SIEMENS

GAMMA instabus

Universal dimmer, 1-fold

UP 525S32

Universal dimmer UP 525S32 is used as a combined device with binary inputs and dimming output for switching and dimming dimmable lamps and LEDs in building automation. Device control is conducted via KNX.

- Universal dimmer with one output for switching and dimming resistive (R), inductive (L) or capacitive (C) loads, including LED
- Automatic or manual adjustment of the dimming principle matching the load – protection against open-circuit operation, short circuit and over temperature
- 3 binary inputs for potential-free contacts to determine the switching state when conventional buttons, switches, windows/door contacts or corresponding sensors are connected
- Flexible installation concept with flush-mounting installation as main installation type and additional installation on a mounting rail in the electrical distributor or surface mounting in false ceilings, parapet ducts, and floor tanks using a mounting case

Functions for configuration with ETS:

- Encrypted telegram transmission via KNX Data Secure
- Flexible and powerful applications with binary inputs and dimming output in one device
- Dimming output with automatic load detection and configurable dimming process, message in case of a short circuit
- Extensive logic functions (logic grid, value converter, disabling element, comparator, limit switch)

Characteristics

The universal dimming actuator operates according to the leading or trailing edge dimming principle and enables switching and dimming of incandescent lamps, HV halogen lamps as well as LV halogen lamps with conventional transformers and Tronic transformers as well as dimmable HV LEDs and LV LEDs with electronic or conventional transformers.

Provided it supports the load, the characteristic of the connected load can be automatically measured and a suitable dimming process can be set. Alternatively, a fixed dimming process can be configured by setting ETS parameters. This procedure is required for loads that do not enable automatic measuring. A dimming output is available.

The device enables a switching and brightness state response of the connected load to the KNX. A short circuit and load failure can also be reported to the KNX.

Aside from the dimming output, the device has 3 additional inputs. Potential-free switches, pushbuttons or other contacts (e.g. magnetic contacts) can be connected to these inputs. The signals of the inputs are read in via a common reference potential at the device. Depending on how the ETS is configured in the application for switches, pushbuttons or contacts, inputs 1 and 2 either act internally on the dimming output or separately on the KNX bus. Input 3 always acts on the KNX bus if required. When acting internally, inputs 1 and 2 directly operate the dimming output in a specified configuration. When acting on the KNX, telegrams for switching or dimming, for blind control or value transmitter application (dimming value transmitter, light scene extension unit, color or color temperature value transmitter) can be sent individually from the inputs.

In addition to the dimming mode and the inputs, the device has 8 internal logic functions for realizing simple or complex logic operations.

The electronics of the device are supplied via the bus voltage (no additional supply voltage required).

The screw terminals on the device are designed for connecting untreated solid conductors, flexible conductors without ferrules 0.5 to 4 mm² and flexible conductors with ferrules 0.5 to 2.5 mm². The KNX connection and the 3 binary inputs are connected via a preassembled control line YY6x0.6.

The device is designed for installation in suitable device boxes (recommendation: electronic device box with partition).

The device is KNX Data Secure-enabled. KNX Data Secure protects the building automation systems against manipulation and can be configured in the ETS project. For secure commissioning, it is mandatory that a device certificate be affixed to the device. As part of the installation process, the device certificate must be removed from the device and kept in a safe place.

The device can be updated. Firmware updates can be conveniently installed using the Siemens firmware download tool.

Functions

Building site function

With the actuator’s factory settings, the device behaves passively, i.e. no telegrams are sent to the KNX. The output is set to the universal dimming principle with automatic detection of the load type. The output can be controlled via inputs 1 (ON/brighter) and 2 (OFF/darker), provided that the bus voltage is switched on. Input 3 has no function.

Programming mode

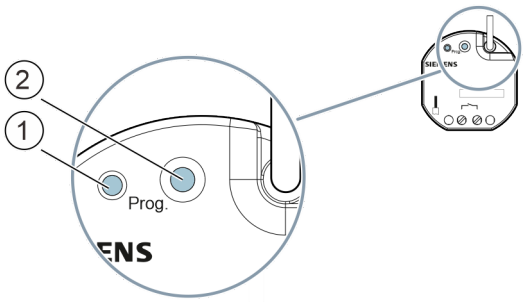


Fig. 1: Programming button and programming LED (exemplary illustration)

After bus voltage recovery, wait several seconds before pushing the programming button (2) (not until booting is complete).

