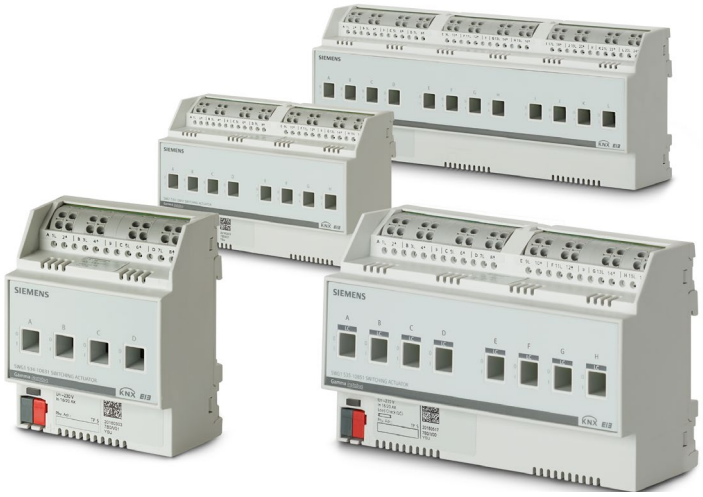
SIEMENS

GAMMA instabus | Technical product information

Switching Actuators N 530, 6 AX
Switching Actuators N 532, 10 AX
Switching Actuators N 534, 16/20 AX
Switching Actuators N 535, 16/20 AX



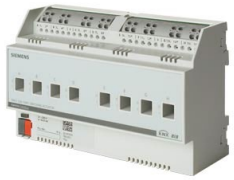
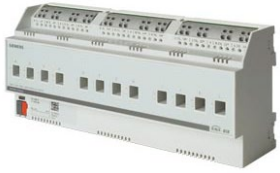
Main characteristics

- For switching capacitive, inductive and resistive loads
- Maintenance-free terminals for connecting and looping through solid, stranded and fine-stranded conductors with conductor cross-sections from 0.5 to 2.5 mm²
- Switching status display with operating capability for each output to test for correct installation

Functions with configuration with ETS

- Control functions:
  - Switching with status message, logic gate, central switching, timed switching, night mode
  - Control value input for analogous values can be configured as an alternative to the switching input
  - Integrated 8-bit scene control and assignment of each output to up to 8 scenes
- Override functions: Manual ON, permanent OFF, locks, central override, forced control
- Diagnostic functions: Counting of switching cycles with threshold monitoring of switching cycles, counting of operating hours with threshold monitoring of operating hours, status messages
- Only for type N 535: load detection with load check threshold monitoring

Type overview

Type	Description	Article number	KNX PL-Link
	Switching Actuator N 530D31, 4 x AC 230 V, 6 AX Switching Actuator N 532D31, 4 x AC 230 V, 10 AX Switching Actuator N 534D31, 4 x AC 230 V, 16/20 AX	5WG1 530-1DB31 5WG1 532-1DB31 5WG1 534-1DB31	Yes
	Switching Actuator N 530D51, 8 x AC 230 V, 6 AX Switching Actuator N 532D51, 8 x AC 230 V, 10 AX Switching Actuator N 534D51, 8 x AC 230 V, 16/20 AX	5WG1 530-1DB51 5WG1 532-1DB51 5WG1 534-1DB51	Yes
	Switching Actuator N 530D61, 12 x AC 230 V, 6 AX Switching Actuator N 532D61, 12 x AC 230 V, 10 AX Switching Actuator N 534D61, 12 x AC 230 V, 16/20 AX	5WG1 530-1DB61 5WG1 532-1DB61 5WG1 534-1DB61	Yes
	Switching Actuator N 535D31, 4 x AC 230 V, 16/20 AX	5WG1 535-1DB31	Yes
	Switching Actuator N 535D51, 8 x AC 230 V, 16/20 AX	5WG1 535-1DB51	Yes
	Switching Actuator N 535D61, 12 x AC 230 V, 16/20 AX	5WG1 535-1DB61	Yes

