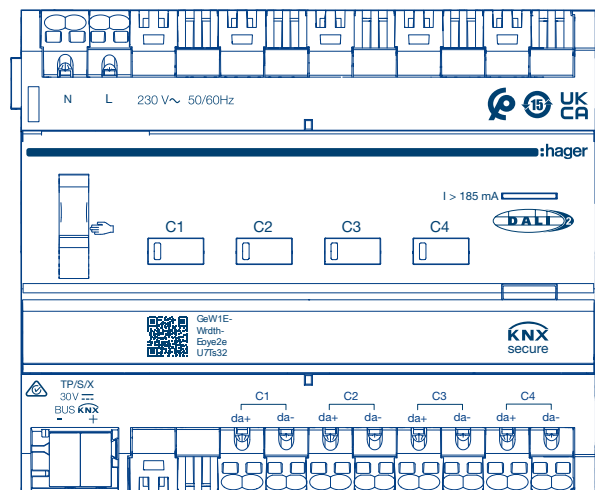# KNX building management system

KNX DALI actuator

KNX Secure DALI 4gang broadcast actuator RGB(T)W

TYAS664D

:hager

Contents

1 Introduction

These instructions describe the safe and correct installation and commissioning of the KNX Secure DALI 4gang broadcast actuator. These instructions are provided as information in addition to the product.

Symbols used

☑ Requirement. This requirement must have been met before continuing with the next assembly step.

● 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, see the application manual
	KNX-certified		Supports KNX Data Secure		Compatibility with DALI 2
	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 in accordance with § 18 Para. 4 of the German Electrical and Electronic Equipment Act		Suitable for use in England, Wales and Scotland

Table 1: Symbols used

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.
	Warning against damagefrom overheating.

 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 of use. The accident prevention regulations valid in the appropriate countries of use must be complied with.

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

2 Safety instructions

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

Hazard due to electric shock. Disconnect before working on the device or load. Take into account all circuit breakers that supply dangerous voltages to the device or load.

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

Danger due to electric shock. The device is not suitable for safe disconnection or isolation of the mains supply.

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

When installing and routing cables, always comply with the applicable regulations and standards for SELV electrical circuits.

3   Scope of delivery

https://hgr.io/r/TYAS664D

Fig. 1: TYAS664D scope of delivery
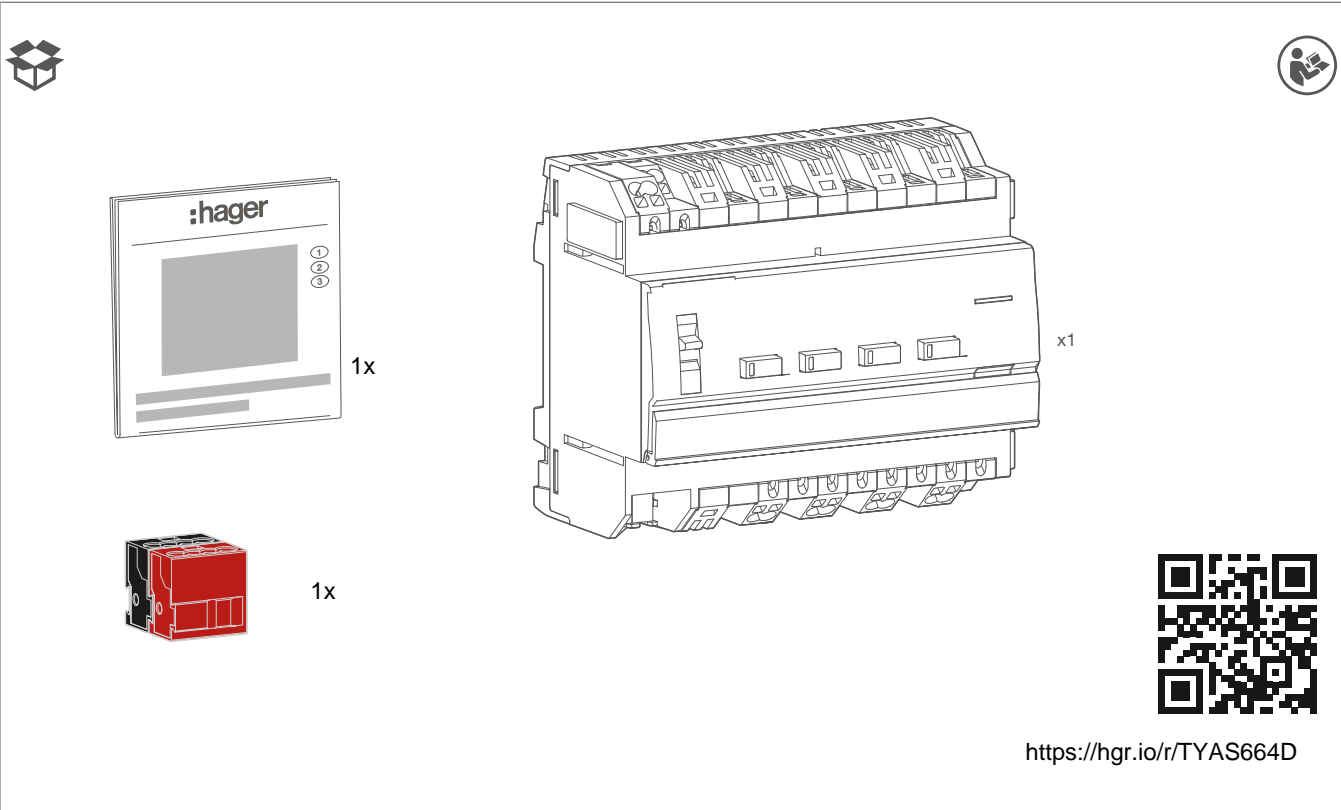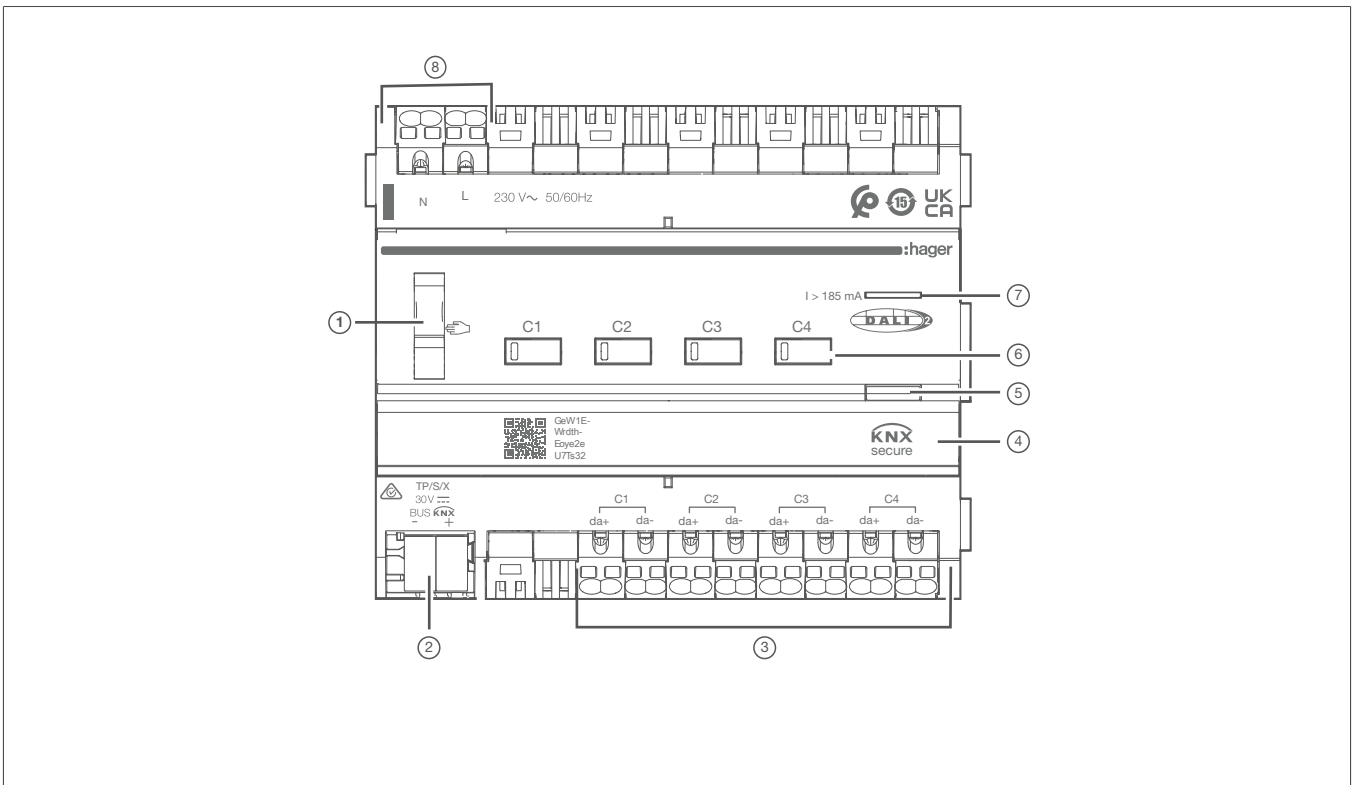
4 Design and layout of the device

