blinking after 20 s)
2	Button: Deactivate direct operation	Deactivate direct operation for all channels
3	LED (yellow): Direct operation active	LED flashes if direct operation is active for at least one channel.
4*	Stop/slat button: Move command "Down" Channel A	Short press of button (< 1 s): → Move command "Stop" or "Lower" → Activate direct operation for channel A Long press of button (> 1 s): → Move command "Down" active → Activate direct operation for channel A
5 *	Lower LED (red): Channel A	LED lit: Move command "Down" active LED off: Direct operation switched off LED flashing in sync with status LED: Direct operation
6*	Stop/slat button: Move command "Up" Channel A	Short press of button (< 1 s): → Move command "Stop" or "Raise" → Activate direct operation for channel A Long press of button (> 1 s): → Move command "Up" active → Activate direct operation for channel A

Pos.	Operating or display elements	Function
7*	Upper LED (red): Channel A	LED lit: Move command "Up" active LED off: Direct operation switched off LED flashing in sync with status LED: Direct operation
5, 7	LEDs (red): Channel A	Both LEDs lit: Override active
8*	Test contacts	Metering point for voltage testing

*The description of positions 4, 5, 6, 7 and 8 applies analogously to the corresponding buttons/LEDs test contacts of channels B, C, D, E, F, G and H.

Connection example

The following connection example shows the connection of 6 AC motors for control (up/down or open/close) e.g. for solar protection, door, window or ventilation flaps via channels A, B, C, D, G and H. The transformers are used to detect the activation of electromagnetic and electronic end position switches.



Example graphic: 8 drive channels

Technical data

Type	N 543D31	N 543D51
Power supply		
KNX bus voltage	DC 24 V (DC 21...30 V)	DC 24 V (DC 21...30 V)
KNX bus current	15 mA	20 mA
KNX power loss (internal consumption)	0.15 W	0.17 W

Type	N 543D31	N 543D51
Drive channels		
2 relay contact outputs per channel, electromagnetically locked against one another	4	8
Contact voltage		
Rated voltage	230 V AC	230 V AC
Contact current		
Rated current, AC (resistive load)	6 A	6 A
Current sensing for travel time determination	≥ 75 mA	≥ 75 mA

Type	N 543D31	N 543D51
Service life		
Mechanical lifespan	50,000,000 switch cycles	50,000,000 switching cycles
Electrical lifespan	100,000 switch cycles	100,000 switching cycles
Power loss		
Maximum power loss per device at rated output	2.8 W	5.5 W
Maximum power loss per output at rated output	0.66 W	0.66 W
Switching capacities/load types, loads		
Resistive load*	1380 W	1380 W
Minimum switching capacity	5 V 10 mA	5 V 10 mA
Maximum DC1 breaking capacity	30 V 6 A	30 V 6 A

Type	N 543D31	N 543D51
Physical specifications		
Housing material	Plastic	Plastic
Dimensions	Rail-mounted device in N-dimension, width 4 HP (1 HP = 18 mm), See dimension drawing	Rail-mounted device in N-dimension, width 8 HP (1 HP = 18 mm), See dimension drawing
Weight	246 g	450 g
Fire load	5 MJ	9 MJ

Environmental conditions	
Ambient temperature in operation	-5...+45 °C
Storage temperature	-20...+70 °C
Transport temperature	-25...+70 °C
Rel. humidity (non-condensing)	5...95 %
Climatic resistance	EN 50428

Protection settings	
Degree of pollution (according to IEC 60664-1)	2
Overvoltage category (according to IEC 60664-1)	III
Protection class (according to EN 60529)	IP 20
Electrical safety, bus	Yes
Electrical safety, device complies with	EN 50428
EMC compatibility	EN 50428
Test mark	KNX, EAC, RCM, WEEE, China-RoHS
CE mark	Yes

Type	N 543D31	N 543D51
Reliability		
Failure rate (at 40°C)	1776 fit	3816 fit

Building site function

With the factory settings, the building site function enables moving up and down as well as stopping and changing the position of elements of an element via a corresponding bus button, even if these devices are yet to be commissioned via ETS.

Direct operation via the membrane keypad

After installation, the individual channels of the device can be tested directly on the device. Prior configuration via the software is not necessary for this.

In the delivery state, direct operation is activated without a time limit.

After configuration, direct operation is limited to the configured time limit.

Resetting the device to factory settings

A very long push of the programming button of more than 20 seconds resets the device to its factory settings. This is indicated by an even flashing of the programming LED with a duration of 8 seconds.

All configuration settings are deleted. The building site function of the delivery state is re-activated.