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Characteristics

Switching actuators N 530D31, N 532D31, N 534D31 and N 535D31 can switch four mutually independent groups of electrical consumers via four potential-free outputs.
For N 535D31, each channel has an additional load detection with threshold monitoring as a diagnostic function.
Switching actuators N 530D51, N 532D51, 534D51 and N 535D51 can switch eight mutually independent groups of electrical consumers via eight potential-free outputs. For N 535D51, each channel has an additional load detection with threshold monitoring as a diagnostic function.
Switching actuators N 530D61, N 532D61, N 534D61 and N 535D61 can switch twelve mutually independent groups of electrical consumers via twelve potential-free outputs. For N 535D61, each channel has an additional load detection with threshold monitoring as a diagnostic function.

The switching actuators can switch resistive loads (e.g. electric heater, incandescent lamps), inductive loads (e.g. motor, low-voltage halogen lamps with upstream wound transformer) or capacitive loads (e.g. low-voltage halogen lamps with upstream electronic transformer). All the switching actuators share the properties described below.

The devices are suitable for switching loads with high inrush current spikes, particularly for fluorescent lamp loads (AX) as per DIN EN 60669-2-1.
The permissible lamp loads are listed in the “Technical data” section.

The devices are rail-mounted devices in N dimension for installation in arrangements and are installed on 35-mm rails as per standard IEC 60715. The switching actuators are connected to the bus connection with a bus terminal block. The power supply is supplied via the bus voltage (no additional power voltage is required). Every actuator output has a potential-free relay with switch position display. Via the relay, the switch position can be changed with a tool.
Every actuator output has one terminal each for the supply voltage (rated operating voltage AC 230 V) and the switched load.
The maintenance-free terminals are for connecting solid, fine-stranded and stranded conductors with conductor cross-sections from 0.5 to 2.5 mm^2. Stranded and fine-stranded conductors can be plugged into the terminals without ferrules.
The terminals have two terminal connections each, allowing, for example, the looping through of the supply voltage from one actuator channel to the next.
Each of the outputs (relays) can be assigned different functions depending on the application, i.e. switching actuators N 53x consisting of the device (hardware) and the application program (software).

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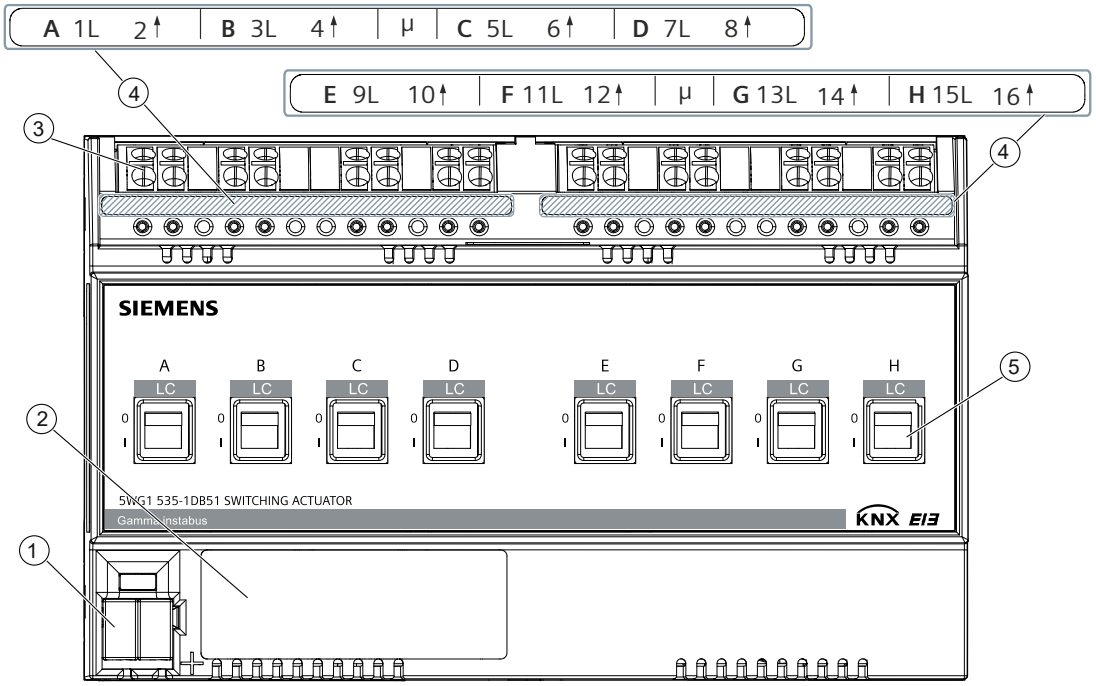
Position and function of the connections and labeling



