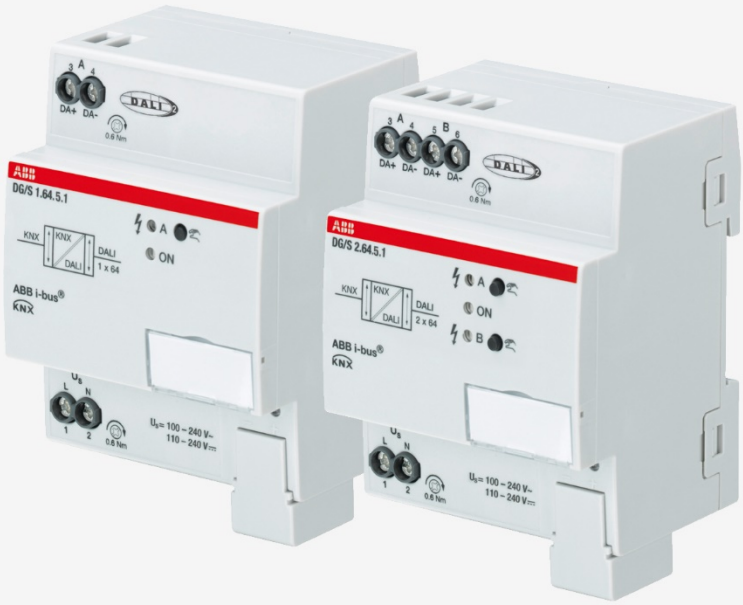
PRODUCT MANUAL

ABB i-bus® KNX

DG/S x.64.5.1

DALI Gateway Premium



Content

Page

1 General

1.1 Using the product manual

This manual provides detailed technical information on the function, installation and programming of the ABB i-bus® KNX device.

1.2 Legal disclaimer

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1.3 Explanation of symbols

1.	Instructions in specified sequence
2.	
►	Individual actions
a)	Priorities
1)	Processes run by the device in a specific sequence
•	List level 1
○	List level 2

Tab.1: Explanation of symbols

Notes and warnings are represented as follows in this manual:

DANGER –

This symbol is a warning about electrical voltage and indicates high-risk hazards that will definitely result in death or serious injury unless avoided.

DANGER –

Indicates high-risk hazards that will definitely result in death or serious injury unless avoided.

WARNING –

Indicates medium-risk hazards that could result in death or serious injury unless avoided.

CAUTION –

Indicates low-risk hazards that could result in slight or moderate injury unless avoided.

ATTENTION –

Indicates a risk of malfunctions or damage to property and equipment, but with no risk to life and limb.

Example:

For use in application, installation and programming examples

Note

For use in tips on usage and operation

2 Safety

2.1 General safety instructions

- ► Protect the device from moisture, dirt and damage during transport, storage and operation.
- ► Operate the device only within the specified technical data.
- ► Operate the device only in a closed housing (distribution board).
- ► Mounting and installation must be carried out by qualified electricians.
- ► Disconnect the device from the supply of electrical power before mounting.
- ► Switch off the DALI control line before mounting

2.2 Proper use

The device is a modular DIN rail component designed for quick installation in electrical distribution boards on 35 mm mounting rails to EN 60715.

3 Product overview

3.1 Product overview

The devices are modular DIN rail components (MDRC) in pro *M* design. The module width of the devices is 4 space units. The devices are designed for installation in distribution boards on 35 mm mounting rails.

The DALI Gateways Premium combine both the internationally standardized and open standards in the DALI standard (IEC 62386) and the installation system KNX (ISO/IEC 14543-3 and EN 500 90). The devices are DALI-2 certified.

The devices are powered by the bus and require an additional gateway supply voltage. The device connects to the ABB i-bus® KNX via the front bus connection terminal.

The application Engineering Tool Software (ETS) is used for physical address assignment and parameterization.

The devices are ready for operation after connecting the bus voltage. To generate the DALI voltage for full function capability, the additional gateway supply voltage is also required.

The DALI Gateways Premium DG/S 1.64.5.1 and DG/S 2.64.5.1 have identical functions but a different number of DALI outputs. Up to 64 DALI devices to IEC 62386 can be connected per output.

The DALI Gateways Premium are used to control DALI equipment such as ballasts, transformers or LED converters with Device Type 0 (DT0) DALI interfaces to IEC 62386, via KNX. DALI self-contained emergency lights (DT1) can be integrated according to IEC 62386 (Part 202). The gateways can also control DT8 (Tc and RGB(W)) color control lamps to IEC 62386 (Part 209).

The DG/S x.64.5.1 accommodates both normal DALI devices (ballasts) and DALI emergency lighting converters (with/without integrated lighting equipment control). However, the total number of 64 or 2x 64 DALI devices may not be exceeded.

Some emergency lighting converters (inverters) form a DALI device pair with a normal DALI device (ballast) in a lamp with an emergency lighting function. In this case, two DALI devices must be considered.

Emergency lights with LEDs often feature only one emergency lighting converter that combines battery monitoring and LED control in a single device. In this case, only one DALI device must be considered.

The DALI Gateways Premium can be used to control a variety of DALI lamps individually or in groups on a DALI output via KNX.

The two DALI outputs on the DG/S 2.64.5.1 can control up to 2 x 64 DALI devices individually or in up to 2 x 16 DALI groups. It is possible to mix individual and group activation on the outputs. If necessary, all the devices can be controlled together in broadcast or in up to 2 x 16 light scenes. Controls can be configured in any way on the DALI output, which makes the gateway highly versatile.

The DALI Gateways Premium themselves provide no functionality in terms of the emergency lighting regulations, e.g. logging functions or other associated stipulated functions. They serve as an intelligent mediator between KNX and DALI.

The various mandatory emergency lighting tests, e.g. function or duration tests, can be triggered via KNX using group objects, and the result provided in the same way. This information can then be used for higher-level management of the emergency lighting, which triggers at prescribed times and captures, saves or logs the result provided on KNX via the gateway.

DG/S x.64.5.1 series DALI gateways feature the Tunable White (Tc) color function, which can be used to set and dim the color temperature and brightness of a lamp (DT8). The gateways also support Dim2Warm and Human Centric Lighting (HCL) functions. Dim2Warm mimics the light bulb effect. HCL automatically mimics the color temperature curve.

The RGB(W) and HSV(W) color function can also be used. This controls, dims and changes the color of a lamp.

As well as scenes, the DALI gateway can be used to parametrize 4 sequences per DALI output. Each sequence consists of up to 11 individual steps. These can apply to an individual ballast, a group, a scene or the whole output.

Another new function is ballast supply voltage switch-off (standby switch-off) in combination with a KNX switch actuator (e.g. SA/S).

The DALI gateways can also be integrated in a load shedding control system.

The DALI gateways determine the operating duration of the individual ballasts and groups.

Note

The gateways are compliant with SELV properties to IEC 60364-4-41 (VDE 0100-410).
DALI does not need to feature SELV properties, and it is possible to route the DALI control line together with the mains voltage in a multi-core cable.

Note

Reaction of DALI power supply in the DALI gateway in case of DALI short circuit: If a DALI short circuit is present for longer than 600 ms, the DALI output stage switches off for 7.5 seconds. The output stage then switches the DALI voltage on again. The process will repeat if the short circuit is still present.

