KNX 4 DALI Gateway

Datasheet

KNX-DALI Gateway

Interface: KNX to DALI Broadcast control of 4 DALI lines

> Art. Nr. 89451312 GTIN: 9010342013850







KNX 4 DALI Gateway Interface

Overview

- 4 DALI lines
- Integrated DALI bus power supply
- **4 DALI ballasts per line**expansion of the number of devices with a DALI Expander
- Broadcast control
- Brightness control of various device types (DT0, DT2, DT3, DT4, DT6, DT8)
- recall of DALI scenes (0...15)

- KNX communication objects for relative and absolute control
- KNX communication objects for light status
- Product database for ETS 5/6
- easy configuration via Lunatone DALI USB interface and DALI-Cockpit Software tool



Specification, Characteristics

type	KNX 4 DALI Gateway		
article number	89451312		
input: KNY			
input type	KNX / TP		
Marking terminals	KNX- / KNX+		
input voltage range	DC 2132V SELV		
max, input supply current	6mA		
max. power consumption	150mW		
•			
input: 24 V			
input type	supply		
terminals	KNX: yellow /white		
	(alternatively 24V supply: red/black)		
marking terminals	24V+ / GND		
input voltage range	DC 2327V		
max. input supply current	100mA		
max. power consumption	2.7mW		
output: DALI 1 4	DALI bus power supply		
marking terminals	DA 1 4 (DA+, DA-)		
output voltage range	12Vdc22,5Vdc, typ. 16V		
guaranteed DALI current	10mA		
	250mA		
max. DALI output current	an additional external bus power supply is not possible!		
insulation data:			

impulse voltage category II pollution degree 2

rated insulation voltage	250V	
insulation	reinforced isolation	
DALI-output (DA+, DA-) / supply (L, N)	DALI (DA+, DA-)/KNX (+,-)	
DALI-input / DALI output (DA+, DA-)		
DALI-input / supply (L, N)		
insulation test voltage DALI-	3000Vac	
output/mains		
environmental conditions:		
storing and transportation	-20°C +75°C	
temperature		
operational ambient temperature	-20°C +60°C	
rel. humidity, none condensing	15%90%	
general data:		
dimensions (I x w x h)	120mm x 41mm x 22mm	
mounting	remote ceiling	
mounting	integration in class II devices	
rated max. temperature tc	65°C	
expected lifetime @ ta = 25°C	50.000h	
protection class	II in intended use	
protection degree housing	IP40	

terminals DALI:

protection degree terminals

connection type	spring terminal connector	
wire size solid core	0,5 1,5 mm ² (AWG20 AWG16)	
wire size fine wired	0,5 1,5 mm ² (AWG20AWG16)	
wire size using wire end ferrule	0,25 1 mm ²	
tripping length 8,5 9,5mm / 0,33 0,37inch		

IP20

standards:

DALI	EN 62386-101		
KNX	ISO/IEC 14543-3		
EMV	EN 61547 EN 50015 / IEC CISPR15		
safety	EN 61347-2-11 EN 61347-1		



Typical Application





Abb. 2 application example: expansion with a DALI Expander (Art. Nr. 89453847)

General description

The gateway connects a KNX system with 4 independent DALI lines. It is DALI-2 and KNX certified (DALI-2 standard).

The gateway is supplied via an external 24V power supply (24V), either via the KNX connection (yellow / white) or the additional terminal block (red / black).

The gateway also serves as the DALI bus supply for all 4 DALI lines. 4 DALI ballasts can be supplied per line. A DALI expander (Art. No. 89453847) can be used to increase the number of devices on the DALI line, see Fig. 2, page 4. An additional DALI bus supply must not be connected.

The gateway is designed to control DALI dimmers without having to configure them in advance. This means that the replacement of defective dimmers, or lights with integrated dimmers, no longer requires configuration by a specialist.

Scenes can be set using the Scene Control Object (18.001). A total of 8 KNX scenes can be linked to DALI scenes.

The DALI-KNX Gateway can be configured with a product database for ETS5.

The DALI system can be configured with a Lunatone DALI USB interface and the free software tool DALI-Cockpit. When using the DALI-Cockpit Software, the PC must be connected to the DALI bus via a suitable interface module (e.g. DALI USB, DALI 4Net, DALI SCI RS232).