Example graphic: 8 load outputs

Pos.	Element	Function
1	KNX bus terminal blocks, screwless	Connect KNX bus
2	Label field	Enter physical address
3	Connection terminals of the switching contacts	Connect input and loads
4	Label of the switching contacts	
5	Switch position display with manual operation	

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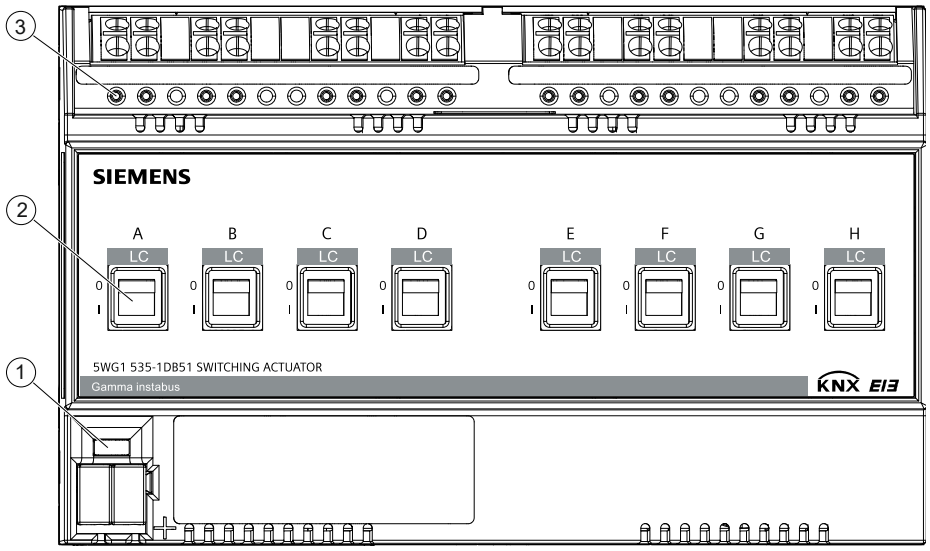

Example graphic: 8 load outputs

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*	Switch position display with operation capability	Slider up position: relay contact open Slider down position: relay contact closed
3*	Test contacts	Metering point for voltage testing

*The description of positions 2 and 3 applies analogously for the corresponding contacts and switches of the other channels.

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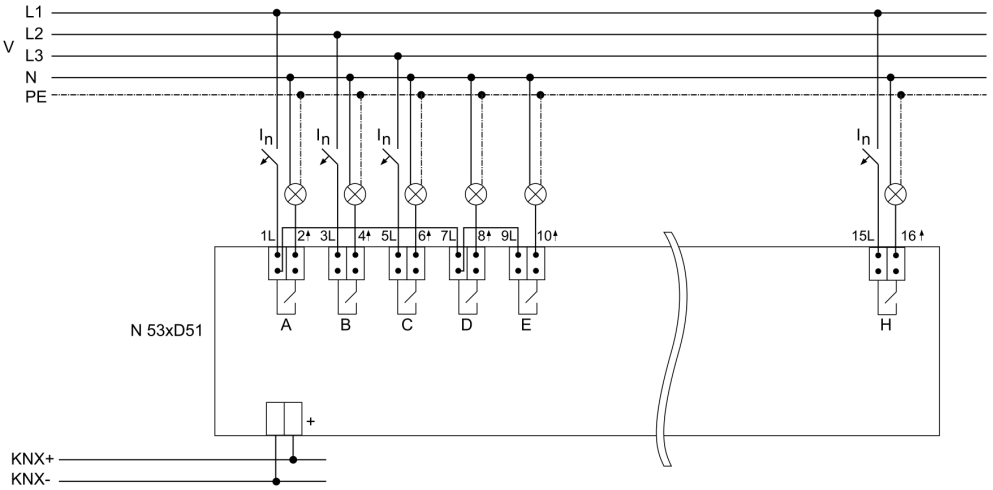
Connection example

The following connection example shows the connection of loads, e.g. lamps, for switching on/off via the switch contacts of channels A to H.