Fig. 2: Design and layout of the device TYAS664D

① Slide switch **auto**/ 🖑
② KNX bus connection terminal
③ Connection of DALI ballasts
④ Labelling field with cover
⑤ Illuminated programming button
⑥ Operation button for manual mode with status LED
⑦ Overload status LED
⑧ Mains supply

5 Function

5.1 System information

This device is a product of the KNX system and corresponds to the KNX guidelines. Detailed specialised knowledge obtained from KNX training courses is required for understanding.

The device is KNX Data Secure-compatible. KNX Data Secure can be configured in the ETS project and offers protection against manipulation in building automation. Detailed knowledge on this subject is required. For KNX Secure commissioning, a device certificate (FDSK) is required, which is attached to the device (QR code label). During installation, the device certificate must be removed from the device and kept in a safe place.

The planning, installation and commissioning of the device are carried out with KNX-certified software.

5.2 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.

5.3 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.

5.4 Functional description

The KNX Secure DALI broadcast actuator has four DALI-compatible switching outputs. These outputs enable DALI ballasts to be controlled via the KNX bus as a broadcast single master. The device is DALI-2-certified and supports device types (DT) DT0, DT2 ... DT7 and DT8.

Correct use

– Control of electrical loads by means of DALI-2 protocol
– 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
– Activation of DALI device types DT0, DT2 ... DT7 and DT8
– Setting the colour temperature (warm white/cool white) via DT8 ballast
– Setting the RGB/RGBW colour space via DT8 ballast
– Compatible with DALI ballasts
– Overload protection
– Short circuit protection

5.5   DALI device types (DT)

In the DALI standard, devices are divided into 9 different device types (DT). The KNX Secure DALI 4gang broadcast actuator supports these device types.

DALI device type (DT)

– DT0, DT2 and DT3 describe the activation and behaviour of fluorescent and halogen lamps
– DT4 is used for the phase dimming of 230 V lamps, e.g. incandescent lamps and retrofit LED luminaires
– DT5 are signal converters that convert the digital DALI signals into analogue dimming signals, e.g. 0–10 V
– DT6 is used for single-colour LEDs (single-channel LEDs)
– DT7 is used simply for switching on or off components such as relay modules
– DT8 is used for colour management for multi-colour or tunable white LEDs
    – Tunable white
    – RGB
    – RGBW

5.6   Short circuit protection

The device has integrated short circuit protection according to IEC 62386-101. In the event of a short circuit, all outputs (C1 --- C4) are switched off. The device automatically scans all outputs, leaves all defective outputs switched off, and all other outputs return to automatic mode.