Product overview

Property	**DG/S 1.64.5.1** **Control** **Group/individual**	**DG/S 2.64.5.1** **Control** **Group/individual**
Design	MDRC	MDRC
Mounting width	4	4
DALI outputs	1	2
DALI devices (ballasts) per gateway	1 x 64 (ballasts and emergency lighting converters)	2 x 64 (ballasts and emergency lighting converters)
DALI emergency lighting converters	1 x 64	2 x 64
Lighting groups per gateway	1 x 16 (DALI)	2 x 16 (DALI)
DALI addressing	1 x 64 individual	2 x 64 individual
DALI voltage	Integrated power supply	Integrated power supply

Product name description

Abbreviation	Designation		
D	DALI		
G	Gateway		
/S	MDRC		
X	1	=	1-fold
	2	=	2-fold
X	64	=	64 devices
X	5	=	Premium
X	X	=	Version number (x = 1, 2 etc.)

Tab. 2: Product name description

3.2 Ordering details

Description	MW	Type	Order no.	Packaging unit [pcs.]	Weight 1 pc. [g]
DALI Gateway Premium	4	DG/S 1.64.5.1	2CDG110273R0011	1	180
DALI Gateway Premium	4	DG/S 2.64.5.1	2CDG110274R0011	1	190

Tab. 4: Ordering details

3.3 DALI Gateway Premium (MDRC) 1.64.5.1

Fig. 1: Device illustration, DG/S 1.64.5.1

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The KNX ABB i-bus® DALI Gateway Premium DG/S 1.64.5.1 is a KNX modular installation device (MDRC) in Pro*M* design for installation in the distribution board on a 35 mm mounting rail.

It is a DALI single-master controller to DALI standard IEC 62386 Parts 101ed2 and 103ed1. The gateway is suitable for use with DALI and DALI-2 systems. It supports Type 0, 1 and 8 DALI operating devices with DALI interfaces to IEC 62386 and their integration in a KNX building installation.

Up to 64 DALI devices can be connected to the DALI output. "Normal" lamps (DT0), self-contained emergency lights (DT1) and color control lamps (DT8) can all be connected to the DALI output in a mixed configuration.

The lamps are controlled via KNX using

- broadcast (all lamps jointly)
- 16 lighting groups
- 64 individual lamps
- 16 scenes
- 4 sequences
- 64 self-contained emergency lights

The fault status (lamps, ballasts or emergency lighting converters) of each DALI device or of the lighting group is sent via the KNX bus by a variety of KNX group objects.

In addition to the standard functions and corresponding feedback for e.g. switching, dimming and brightness values, the DALI Gateway has functions for Staircase lighting, Scenes, Sequences, Operating duration, Slave, Forced operation and Block. The lighting groups or individual lamps can be integrated in an energy-efficient building automation system via a KNX presence detector or light controller.

The DALI Gateway DG/S 1.64.5.1 features the Tunable White (Tc) and RGB(W) color function. Tunable white allows you to set and dim the color temperature of lamps (DT8). There are also settings options for the additional Dim2Warm and Human Centric Lighting (HCL) functions. RGB(W) or HSV(W) can be used to set or dim the color of a lamp.

Other functions include 1-bit scene retrieval and ballast supply voltage switch-off (standby switch-off) in combination with a KNX switch actuator. The DALI Gateway DG/S 1.64.5.1 can also be integrated in a load shedding control system.

Function, duration and partial duration tests and battery tests for self-contained emergency lighting systems to IEC 62386-202 can be triggered and stopped via KNX, with results provided on the KNX bus.

The DALI gateway possesses a wide-range supply voltage input. No separate DALI power supply is required. The DALI power supply for 64 DALI devices per output is integrated in the DALI gateway.

The ABB i-bus® Tool permits commissioning (DALI) and diagnostics without ETS.