Functions with configuration with ETS

Version of the Engineering Tool Software and application program

Application	Version
Engineering Tool Software (ETS)	ETS 4.2 or above

Behavior at bus voltage failure/recovery

As the electronics of the device are bus-powered, a loss of voltage only results in a loss of function for the solar protection actuator if the voltage failure also causes the bus voltage to fail as well.

Each channel can be independently configured with parameters to define what status it is to assume in case of bus voltage failure (up, down, no change or stop).

In case of bus voltage failure, the current status and other values for each channel are saved permanently so that they can be restored when the bus voltage is recovered.

When the bus voltage is recovered, one of the following functions can be selected as the starting value: Up, down, no change, as per parameter and stop. A delay can be configured for the starting value. In addition, a starting behavior when bus voltage is recovered can be configured for each active override.

On bus voltage recovery, the configured actions are executed and, if applicable, new status values are reported.

Behavior on unloading the application program

After "unloading" the application program with the ETS, the unloaded device has no functions.

A very long push of the programming button of more than 20 seconds resets the device to its factory settings.

Manual operation/automatic operation

The manual operation and automatic operation function can be released separately for each channel via the ETS.

Manual operation is used for on-site control of the drives either individually or as a central command. Direct moving to element or slat positions is also possible here.

Automatic operation is configured for automated control of drives via a weather station. Automatic control via central commands is also possible.

When the sun is shining, sun tracking control of elements or shadow line tracking is implemented.

Overrides

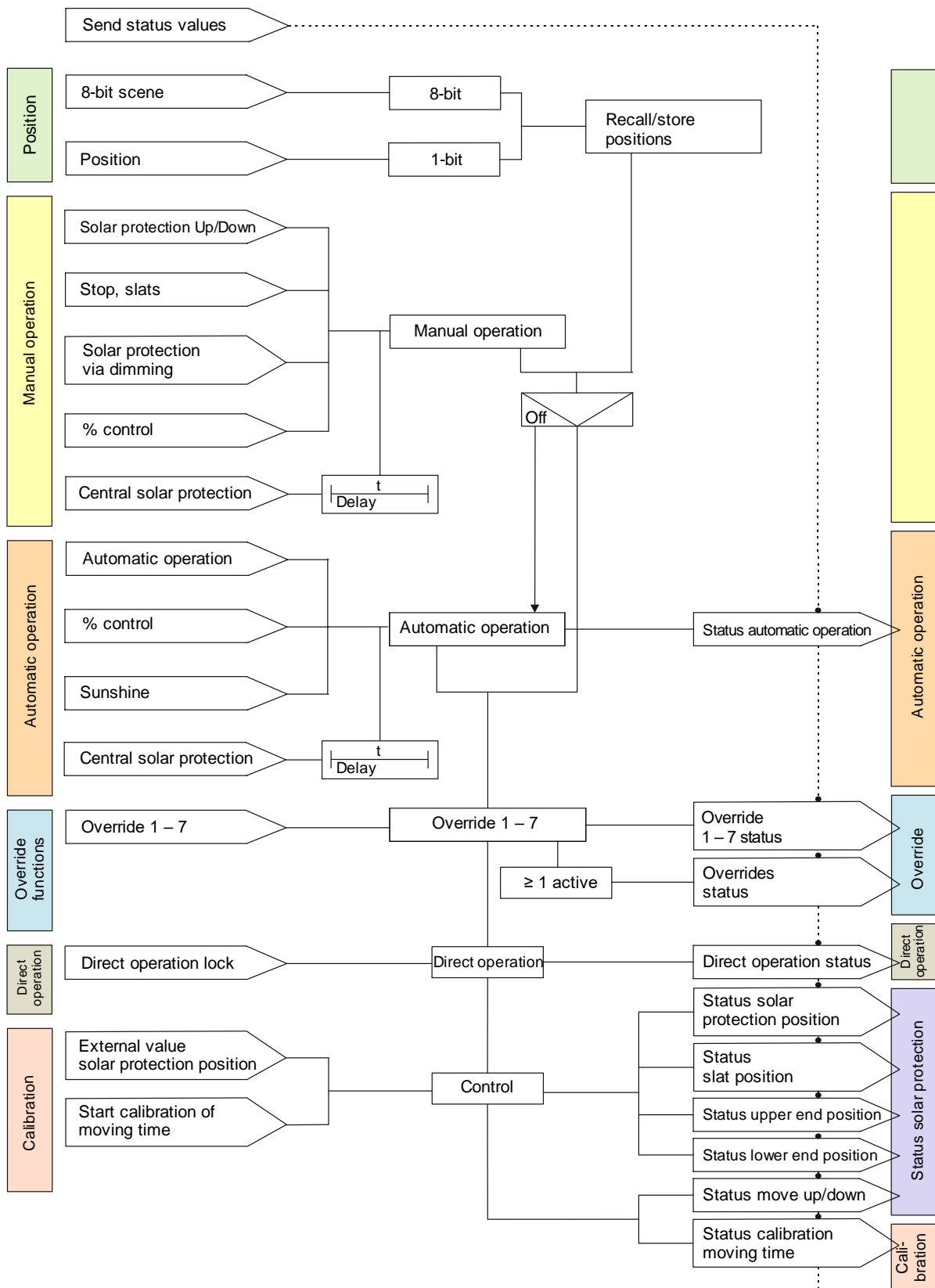
Up to seven different override function blocks can be activated via ETS to override the solar protection functions. The overrides can be configured per channel and individually (wind alarm, rain alarm, frost alarm, lock, forced position, forced control, range limitation). Different priorities can be assigned to the override functions.