Activate programming mode

a) Briefly press the programming button (2) (< 1 s).

⇨ Programming mode is activated.

⇨ The programming LED (1) illuminates continuously.

Deactivating programming mode

✓ Programming mode is activated. The programming LED (1) illuminates continuously.

a) Briefly press the programming button (2) (< 1 s).

⇨ Programming mode is deactivated.

⇨ The programming LED (1) is not illuminated.

Behavior on bus voltage failure/recovery

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

Binary inputs

- Depending on how the ETS is configured in the application for switches, pushbuttons or contacts, inputs 1 and 2 either act internally on the relay output or separately on the KNX bus. Input 3 always acts on the KNX if required.
- Individually adjustable functions for the inputs with effect on the KNX (switching, dimming, shutter, value transmitter, scene extension unit, 2-channel operation, controller extension unit, no function)
- Switching: Command when closing and opening the contact adjustable (no reaction, ON, OFF, TURN). The behavior after bus voltage recovery can be preset.
- Dimming: Dimming of brightness and/or color temperature. Command when closing the contact, time between switching and dimming, dimming in different steps, telegram repetition in case of long signal at the input and sending of a stop telegram at the end of the dimming process configurable, presetting of the behavior after bus voltage recovery possible.
- Shutter: The command when closing the contact and operating concept is configurable. Times for short and long signal at input and slat adjustment adjustable, behavior after bus voltage recovery can be preset.
- Value transmitter: Can function as 1-byte, 2-byte, 3-byte or 6-byte value transmitter incl. color temperature and color value transmitter; individually configurable values, optional value adjustment with long signal at input (not with 6-byte value transmitter) and presetting of behavior after bus voltage recovery is possible.
- Scene extension unit: Adjustable function (without or with memory function) and the scene number
- 2-channel operation: When closing the contact on the input, up to two telegrams can be sent to the KNX. Adjustable operating concept (channel 1 only or channel 2/both channels). The functions of the channels (1-bit, 1-byte, 2-byte, 3-byte, 6-byte) can be configured separately.
- Controller extension: Configurable functions (operating mode switching, forced operating mode switching, presence function and setpoint shift)
- Blocking of all or individual inputs via a 1-bit object possible, polarity of the blocking object, behavior at the beginning and end of the blocking and behavior during an active blocking adjustable

Dimming output

- Switching and dimming of the dimming output
- Central control function via up to 6 switching objects, 6 dimming objects and 6 value objects and collective feedback
- Switching response: active (sending on change or cyclically to the bus) or passive (object can be read) response function

- Adjustable reaction on bus voltage failure/recovery and after an ETS programming operation
- Logical link function for the output
- Configurable blocking function for the output, alternatively configurable forced position function for the output
- Time functions (switch-on, switch-off delay, staircase lighting function - also with pre-warning function)
- Can be integrated into light scenes: Up to 64 configurable internal scenes
- Operating hours counter can be activated for the output

Logic functions

- The device has 8 internal logic functions:in addition to the switching operation and inputs
- Logic gates (e.g. AND, OR, exclusive OR, each with up to 4 inputs)
- 1-bit-to-1-byte converter with input filter, blocking object and specification of output values
- Blocking element with filter and time functions and blocking object
- Comparator for values with 9 different input data formats and many comparison operations
- Limit switch with hysteresis with upper and lower threshold value for 9 different input data formats. Incl. setting the 1-bit output values
- The logic functions have dedicated KNX communication objects and can process telegrams from the actuator or other bus devices