In the event of a short circuit, the status LED of the affected output flashes (Bild 3)
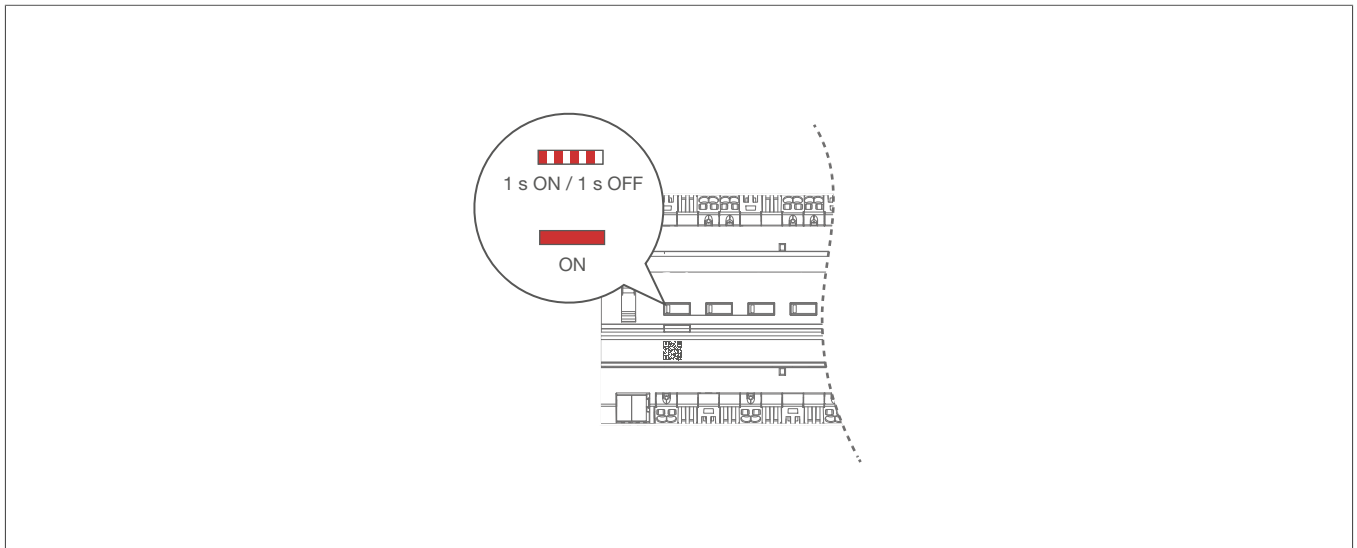

Fig. 3: Short circuit protection detected

5.7   Overload protection

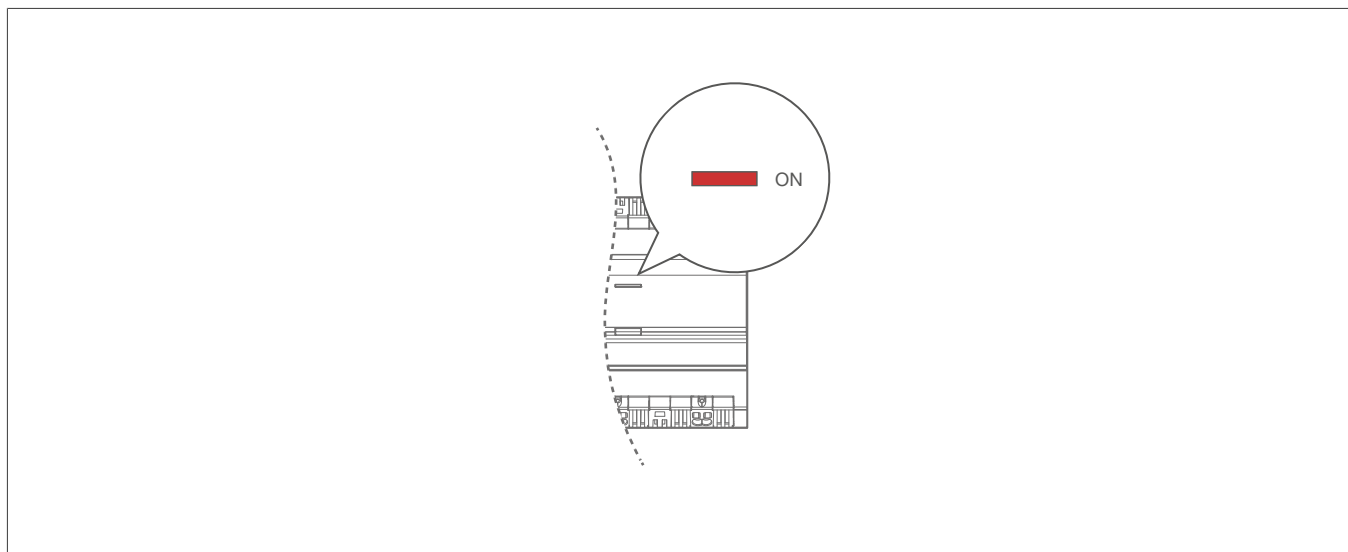In the event of an overload, the device switches all outputs off and the status LED (Bild 4) lights up red.

Fig. 4: Overload detected

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 2/6).

> ⓘ **Note!**
>
> 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 (Bild 2/6).

Operating outputs in manual mode

Operation takes place by a short or long press on the operation button (6).

Condition (6)	Behaviour when button is pressed (6)
Load is switched off. Status LED of the button (6) 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 (6) 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!
	● Disconnect 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

⚠	**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!

ⓘ	**Note!**
	Observe temperature range. Provide sufficient cooling.

