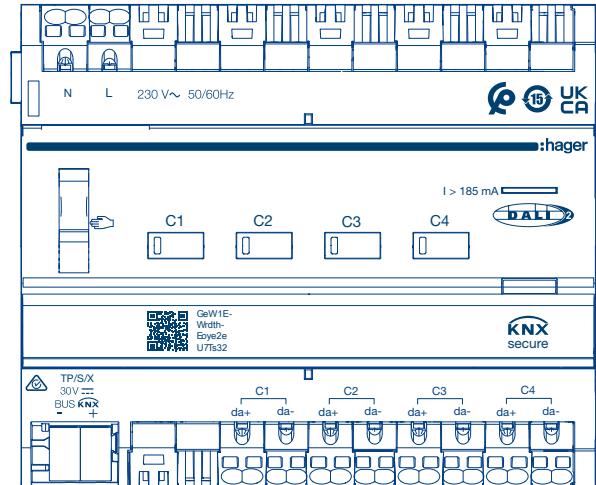


# KNX building management system

## KNX DALI actuator



KNX Secure DALI actuator 4x broadcast  
RGB(T)W.  
**TYAS664D**



UK  
CA

**:hager**

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## 1 Introduction

This manual describes the safe and proper installation and commissioning of the KNX Secure DALI actuator 4-speed broadcast. This guide is a unit of information available in addition to the product.

### Symbols used

Precondition This requirement must first be met in order to proceed to 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 an electrical specialist		For more information on device configuration, see the Application Manual
 	KNX certified		Supports KNX Data Secure		Compatibility with DALI 2
	Installation terminal with operating opening		Compatibility with KNX S-Mode (ETS)		Compatibility with Hager Easytool
	Applicable in China		Applicable in Morocco		Applicable in Australia and New Zealand
	Usable throughout Europe and Switzerland		Manufacturer's information in accordance with § 18 Para. 4 of the German Electrical and Electronic Equipment Act		Applicable in England, Wales, Scotland

Table 1: Symbols used

## Introduction

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 through electricity.
	Warning of damage caused by overheating.



The assembly, installation and configuration of electronic devices may only be performed 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 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