MLFB	Type / I_n
5WG1 530-1DB31 5WG1 530-1DB51 5WG1 530-1DB61	B / 16 A
5WG1 532-1DB31 5WG1 532-1DB51 5WG1 532-1DB61	B / 16 A
5WG1 534-1DB31 5WG1 534-1DB51 5WG1 534-1DB61	B / 16 A B / 20 A
5WG1 535-1DB31 5WG1 535-1DB51 5WG1 535-1DB61	B / 16 A B / 20 A



Maximum current via the load terminals ≤ 20 A

Example graphic: 8 load outputs

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Technical data

Power supply	
KNX bus voltage	DC 24 V (DC 21...30 V)
KNX bus current	20 mA
KNX power loss (internal consumption)	0.2 W

Type	N 530	N 532	N 534	N 535
Outputs (load relays)				
Number of load relays (bi-stable relays, potential-free), type N 53../31:	4	4	4	4
Number of load relays (bi-stable relays, potential-free), type N 53../51:	8	8	8	8
Number of load relays (bi-stable relays, potential-free), type N 53../61:	12	12	12	12
Contact voltage				
Rated voltage (at 50/60 Hz)	230 V AC	230 V AC	230 V AC	230 V AC
Contact current				
Rated current per channel	6 A	10 A	16 A	16 A
Maximum inrush current (t = 150 µs)	400 A	400 A	600 A	600 A
Maximum inrush current (t = 250 µs)	320 A	320 A	480 A	480 A
Maximum inrush current (t = 600 µs)	200 A	200 A	300 A	300 A
Rated current AC1 operation (cosØ = 0.8)	10 A*3	16 A*3	20 A*1	20 A*1
Rated current AC3 operation (cosØ = 0.45)	6 A	8 A	16 A	16 A
Fluorescent lamp load AX	6 A	10 A	16 A	16 A
Service life				
Mechanical lifespan	1,000,000 switch cycles			
Power loss				
Maximum power loss per device at rated output, Type N 53../31:	1 W	2 W	4 W	4 W
Maximum power loss per device at rated output, Type N 53../51:	2 W	4 W	8 W	8 W
Maximum power loss per device at rated output, Type N 53../61:	3 W	6 W	12 W	12 W
Switching capacities/load types*2				
Maximum switching capacity at rated voltage	1380 W	2300 W	3680 W	3680 W
Multi-phase operation	Yes	Yes	Yes	Yes
Minimum switching capacity	12 V 100 mA	12 V 100 mA	12 V 100 mA	12 V 100 mA
Maximum DC1 breaking capacity	24 V 6 A	24 V 10 A	24 V 10 A	24 V 10 A
Maximum capacitive load	70 µF	140 µF	200 µF	200 µF

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Type	N 530	N 532	N 534	N 535
Outputs (load relays)				
Rated current AX capacitative load (35 µF)	6 A	10 A	16 A	16 A
R rated current, AX capacitative load (70 µF)	6 A	10 A	16 A	16 A
R rated current, AX capacitative load (140 µF)	-	10 A	16 A	16 A
R rated current, AX capacitative load (200 µF)	-	-	16 A	16 A
Rated output at AC3	1380 VA	1840 VA	3680 VA	3680 VA
Incandescent lamps				
Incandescent lamp	1380 W	2300 W	3680 W	3680 W
HV halogen lamp	1380 W	2300 W	3680 W	3680 W
LV halogen lamp with magnetic transformers	500 VA	500 VA	2000 VA	2000 VA