Technical design

Position and function of the connections, operating and display elements

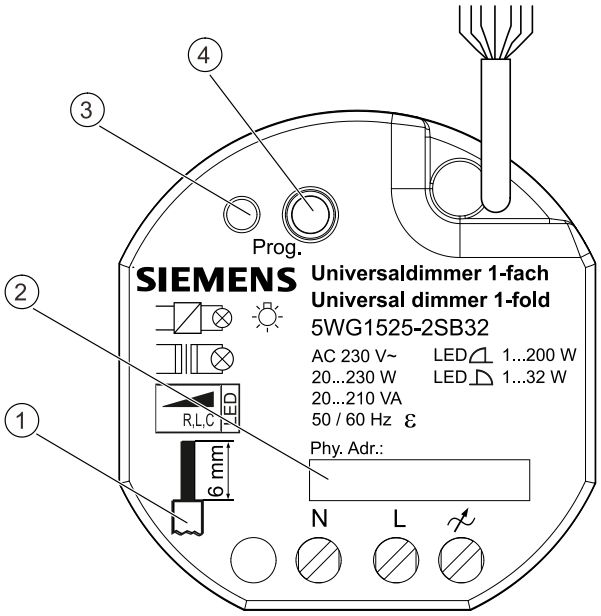


Fig. 2: Connections, operating and display elements

Pos.	Operating or display elements	Function
1	Note on cable insulation	Stripping length 6 mm
2	Label field	Enter physical address
3	Programming LED (red)	LED on = programming mode active
4	Programming button	Short push of button (< 1 s): ● Activate programming mode, display state (LED on = active)

Type overview

Type	Description	Article number	KNX PL-Link
	Universal dimmer UP 525S32	5WG1525-2SB32	No

Version of the Engineering Tool Software

Application	Version
Engineering Tool Software (ETS)	ETS5 version 5.7.3 or higher

Accessories

Type	Description	Article number
	Mounting case M 592/01	5WG1592-8AB01

Product documentation and support

Product documentation

Documents related the product, such as operating and installation instructions, application program description, product database, additional software and CE declarations can be downloaded from the following website:

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

Frequently asked questions

For frequently asked questions about the product and their solutions, see:

https://support.industry.siemens.com/cs/products?dtp=Faq&mfn=ps&lc=de-WW

Support

Contact details for additional questions relating to the product:

Tel.: +49 89 9221-8000

http://www.siemens.com/supportrequest

Notes

Security

⚠ CAUTION	
	**National safety regulations** Failure to comply with national safety regulations may result in personal injury and property damage. ● Observe national provisions and comply with the appropriate safety regulations.

⚠ WARNING	
	**Risk of death due to electric voltage and electric current!** Electrical expertise is required for the installation. Incorrect installation can deactivate electrical safety features without this being apparent to a lay person. ● The device should only be installed and put into operation by a certified electrician. ● When connecting the device, ensure that the device can be enabled. ● Do not open the casing of the device. ● Secure the phases with a B16 line protection switch. ● Only use loads that are approved for dimming operation. ● When planning and setting up electrical systems, observe the relevant guidelines, regulations and standards of the respective country. ● Do not connect DC or AC voltage to the inputs of the potential-free contacts (leads to damage/destruction of the device and voltage carry-over to the bus). ● Ensure safe separation of dangerous currents when connecting the potential-free contacts. ● Install the device in a location that is inaccessible to lay persons (e.g. flush-mounted box, sill duct, control cabinet). ⇨ Incorrect installation can deactivate electrical safety features without this being apparent to a lay person.

If you pass on the device, ensure you also pass on the documentation for the device, such as, the operating instructions.

Connecting loads to the dimming contact

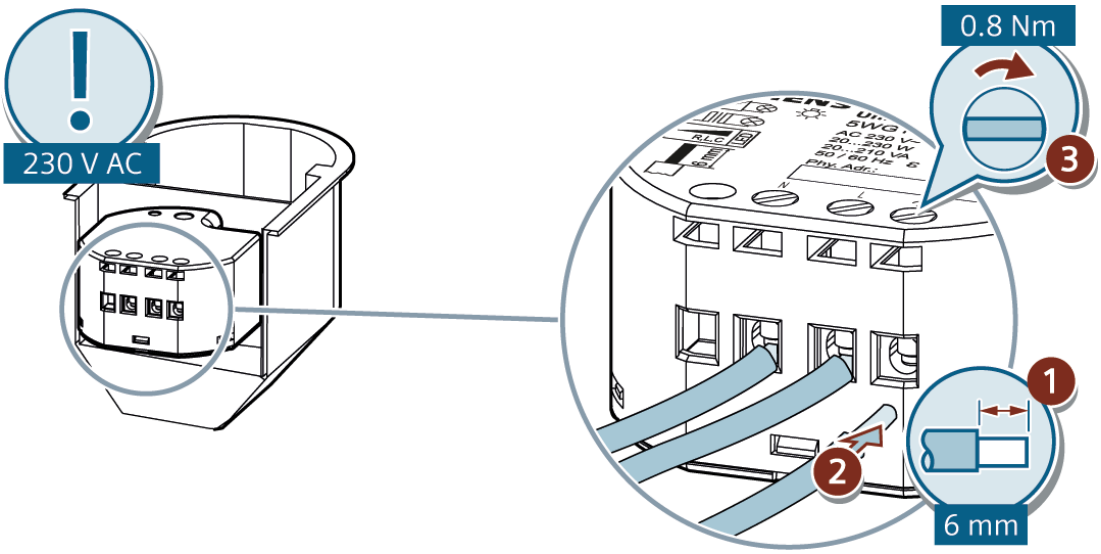
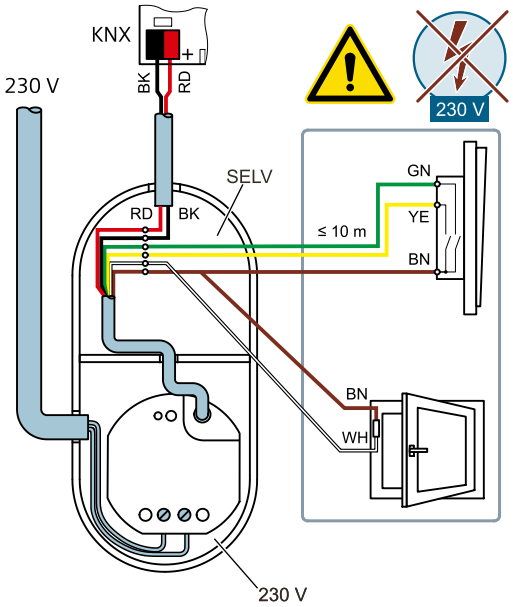