8-bit scene control


Using 8-bit scene control, current sunblind or slat positions can be assigned to a scene and activated again later through the scene.

Schematic design of a sunblind actuator channel

The following scheme shows the function of a channel of the solar protection actuator using the "blind" function in a logical context.



Safety

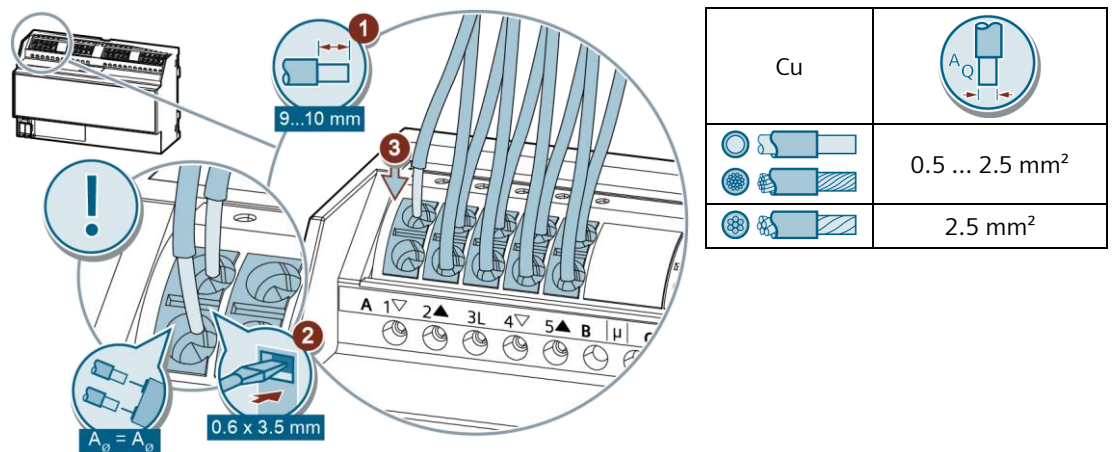
	WARNING
	<ul style="list-style-type: none"> • The solar protection actuators should only be installed and put into operation by a certified electrician. • Ensure that the solar protection actuators can be activated. • Do not open the casing of the solar protection actuators. • Only use conventional transformers that comply with the relevant standards and contain a thermal fuse. • For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered. • Each phase must be secured using a B10 circuit breaker!

Note on installation

The solar protection actuators can be used for fixed installations in interior spaces, for dry locations, within distribution boards or small casings with DIN rails EN 60715-TH35.

