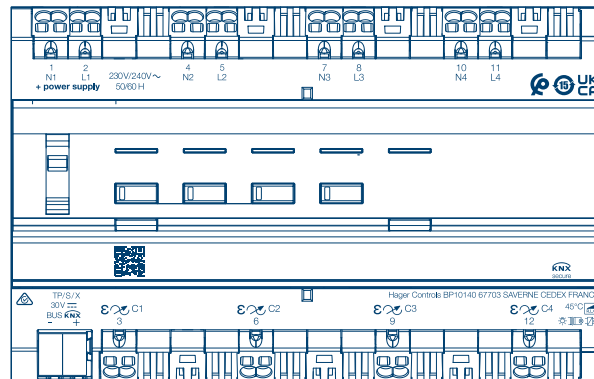


KNX building management system

KNX dimming ac- tuator



KNX Secure 4gang universal dimming actuator,
4x300 W

TYAS664AN



UK
CA

:hager















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1 Introduction



These instructions describe the safe and correct installation and commissioning of the KNX Secure dimming actuator. These instructions are provided as information in addition to the product.

Symbols used


- Single-step instruction or any sequence.
- ① Multi-step instruction. Sequence must be maintained.
- List
- Reference to additional documents/information

	Scope of delivery		Installation by a qualified electrician		For further information on configuring the device, refer to the application manual
	Compatibility with KNX S-Mode (ETS)		Supports KNX Data Secure		
	Installation terminal with actuation opening		Compatibility with KNX S-Mode (ETS)		Compatibility with Hager Easytool
	Suitable for use in China		Suitable for use in Morocco		Suitable for use in Australia and New Zealand
	Suitable for use throughout Europe and Switzerland		Manufacturer's information is in accordance with § 18 Para. 4 of the German Electrical and Electronic Equipment Act		Suitable for use in England, Wales and Scotland


Symbol	Warning word	Consequence on non-observance
	Danger	Leads to serious injuries or death.
	Warning	Can lead to serious injuries or death.
	Caution	Can lead to minor injuries.
	Caution	Can lead to device damage.
	Note	Can lead to physical damage.

Symbol	Description
	Warning against electric shock.
	Warning against damage from electricity.

Introduction

Symbol	Description
	Warning against damage from heating.

Target group

	Electronic devices may only be assembled, installed and configured by an electrically trained and certified specialist in accordance with the relevant installation standards of the country. The accident prevention regulations valid in the appropriate countries must be complied with.
---	---

In addition, these instructions are intended for system administrators and electrically trained specialists.

2 Safety instructions

Electrical devices may only be installed and assembled by a qualified electrician in accordance with the relevant installation standards, guidelines, regulations, directives, and safety and accident prevention regulations of the country of installation.

Danger due to electric shock. Disconnect before working on the device or replacing lamps. Take into account all circuit protection devices that supply dangerous voltages to the device.

Do not connect any LED or compact fluorescent lamps that are not expressly suitable for dimming. The device may get damaged.

Do not connect luminaires with an integrated dimmer.

Do not connect capacitive and inductive loads together on the output.

The maximum permissible load per device must not be exceeded.

If different external conductors are used for the output combinations, then this will invariably lead to damage to the product. Output combinations cannot be made if the external conductors used on C1, C2, C3 and C4 are different.

Danger due to electric shock. The device is not suitable for safe disconnection of the mains supply. Even when the device is switched off, the load is not galvanically separated from the mains supply.

Failure to comply with these installation instructions may result in damage to the device, fire or other dangers.

Danger due to electric shock on the SELV/PELV installation. Not suitable for switching SELV/PELV voltages.