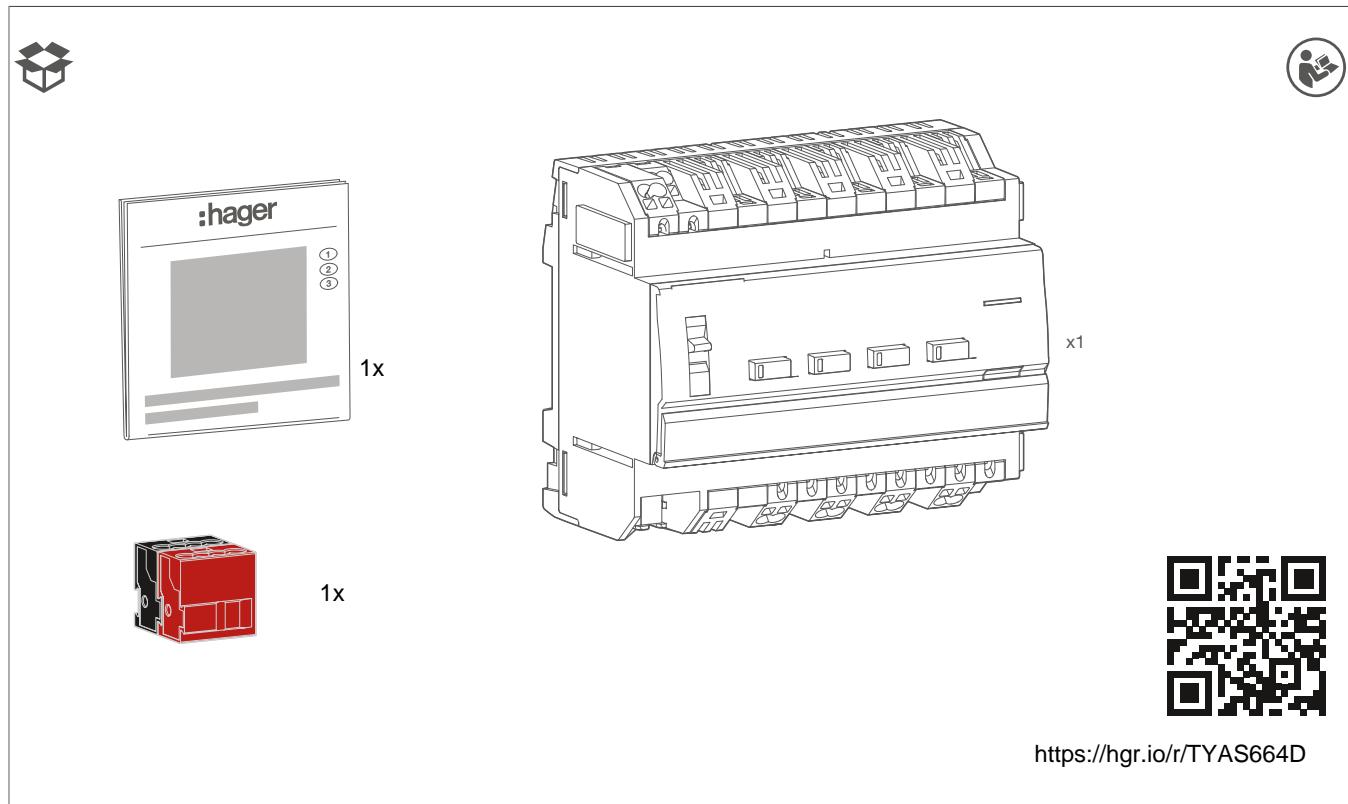


Fig. 1: TYAS664D scope of delivery

## 4 Design and layout of the device

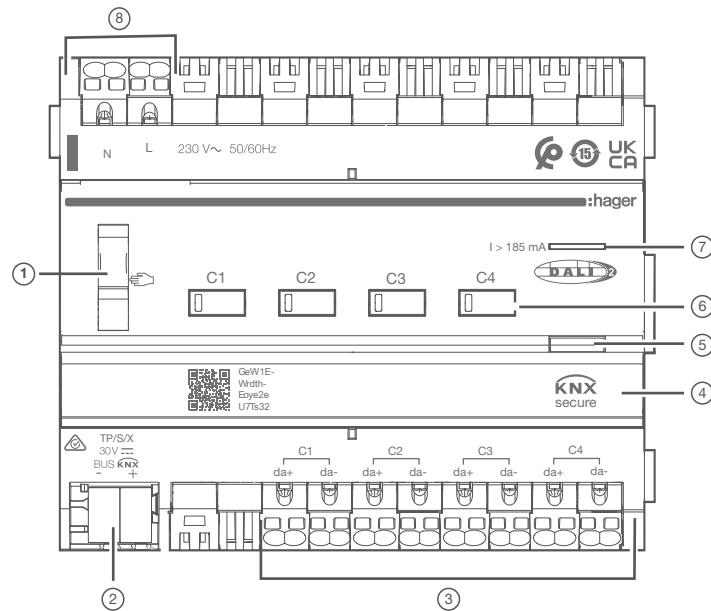


Fig. 2: Design and layout of the device TYAS664D

- 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

### 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.

### 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 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

### 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

## Function

### 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 ([Fig. 3](#))

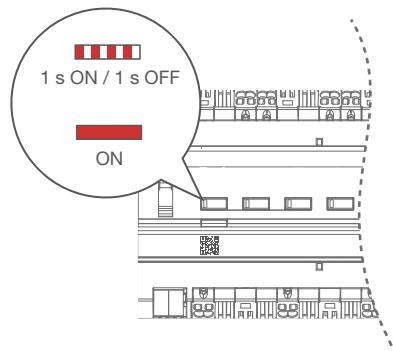


Fig. 3: Short circuit protection detected

### Overload protection

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

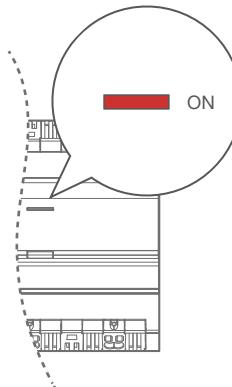


Fig. 4: Overload detected

## 6 Operation

### Manual operation switch on/off

Bus voltage supply is present.

- Push the switch (Fig. 2/1) to the position .

Manual mode is switched on.

The outputs can be controlled independently of each other using the control buttons (Fig. 2/6).

#### Note!

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

Systemlink commissioning:

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

Or:

- Push the switch (Fig. 2/1) to the **AUTO** position.