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

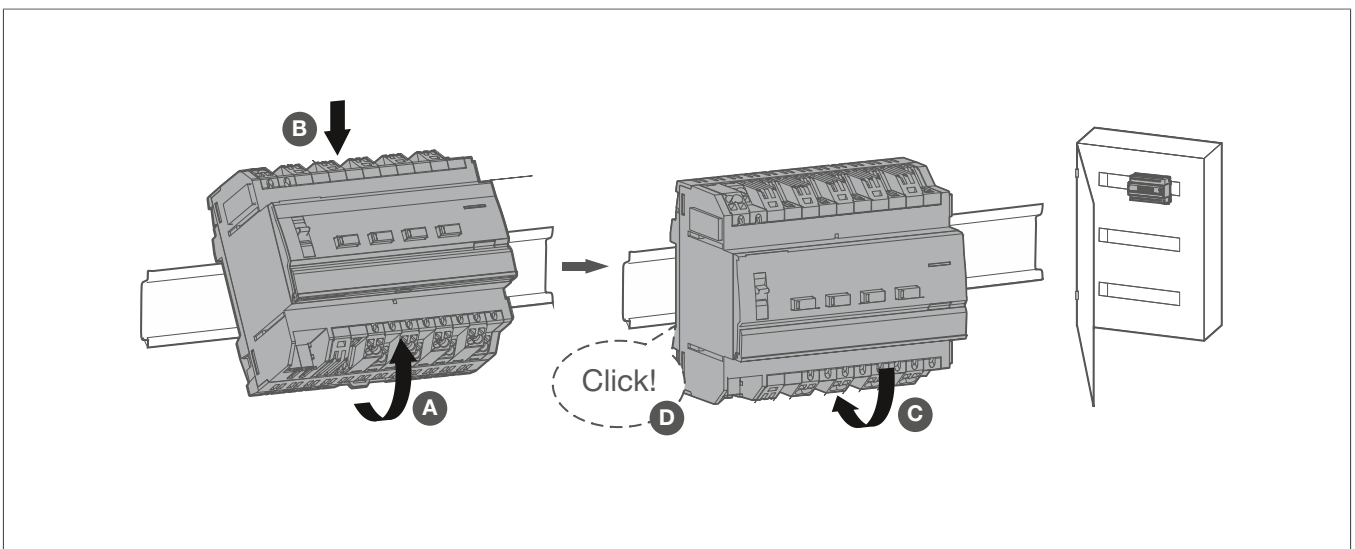Fig. 5: Installing the device on the DIN rail

Connecting the device

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

● Connect the connection cables for the power supply.
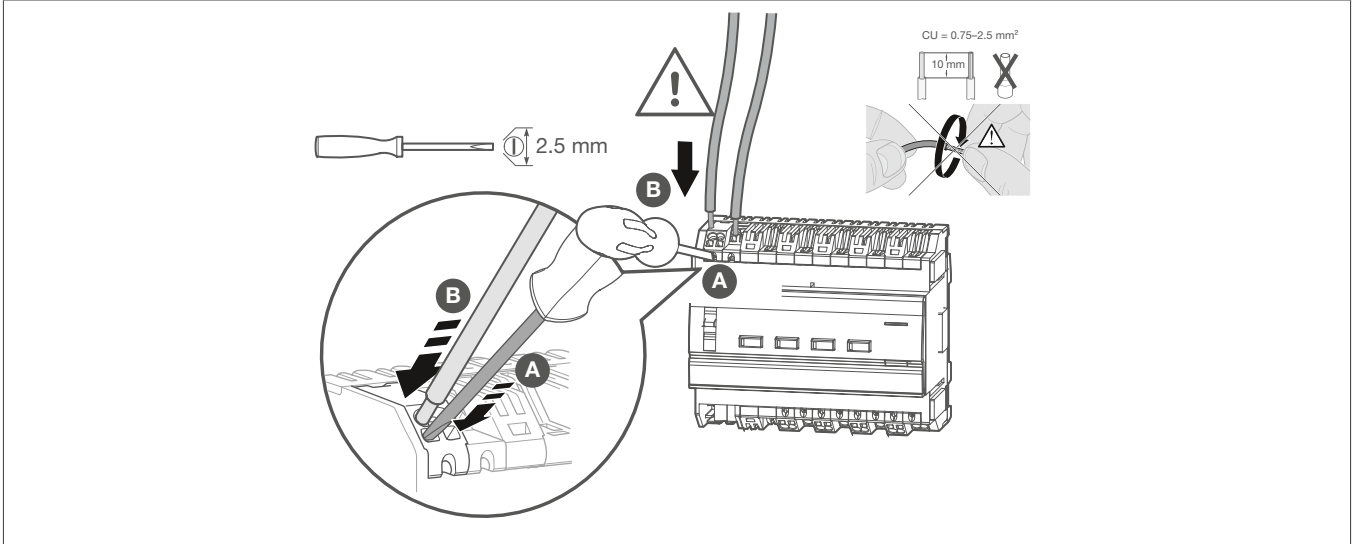
Fig. 6: Connecting the device