3 Scope of delivery

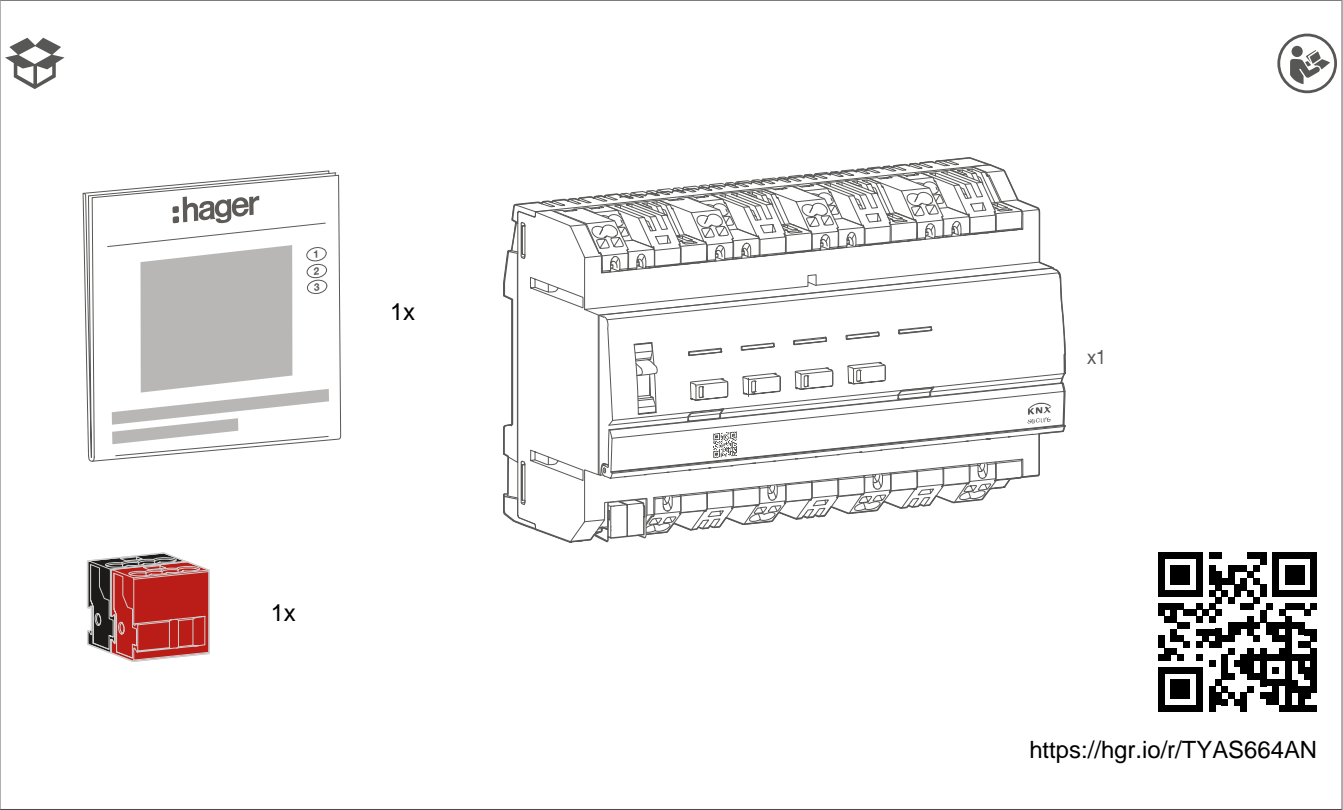


Fig. 1: TYAS664AN scope of delivery

4 Design and layout of the device

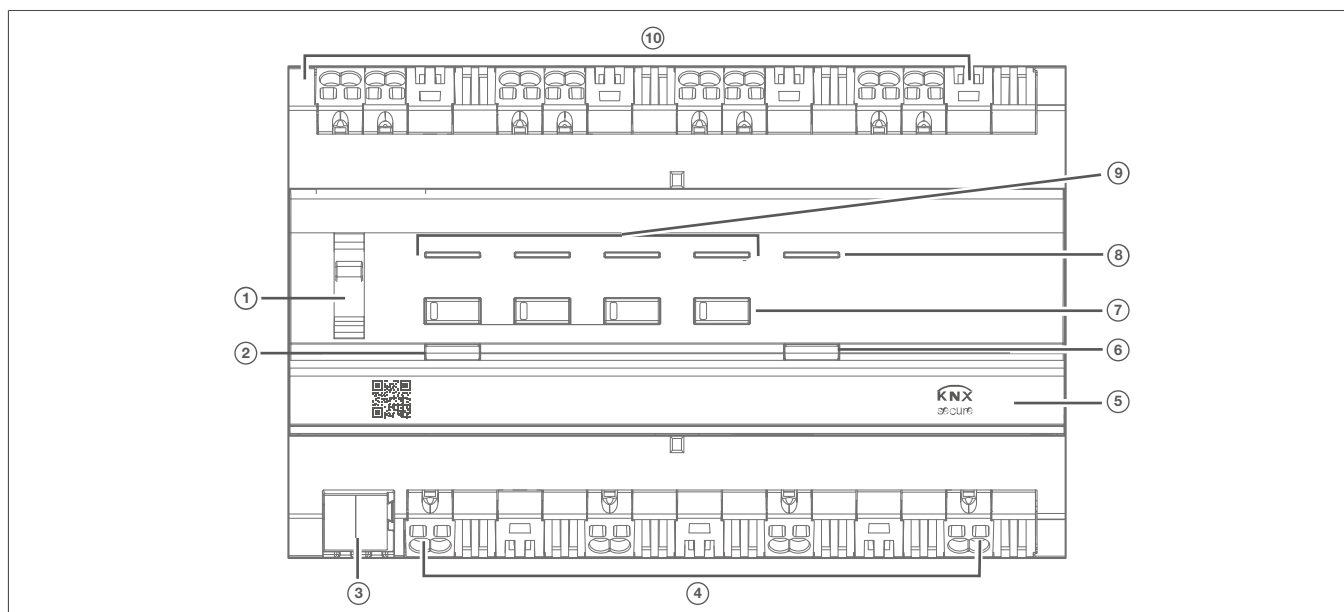


Fig. 2: Design and layout of the device TYAS664AN

- ① Schiebeschalter auto /min / max/ ➡
- ② Beleuchtete Taste Dimmmodus
- ③ KNX Busanschlussklemme
- ④ Anschlüsse Lasten
- ⑤ Beschriftungsfeld mit Abdeckung
- ⑥ Beleuchtete Programmier-Taste
- ⑦ Bedientaste für Handbetrieb mit Status-LED
- ⑧ Kontroll-LED Überhitzungsschutz
- ⑨ Kontroll-LED Kurzschluss und Überlastschutz je Ausgang
- ⑩ Anschluss Spannungsversorgung 230 V~

5 Function

System information

Dieses Gerät ist ein Produkt des KNX-Systems und entspricht den KNX-Richtlinien. Detaillierte Fachkenntnisse durch KNX-Schulungen werden zum Verständnis vorausgesetzt.

Das Gerät ist KNX Data Secure fähig. KNX Data Secure kann im ETS-Projekt konfiguriert werden und bietet Schutz vor Manipulation in der Gebäudeautomation. Detaillierte Kenntnisse zu diesem Thema werden vorausgesetzt. Für die Inbetriebnahme eines KNX-Secure-Gerätes ist ein Gerätezertifikat (FDSK) erforderlich, welches am Gerät angebracht ist (QR-Code Aufkleber). Während der Montage ist das Gerätezertifikat vom Gerät zu entfernen und sicher aufzubewahren.

Planung, Installation und Inbetriebnahme des Gerätes erfolgen mithilfe einer KNX-zertifizierten Software.

Systemlink commissioning

The function of the device is software-dependent. The software is to be obtained from the product database. You can find the latest version of the product database, technical descriptions as well as conversion and additional support programmes from our website.

easylink commissioning

The function of the device is configuration-dependent. The configuration can also be performed using devices developed specially for simple setting and commissioning.

This type of configuration is only possible with devices compatible with the easylink system. easylink stands for easy, visually supported commissioning. Preconfigured standard functions are assigned to the inputs/outputs by means of a service module.

Functional description

The device has load outputs that can be connected to different external conductors. It works with automatic load detection depending on the connected load in the phase cut-on or phase cut-off and enables switching and dimming via the KNX bus of:

- Incandescent lamps and halogen lamps
- Low-voltage halogen lamps with conventional or electronic transformer
- Dimmable LED and energy-saving lamps

Additionally, the device has a learn function for more efficient control of energy-saving lamps and 230 V LED lamps.

Correct use

- Dimming of 230 V AC electrical loads
- Installation on DIN rail according to IEC 60715

Product characteristics

- Compatible with KNX Data Secure products
- Manual activation of the outputs on the device possible, building site operation
- Status indication of the outputs on the device
- Automatic load detection
- Setting the minimum and maximum dimming value
- Time switching functions

- Scene function
- Overload protection
- Short circuit protection
- Forced position by higher-level controller
- Connection of various external conductors possible
- Combination of the outputs for higher wattage dimming

Output combinations

The 4 channels can be combined in various approved combinations for dimming higher wattage loads.

Before an ETS download, the device automatically performs a test in order to detect whether the cabling performed corresponds to one of the approved combinations. After an ETS download, the device automatically performs a test in order to detect whether the cabling performed corresponds to the 'Output combination' parameters saved in ETS.

Approved combinations (see Tab. 1):

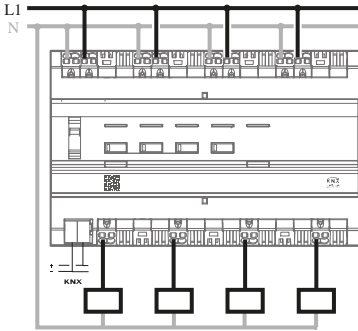
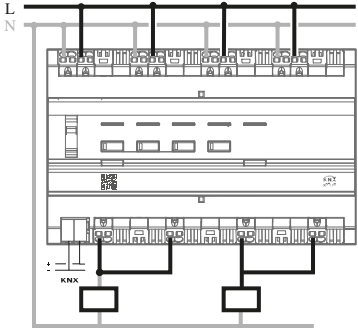
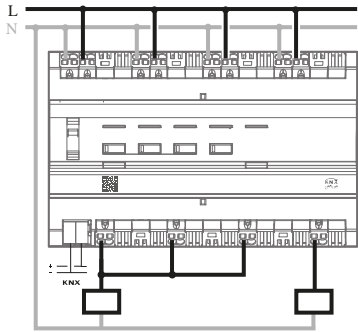
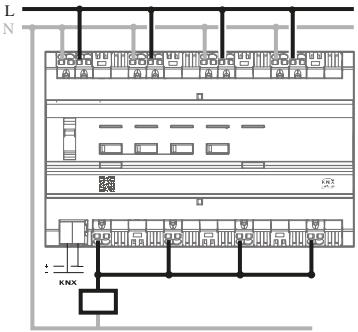
1 - 2 - 3 - 4 (300 W) - (300 W) - (300 W) - (300 W)	(1 + 2) - (3 + 4) (600 W) - (600 W)
	
(1 + 2 + 3) - (4) (900 W) - (300 W)	(1 + 2 + 3 + 4) (1200 W)
	
(1 + 2) - (3) - (4) (600 W) - (300 W) - (300 W)	(1) - (2) - (3 + 4) (300 W) - (300 W) - (600 W)

Table 1: Approved output combinations

Function

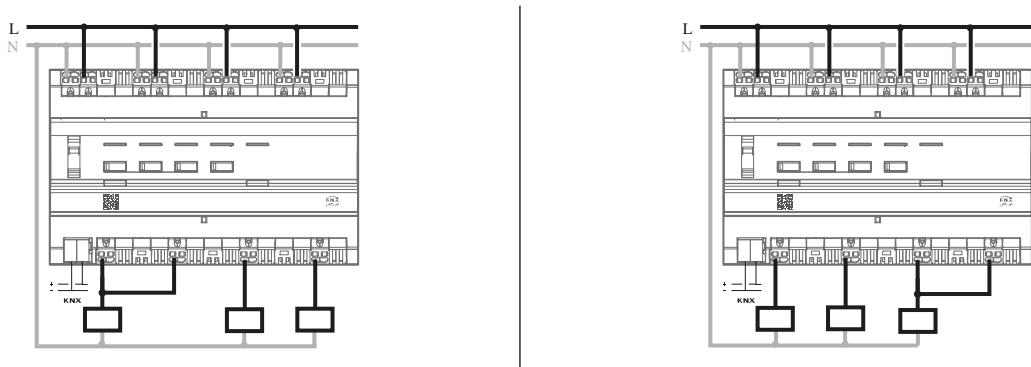


Table 1: Approved output combinations

If an unapproved output combination is detected, the product will display, via the red LEDs on the buttons, which output group is not approved/not standard.