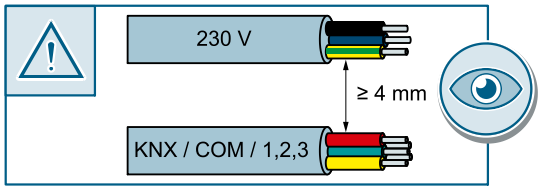
Fig. 3: Connecting loads to the dimming contact

Cu		
	0.5 … 4.0 mm²	
	0.5 … 2.5 mm²	

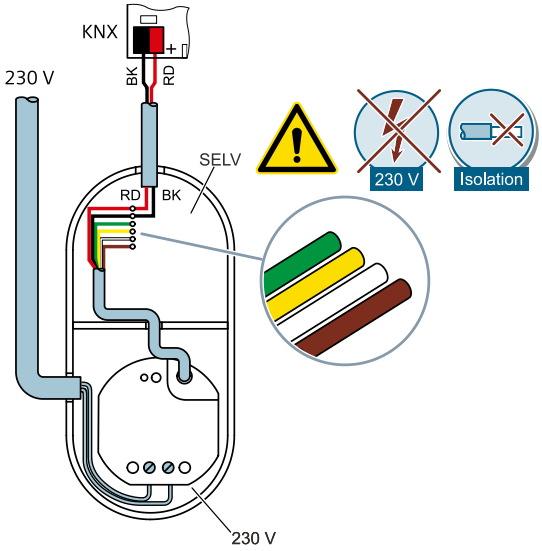
Connecting the contacts to the binary input and KNX connection



DANGER! Never connect mains voltage (230 V) or other external voltages to the extension inputs. Connecting an external voltage jeopardizes the electrical safety of the entire KNX/EIB system (SELV/no galvanic isolation)! Persons may be exposed to danger, equipment and facilities may be destroyed.



Ensure a distance of at least 4 mm between the low voltage lines (bus and extension inputs) and the load lines (230 V).



- **DANGER!** Do not insulate any of the wires of the 6 pole connection line against each other and against external voltages.
- Never connect input 1 (green), input 2 (yellow), input 3 (white) or reference potential (com) (brown) to inputs or reference potential (com) of other devices.
- Never place bus/binary input and mains voltage terminals together in a the same connection box. Use a device socket with a rigid partition or separate device sockets (recommendation: electronic device box with partition). Observe cable routing and spacing

Testing 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.