3.3.1 Dimension drawing

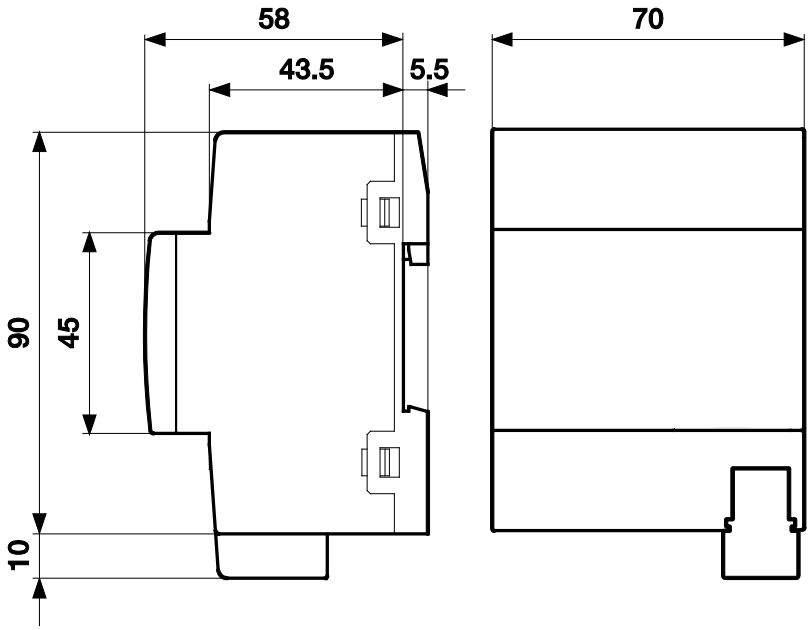

Fig. 2: Dimension drawing

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3.3.2 Connection diagram

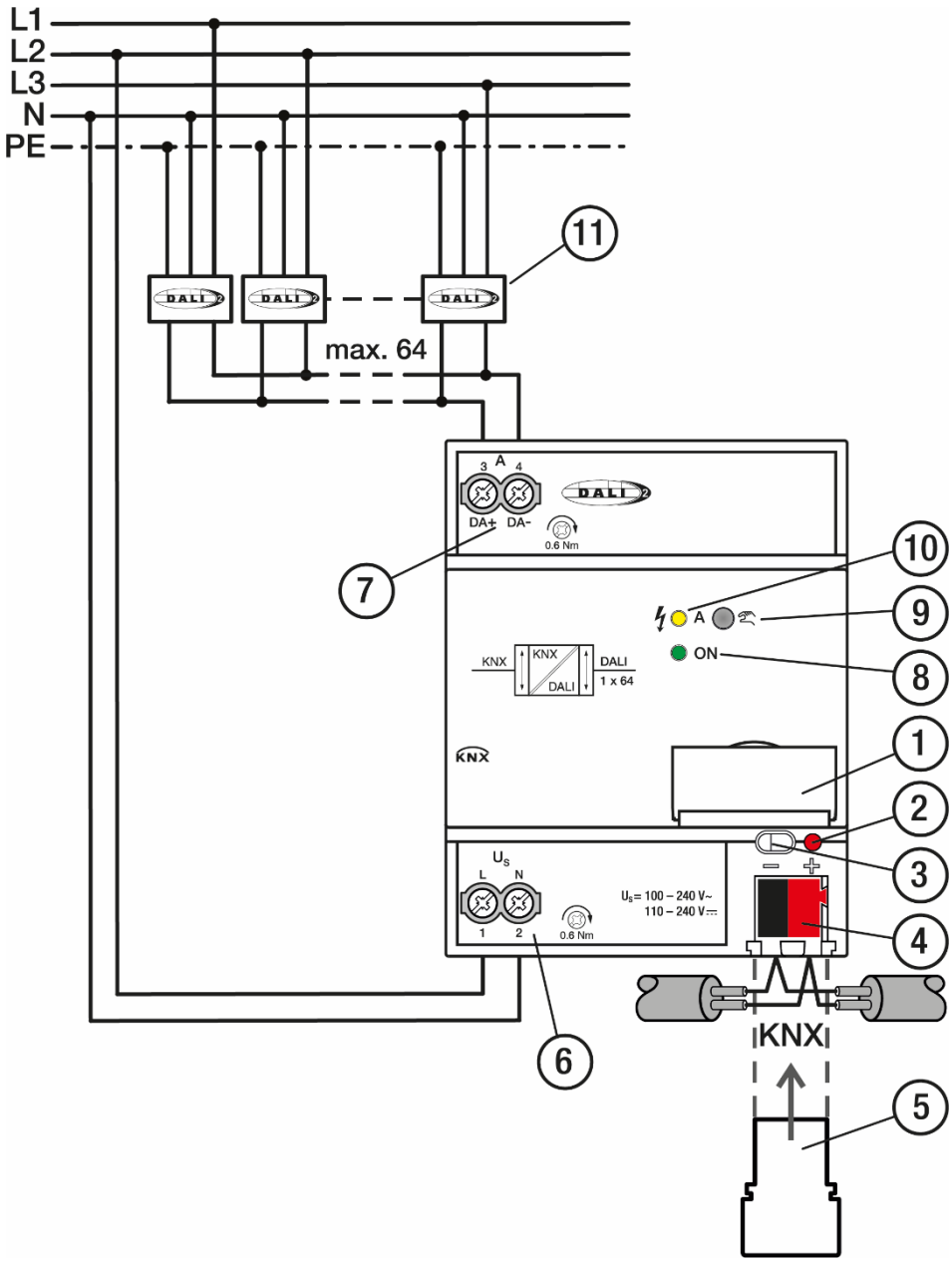

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Fig. 3: Connection diagram

Legend

1	Label carriers	7	DALI output A
2	*KNX programming* button	8	Operation LED (green)
3	*KNX programming* LED (red)	9	Manual operation A
4	KNX connection	10	DALI status LED A (yellow)
5	Cover cap	11	DALI devices (DT 0, 1 and 8)
6	Gateway supply voltage		

3.3.3 Operating and display elements

Button/LED	Designation	LED indicator
	Assignment of the physical KNX address	On: Device is in KNX programming mode
	ON	Off: No KNX voltage and/or a gateway supply voltage failure On: System initialized Flashing slowly (1 Hz): Manual mode Flashes quickly (5 Hz) if there is a KNX voltage but no gateway supply voltage
	DALI	Off: Gateway is in normal mode On: DALI fault Flashing quickly (5 Hz): Initialization phase

Tab. 5: Operating and display elements

Note

In manual operation the yellow DALI LED indicates the switch status of the DALI output instead of a DALI fault. If the LED is off this means the output is switched off.

Note

The initialization phase starts after download, KNX bus voltage recovery or after elimination of a DALI short circuit. If more than 64 DALI devices are connected to a DALI output, the device will not exit the initialization phase. The yellow LED will continuously flash.

3.3.4 Technical data

3.3.4.1 General technical data

KNX DALI gateway	DALI single-master controller	IEC 62386 Parts 101ed2 and 103ed1
Supply	Gateway supply voltage	100 – 240 V AC
	Voltage range	85…265 V AC, 50/60 Hz 110…240 V DC
	Power consumption total via mains*)	maximum 6 W
	Current consumption total via mains*)	maximum 25 mA
	Leakage loss total for device*)	maximum 2 W
	KNX current consumption	maximum 10 mA
	Power consumption via KNX	maximum 210 mW
	*) at 230 V AC and max. load	
DALI outputs (channels)	Number of outputs	1
	Voltage proof, short circuit proof	230 V AC
		Maximum 64 per output to IEC 62386; DALI devices for self-contained emergency lighting to IEC 62386-202 are supported.[2)]
	Number of DALI devices	Maximum 64 per output to IEC 62386; DALI devices for self-contained emergency lighting to IEC 62386-202 are supported.[2)]
	Distance between gateway and last DALI device with cross-sectional area:	
	• 0.5 mm^2	100 m[1)]
	• 0.75 mm^2	150 m[1)]
	• 1.0 mm^2	200 m[1)]
	• 1.5 mm^2	300 m[1)]
Connections	KNX	KNX connection terminal, 0.8 mm Ø, solid
	DALI outputs and Mains voltage	Screw terminal, universal head 0.2…4 mm^2stranded 0.2…6 mm^2solid
	Tightening torque	Maximum 0.6 Nm
Degree of protection	IP 20	To EN 60529
Protection class	II	To EN 61 140
Isolation category	Overvoltage category Pollution degree	III to EN 60664-1 2 to DIN EN 60 664-1
KNX safety extra low voltage	SELV 24 V DC	
DALI voltage	Typical 16 V DC (12…20.5 V DC)	To EN 60929 and IEC 62386
	No-load voltage	18 V DC
	Lowest supply current at 12 V DC	160 mA
	Highest supply current	250 mA

Temperature range	Operation	-5°C…+45°C
	Storage	-25°C…+55°C
	Transport	-25°C…+70°C
Environmental conditions	Humidity	Maximum 93%, moisture condensation should be excluded
	Atmospheric pressure	Atmosphere up to 2,000 m
Design	Modular installation device (MDRC)	Modular installation device, pro *M*
	Dimensions	90 x 70 x 63.5 mm (H x W x D)
	Mounting width	4 x 17.5 mm modules
	Mounting depth	68 mm
Mounting	On 35 mm mounting rail	To EN 60715
Mounting position	Any	
Weight		0.13 kg
Housing, color	Plastic, gray	Halogen-free Flammability V-0 as per UL94
Approvals	KNX to EN 50 090-1, -2 EN 50 491-5-2 DALI-2 to IEC 62386	Certification Certification
CE marking	In accordance with the EMC and Low Voltage Directives	

1) The length refers to the entire routed DALI control cable. The maximum values are rounded and refer to the resistance value. EMC influences are not considered. For this reason, the values should be considered as absolute maximum values.

2) Both "normal" lamps and self-contained emergency lights can be connected in a mixed configuration to the DALI output. However, the maximum number of DALI devices may not exceed 64.

Tab. 6: Technical data

3.3.4.2 Device type

Device type	DALI Gateway Premium	DG/S 1.64.5.1
	Application	DALI Premium 1f /…*
	Maximum number of group objects	2028
	Maximum number of group addresses	2000
	Maximum number of assignments	2000

* … = Current version number of the application. Please refer to the software information on our homepage.

Tab. 7: Device type

3.4 DALI Gateway Premium (MDRC) 2.64.5.1

Fig. 1: Device illustration, DG/S 2.64.5.1

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The KNX ABB i-bus® DALI Gateway Premium DG/S 2.64.5.1 is a KNX modular installation device (MDRC) in Pro*M* design for installation in the distribution board on a 35 mm mounting rail.

It is a DALI single-master controller to DALI standard IEC 62386 Parts 101ed2 and 103ed1. The gateway is suitable for use with DALI and DALI-2 systems. It supports Type 0, 1 and 8 DALI operating devices with DALI interfaces to IEC 62386 and their integration in a KNX building installation.

Up to 64 DALI devices can be connected to each DALI output. "Normal" lamps (DT0), self-contained emergency lights (DT1) and color control lamps (DT8) can all be connected to the DALI output in a mixed configuration.

The lamps are variably controlled via KNX per DALI output via

- broadcast (all lamps jointly)
- 16 lighting groups
- 64 individual lamps
- 16 scenes
- 4 sequences
- 64 self-contained emergency lights

The fault status (lamps, ballasts or emergency lighting converters) of each DALI device or of the lighting group is sent via the KNX bus by a variety of KNX group objects.

In addition to the standard functions and corresponding feedback for e.g. switching, dimming and brightness values, the DALI Gateway has functions for Staircase lighting, Scenes, Sequences, Operating duration, Slave, Forced operation and Block. The lighting groups or individual lamps can be integrated in an energy-efficient building automation system via a KNX presence detector or light controller.