The 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 indicated by the status LED of the control key (Fig. 2/6).

### Operating outputs in manual operation

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

Status (6)	Behavior when pressing a key (6)
Load is switched off. The status LED of the button (6) is off.	Short button-press: ON - The connected load is switched on. The LED of the button lights up. Long button-press: Dimming up to the maximum brightness. The status LED of the button lights up.
Load is switched on. The status LED of the button (6) lights up.	Short button-press: OFF - The connected load is switched off. The 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 pressing the operation button, 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!

#### Assembling 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.

- Installation on DIN rail after TH 35 7.5-15 according to IEC 60715:2017 / EN 60715:2017 ( [Fig. 5: Mount the device on the DIN rail](#) )

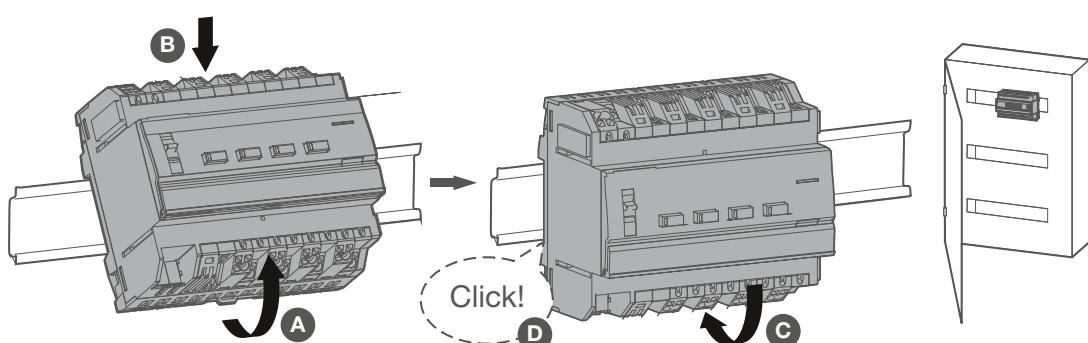


Fig. 5: Mount the device on the DIN rail

#### Connect device

The device is assembled on the hat rail in accordance with ISO 60715.

- Connect the connection lines for the power supply.

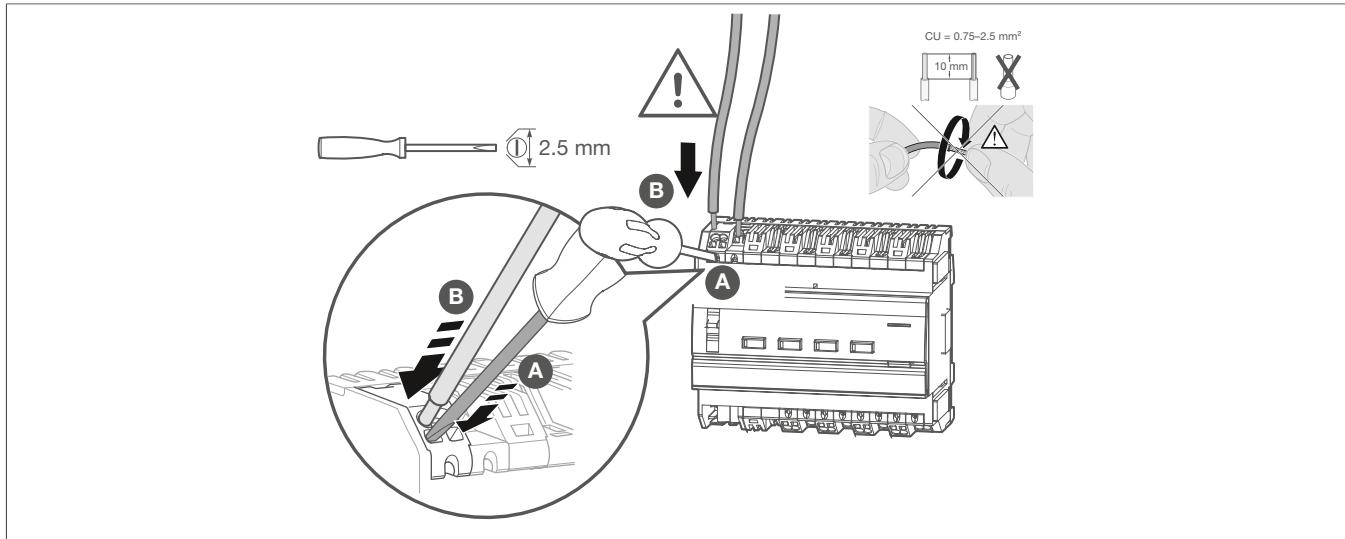


Fig. 6: Connect device

#### Connecting loads

- Connect the electrical load to the lower terminals of the device.