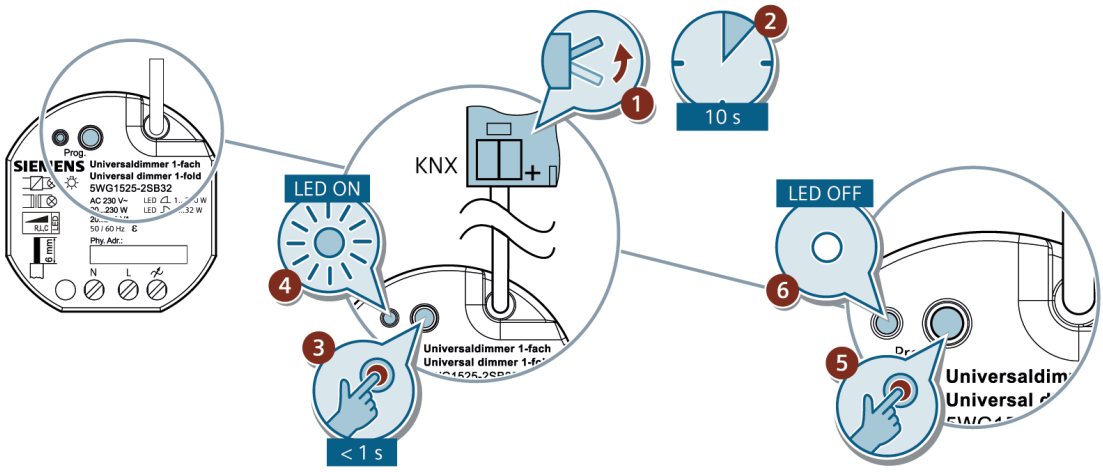


Fig. 4: Testing KNX 24 V DC type. SELV

Safe state mode

The safe state mode stops the execution of the loaded application program.

Only the device's system software is still running. ETS diagnostic functions and programming the device are possible.

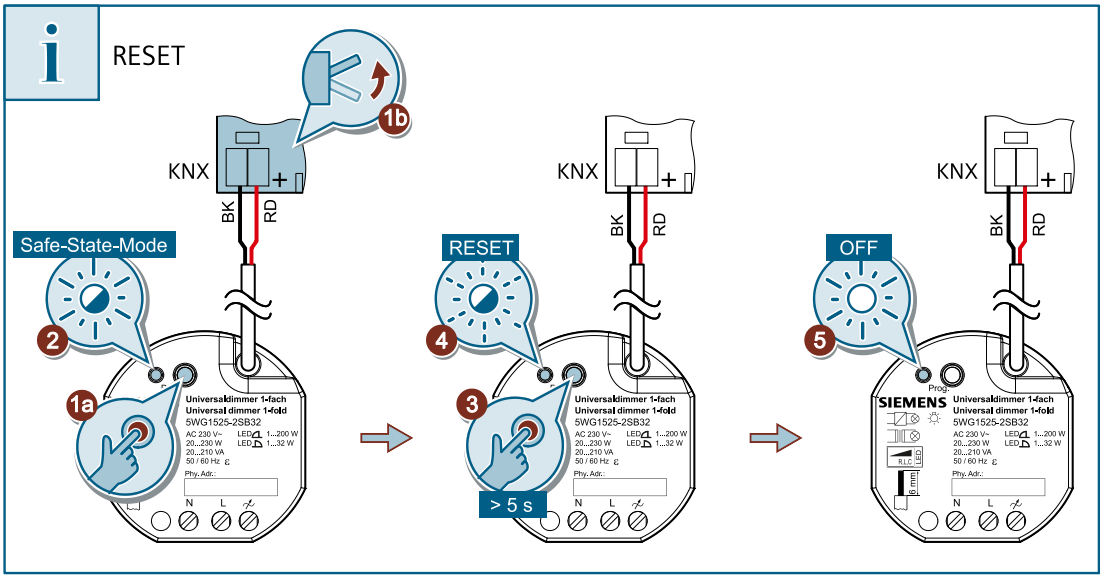


Fig. 5: Safe state mode and exucting a master reset

Activating safe state mode

a) Switch off the bus voltage or disconnect the device from the KNX.

b) Wait approx. 10 s.

c) Press and hold the programming button (1a).

d) Switch on the bus voltage or connect the device to KNX (1b).

e) Only release the programming button when the programming LED flashes slowly (2).

⇨ Safe state mode is activated.

Briefly pressing the programming button again also lets you activate and deactivate the programming mode as usual even in safe state mode. When programming mode is active, the programming LED no longer flashes.

Deactivate safe-state mode

a) Switch off bus voltage or disconnect device from the KNX.

b) Wait approx. 10 s or execute ETS programming operation.

⇨ Safe-state mode is deactivated.