The DALI Gateway DG/S 2.64.5.1 features the Tunable White (Tc) and RGB(W) color function. Tunable white allows you to set and dim the color temperature of lamps (DT8). There are also settings options for the additional Dim2Warm and Human Centric Lighting (HCL) functions. RGB(W) or HSV(W) can be used to set or dim the color of a lamp.

Other functions include 1-bit scene retrieval and ballast supply voltage switch-off (standby switch-off) in combination with a KNX switch actuator. The DALI Gateway DG/S 2.64.5.1 can also be integrated in a load shedding control system.

Function, duration and partial duration tests and battery tests for self-contained emergency lighting systems to IEC 62386-202 can be triggered and stopped via KNX, with results provided on the KNX bus.

The DALI gateway possesses a wide-range supply voltage input. No separate DALI power supply is required. The DALI power supply for 64 DALI devices per output is integrated in the DALI gateway.

The ABB i-bus® Tool permits commissioning (DALI) and diagnostics without ETS.

3.4.1 Dimension drawing

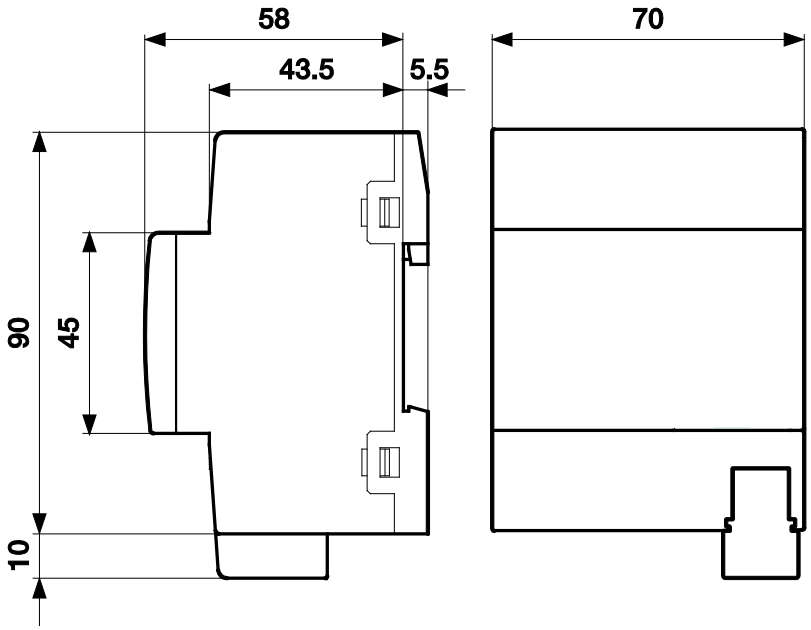

Fig. 2: Dimension drawing

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3.4.2 Connection diagram

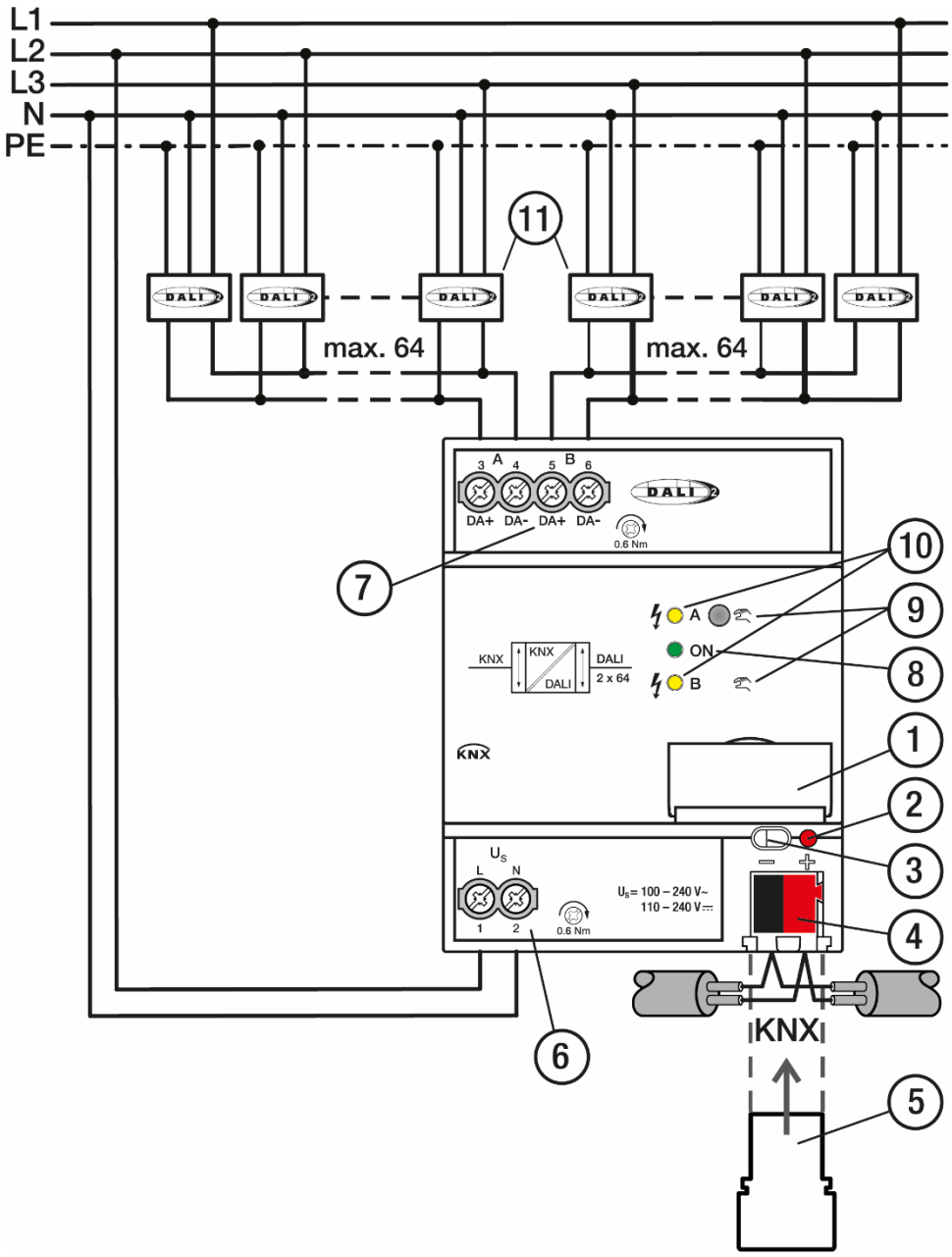

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Fig. 3: Connection diagram

Legend

1	Label carriers	7	DALI output A/B
2	*KNX programming* button	8	Operation LED (green)
3	*KNX programming* LED (red)	9	Manual operation A/B
4	KNX connection	10	DALI status LED A/B (yellow)
5	Cover cap	11	DALI devices (DT 0, 1 and 8)
6	Gateway supply voltage		

3.4.3 Operating and display elements

Button/LED	Designation	LED indicator
	Assignment of the physical KNX address	On: Device is in KNX programming mode
	ON	Off: No KNX voltage and/or a gateway supply voltage failure On: System initialized Flashing slowly (1 Hz): Manual mode Flashes quickly (5 Hz) if there is a KNX voltage but no gateway supply voltage
	DALI	Off: Gateway is in normal mode On: DALI fault Flashing quickly (5 Hz): Initialization phase

Tab. 5: Operating and display elements

Note

In manual operation the yellow DALI LED indicates the switch status of the DALI output instead of a DALI fault. If the LED is off this means the output is switched off.

Note

The initialization phase starts after download, KNX bus voltage recovery or after elimination of a DALI short circuit. If more than 64 DALI devices are connected to a DALI output, the device will not exit the initialization phase. The yellow LED will continuously flash.