Load detection (load check) (only type N 535)	
Capture area AC	0.1...20 A
Accuracy	± 2 % of actual current value ± 20 mA
Load check I_{Load} AC (at rated voltage)	0.1...20 A, sinusoidal
Load check I_{Load} DC	is not captured

Type	N 530	N 532	N 534	N 535
Physical specifications				
Housing material	Plastic			
Dimensions	See dimension drawing			
Weight, type N 53../31:	235 g	235 g	280 g	331 g
Weight, type N 53../51:	430 g	430 g	525 g	604 g
Weight, type N 53../61:	630 g	630 g	775 g	874 g
Fire load, type N 53../31:	5 MJ	5 MJ	6 MJ	7 MJ
Fire load, type N 53../51:	8 MJ	8 MJ	10 MJ	11 MJ
Fire load, type N 53../61:	12 MJ	12 MJ	14 MJ	16 MJ

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

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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	Safety extra low voltage SELV DC 24 V
Electrical safety, device fulfills	EN 50428
EMC compatibility	EN 50428
Test mark	KNX, EAC, RCM, WEEE, China-RoHS
CE mark	Yes

Type	N 530	N 532	N 534	N 535
Reliability				
Failure rate (at 40 °C), type N 53../31:	378 fit	378 fit	377 fit	618 fit
Failure rate (at 40 °C), type N 53../51:	598 fit	598 fit	597 fit	943 fit
Failure rate (at 40 °C), type N 53../61:	820 fit	820 fit	819 fit	1300 fit

*1 Information on derating: 20 A only up to 35 °C ambient temperature and neighboring channel current-free
*2 for horizontal installation position and load connection at top
*3 with resistive load

Functions

Building site function

The building site function provided ex-factory enables switching the building site lighting on and off via bus wall switches and actuators, even if these devices have not yet been commissioned with the Engineering Tool Software (ETS).

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.

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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

In case of bus voltage failure, the current switch status and other values for each output are permanently stored. On bus voltage recovery, these values are restored. For each channel, the configured actions are also 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.

Timer functions

When configuring the device with ETS, one timer and night mode can be programmed. It is possible to set delayed switching on/off and a warning before switching off occurs.

Overrides

Up to seven different override function blocks can be activated via ETS to override the automation functions.

Switch cycle and operating hours count

To monitor use, the right configuration makes it possible to count and display the switching cycles and operating hours of the device. For switching actuators of type N 535, the counting of operating hours can additionally be configured so that operating hours are only counted when there is an active current flow.

Load current monitoring (only type N 535)

For switching actuators of type N 535, the load check can optionally be measured and the status can be sent via the bus. The load check can also be monitored with regard to exceedance or falling short of load check limit values. An adjustment factor and offset value can be specified.

8-bit scene control

Using 8-bit scene control switching states can be assigned to a scene and activated again later through the scene.