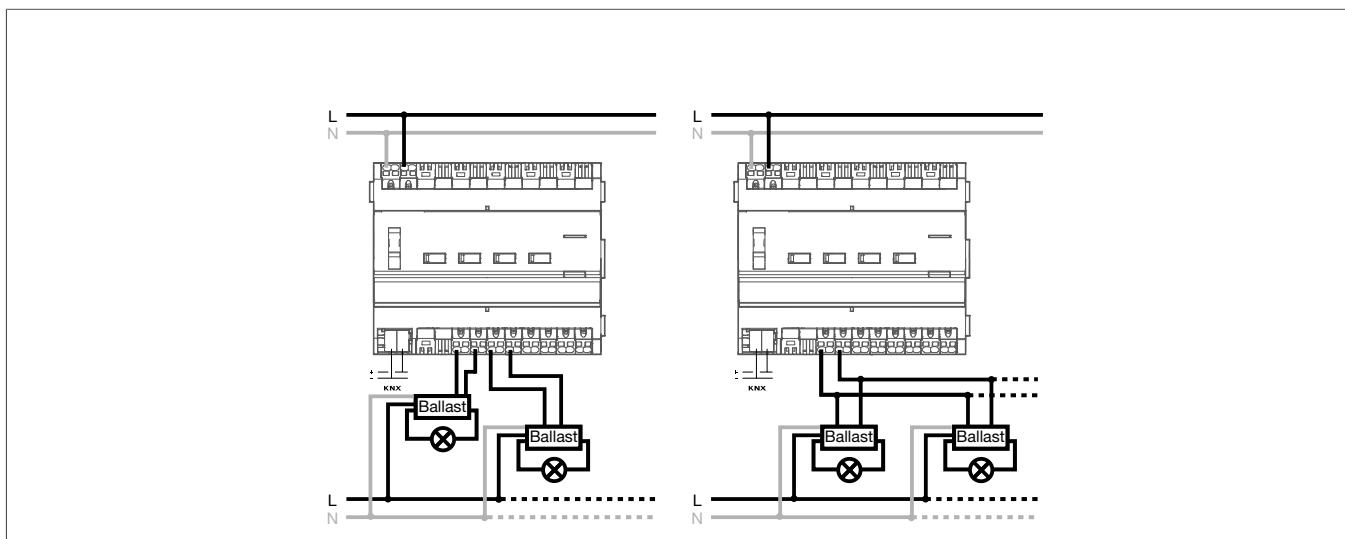


Fig. 7: Connect the load to the device



#### Note!

The control line and load line may be laid in a common line, e.g. NYM-J 5 x 1.5 mm<sup>2</sup>.

Use a control line type and cross-section that conform to VDE regulations for 250 V lines, and lay the line in compliance with these regulations too, with basic insulation.

The connected DALI devices 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.