3.4.4 Technical data

3.4.4.1 General technical data

KNX DALI gateway	DALI single-master controller	IEC 62386 Parts 101ed2 and 103ed1
Supply	Gateway supply voltage	100 – 240 V AC
	Voltage range	85…265 V AC, 50/60 Hz 110…240 V DC
	Power consumption total via mains*)	maximum 11 W
	Current consumption total via mains*)	maximum 48 mA
	Leakage loss total for device*)	maximum 4 W
	KNX current consumption	maximum 10 mA
	Power consumption via KNX	maximum 210 mW
	*) at 230 V AC and max. load	
DALI outputs (channels)	Number of outputs	2
	Voltage proof, short circuit proof	230 V AC
		Maximum 64 per output to IEC 62386; DALI devices for self-contained emergency lighting to IEC 62386-202 are supported.2)
	Number of DALI devices	Maximum 64 per output to IEC 62386; DALI devices for self-contained emergency lighting to IEC 62386-202 are supported.2)
	Distance between gateway and last DALI device with cross-sectional area:	
	• 0.5 mm^2	100 m1)
	• 0.75 mm^2	150 m1)
	• 1.0 mm^2	200 m1)
	• 1.5 mm^2	300 m1)
Connections	KNX	KNX connection terminal, 0.8 mm Ø, solid
	DALI outputs and Mains voltage	Screw terminal, universal head 0.2…4 mm^2stranded 0.2…6 mm^2solid
	Tightening torque	Maximum 0.6 Nm
Degree of protection	IP 20	To EN 60529
Protection class	II	To EN 61 140
Isolation category	Overvoltage category Pollution degree	III to EN 60664-1 2 to DIN EN 60 664-1
KNX safety extra low voltage	SELV 24 V DC	
DALI voltage	Typical 16 V DC (12…20.5 V DC)	To EN 60929 and IEC 62386
	No-load voltage	18 V DC
	Lowest supply current at 12 V DC	160 mA
	Highest supply current	250 mA

Temperature range	Operation	-5°C…+45°C
	Storage	-25°C…+55°C
	Transport	-25°C…+70°C
Environmental conditions	Humidity	Maximum 93%, moisture condensation should be excluded
	Atmospheric pressure	Atmosphere up to 2,000 m
Design	Modular installation device (MDRC)	Modular installation device, pro *M*
	Dimensions	90 x 70 x 63.5 mm (H x W x D)
	Mounting width	4 x 17.5 mm modules
	Mounting depth	68 mm
Mounting	On 35 mm mounting rail	To EN 60715
Mounting position	Any	
Weight		0.15 kg
Housing, color	Plastic, gray	Halogen-free Flammability V-0 as per UL94
Approvals	KNX to EN 50 090-1, -2 EN 50 491-5-2 DALI-2 to IEC 62386	Certification Certification
CE marking	In accordance with the EMC and Low Voltage Directives	

1) The length refers to the entire routed DALI control cable. The maximum values are rounded and refer to the resistance value. EMC influences are not considered. For this reason, the values should be considered as absolute maximum values.

2) Both "normal" lamps and self-contained emergency lights can be connected in a mixed configuration to the DALI output. However, the maximum number of DALI devices may not exceed 64.

Tab. 6: Technical data

3.4.4.2 Device type

Device type	DALI Gateway Premium	DG/S 2.64.5.1
	Application	DALI Premium 2f /…*
	Maximum number of group objects	4051
	Maximum number of group addresses	4000
	Maximum number of assignments	4000

* … = Current version number of the application. Please refer to the software information on our homepage.

Tab. 7: Device type

4 Function

4.1 General information on DALI and standards

The requirements for modern lighting technology are extremely varied. Historically, lighting was required only for visual tasks, but nowadays there is a focus on factors such as comfort, ambiance, functionality and energy saving. Furthermore, modern lighting systems are increasingly being incorporated into building installation facility management to monitor the status of the entire lighting system. The requirement is often for a complex lighting management system that meets the uses of the premises. All these requirements cannot be adequately met by traditional 1–10 V electrical installations, or only at considerable effort and cost. The DALI standard (IEC 62386, formerly EN 60929) has emerged against this background in conjunction with leading manufacturers of lamp ballasts. It describes and defines the DALI (Digital Addressable Lighting Interface) digital interface for lighting technology equipment.

DALI has become established as an independent standard in the field of lighting technology. The range of ballasts, transformers, dimmers and relays with DALI interfaces has decisively influenced modern lighting technology.

Part 202 of DALI standard 62386 standardizes telegrams that communicate with emergency lighting units (converters) in self-contained emergency lights. These standardized DALI telegrams can be used to trigger emergency lighting tests (e.g. function or duration tests) via a higher-level building management control system and can also document the result.

Part 209 of DALI standard 62386 standardizes telegrams that communicate with color-controllable lamps to control their variables (color temperature Tc, RGB(W), etc.) via a higher-level building automation system.

For more information, visit www.digitalilluminationinterface.org.

4.1.1 DALI vs DALI-2

DALI-2 refers to version 2 of DALI standard IEC 62386. In this second version, the parts have been restructured for greater flexibility in shaping future standards initiatives. The new structure makes a clear distinction between the electrical and functional requirements for operating devices. Part 101 deals with electrical parameters and Part 102 defines operating device parameters that all DALI-compatible devices must support. Part 103, "Control devices" is new, and distinguishes between sensors and application controllers. Application controllers can be operated as single- or multi-master. Bidirectional communication is now standardized.

One of the key points in DALI-2 is backward compatibility with DALI.

Along with new functions, including "Extended fade time", DALI-2 specifies much higher quality standards and more test procedures, resulting in greater compatibility between DALI devices from different manufacturers.

4.2 Functional overview

The KNX DALI Gateways Premium DG/S 1.64.5.1 and DG/S 2.64.5.1 are modular installation devices in Pro *M* design. They are DALI single-master controllers to DALI standard IEC 62386 ed/1 and ed/2. A DALI gateway provides the interface between the KNX installation and the DALI illumination control.

The difference between the two DALI gateways is their number of DALI outputs. Both outputs are the same and have identical functions and properties. Up to 64 DALI devices can be connected to each output. These 64 devices can be controlled in broadcast, individually or in a DALI group. Individual and group activation can be combined on the same output. Each device or group can be independently switched, dimmed and assigned a brightness value via KNX. The gateways have group objects that can be programmed to signal lamp, ballast or combined lamp/ballast faults on KNX. The fault status of an individual device can also be signaled or queried via coded group objects. The gateways also have a Scene function (16 per output), a Sequence function (4 per output), a Staircase Lighting function, and Slave, Block and Forced operation functions.

The gateways support IEC 62386 DALI device types DT0, DT1 (self-contained emergency lamps) and DT8 (color-controllable lamps). A self-contained emergency lamp, or more precisely, a DT1 emergency lighting converter, is a DALI device that monitors and tests the state of the individual battery on an emergency lighting device and provides the information via standardized DALI telegrams to IEC 62386-202. The DALI gateways evaluate this information and send it on KNX.

The DALI gateways can also control other device types with DT0 functionality.

The DALI Gateways Premium do not support overlapping DALI groups, i.e. a device can be assigned to only one group. If a device is controlled individually, it cannot be controlled via DALI groups as well. KNX addressing can be used to set up a mix of individual DALI devices and DALI groups. It is also possible to jointly control all DALI devices connected to a DALI output using DALI output telegrams (DALI broadcast control).

The DALI Gateways Premium are single-master DALI controllers, i.e. they dispense with the need to connect another DALI master such as DALI sensors, presence detectors or DALI light controllers to the output. These functions can be executed with KNX; the DALI gateway functions as a 64-fold or 2x64-fold actuator/dimmer.