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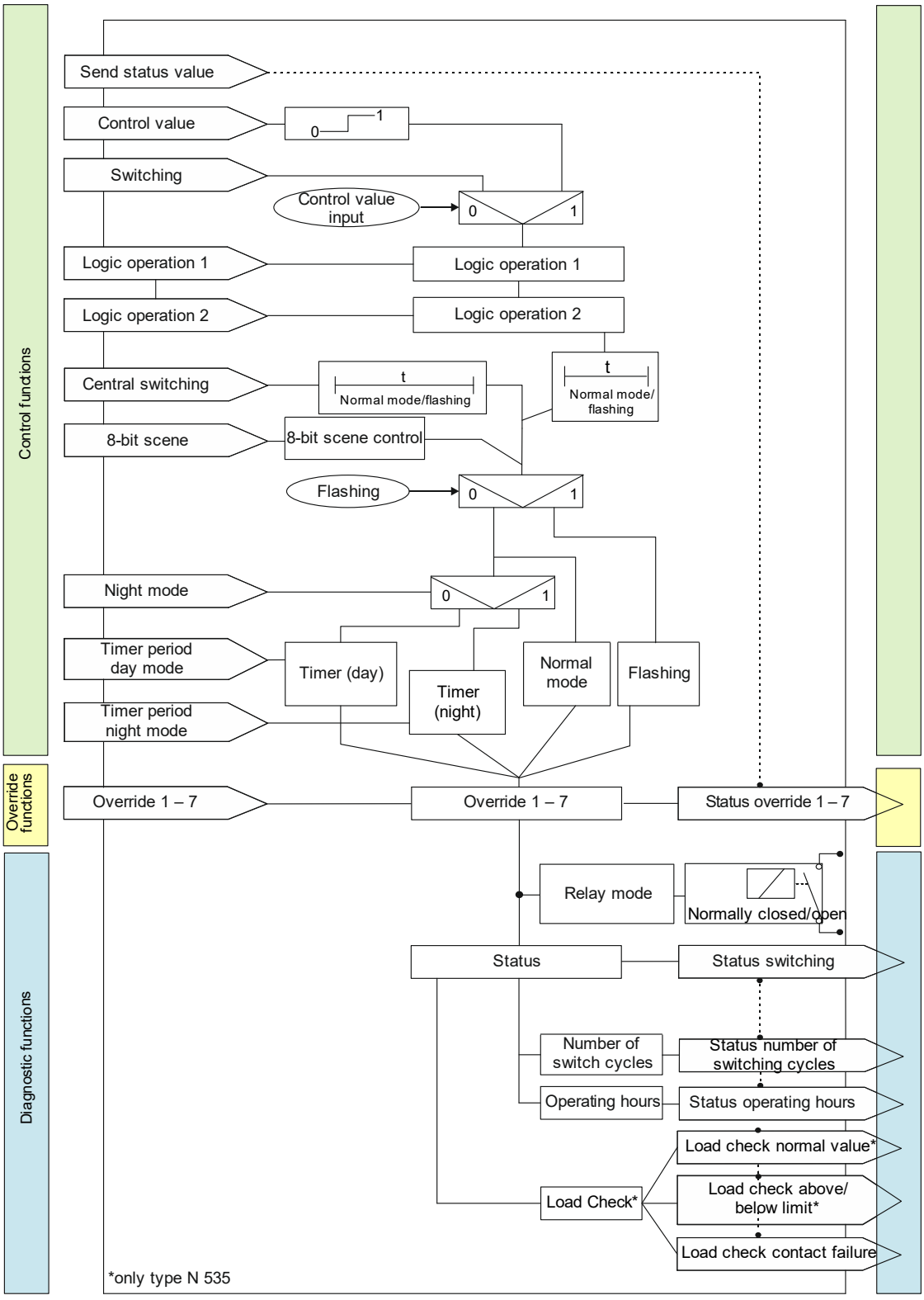
Schematic design of a switching actuator channel

The following diagram shows an example of the functions of a channel of the switching actuator or switching actuator with load detection in a logical context.



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Notes

Safety

WARNING

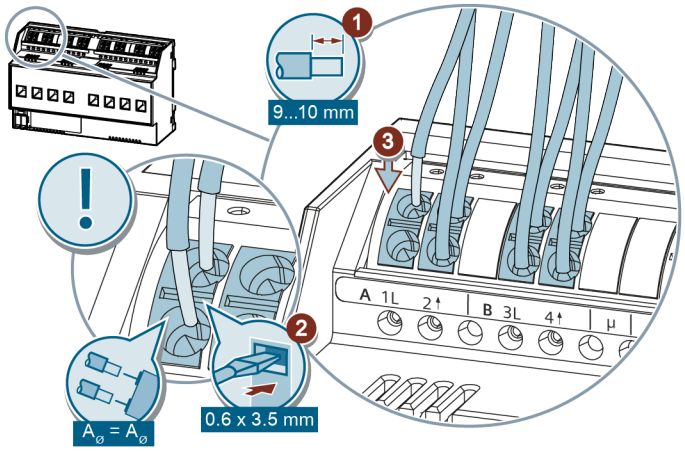
- The switching actuator should only be installed and put into operation by a certified electrician.
- Ensure that the switching actuators can be activated.
- Do not open the casing of the switching actuators.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

Note on installation

The switching actuators can be used for fixed installations in interior spaces, for installations in dry locations, within distribution boards or small casings with DIN rails EN 60715-TH35.
If the relays are switched using amplifying contactors, the suppressors recommended by the contactor manufacturer must be taken into account. These can be RC elements, varistors or free-wheeling diodes.