Short circuit and overload protection

Short circuit and overload are signalled via the control LED ([Bild 2/9](#)). The load is throttled (see Troubleshooting).

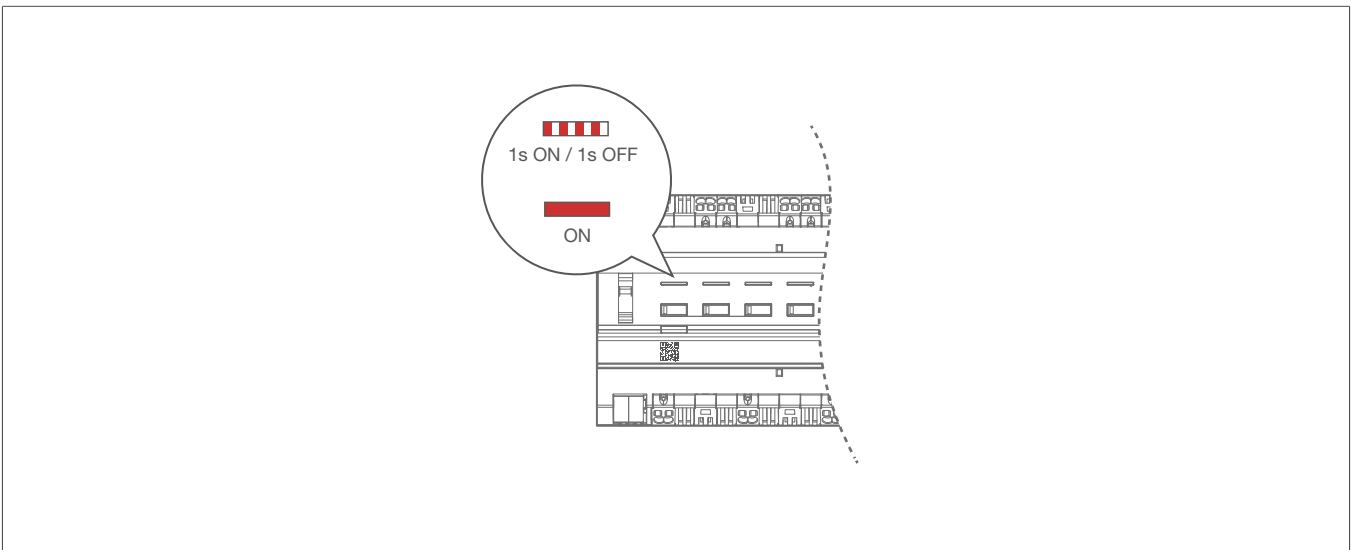


Fig. 3: Short circuit or overload detected

Overheating protection

Overheating of the device is signalled by a permanent light of the control LED ([Bild 2/8](#)). The connected load is throttled (see Troubleshooting).

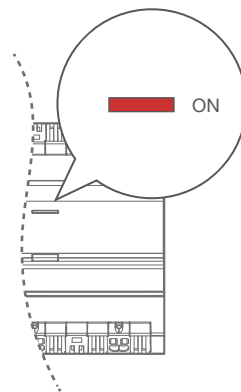


Fig. 4: Overheating protection has triggered

6 Operation

Switching manual mode on/off

☑ Bus voltage supply is present.

- Move the switch (Bild 2/1) to position .

Manual mode is switched on, the outputs can be controlled independently of each other via the operation buttons (Bild 2/7):



During manual mode, the controller is deactivated via the KNX bus.

systemlink commissioning:

Depending on the programming, manual mode is activated permanently or for a time period configured using the application software. If manual mode is disabled via the application software, no activation takes place.

Or:

- Move the switch (Bild 2/1) to position **auto**.

Manual operation is switched off. Operation takes place solely via the KNX bus. The output assumes the position predefined by the bus controller. The switching status is displayed by the status LED of the operation button (Fig. 2/7).

Operating outputs in manual mode

Operation takes place by a short or long press on the operation button (Bild 2/7).

Condition (Bild 2/7)	Behaviour when button is pressed (Bild 2/7)
Load is switched off. Status LED of the button (Bild 2/7) is off.	Short button-press: ON – the connected load is switched on. LED of the button lights up. Long button-press: Dimming to the maximum brightness. Status LED of the button lights up.
Load is switched on. Status LED of the button (Bild 2/7) lights up.	Short button-press: OFF – the connected load is switched off. LED of the button goes out. Long button-press: Changes the current brightness. Dimming takes place in the opposite direction of the last dimming operation until maximum or minimum brightness.

Table 2: Manual operation



If the integrated LED flashes when the operation button is pressed, no load is connected.

7 Information for qualified electricians

7.1 Installation and electrical connection



Danger

Electric shock when live parts are touched!

An electric shock can lead to death!

- Isolate all connection cables before working on the device and cover any live parts in the area!



Caution

Impermissible heating if load of the device is too high!

The device and the connected cables may get damaged in the connection area!

- Do not exceed the maximum current carrying capacity!

Installing the device



Note!

Observe temperature range. Provide sufficient cooling.

- 1 Install the device on a TH 35 7.5–15 DIN rail according to IEC 60715:2017 / EN 60715:2017 (Bild 5).

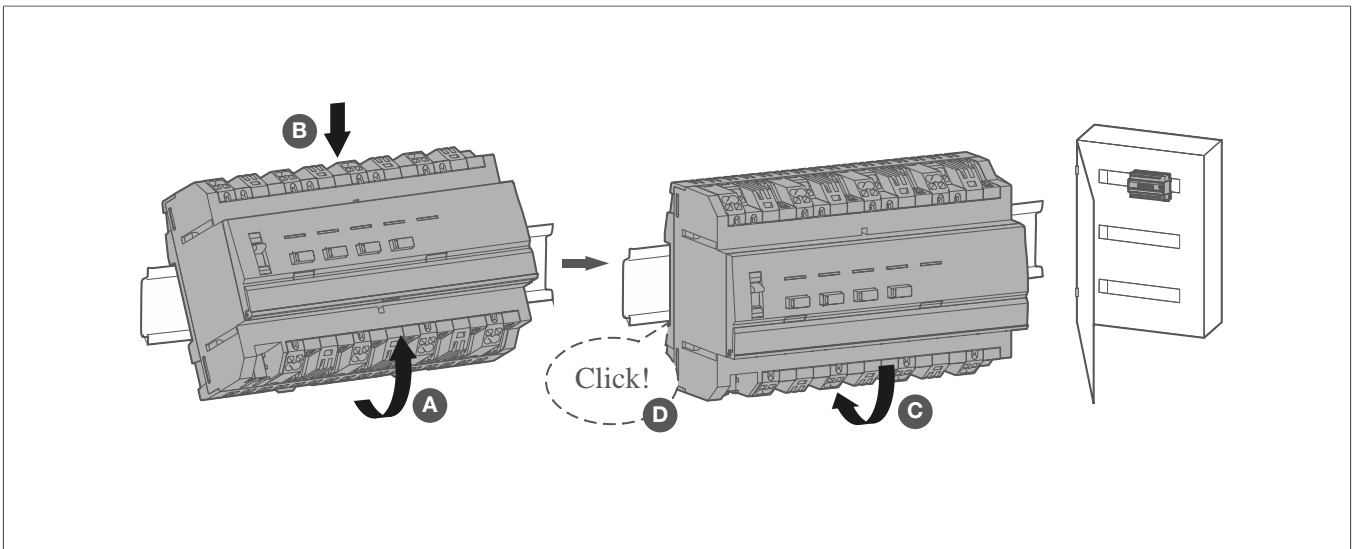


Fig. 5: Installing the device on the DIN rail

Connecting the device

- ☑ The device is installed on the DIN rail in accordance with ISO 60715.