Master reset

The master reset resets the device to its factory settings (physical address 15.15.255, the firmare is retained). The device must then be recommissioned using the ETS.

In secure mode: A master reset deactivates the device security. The device can subsequently be recommissioned with the device certificate.

Executing a master reset

✓ Safe state mode is activated.

a) Press the programming button and hold it for > 5 s (3).

⇨ The programming LED flashes rapidly (4).

⇨ The device executes a master reset, restarts and the LED turns off (5).

⇨ After approx. 5 s the device is operational again.

Location of the device certificate QR code

For safe commissioning, the ETS requires a suitable device certificate. The device certificate is a string containing the device-specific FDSK (Factory Default Setup Key) and the serial number of a KNX Data Secure-enabled device. The certificate has to be communicated to the ETS.

The FDSK is a factory unique string for each Secure device. The ETS uses it once to create further (digital) keys (tool key/runtime key) for secure communication within the project. The FDSK is stored in the ETS project for this specific device. If the FDSK is lost, the device cannot be started in secure mode.

In case of a reset to factory settings, the FDSK must be entered again for secure start-up within the project.

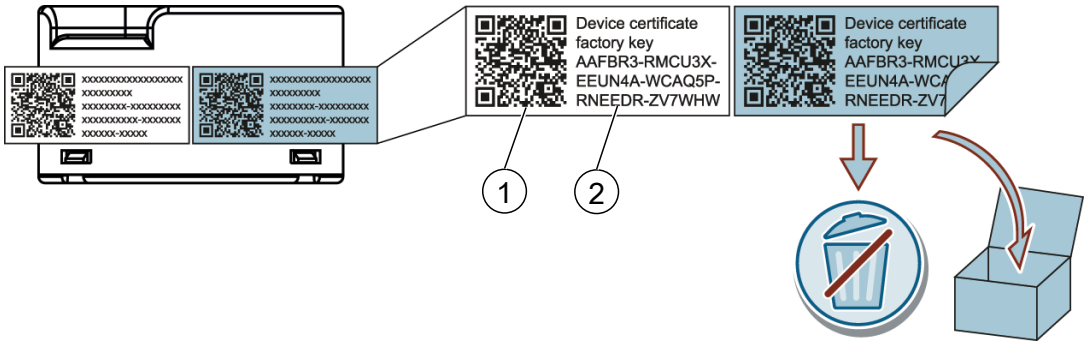


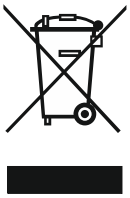
Fig. 6: Device certificate

Item	Name
1	QR code
2	Factory key

The device certificate is affixed to the side of the device as a sticker. There is a duplicate device certificate, which can be removed for easy commissioning with the ETS and stored in a safe place.

The device certificate must be removed from the device and stored securely. The FDSK must not fall into the hands of unauthorised persons.

Disposal



The device is considered an electronic device for disposal in accordance with European Directive and may not be disposed of as domestic waste.

- Use only designated channels for disposing the devices.
- Comply with all local and currently applicable laws and regulations.

If a device is defective, contact the local sales office.

Power supply

Power supply	
Rated voltage KNX	DC 24 V (DC 21... 30 V)
Power consumption KNX	5 ... 18 mA
Power loss (internal consumption)	150 ... 170 mW

Inputs

Binary inputs	
Number of inputs	3
Control lead (pre-assembled)	YY6x0.6
Input type	potential free
Pulse voltage if contact is open	5 V
Pulse current if contact is closed	Continuously 1.25 mA
Total length of extension input lead with pairs of twisted cables	max. 10 m
Lead type (preferred)	J-Y(St)Y
Input signal delay until first bus telegram after closing the contact	approx. 15 ms + debounce time (configurable)
Input signal delay until first bus telegram after opening the contact	approx. 15 ms + debounce time (configurable)
Debounce time (configurable), min. (= from)	10 ms
Debounce time (configurable), max. (= to)	255 ms

Outputs

Switching outputs	
Number of dimming outputs	1
Switching voltage (at 50/60 Hz)	AC 230 V
Operating voltage, minimum rated value	230 V - 15 %
Operating voltage, maximum rated value	240 V + 6 %

Contact current	
Rated current per channel	1 A
Restrictions for rated current (device) – derating information	Power reduction when installed in wood or drywall -15 % for installation in multiple combinations -20%