The DALI power supply for the 64 DALI devices on each output is integrated in the gateway.

DALI device readdressing and assignment to DALI groups are performed in the ETS independent ABB i-bus® Tool so that, for example, a facility manager without ETS knowledge is capable of exchanging and reassigning DALI devices if maintenance is required. In addition, the error states of the individual DALI devices (ballasts, emergency lighting converters and color-controllable lamps) are represented graphically with the ABB i-bus® Tool. The ABB i-bus® Tool can also be used for function checks during commissioning.

Parameter setting and group address allocation is performed with Engineering Tool Software, ETS, version 5.5.3 or later.

The table below provides an overview of the functions possible with the device.

Parametrization options	Output	Group	Ballast	Em. lighting converter
Minimum dimming/maximum brightness values (dimming thresholds)		■	■	
Switch functions	■	■	■	
Switch-on value		■	■	
Dimming speed for turn on/off		■	■	
Switch telegram and status		■	■	
Dimming	■	■	■	
Dimming speed for 0…100%		■	■	
Allow switching on via relative dimming		■	■	
Brightness value	■	■	■	
Dimming speed for transition brightness values		■	■	
Allow set switch on/off via brightness value		■	■	
Brightness value and status	■	■	■	
Fault messages				
Gateway supply voltage fault	■			
DALI voltage fault	■			
DALI device fault (ballast)	■	■	■	
Lamp fault	■	■	■	
Coded error message via 2-byte group object	■	■	■	
Number of devices or groups with a fault		■	■	
Number of devices or group with a fault		■	■	
Acknowledge fault messages	■	■	■	
Block fault message via group object	■			
Emergency lighting functions				
Emergency lighting converter function test				■
Emergency lighting battery partial duration test				■
Emergency lighting battery duration test				■
Emergency lighting battery query				■
Inhibit/rest mode (deactivate emergency operation)				■
Color functions				
Color temperature Tc / Tunable White (DT8)	■	■	■	
Switching, dimming, color temperature and brightness value setting		■	■	
Color temperature presets		■	■	
Human Centric Lighting (HCL)	■	■	■	
Dim2Warm		■	■	
RGB(W)		■	■	
HSV(W)		■	■	

Parametrization options	Output	Group	Ballast	Em. lighting converter
Other functions				
Reaction on KNX voltage failure/recovery		■	■	
Reaction on DALI voltage failure/recovery		■	■	
Standby switch-off		■	■	
Power-On level		■	■	
Characteristic correction		■	■	
Partial failure function	■	■	■	
Forced operation (1 bit/2 bit) function		■	■	
Block function		■	■	
Slave function with offset		■	■	
Staircase lighting function (multi-stage switch-off, advance warning)		■	■	
Burn-in function including remaining burn-in time		■	■	
Turn off brightness function (nighttime operation)		■	■	
Color control via RGB (3 brightness values)		■	■	
Operating duration		■	■	
Load shedding	■	■	■	
General functions				
Central switching	■			
Manual operation	■			
Request status values via 1 bit group object		■	■	
Block automatic DALI address assignment	■			
Cyclic monitoring telegram *(In operation)*	■			
Limit KNX status telegrams	■			
Limit rate of DALI telegrams (interval between query commands)	■			
Component mode (manual operation without programming)	■			
Ballast change without software	■			
16 scenes				
Recall and save via KNX with 8 bit telegram	■	■	■	
Recall via KNX with 1 bit telegram	■	■	■	
4 sequences				
10 steps plus optional end step	■	■	■	
i-bus® Tool diagnostics and test functions				
Testing and status of single ballasts		■	■	
Testing and status of group assignment		■	■	
Testing and status of additional functions Slave/Staircase lighting		■	■	
Testing and status of self-contained emergency lights		■	■	
System status display (ballast/lamp fault/framing error)	■	■	■	

■ = Property applies

4.2.1 Emergency lighting tests

The DG/S x.64.5.1 acts as a gateway between self-contained emergency lighting systems and a KNX building automation system. This allows DALI-based emergency lighting to IEC 62386-202 to be controlled and monitored with a KNX control panel.

A DALI device to IEC 62386-202 (DT1), for self-contained emergency lights, is described in this manual in shortened form as an emergency lighting converter.

The gateway itself provides no functionality in terms of the emergency lighting regulations, e.g. logging or other associated stipulated functions. It is used exclusively as a gateway between KNX group objects and DALI commands.

The various mandatory tests for emergency lighting are controlled by KNX group objects. The test sequence is subsequently monitored by KNX group objects, and the results are signaled on KNX by further group objects.

A further option for emergency lighting tests is the use of an automated test interval controlled by the DALI emergency lighting converter itself. The interval duration is defined by KNX parameters. KNX group objects transmit the results.

Function test

The function test is implemented by the emergency lighting converter itself. The test is requested at a parametrizable interval in the emergency lighting converter or by a KNX group object. The test covers the functional security of the emergency lighting converter electronics and correct operation of a lamp and a switch-over device for an individual battery.

Duration test

The duration test is implemented on the basis of IEC 62386-202 and is used to determine whether the individual battery supplies the system within the limits of the rated operating duration in emergency lighting operation.

Partial duration test

The gateway controls the partial duration test with the aid of the DALI device duration test. This is possible because a partial duration test is not stipulated or described by the standards. It is just an additional option to improve the operation readiness of emergency lighting simply and quickly without fully discharging the battery.

The partial duration test is a duration test that is terminated by the gateway after a set time. Therefore, for the test to run there must be a connection between the gateway and the emergency lighting converter. If the gateway is unable to stop the test, it runs for the full duration.

Inhibit/rest mode

Rest mode is a state in which the emergency light is switched off during its emergency lighting operation.

Inhibit mode is a timed emergency lighting converter state in which the emergency light does not switch to emergency operation in the event of a mains voltage failure.

DANGER –

In both cases, the emergency light no longer fulfills its safety function and remains off.

For this reason, use this function with great care. It can be helpful to use Inhibit/rest mode during the construction phase when the power supply is often switched off, to prevent the emergency lighting battery from constantly charging/discharging and thus conserve the emergency light.

4.2.2 Load shedding function

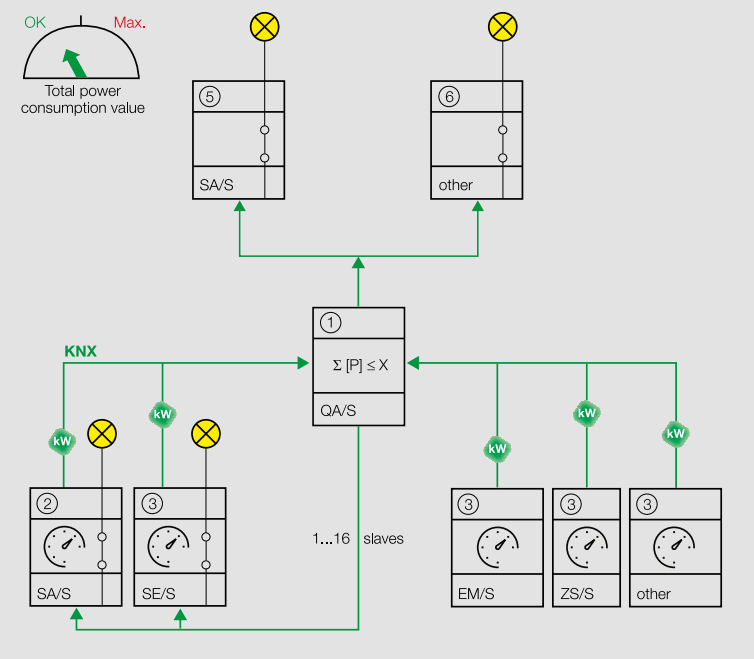
With the *Load shedding* function, a load control master (e.g. Energy Analyzer QA/S, Energy Actuator SE/S) can manage an electrical installation energy efficiently. If a defined load limit is exceeded, the load control master sends switching commands in the form of load shedding stages on the bus The slave devices receive the load shedding stages and react as per the parameterization.