- 1 Connect the connection cables for the power supply.

The device can be connected in a single-phase (Fig. 7) or three-phase (Fig. 8) configuration.

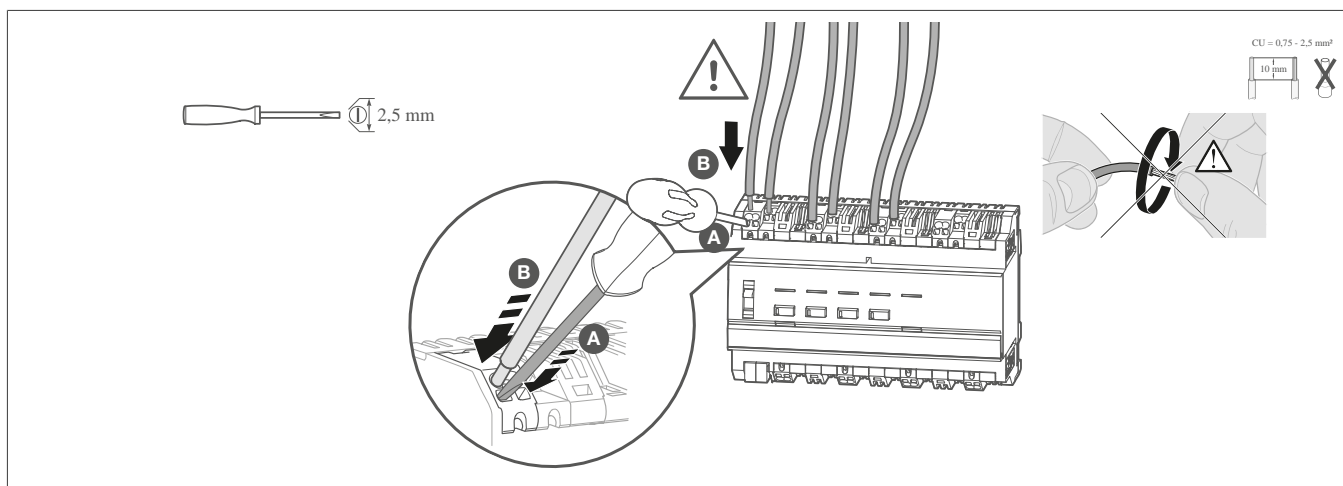


Fig. 6: Gerät mittels Steckklemme anschließen

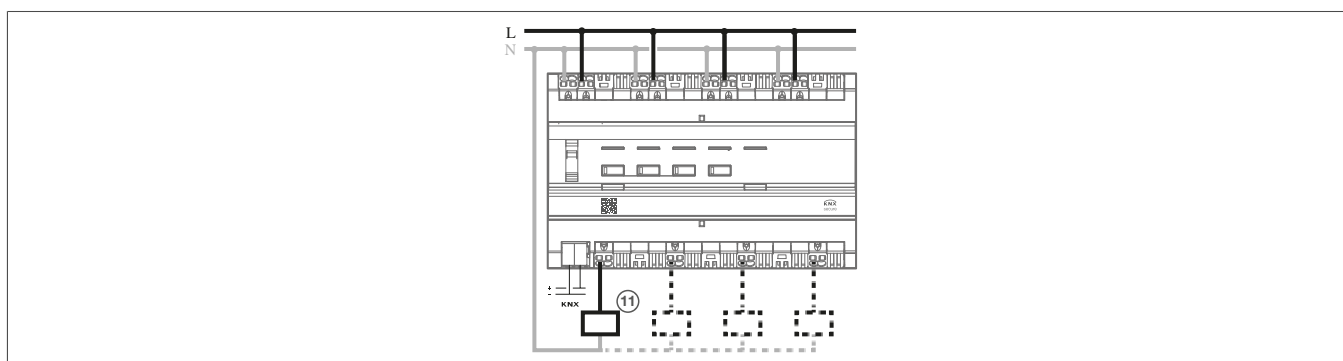


Fig. 7: Geräteanschluss einphasig - 4 elektrische Lasten

⑪ elektrische Last

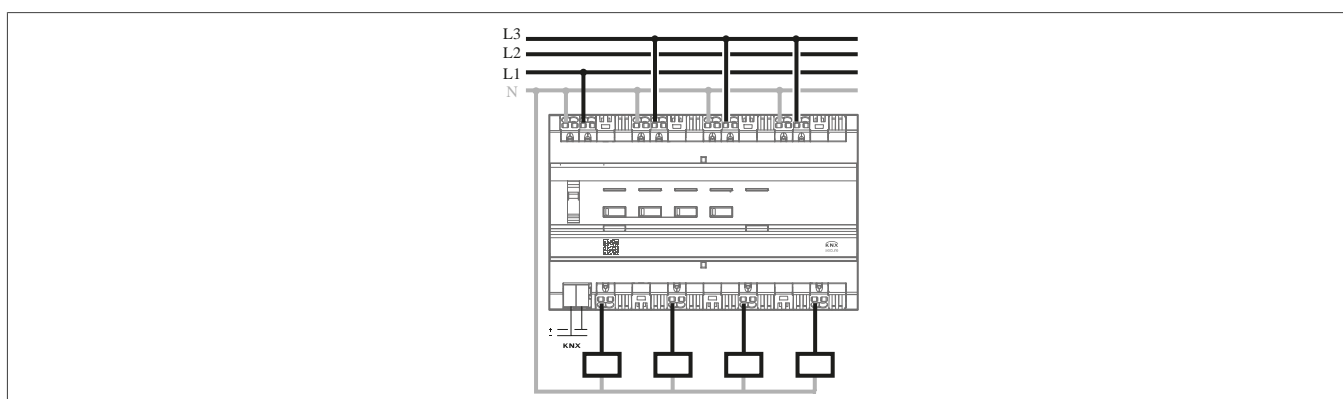


Fig. 8: Geräteanschluss dreiphasig - 4 elektrische Lasten

Connecting loads



To ensure proper functioning of the device, an electrical load must always be connected to output 1.

- Connect the electrical load to the lower terminals of the device. Different combinations of load connections can be established ([siehe Ausgangskombinationen , Seite 9](#)).