Installation

- The KNX 4 DALI Gateway is intended for remote installation in a ceiling or in an enclosure, ensure proper cable relief for installation in protection class II devices
- The device can be supplied via KNX (terminals: 24V +: yellow / GND: white) or an external 24V supply (24V: red / GND: black).
- The 4 DALI outputs are supplied by the KNX 4 DALI device. No additional DALI bus power supply may be connected to the DALI outputs.
 If additional ballasts are required on the DALI bus, a DALI Expander (Art. No. 89453847) can be used, see application example, Fig. 2, page 4.
- The wiring should be carried out as a permanent installation in a dry and clean environment.
- Installation may only be carried out in a voltage-free state of the system and by qualified specialists.
- National regulations for setting up electrical systems must be followed.
- the polarity of the output voltage is marked on the housing (DA+, DA-)
- The DALI wiring can be realized with standard low-voltage installation material. No special cables are required.
- The DALI-line may be installed within the same cable or as single conductors within the same tube as mains supply
- The DALI-line must not be connected to mains or other extra low voltage (SELV) systems
- Wiring topology of the DALI-line can be a line, tree or star

 Only 1 wire may be connected to each terminal. When using double wire end ferrules, the connection capacity of the terminal must be considered.



 Attention: The DALI-signal is not classified as SELV circuit. Therefore, the standards for installation in low voltage system apply.

F

 The voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA)

Set up - Software

- 1. Start the ETS5 and load the Gateway's product database.
- Assign the KNX address to the Gateway:
 → When requested, press the "Prog. button" on the device housing. If the address has been assigned successfully, the red LED will turn off.

- 3. Optional: start the Lunatone DALI Cockpit Software and make the desired configurations for the DALI System.
- 4. Configuration of the required gates in the ETS (function, DALI address).
- 5. Load the settings made in the ETS into the Gateway.

ETS (KNX configuration Software)

An ETS (version ETS 5) product database for the gateway is available. Download link for ETS product database: https://www.lunatone.com/en/downloads-a-z/

All necessary settings for the KNX system can be made using the ETS. For larger projects, it can be useful to rename the gates and enter the used DALI addresses - this can increase clarity in the product database. See Fig.3 below.

1.1.1 KNX DALI Gateway 4BC > Gate 1				
+ General	Copy gate configuration from	1	*	
- Gate 1		Copy configuration		
Mode	Gate Name			
DALI Parameter				
+ Gate 2				

Fig.3 Gate Settings ETS

Settings DALI Cockpit

The DALI Cockpit is a configuration software developed by Lunatone for DALI devices (Windows operating system). When using the DALI-Cockpit Software, the PC must be connected to the DALI bus via a suitable interface module (DALI USB, DALI 4Net, DALI SCI RS232).

Download link for DALI Cockpit Software: https://www.lunatone.com/en/product/dali-cockpit/

The following DALI settings can be made:

- Assignment of DALI addresses
- definition of groups
- definition of scenes
- configuration of the DALI operating devices
- setting Lunatone operating modes
 (Dim2Warm, Balance&Dim, Color&Dim)
- defining fade time
- saving and loading DALI configurations
- sending DALI commands manually

With the DALI Cockpit Software all devices on the DALI bus can be automatically or manually assigned with an individual address. Afterwards it is possible to, define scene values (color, color temperature, brightness, etc.) of each device. Devices can also be assigned to the 16 DALI groups. However, the DALI groups will not be used via the KNX 4 DALI gateway, since the DALI gateway solely uses broadcast control.

With broadcast control all devices are addressed, and receive DALI commands simultaneously, hence a synchronous lighting control can be realized.

DALI Device Types

In the DALI standard, devices are divided into different types. The following device types are supported by the gateway:

- DT0 fluorescent lamps
- DT2 discharge lamps
- DT3 low voltage halogen lamps
- DT4 incandescent light bulbs
- DT6 single color LEDs 1 channel
- DT8 brightness control of Tunable White CW-WW and color RGB / RGBW LEDs

Application Example

The KNX 4 DALI gateway only supports DALI broadcast control, all devices of the respective DALI lines are addressed via broadcast.

Fig. 4 shows an example installation with 4 DALI lines. The dimmers (gears) connected to the DALI lines are controlled by KNX input devices (buttons, presence detectors).

As the gateway acts as a single master on the DALI lines no further masters (control devices, buttons, presence detectors) may be installed on the DALI lines.

The current status of the devices is sent to the KNX participants or can be queried (see KNX flags).

A central switching of all DALI ballasts via KNX can be implemented with the gateway



ETS - GATES

In the ETS, 4 gates are available. Each of the four gates is a Switch & Dim Gate (see also Fig. 5) and corresponds to a permanently assigned DALI line (Fig. 6). Startup behavior, lighting control parameters, and scenes can be configured in each gate 1 to 4.

Gateway start-up (reset) behavior

There are two possible start-up behaviors:

- recall of a predefined values. Values can be defined with the ETS, at start-up the status communication objects are automatically sent.
- no action

These options are available in the ETS product database for each gate, see Fig. 7.

Brightness

The following DALI parameters can be set for each gate, tab "Brightness", see Fig.8:

- Behavior when switching on (Switch On),
- Behavior when switching off (Switch Off),
- The minimum attainable level when dimming (Minimum dim level)
- the dimming behavior: linear or logarithmic (dimming value calculation type)
- fade time settings

Scene

Up to 8 scenes can be configured for each gate, see Fig. 9.