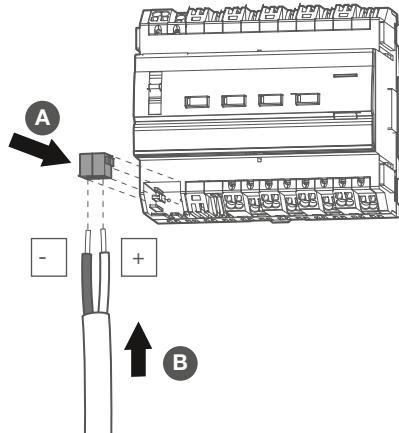


Fig. 8: Connecting the bus cable



## 7.2 Disassembly



### 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.

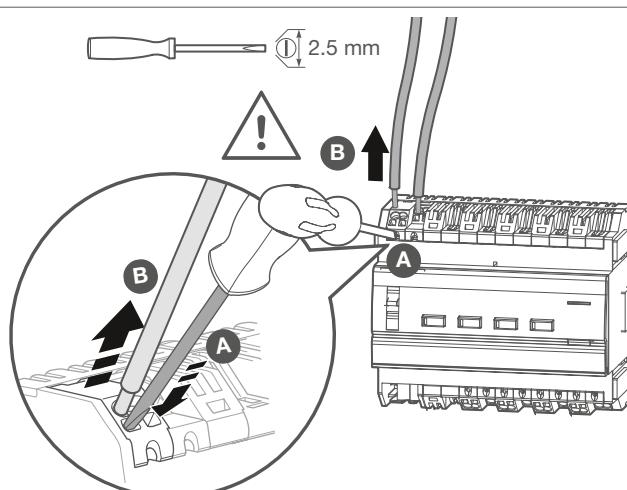


Fig. 9: Disconnecting the connection cables

### Disconnect the bus terminal

- The bus voltage is switched off.
- Remove the bus connection terminal from the device.

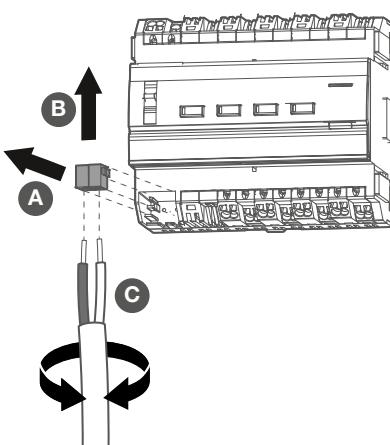


Fig. 10: Removing the bus connection terminal

**Dismantling the device**

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

- Remove the device from the DIN rail.

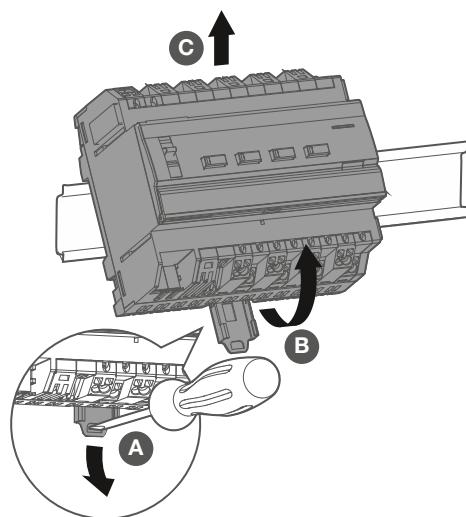


Fig. 11: Mount the device from the DIN rail

**Note!**

Dispose of the appliance according to the appropriate country guidelines ([see Disposal](#)) or, if warranted, contact the point of sale ([see Warranty](#)).

## 8 Appendix

### 8.1 Technical data

KNX Medium	TP1-256
Commissioning mode	systemlink, easylink
<b>Mains power supply</b>	
Supply voltage	230 V +10 %/-15 % 240 V ±6 %
Mains frequency	50/60 Hz
Own consumption on mains	900 mW
<b>KNX power supply</b>	
Supply voltage	21 ... 32 V SELV
Current consumption on standby	2 mA
Current consumption, typ.	3 mA
<b>DALI power supply</b>	
Supply voltage	16 V SELV
Guaranteed current per channel	45 mA
Total current over 4 channels	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
<b>Environmental conditions</b>	
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
<b>Connection capacity</b>	
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 <sup>2</sup>
<b>DALI control line length</b>	
At 0.75 mm <sup>2</sup>	< 168 m
At 1.0 mm <sup>2</sup>	< 224 m
At 1.5 mm <sup>2</sup>	< 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 is not set to (Bild 2/1) .**

💡 Set the switch to .

**Manual is not enabled (systemlink).**

💡 Enable manual operation via application software.

**Bus operation is not possible.**

**Bus voltage is not present.**

💡 Check bus connection terminals for correct polarity.

💡 Check bus voltage by briefly pressing the programming button (Fig. 2/5), red LED lights up if bus voltage is present.

**Manual operation is active.**

💡 Switch is in position . Push the switch (Fig. 2/1) to the **AUTO** position.

**Connected loads do not light up.**

**Short-circuit protection has tripped, the status LED in the control key (Fig. 2/6) lights up/flashes.**

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

**Overheat protection has tripped, status LED (Fig. 2/7) is lit.**

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

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

**The outer conductor of the respective 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 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.

## **8.5 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.



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