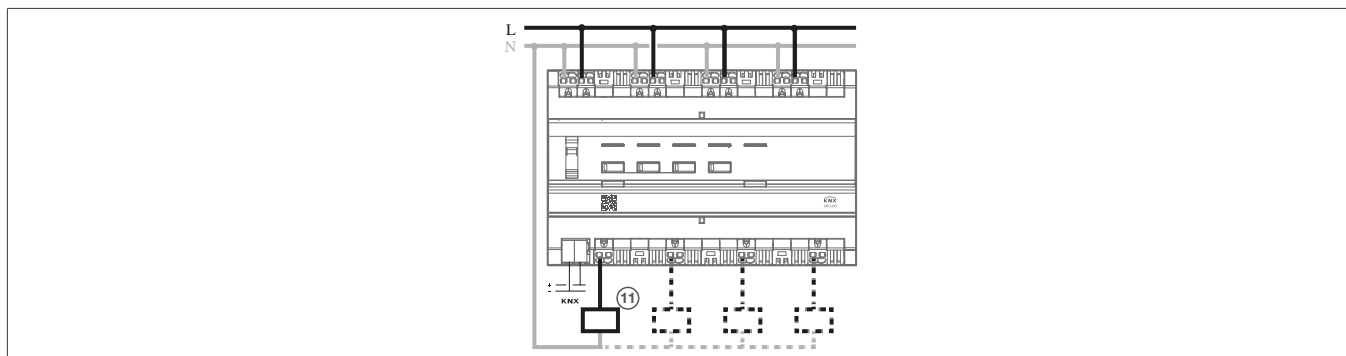


Fig. 9: Geräteanschluss einphasig - 4 elektrische Lasten

⑪ elektrische Last

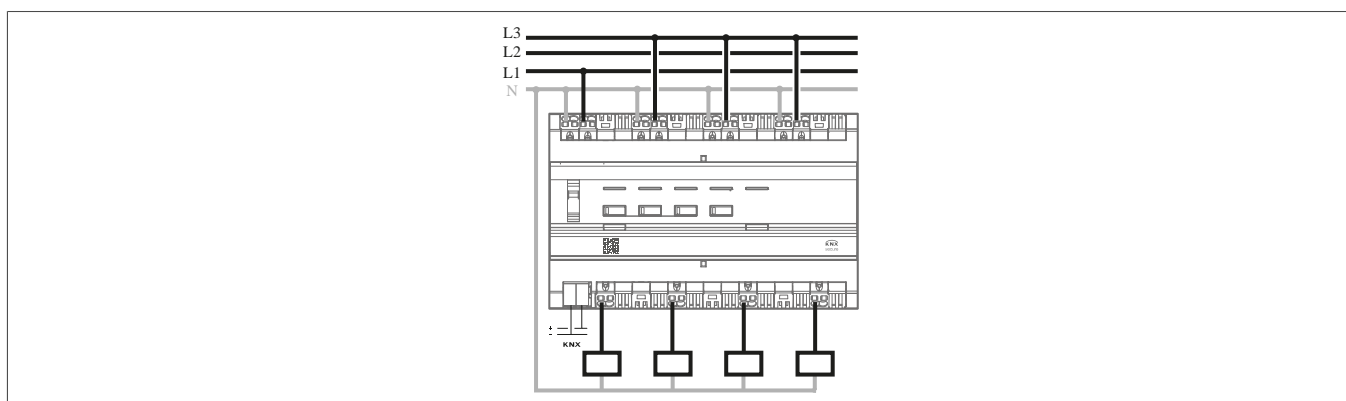


Fig. 10: Geräteanschluss dreiphasig - 4 elektrische Lasten

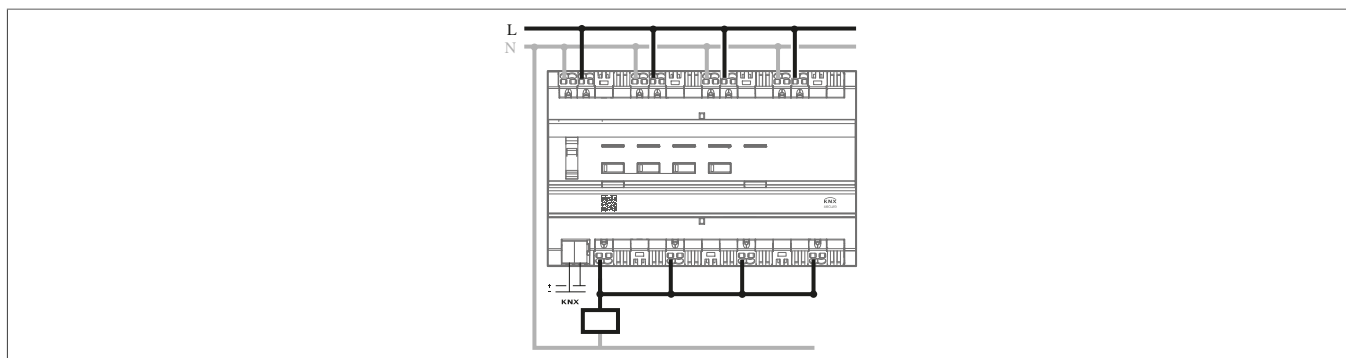


Fig. 11: Single-phase device connection - 1 electrical load (device combination 1+2+3+4)

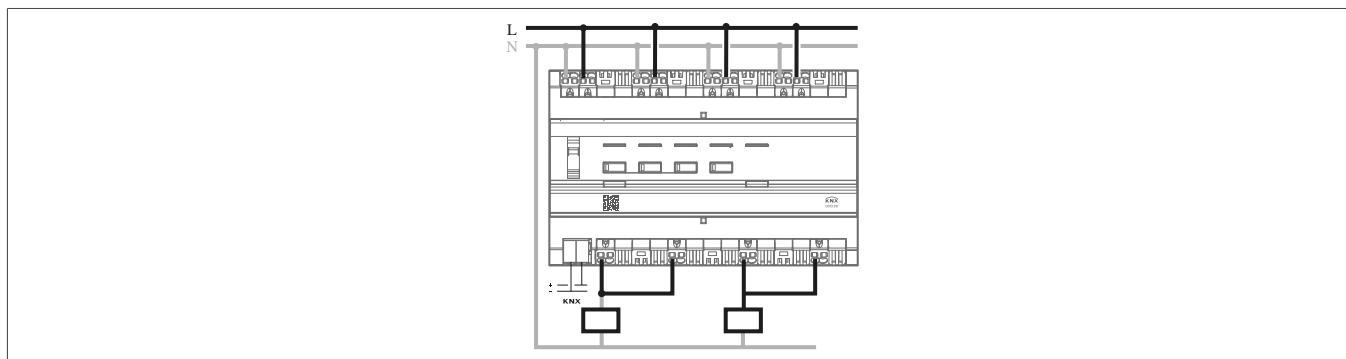


Fig. 12: Single-phase device connection - 2 electrical loads (device combination 1+2 - 3+4)



Additional device combinations are listed in Chapter [Ausgangskombinationen](#).

Connecting the bus cable

☑ The connection cables for the load and power supply are connected.

- 1 Connect the bus cable via the bus connection terminal.

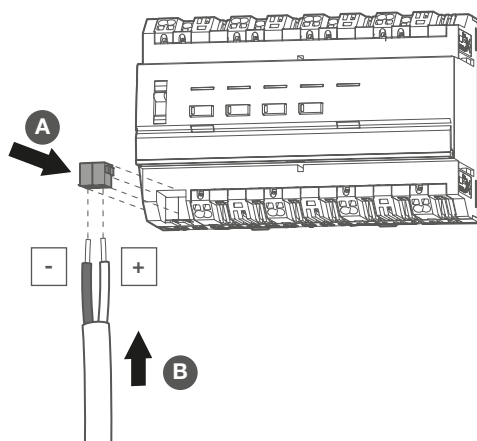


Fig. 13: Connecting the bus cable

7.2 Commissioning

The device can be programmed in three ways:

- KNX systemlink mode (standard ETS programming) [siehe Inbetriebnahme KNX systemlink](#)
- KNX Secure mode [siehe Inbetriebnahme im KNX Secure Modus](#)
- KNX easylink mode [siehe Easylink Inbetriebnahme](#)

Commissioning in KNX systemlink mode (ETS)

systemlink – loading the physical address and application software

☑ The slide switch for manual mode ([Bild 2/1](#)) is in position **auto**.