Switching outputs	
Maximum power loss of the device at rated output	1.5 W
Maximum power loss per output at rated output with maximum resistive load	1.5 W

Switching capacity/load types	
Rated output with load type from incandescent lamps	Leading edge: 20 ... 210 W, trailing edge: 20 ... 230 W
Rated output with load type from HV halogen lamps	Leading edge: 20 ... 210 W, trailing edge: 20 ... 230 W
Rated output with load type from HV LED lamps	Leading edge: 1 ... 32 W, trailing edge: 1 ... 200 W
Rated output with load type from LV halogen lamps with electronic transformers	Leading edge: 1 ... 210 W, trailing edge: 1 ... 230 W
Rated output with load type from LV halogen lamps with magnetic transformers	Leading edge: 20 ... 210 W

Reliability

Failure rate	
Failure rate (at 40°C)	293 fit

Connection types

Clampable conductor cross-sections	
solid	0.5 ... 4 mm²
fine stranded without ferrule	0.5 ... 4 mm²
fine stranded with ferrule	0.5 ... 2.5 mm²
Tightening torque screw terminals	max. 0.8 Nm

Mechanical data

Mechanical data	
Material housing	PC
Housing width	48 mm
Housing length	50 mm
Housing height	28 mm
Product weight	52 g
Fire load	0.55 kWh (2 MJ)

Environmental conditions

Ambient conditions	
Environmental category (as per EN 60721-3-3)	3k5
Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-25 ... +70 °C
Relative humidity (non-condensing)	5 % ... 93 %

Protection settings

Protection settings	
Degree of pollution (according to IEC 60664-1)	2
Overvoltage category (according to IEC 60664-1)	3
Protection type IP	20
Electrical safety, bus	Yes
Electrical safety, device complies with	EN 50428
EMC requirements, device complies with	EN 50428

Test mark

Test mark	
CE marking	Yes
KNX approval mark	Yes
EAC marking	Yes
RCM marking	Yes
UKCA marking	Yes

Connection example

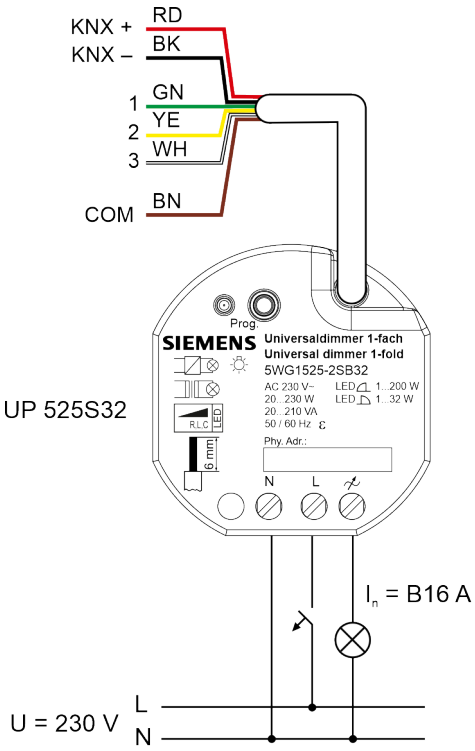


Fig. 7: Connection example

Dimensions

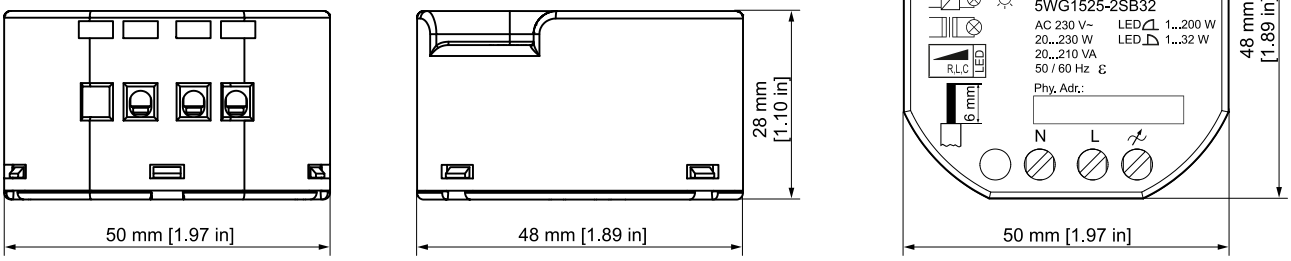


Fig. 8: Dimensions

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