Connecting loads

● Connect the electrical load to the lower terminals of the device.
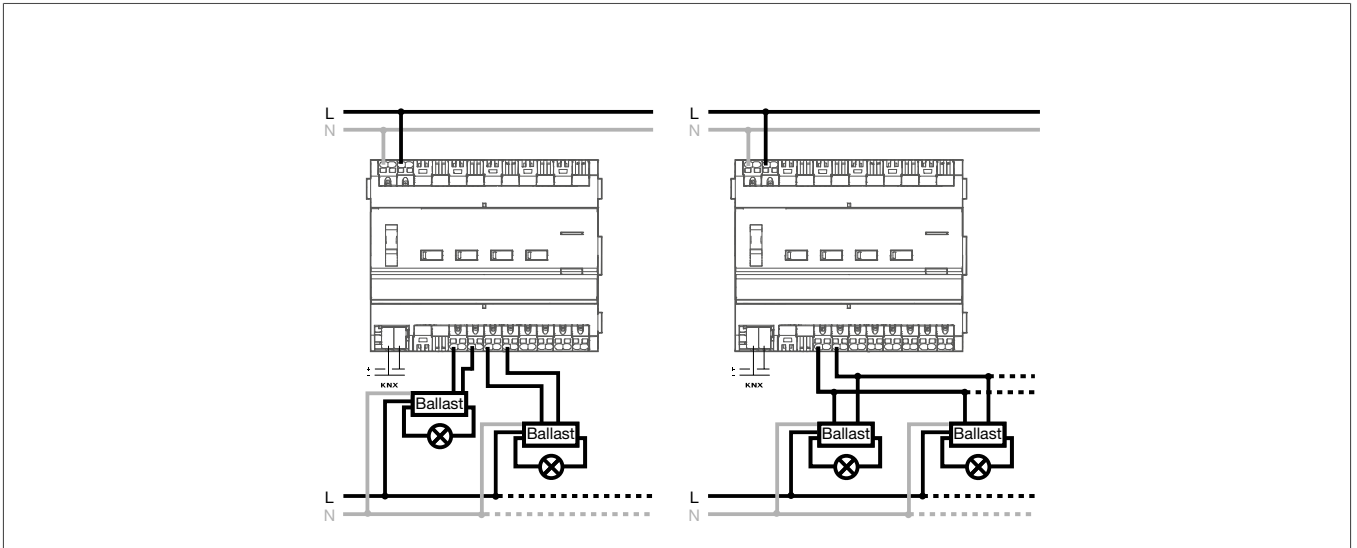
Fig. 7: Connecting the load to the device

> ℹ️ **Note!**
>
> The control line and load cables can beprovided in a common cable, e.g. NYM-J 5 x 1.5 mm².
>
> ---
>
> Use a control line type and cross-section that conforms to VDE regulations for 250 V lines, install the line in compliance with these regulations and with command voltage basic insulation.
>
> ---
>
> The connected DALI groups may be operated in different phases.

Connecting the bus cable

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

● Connect the bus cable via the bus connection terminal.

Fig. 8: Connecting the bus cable

7.2   Commissioning

The device can be programmed in three ways:

– KNX systemlink mode (standard ETS programming) siehe , Seite 15
– KNX Secure mode siehe Inbetriebnahme im KNX Secure Modus , Seite 15
– KNX easylink mode siehe Easylink Inbetriebnahme , Seite 16

systemlink – loading the physical address and application software

Dimming actuator commissioning

systemlink – loading the physical address and application software

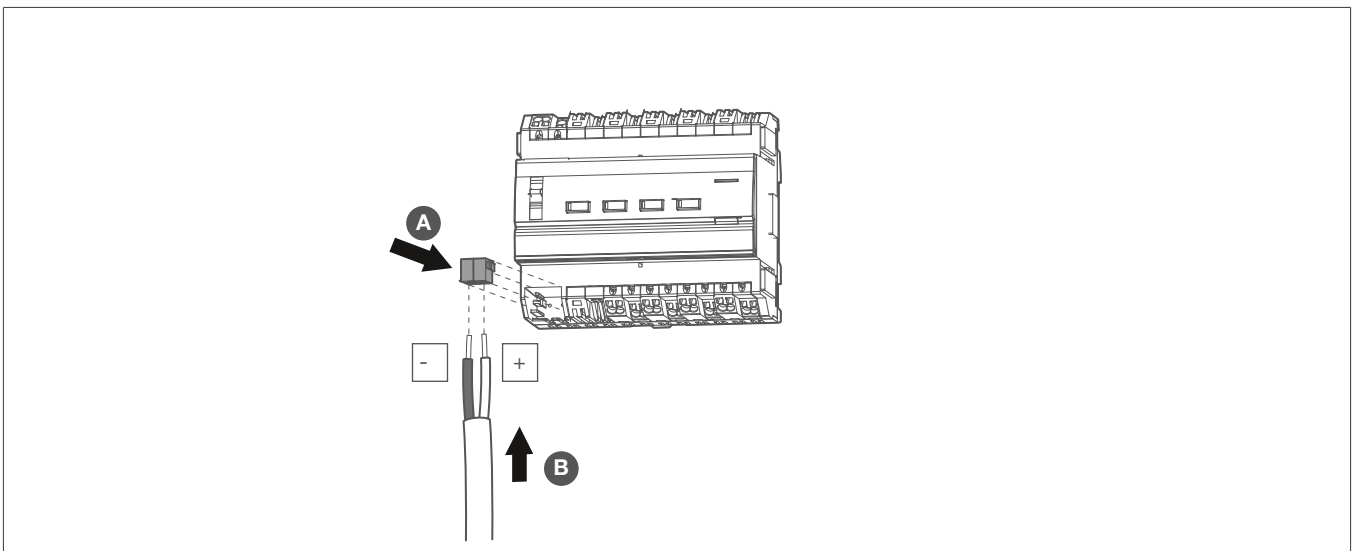☑ The slide switch for manual mode (Bild X) is in position **auto**.

① Switch on the mains voltage.
② Switch on the bus voltage.
③ Press the programming button (Bild X).

   The button lights up.

> ℹ️ 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 X).
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 11), scan it (Bild 10) or add it to the project in ETS.

> ℹ️ **Note!**
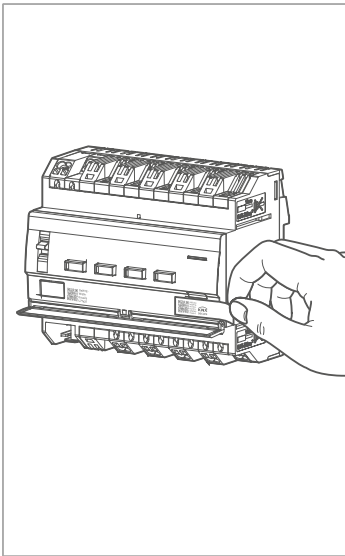> Use a high-resolution camera to scan the QR code.