The DPT18.001 and DPT 17.001 are supported for scenes. 8 KNX scenes can be assigned to DALI scenes. Scenes can be taught in using the DPT18.001. Whether teaching is permitted can be configured for each scene.

Group Objects 7 41 Parameters				
1.1.2 KNX 4DALI Gateway > Gate 1 > Mode				
	General	Function Selection	Switch & Dim Gate	•
-	Gate 1			
ř	Mode			
	DALI Device			
	Startup			
	Brightness			
	Scene			
+	Gate 2			
+	Gate 3			
+	Gate 4			





Fig.6 Gate settings ETS: DALI Device – output linking

I.I.2 KNX 4DALI Galeway	y > Gate 1 > Startup		
General	Enable Startup Behaviour	\checkmark	
— Gate 1	Switch at Startup	Off On	
Mode DALI Device	Brightness at Startup The dimming at startup uses (Brightness -> Fading -> Fac	100 the fade time that is configured for absolute dir le for absolute dimming)	‡ % nming.
Startup			
Brightness			
Scene			
+ Gate 2			
+ Gate 3			
+ Gate 4			



1.1.2 KNX 4DALI Gateway	> Gate 1 > Brightness			
General	Switching & Dimming	Switching & Dimming		
— Gate 1	Switch-On	Go to dim level	•	
Mode		100	\$%	
DALI Device	Switch-Off	Equal minimum dim level	•	
Startup	Minimum dim level	0	\$ %	
Brightness	Dimming value calculation type	🔵 Linear 🔘 Logarithmic		
Scene	Fading			
+ Gate 2	Enable fading for Switch-On	\checkmark		
4 642	Fade time Switch-On	4.0s	•	
T Gate 3	Enable fading for Switch-Off	×		
+ Gate 4	Fade time Switch-Off	4.0s	•	
	Enable fading for relative dimming	✓		
	Fade time relative dimming	4.0s	•	
	Enable fading for absolute dimming			
	Fade time absolute dimming	4.0s	•	

Fig.8 Gate settings ETS: Brightness settings

.2 KNX 4DALI Gateway	/ > Gate 1 > Scene	
General	Select group object type	Scene Control (DPT 18.001)
Gate 1	Scene Mappings	
Mode	Enable Scene Mapping A	\checkmark
DALI Device	Select KNX scene	KNX Scene 1
Startup	Select DALI scene	DALI Scene 0
Brightness	Allow scene storage	
Scene	Enable Scene Mapping B	
beene	Enable Scene Mapping C	
Gate 2	Enable Scene Mapping D	
	Enable Scene Mapping E	
Gate 3	Enable Scene Mapping F	
Gate 4	Enable Scene Mapping G	
	Enable Scene Mapping H	
	Fading	
	Enable fading for scenes	\checkmark
	Fade time scenes	4.0s

Fig.9 Gate settings ETS: Scene settings

Switch&Dim Gates

The gate type Switch&Dim offers the possibility to switch and dim lights.

KNX		DALI	
KNX control (Modes, data point types)	Gateway (notes)	DALI device types (supported color modes)	
	Control: Switch&Dim		
 Absolute Control: Brightness: DPT 5.001 (0100%) Switching: DPT 1.001(On/Off) 	Other DALI device types can be controlled.	DALI - DTO fluorescent lamps	
 Scenes: 17.001, 18.001 Status feedback: (absolute): Brightness: DPT 5.001 (0100%) Switching: DPT 1.001(On/Off) Scenes: 17.001 		DALI - DT2 discharge lamps	
		DALI - DT3 low voltage halogen lamps	
Relative Control: • Brightness: DPT 3.007		DALI - DT4 incandescent light bulbs	
		DALI - DT6 LED	
table 5 Switch&Dim Gates			

© 2025-04-03, Lunatone Industrielle Elektronik GmbH

Purchase Information

Art.Nr.: 89451312

KNX 4 DALI Gateway KNX to DALI interface, 4 independent DALI lines, integrated DALI bus power supply

Additional Information and Equipment

DALI-Cockpit – DALI system configuration tool, free when using a Lunatone interface device <u>https://www.lunatone.com/en/product/dali-</u> <u>cockpit/</u>

Lunatone DALI products https://www.lunatone.com/en

Lunatone data sheets and manuals https://www.lunatone.com/en/downloads-a-z/

Contact

Technical Support: support@lunatone.com

Requests: sales@lunatone.com

www.lunatone.com



Disclaimer

Subject to change. Information provided without guarantee. The datasheet refers to the current delivery.

The function in installations with other devices must be tested for compatibility in advance.