The load shedding stages can be defined individually for each channel or output in the slave devices.

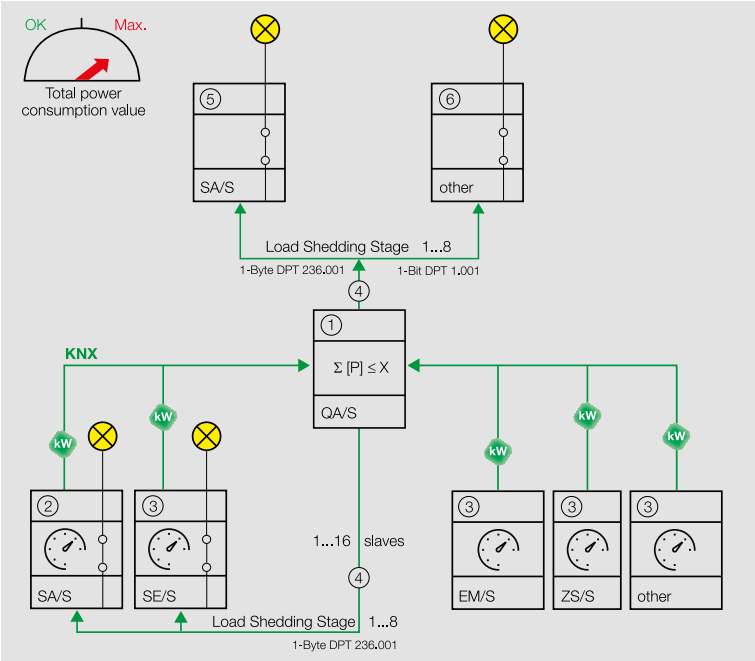
The functionality is explained in the following example based on a QA/S as the master:

Note

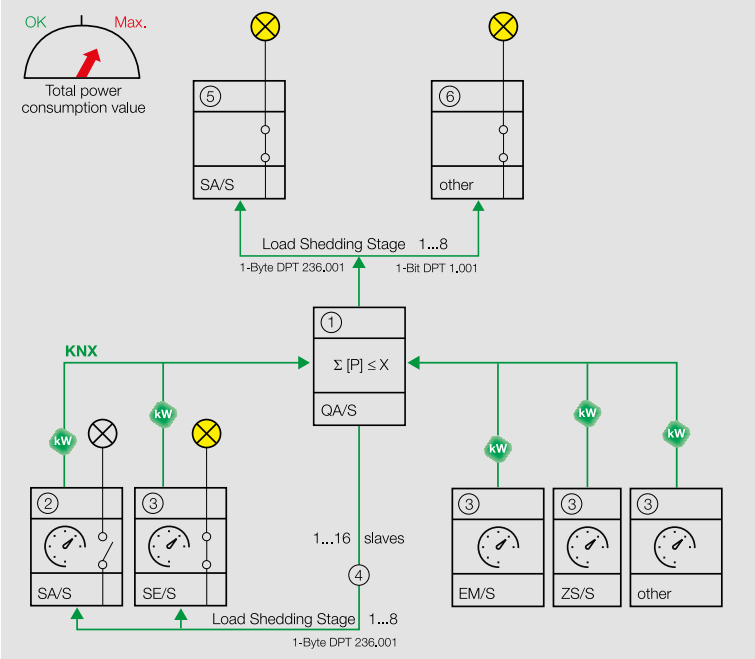
The QA/S (master) processes eight load shedding stages in this example. The number of load shedding stages must be matched between master and slave.



The QA/S (master) (1) receives power values from up to 16 slaves (e.g. SA/S X.16.6.2 (2) or energy meters such as SE/S, EM/S, ZS/S (3)). Devices (5, 6), e.g. DALI gateways that do not send any direct energy consumption values, can also be integrated into the *Load shedding* function via an energy meter (e.g. ZS/S (3)).



The master adds together the power values received and calculates the total power consumption. If the total power consumption exceeds the load limit defined, the master sends load shedding stages (4) on the bus.

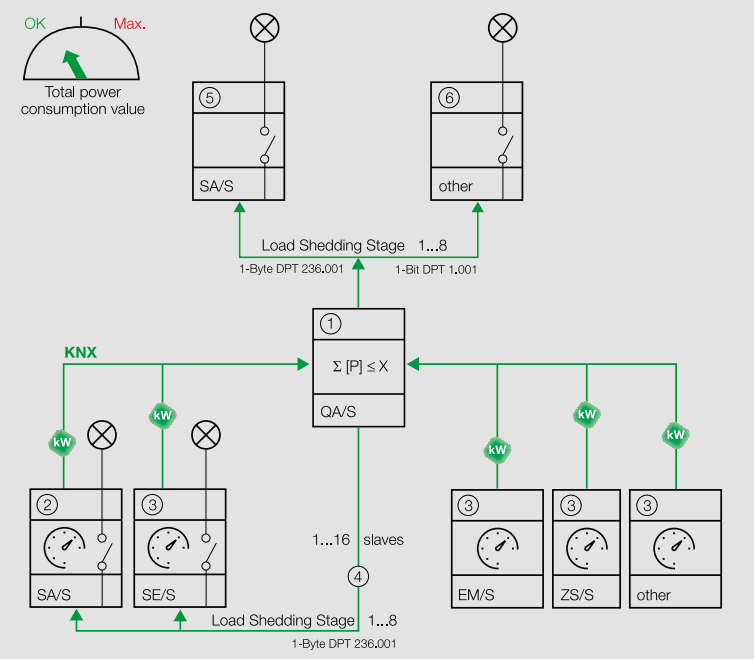


The DALI gateway receives the load shedding stage and limits the brightness of the devices assigned to the stage.

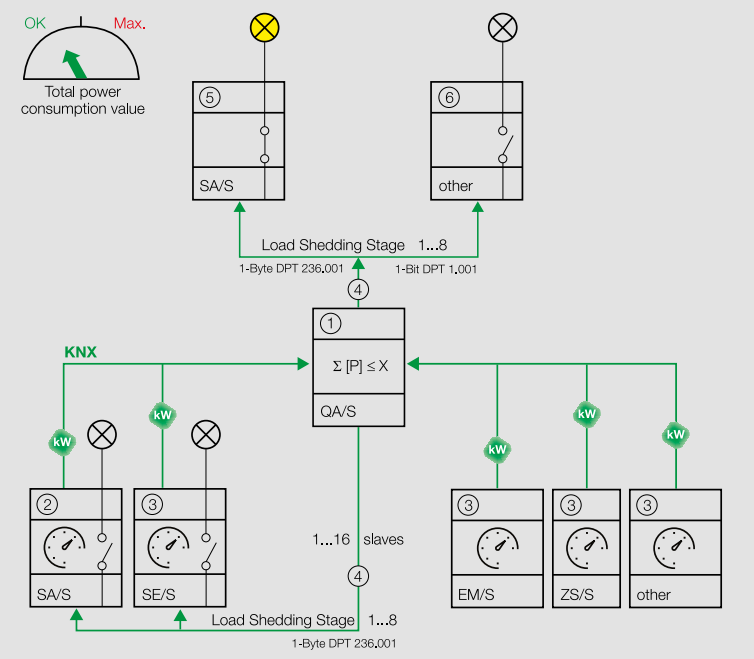
The load shedding stages and maximum brightness of the output are assigned via the *Load shedding* parameter table. The *Factor in function Load shedding* parameter is used to set whether the group/ballast reacts to the load shedding stage.