- ① Switch on the mains voltage.
- ② Switch on the bus voltage.
- ③ Press the programming button ([Bild 2/6](#)).

The button lights up.



If the button does not light up, no bus voltage is present on the device.

- ④ Load the physical address into the device.
Status LED of the button goes out.
- ⑤ Note down the physical address on the labelling field ([Bild 2/5](#)).
- ⑥ Load the application software into the device.

Commissioning in KNX Secure mode

☑ The device has been installed and connected so that it is ready for operation.

- ① Activate safe commissioning mode in ETS.
- ② Enter the device certificate (QR code) ([Bild 16](#)), scan it ([Bild 15](#)) or add it to the project in ETS.



Note!

Use a high-resolution camera to scan the QR code.

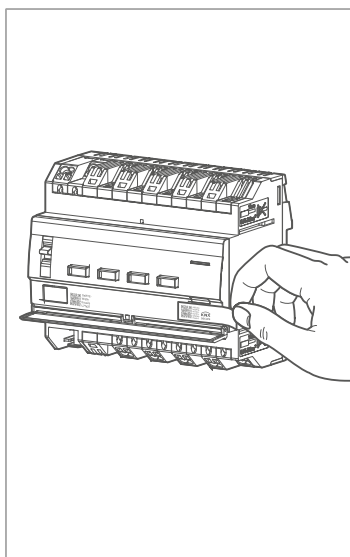


Fig. 14: Removing the device certificate from the device (similar to illustration)

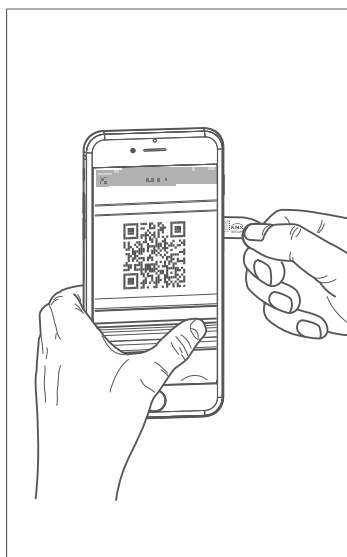


Fig. 15: Scanning the QR code

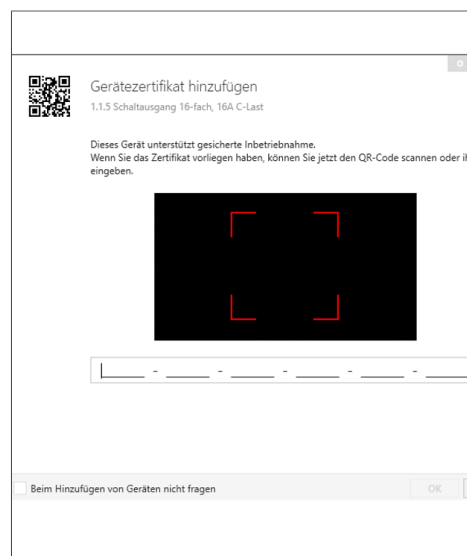


Fig. 16: Entering the QR code manually

- 3 Document all passwords and keep them in a safe place.
- 4 Remove the device certificate (QR code) from the device and store it with the passwords.
- 5 Note down the device certificate along with the physical address and product reference in a list.

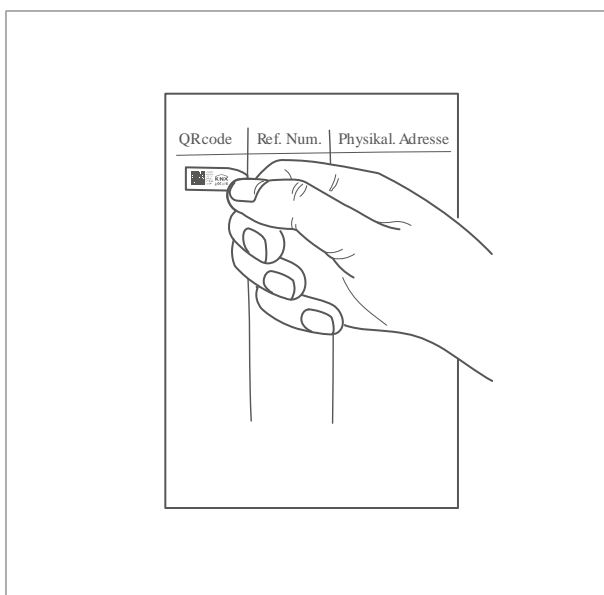


Fig. 17: Storing the device certificate in the project documentation

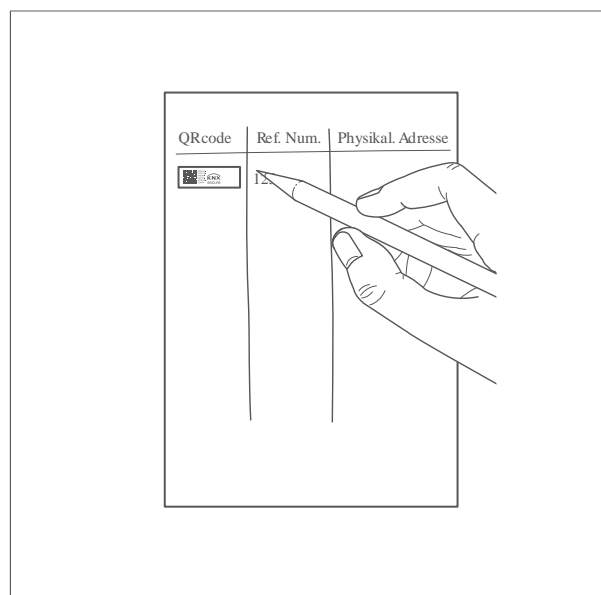


Fig. 18: Noting down the article number and physical address for the device certificate

easylink commissioning

The function of the device is configuration-dependent. The configuration can also be performed using devices developed specially for simple setting and commissioning.

This type of configuration is only possible with devices compatible with the easylink system. easylink stands for easy, visually supported commissioning. Preconfigured standard functions are assigned to the inputs/outputs by means of a service module.

7.2.1 Commissioning the device

☑ The device has been installed and connected correctly.

- 1 Switch on the mains voltage at the outputs.
- 2 Switch on the bus voltage.

Depending on the parameterisation, the status LEDs of the operation buttons for manual mode light up.

Functional test

The functionality of the outputs is displayed via the status LED of the operation button ([Bild 2/7](#)).

LED status	Meaning of the signal
LED lights up permanently	Load is activated
LED flashes	No load connected

Table 3: Functionality of the outputs

The individual outputs can be switched in manual mode via the operation button ([Bild 2/7](#)).