Commissioning

Connecting loads to the switching contacts



Cu	A_Q
	0.5 ... 2.5 mm²
	2.5 mm²

Example graphic: 8 load outputs

Note on installation

Maximum current via the load terminals ≤ 20 A

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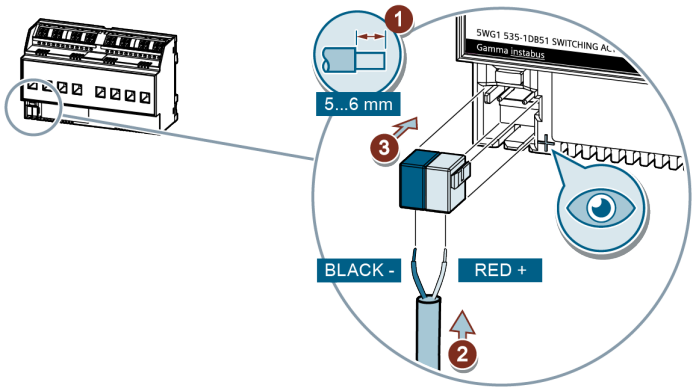
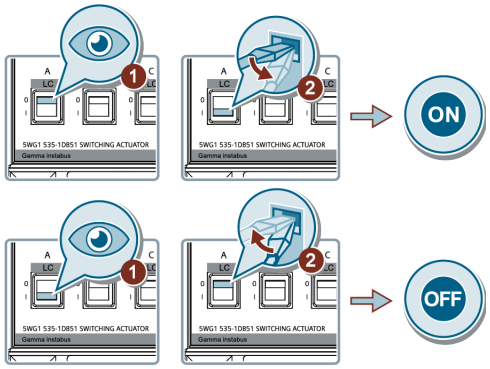


Cu	
	0.6 – 0.8 mm

Example graphic: 8 load outputs

Checking the connection to the channels

The position of the relay contacts of a channel can be changed with a command via the bus or manually using tools.
This test can be used to check whether the consumers of the channels have been connected correctly.



	WARNING
	• Manual operation of the slide switch is intended only as an emergency option or for testing during installation. No telegram is sent to the bus and the changed switch position is not registered by the device. • In case of bus failure/recovery, a manually switched relay is moved into in the parameterized switching state.

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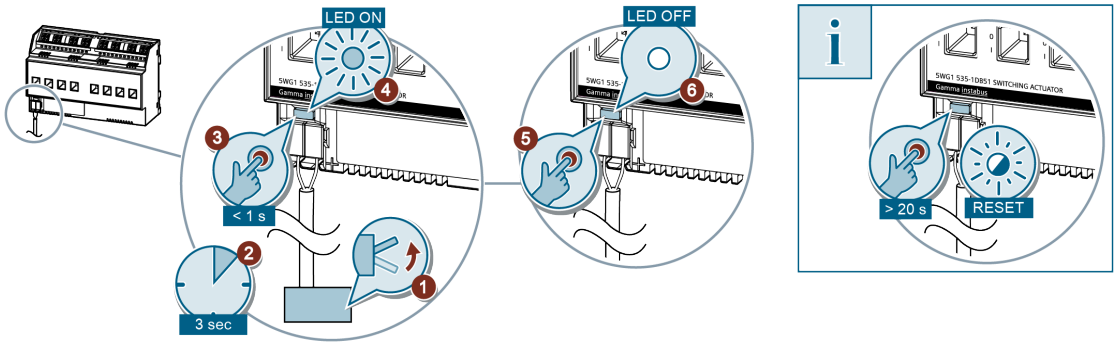
Test of KNX 24 VDC type SELV

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.