Fig. 9: Removing the device certificate from the device (similar to illustration)
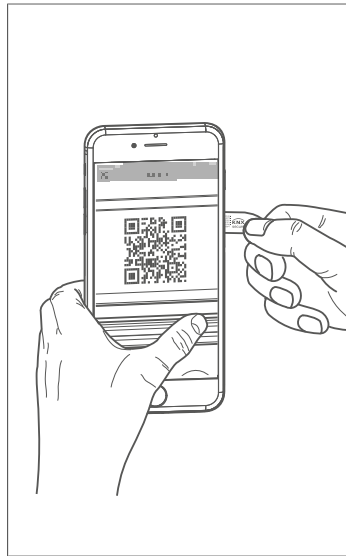
Fig. 10: Scanning the QR code
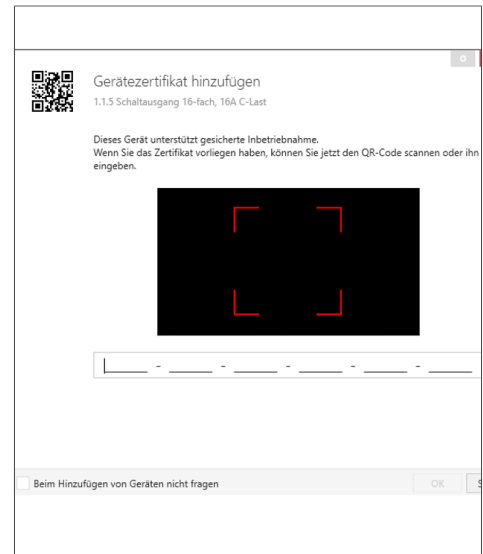
Fig. 11: Entering the QR code manually

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.
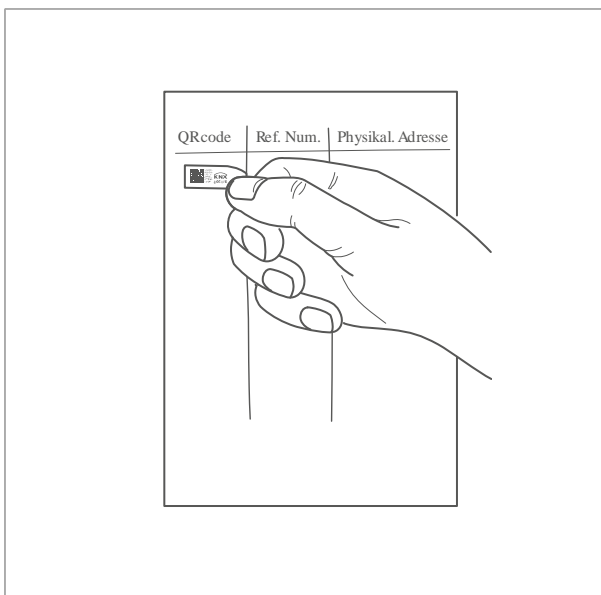
Fig. 12: Storing the device certificate in the project documentation
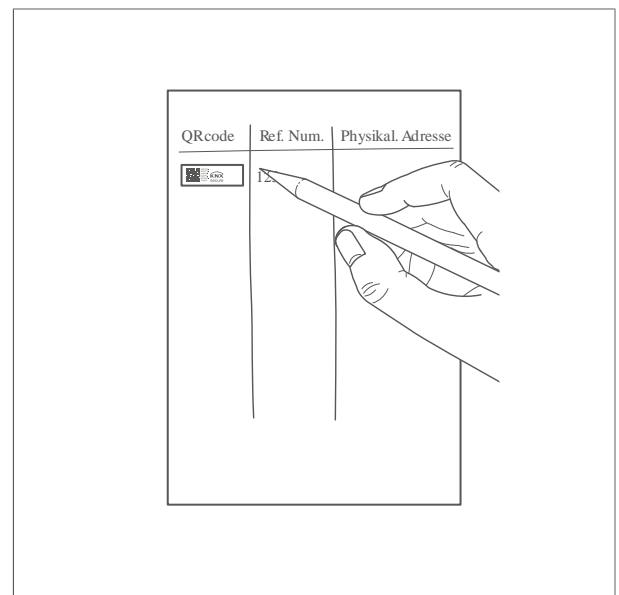
Fig. 13: Noting down the article number and physical address for the device certificate

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.

Commissioning the device

☑ The device has been installed, connected and programmed correctly.

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

Depending on the parameter settings, 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 ((6)).