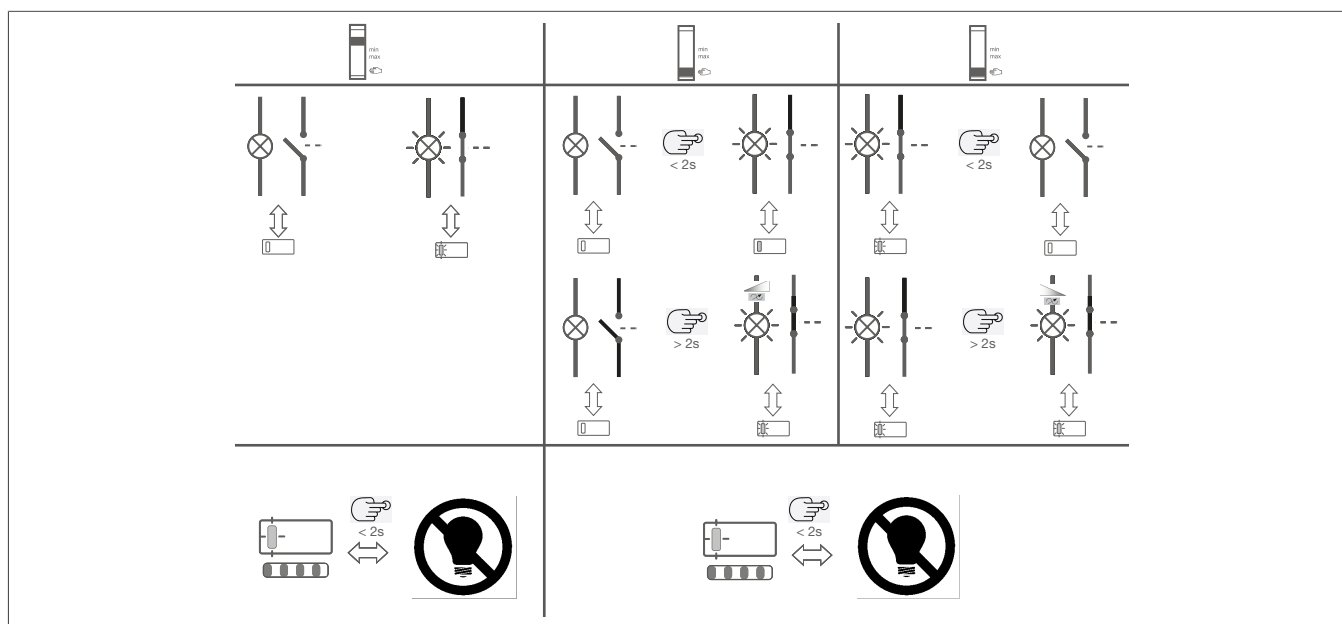



Fig. 19: Functional test

- ☑ The device has been installed and connected correctly.
- ☑ The mains and bus voltage are switched on.
- ☑ The load is switched off.

- Move the slide switch ([Fig. 2/1](#)) to the manual mode position .
- Press the manual operation button ([Bild X](#)) briefly for < 2 s.

The connected load is switched on and the status LED of the button lights up.

OR:

- Hold down the manual operation button ([Fig. 2/7](#)) for > 2 s.

The connected load can be dimmed to maximum brightness and the status LED of the button

lights up.

Setting the minimum and maximum dimming value on the device

☑ The device is ready for operation.



The brightness value can be set by manual operation on the device or by the programmed dimming button of an operating unit.

Setting the brightness value

- 1 Set the switch (Bild 2/1) to max. in order to apply the set brightness as the maximum dimming value.

Or:

- 1 Set the switch (Bild 2/1) to min. in order to apply the set brightness as the minimum dimming value.
- 2 Keep the operation button (Bild 2/7) pressed for more than 3 s.
The status LED flashes twice. The set brightness value is saved.



If the minimum or maximum dimming value is outside the setting range, the status LED (Bild 2/7) flashes permanently after the save operation.

Setting dimming mode on the device

In the factory setting, the device performs automatic load detection for ohmic, inductive and capacitive loads and selects the suitable dimming performance. If the load type is known, this can be specified on the device without performing automatic load detection.

☑ The device is ready for operation.

- 1 Keep the dimming mode button (Bild 2/2) pressed until the status LED of the operation button (Bild 2/7) flashes.
- 2 Press the button (Bild 2/7) to select the output that is to have its dimming mode changed.
- 3 Briefly press the dimming mode button (Bild 2/2) repeatedly until the coloured lighting of the button (Bild 2/2) displays the desired operating mode (Tab. 4: Dimming mode).
- 4 Keep the dimming mode button (Bild 2/2) pressed until the lighting of the button (Bild 2/2) flashes quickly. While the button is flashing quickly, the selected operating mode is set. After that, the operating mode is displayed for approx. 3 s before the button goes out.



If the setting is not confirmed by holding down the button, the device will revert to its previous dimming mode after 2 minutes.

If the operating mode selected is not suitable for the connected load, the dimming channel will reset to 'factory setting' automatically.

Button lighting (Bild 2/2)

Dimming mode

Yellow

Energy-saving lamps

Table 4: Dimming mode

Button lighting (Bild 2/2)

Dimming mode

Purple	Capacitive load
Blue	Inductive load
Red	LED load
Green	Status of automatic load detection ¹
White	Automatic load setting (factory setting)

Table 4: Dimming mode

Displaying dimming mode

- Briefly press the dimming mode button (Bild 2/2).

The coloured lighting of the button will display the current operating mode for approx. 3 s (Tab. 4).

Programming the load via the button of an operating unit

When programming the connected load type, the dimming performance for compact fluorescent lamps and LED lamps is optimised.

The device is ready for operation. The dimming button of an operating unit has been programmed with the output to be programmed in.

- 1 Press the dimming button (Bild 2/2) 5 times briefly, then keep the button pressed until the load switches off.



The short press is independent of the configured operating performance on the operating unit (5x on, 5x off or 5x on/off).

- 1 Press the dimming button (Bild 2/2) once briefly.

The load learning procedure lasts approx. 30 s. To optimise the dimming performance, a dimming operation is performed. After programming, the connected load lights up at maximum brightness and flashes once. The teach-in procedure is complete.



Depending on the type of connected load, the minimum brightness may change due to the storing procedure.

Resetting learned loads in the device

The device can be reset to automatic load detection, e.g. after replacing lamps.



Automatic load detection is particularly suitable for loads that can be dimmed clearly in the phase cut-on or phase cut-off ('conventional loads').

- ☑ The device is ready for operation. The dimming button of an operating unit has been programmed with the output to be programmed in.

¹ In the selected dimming mode, the device performs an automatic detection of all identified loads for approx. 30 s. This can lead to temporary impairment of the lighting.

- 1 Press the dimming button (Fig. 2/2) 5 times briefly, then keep the button pressed until the load switches off.



The short press is independent of the configured operating performance on the operating unit (5x on, 5x off or 5x on/off).

If the dimming button is not pressed again within the next 10 s, the learned dimming principle is retained.

- 2 Press the dimming button (Bild 2/2) twice briefly.
The load flashes twice. Automatic load detection is activated again.

7.3 Dismantling

Disconnecting the load cables

- ☑ All the cables delivering voltage to the device are switched off.

- 1 Disconnect the connection cables on the device.

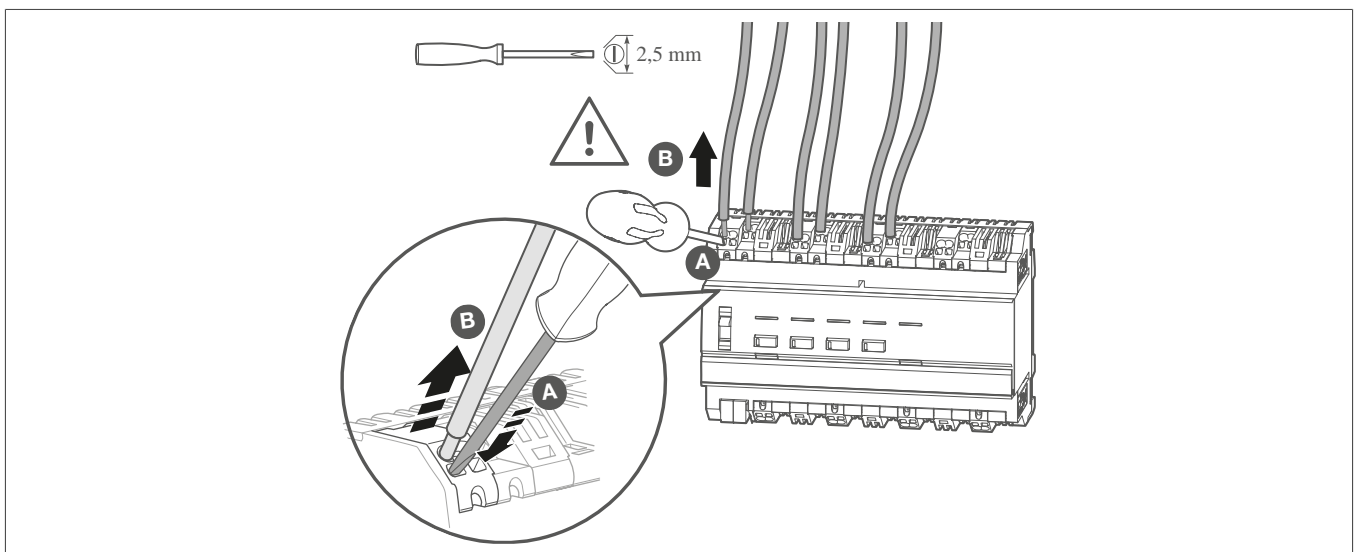


Fig. 20: Disconnecting the connection cables

Removing the bus connection terminal

- ☑ The bus voltage is switched off.