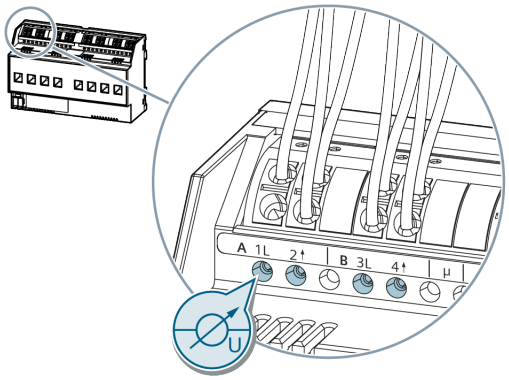


Example graphic: 8 load outputs

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

Commissioning and function test

The voltage of a channel can be checked via test contacts.



Example graphic: 8 load outputs

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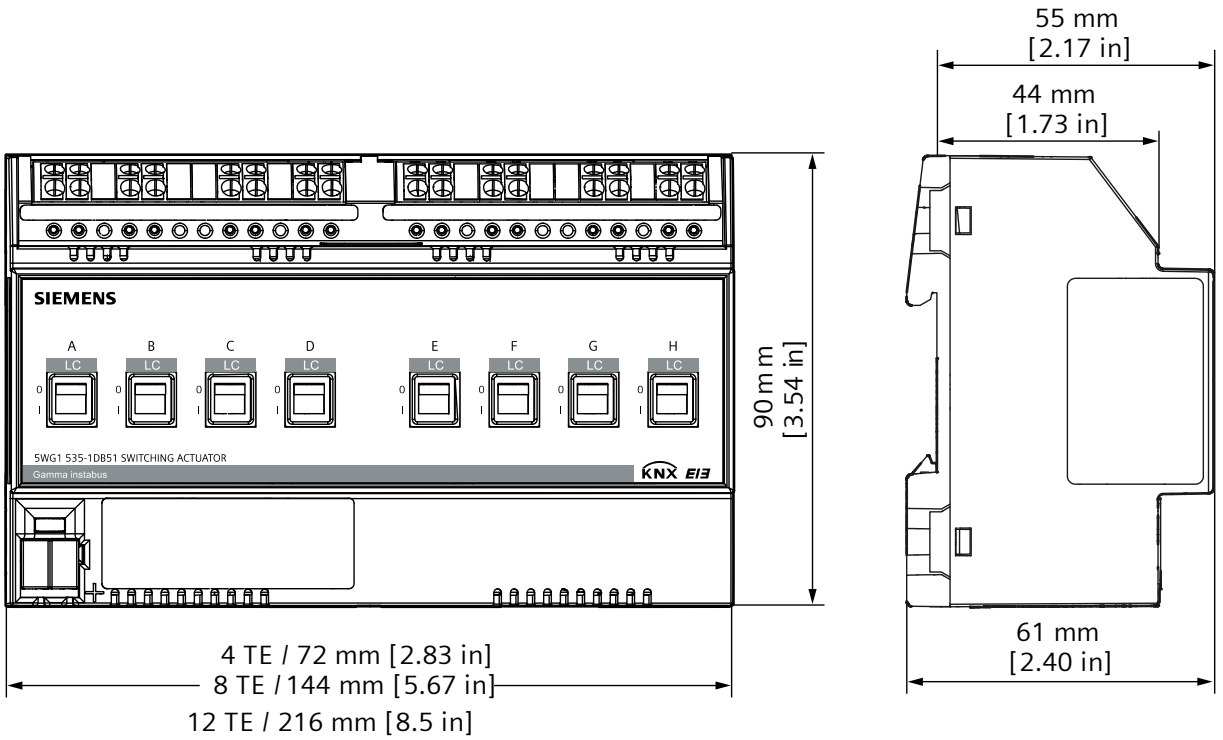
Dimensions



Example graphic: 8 load outputs

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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:
  ☏ +49 89 9221-8000
  ✉ support.automation@siemens.com
  http://www.siemens.com/supportrequest

Technical Support:
http://www.siemens.com/supportrequest

FAQ:
https://support.industry.siemens.com/cs/products?dtp=Faq&mfn=ps&lc=en-DE

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