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 ((6)).
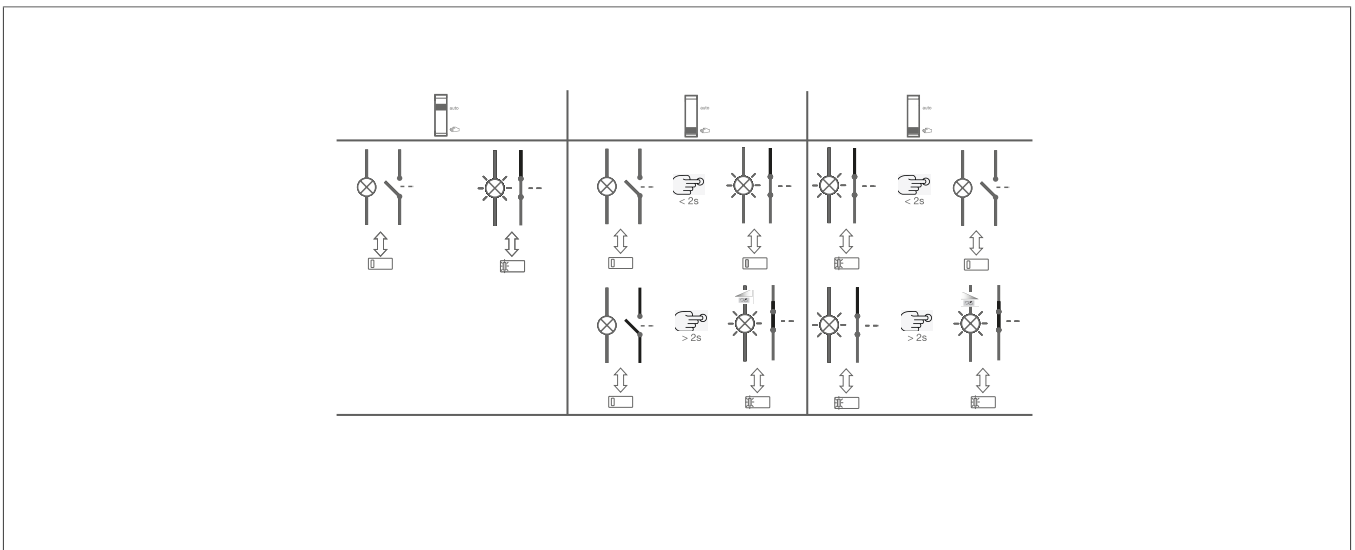
Fig. 14: Functional test

☑ 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 ((1)) to the manual mode position 👆.
● Press the manual operation button ((6)) 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 ((6)) for > 2 s.

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

7.3 Dismantling

	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!

Disconnecting the load cables

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

● Disconnect the connection cables on the device.
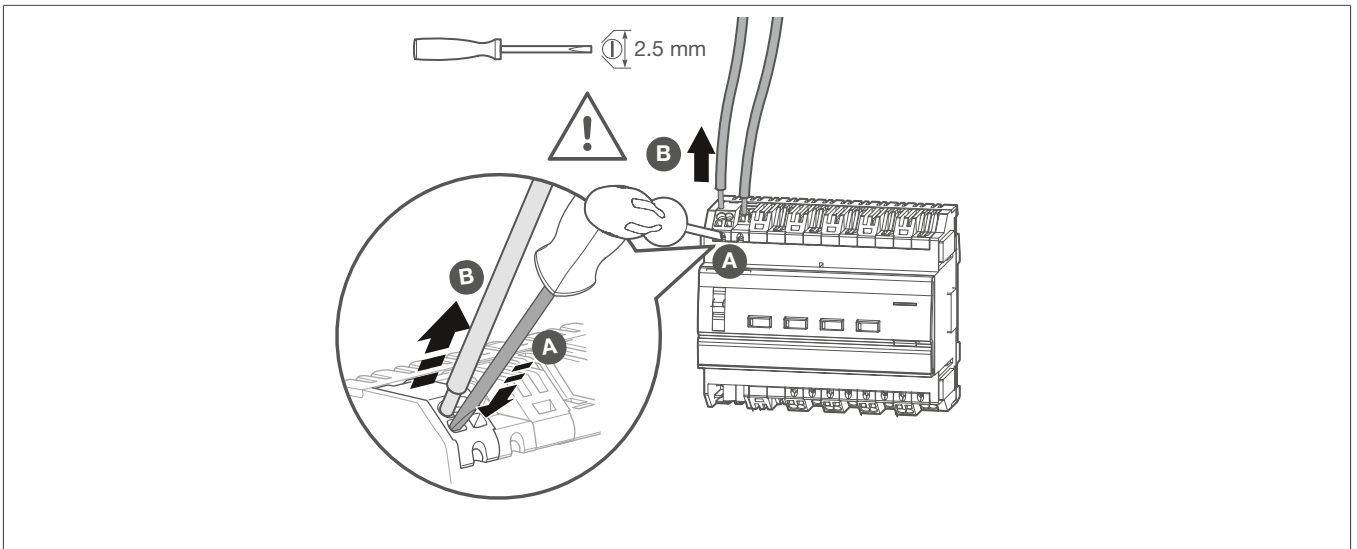
Fig. 15: Disconnecting the connection cables

Disconnecting the bus connection terminal

☑ The bus voltage is switched off.

● Remove the bus connection terminal from the device.
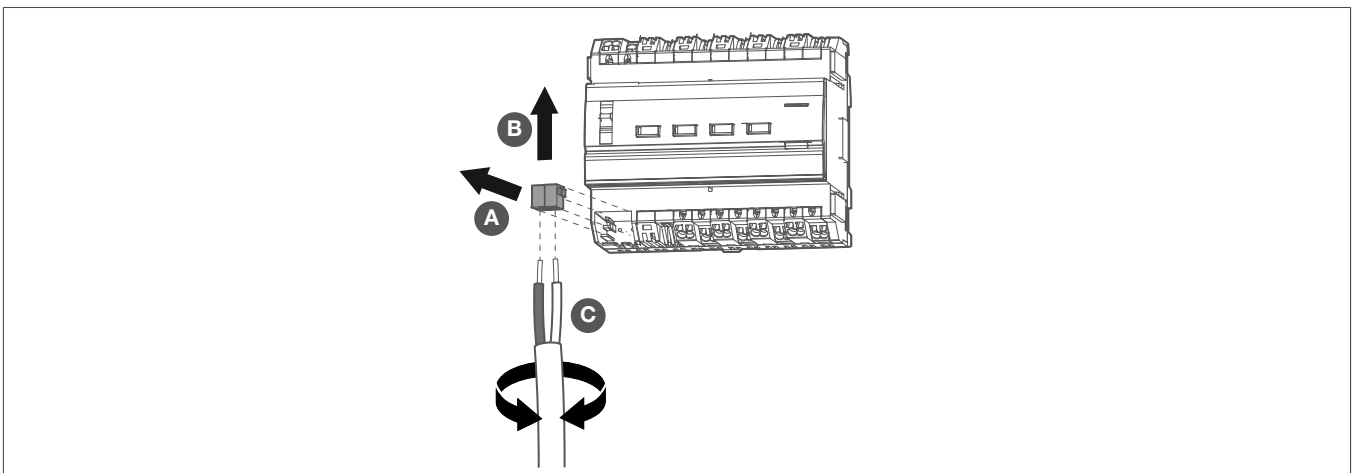
Fig. 16: Removing the bus connection terminal

Dismantling the device

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

● Remove the device from the DIN rail.