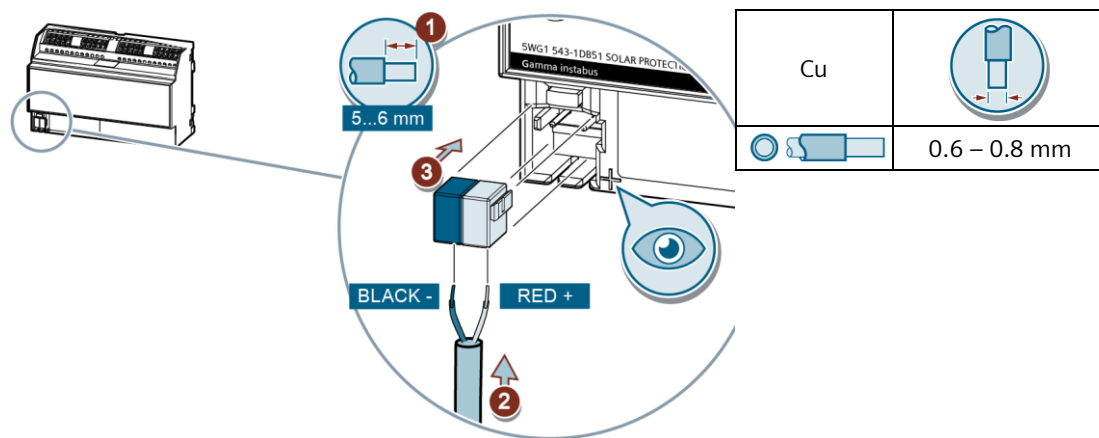
Commissioning

Connecting motors to the relay contacts



Example graphic: 8 drive channels

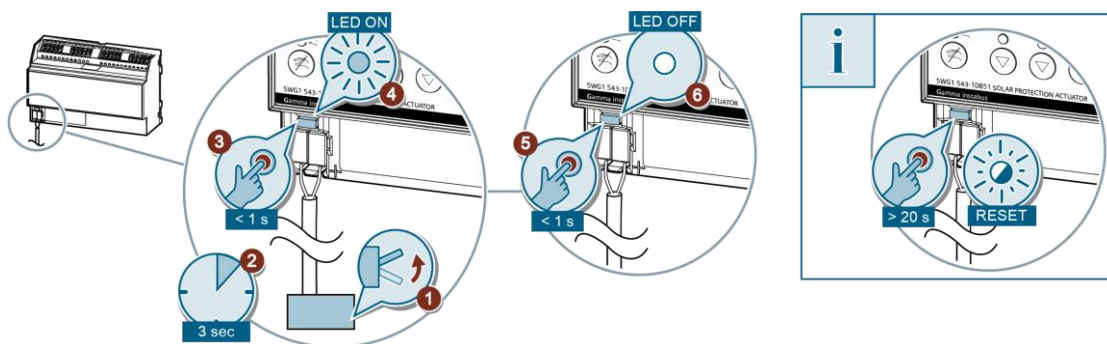
Connecting KNX



Example graphic: 8 drive channels

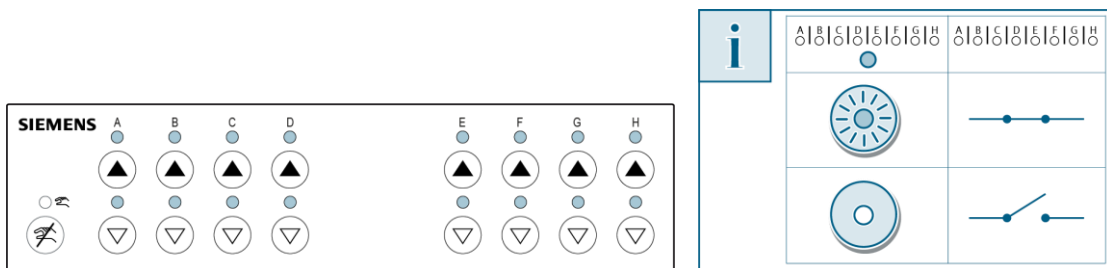
Test of KNX 24 V DC type SELV

This test can be used to check whether the bus connection cable is connected with the correct polarity and whether device is supplied with bus voltage.



Example graphic: 8 drive channels

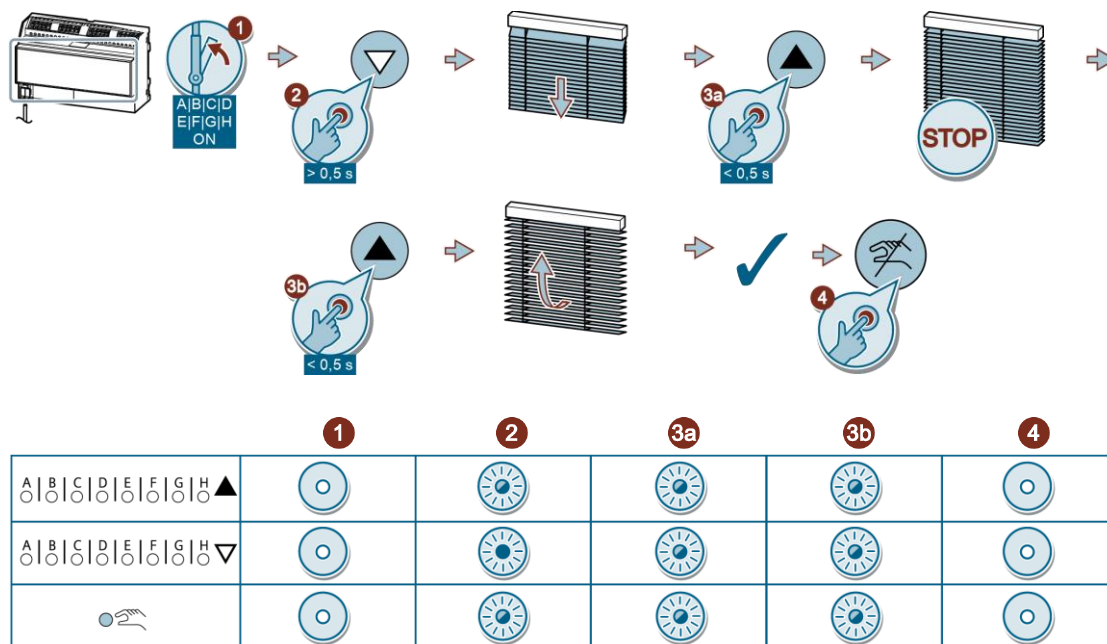
Operation in direct operation (A|B|C|D|E|F|G|H U_n~ 230 V)