- 1 Remove the bus connection terminal from the device.

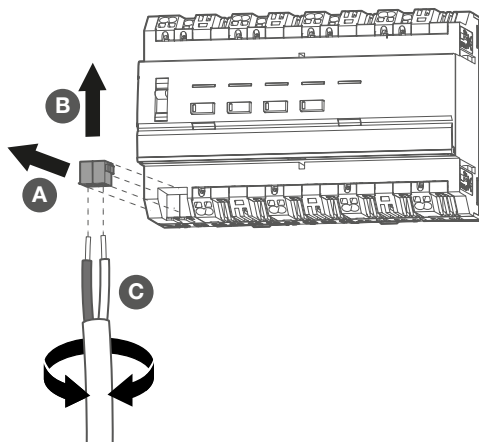


Fig. 21: Removing the bus connection terminal

Dismantling the device

☑ The bus connection cable and the load cables have been disconnected.

- 1 Remove the device from the DIN rail.

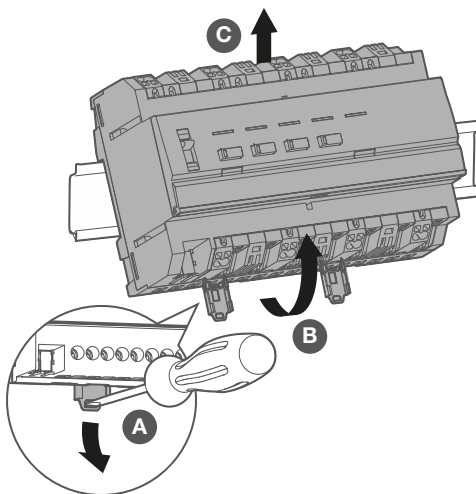


Fig. 22: Removing the device from the DIN rail



Dispose of the device in line with the corresponding guidelines of the country ([siehe Disposal](#)) or, if you have a warranty claim, contact the point of sale ([siehe Warranty](#)).

8 Appendix

8.1 Technical data

KNX Medium	TP1-256
Commissioning mode	Systemlink, Easylink
Supply voltage via grid	230 V ~, +10 %/-15 % 240 V~, ±6 %
KNX supply voltage	21 ... 32 V SELV
BUS connection mode	Connecting terminal
KNX current consumption	2.4 mA
Consumption without load	780 mW
KNX max. current consumption	5 mA
Own consumption on mains	Max. 1 W
Max. power dissipation	Max. 2.4 W
Upstream protection device	10 A
Operating altitude	Max. 2000 m
Degree of contamination	2
Surge voltage	4 kV
Degree of protection of housing	IP20
Degree of protection of housing under front plate	IP30
Impact protection	IK04
Overvoltage class	III
Operating temperature	-5 ... +45 °C
Storage/transport temperature	-20 ... +70 °C
Maximum switching cycle rate at full load	6 switching cycles/minute
Connection capacity	0.75 ... 2.5 mm²
Standards	EN 50491-3; EN 60669-2-1
Dimensions	8 modules, 8 x 17.5 mm



Conventional or electronic transformers should not be operated with less than 75 % of their nominal load.

Load that can be connected per output

Output combinations

- 230 V incandescent lamps, halogen lamps
- 12 V/24 V halogen lamps with conventional transformer
- 12 V/24 V halogen lamps with electronic transformer
- 12 V/24 V energy-saving lamps (CFL) / LED lamps with dimmable driver ²

	Min.	Max.
1 output, independent of the channel	5 W (1 driver)	300 W (8 drivers)
2 outputs, combined in a channel	150 W (4 drivers)	600 W (10 drivers)
3 outputs, combined in a channel	300 W (5 drivers)	900 W (13 drivers)
4 outputs, combined in a channel	450 W (6 drivers)	1200 W (16 drivers)

Table 5: Number of connectable drivers

² Driver restrictions must only be observed for energy-saving lamps used with drivers.

Output combinations

- Dimmable 230 V energy-saving lamps (CFL) / LED lamps
- 12 V/24 V halogen lamps with conventional transformer
- 12 V/24 V halogen lamps with electronic transformer
- 12 V/24 V energy-saving lamps (CFL) / LED lamps with dimmable driver

	Min.	Max.
1 output, independent of the channel	5 W (1 lamp)	60 W (8 drivers)
2 outputs, combined in a channel	20 W (4 lamps)	120 W (10 lamps)
3 outputs, combined in a channel	40 W (5 lamps)	180 W (13 lamps)
4 outputs, combined in a channel	60 W (6 lamps)	240 W (16 lamps)

Table 6: Number of connectable lamps

8.2 Troubleshooting

Manual operation not possible.

Switch (Bild 2/1) not set to .

💡 Move the switch to .

Manual operation is not enabled (systemlink).

💡 Enable manual operation via application software.

Bus operation not possible.

Bus voltage is not present.

💡 Check bus connection terminals for correct polarity.

💡 Check bus voltage by briefly pressing the programming button (Bild 2/6), red LED lights up if bus voltage is present.

Manual mode is active.

💡 Switch (Bild 2/1) is in position . Move the switch (Bild 2/1) to position **auto**.

Connected loads do not light up.

Short circuit and overload protection has triggered, control LED (Bild 2/9) lights up/flashes.

💡 Reduce connected load, check wiring and repair if necessary.

Overheating protection has triggered, control LED (Bild 2/8) lights up.

💡 Reduce connected load, provide sufficient cooling, increase distance to adjacent devices.

External conductor L1 missing, external conductor L1 must be available for the outputs to function.

The external conductor (L1, L2, L3) of the appropriate output (output 1, 2, 3 or 4) is missing.

Before an ETS download: The cabled output combination does not correspond to an approved output combination.

After an ETS download: The output combination does not correspond to the 'Output combination' parameter set in ETS.

8.3 Accessories

Optional accessories

KNX bus connection terminals, 2-pole, red/black

TG008

KNX system cable, Y(ST)Y, 2x2x0.8

TG01x

8.4 Regulatory Compliance Australia

8.5 Disposal



Correct disposal of this product (electrical waste).

(Applicable in the European Union and other European countries with separate collection systems).

This marking shown on the product or its documentation indicates that it should not be disposed of with other household waste at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste

disposal, please separate this device from other types of waste. Recycle the device responsibly to promote the sustainable reuse of material resources.

Household users should contact either the dealer where they purchased this product, or their local government office, for details of where and how they can take this device for environmentally safe recycling.

Commercial users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial waste for disposal.

8.6 Warranty

We reserve the right to implement technical and formal changes to the product in the interest of technical progress.

Our products are under guarantee within the scope of the statutory provisions.

If you have a warranty claim, please contact the point of sale.



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