Fig. 17: Removing the device from the DIN rail

> **Note!**
>
> Dispose of the device in line with the corresponding guidelines of the respective country (siehe Entsorgung) or, if you have a warranty claim, contact the point of sale (siehe Gewährleistung).

8 Appendix

8.1 Technical data

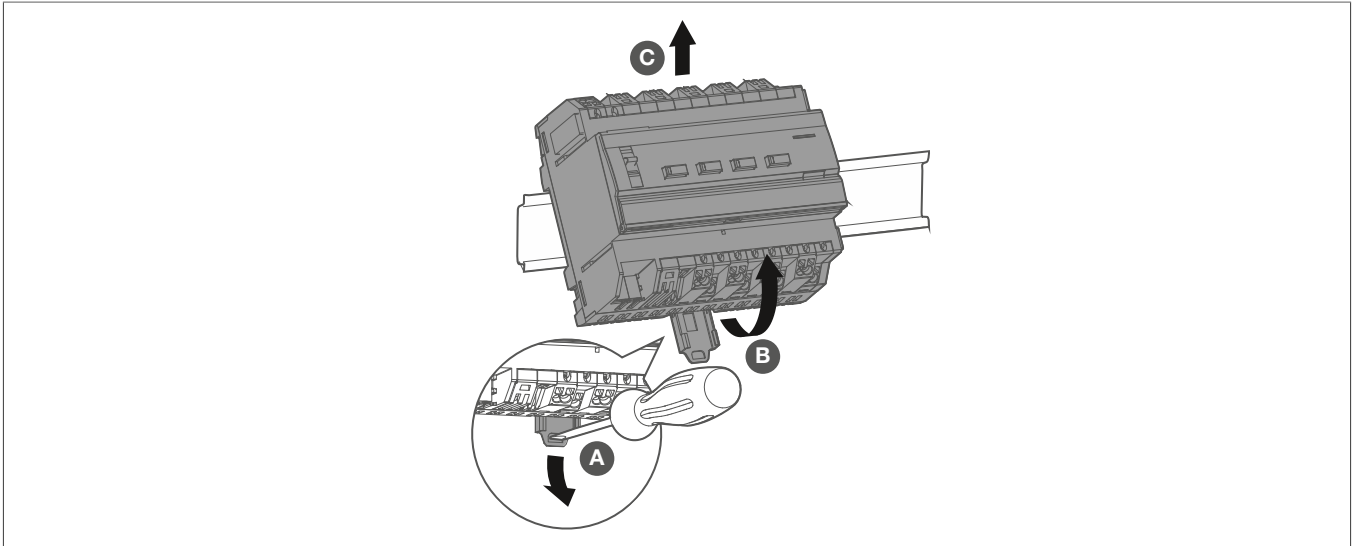|	
KNX Medium	TP1-256
Commissioning mode	systemlink, easylink
Mains power supply	
Supply voltage	230 V +10 %/-15 %
	240 V ±6 %
Mains frequency	50/60 Hz
Own consumption on mains	900 mW
KNX power supply	
Supply voltage	21 ... 32 V ⎓ SELV
Current consumption on standby	2 mA
Current consumption, typ.	3 mA
DALI power supply	
Supply voltage	16 V ⎓ FELV
Guaranteed current	185 mA
Maximum current	250 mA
Run-up time	< 500 ms
Number of DALI ballasts per device	Max. 96
DALI protocol	ISO 62386
Short circuit behaviour	According to IEC 62386-101
Environmental conditions	
Operating temperature	-5 ... +45 °C
Storage/transport temperature	-20 … +70 °C
Relative humidity	95 % at 20 °C
Degree of contamination	2
Degree of protection of housing	IP20
Degree of protection of housing under front plate	IP30
Impact resistance	IK04
Operating altitude	Max. 2000 m
Surge voltage	4 kV
Overvoltage class	III
Protection switch	10 A
Connection capacity	
KNX connection mode	Connecting terminal
KNX connection cross-section	0.6 ... 0.8 mm
DALI/230 V connection mode	quickconnect
quickconnect connection cross-section	0.75 ... 2.5 mm^2
DALI control line length	
At 0.75 mm^2	< 168 m
At 1.0 mm^2	< 224 m
At 1.5 mm^2	< 300 m [*]

*   Cable lengths over 300 m are not recommended!

Dimensions	6 modules, 6 x 17.5 mm

8.2 Troubleshooting

Manual operation not possible.

Switch (Bild 2/1) is 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 2/5), red LED lights up if bus voltage is present.

Manual mode is active.

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

Connected loads do not light up.

Short circuit protection has triggered, status LED in the operation button (Fig. 2/6) lights up/ flashes.

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

Overvoltage protection has triggered, status LED (Bild 2/7) lights up.

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

Supply voltage connection (L, N) for the device is missing. The supply voltage must be present for the outputs to function.

The external conductor 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 Optional accessories

KNX bus connection terminals, 2-pole, red/black	TG008
KNX system cable, Y(ST)Y,2x2x0.8	TG01x

8.4 ROHS China

8.5 Regulatory Compliance Australia

8.6 Disposal note

Disposal note

 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 disposal.

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.

8.7 Warranty

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

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

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

![hager logo]

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