Example graphic: 8 drive channels

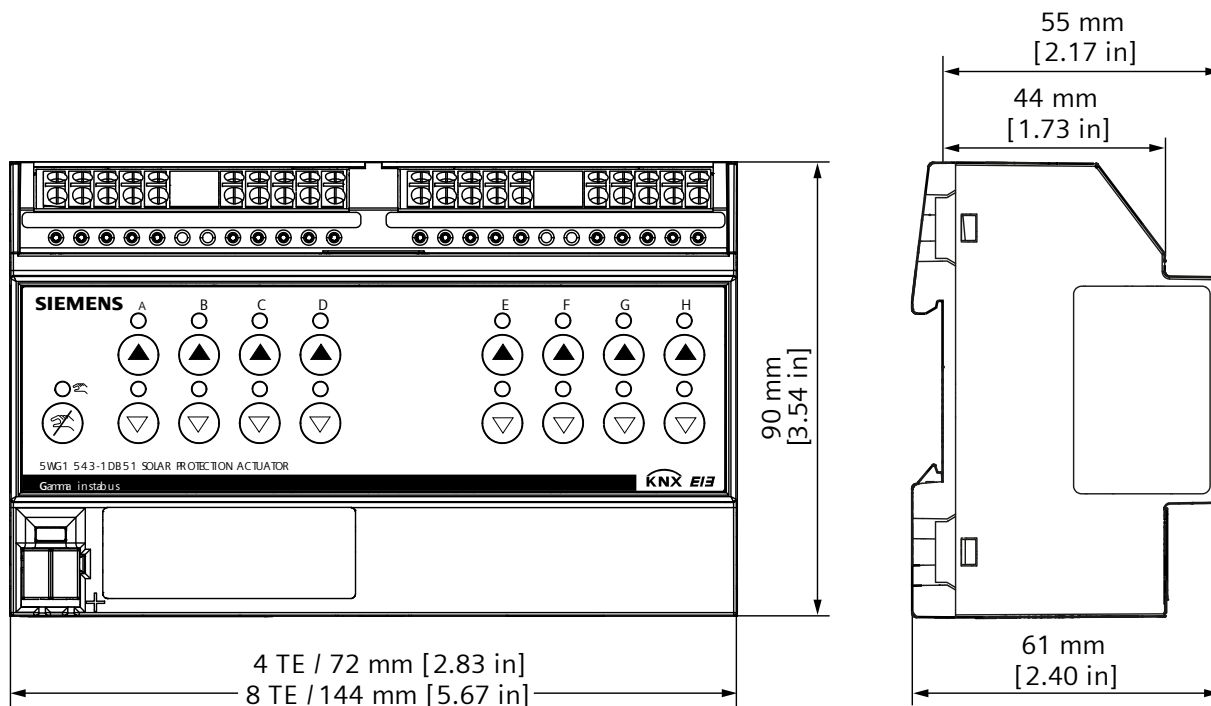
Function test of the installation

This test can be used to check whether the motors have been connected correctly.



Example graphic: 8 drive channels

Dimensions



Example graphic: 8 drive channels

Product documentation


Associated documents such as the operating and installation instructions, application program description, product database, additional software, product image, CE declaration etc. can be downloaded from the following internet address:





<http://www.siemens.com/gamma-td>

Support

- Provision of operating/installation instructions
- Return a defective device to the appropriate sales office.
- Contact details for technical support in case of additional questions relating to the product:

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 +49 911 895-7223

 support.automation@siemens.com

<http://www.siemens.com/supportrequest>



Technical Support:

<http://www.siemens.com/supportrequest>



FAQ:

<https://support.industry.siemens.com/cs/ww/en/ps/faq>