Note

Integration of other devices into the load shedding → corresponding product manuals.
ABB switch actuators (5) or DALI gateways (6) include the *Load shedding* function complete with the group object *Receive load shedding stage* (DPT 236.001).
Devices without the group object *Receive load shedding stage* (DPT 236.001) can be integrated in the *Load shedding* function using the group objects *Send load shedding stage X* (DPT 1.001) of the QA/S Energy Analyzer.



The master increases the load shedding stage until the total power consumption drops below the load limit.



Once the total power consumption drops below the load limit, the master (1) decreases the load shedding stage and sends this information via the bus to the slaves. Canceling a load shedding stage rescinds the maximum brightness value as per the parametrization.

4.3 Functions of the inputs

This section is not relevant for these devices.

4.4 Functions of the outputs

Up to 64 devices with a DALI interface can be connected to the DALI output. The DALI gateway is a DALI master with integrated DALI power supply.

Note

Other DALI masters must not be connected to the DALI gateway output.
Connecting another master to the single-master system can cause communication malfunctions.

ATTENTION –

Other DALI power supplies must not be connected to the gateway output.
Connecting another DALI power supply can add to the DALI currents, which in turn may irreparably damage the DALI input stages on the ballasts.
Inadvertent connection of 230 V mains voltage to the DALI output will **not** destroy the DALI output stage. The DALI output has built-in protection.

A control cable – maximum length below – can be used on the DALI output:

Cable length [mm²]	2 x 0.5	2 x 0.75	2 x 1.0	2 x 1.5
Max. cable length [m] from DG/S to DALI device	100	150	200	300

These values are rounded resistance values. EMC influences are not considered. For this reason, the values should be considered as absolute maximum values.

It is possible to assemble the DALI control cable with conventional installation material for mains cables. The two cores of the five-core NYM 5x1.5 mm² that are not required can be used regardless of polarity. It is not mandatory to lay a separate control cable. Take national standards into consideration.

DALI control cables are isolated from the power supply by basic insulation properties according to EN 410. SELV properties do not feature.

The device is ready for operation after connection of the gateway supply voltage. The green operating LED on the front of the device lights up.

Note

The initialization phase will terminate if more than 64 DALI devices are connected and the information will be displayed by KNX group objects or in the ABB i-bus® Tool.

The initialization phase starts automatically after download, gateway supply voltage recovery and KNX bus voltage recovery. In this phase, the gateway checks the system and addresses new, non-addressed DALI devices if addressing is enabled. Initially the gateway assumes that the DALI system is unchanged and immediately sends incoming KNX commands to the DALI, so that if the system has not changed, the lighting can still be controlled during the initialization phase. Meanwhile, analysis of the DALI installation runs in the background.

The initialization phase also runs if *Enable automatic DALI addressing* has been deactivated.

4.5 Integration in the i-bus® Tool

The devices feature an interface to the i-bus® Tool.

The i-bus® Tool can be used to read out data and test functions on the device connected.

In addition, values can be simulated for test purposes. If there is no communication, output values are no longer output on the bus, even if they are simulated using the i-bus® Tool.

The i-bus® Tool can be used to specify setpoints to test the correct reaction of the generator.

The device's physical inputs and outputs can be tested via the i-bus® Tool.

You can download the i-bus® Tool free of charge from our homepage (www.abb.com/knx).

The functions are described in the i-bus® Tool online help.

4.6 Special operating states

4.6.1 Reaction on bus voltage failure/recovery, download and ETS reset

The device's reaction on bus voltage failure/recovery, download and ETS reset can be set in the device parameters.

4.6.1.1 Bus voltage failure

Bus voltage failure describes the sudden drop in/failure of the bus voltage, e.g. due to a power failure.

4.6.1.2 Bus voltage recovery

Bus voltage recovery is the state after bus voltage is restored after failing previously due to a bus voltage failure.

4.6.1.3 ETS reset

Generally, an ETS reset is defined as a reset of the device via ETS. To trigger an ETS reset, go to the ETS *Commissioning* menu and select *Reset device*. This stops and restarts the application. The device configuration remains unchanged.

4.6.1.4 Download

Downloading describes loading a modified or updated application onto the device with ETS.

Note

The device will no longer function after the application is uninstalled or after an interrupted download.

5 Mounting and installation

5.1 Information about mounting

The mounting position for the device can be selected as required.

The electrical connection is made via screw terminals. The connection to the bus is implemented using the bus connection terminal supplied. The terminal assignment is located on the housing.

The device is ready for operation after connection of the gateway supply voltage.

Note

The maximum permissible current on a KNX line must not be exceeded.
During planning and installation ensure that the KNX line is correctly dimensioned.

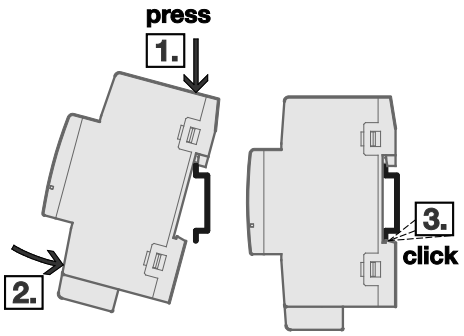
DANGER – Severe injuries due to touch voltage

Feedback from differing phase conductors can produce touch voltages and lead to severe injuries.
Operate the device only in a closed housing (distribution board).
Disconnect all phases before working on the electrical connection.

5.2 Mounting on DIN rail

The device is fitted and removed without auxiliary tools.

Make sure the device is accessible for operation, testing, visual inspection, maintenance and repair.



2CDC072013F0015

Fig. 5: Mounting on DIN rail

1. Place the DIN rail holder on the upper edge of the DIN rail and push down.
2. Push the lower part of the device toward the DIN rail until the DIN rail holder engages.

⇨ The device is now mounted on the DIN rail.

▶ Relieve the pressure on the top of the housing.

5.3 Supplied state

The device is supplied with the physical address 15.15.255. The application is preloaded.

The complete application can be reloaded if required. Downloads may take longer after an application is uninstalled or when changing applications.

6 Commissioning

6.1 Prerequisites for commissioning

To commission the device, a PC with ETS is required along with a connection to the ABB i-bus®, e.g. via a KNX interface.

The device is ready for operation after connecting the bus voltage.

6.2 Commissioning overview

ETS and the current version of the device application program are required for programming.

The current application program is available for download at www.abb.com/knx. Once imported, the application is located in ETS in the *Catalogs* window under *Manufacturers/ABB/Lighting/DALI*.

The device does not support the locking function (BCU code) of a KNX device in ETS. Using a BAU code to inhibit access to all the project devices has no effect on this device. Data can still be read and programmed.

DALI device and group assignment are carried out with the ABB i-bus® Tool.

The emergency lighting battery must be charged in order to commission the DALI emergency lighting converter. Commissioning is not possible during emergency lighting operation.

The KNX voltage is sufficient for KNX programming with ETS. Therefore in an office environment, it is possible to pre-program the DG/S exclusively using the KNX voltage without having to resort to a gateway supply voltage (a 230 V AC/DC supply). As the i-bus® Tool is responsible for the group compilation and directly accesses the DALI devices via the DG/S, the gateway supply voltage is required for the task.

The properties of the groups and ballasts are mutually independent and can be programmed individually. So it is possible, depending on the application, to freely define every group and to parametrize them accordingly.

For information on how to use the i-bus® Tool, see 4.5 Integration in the i-bus® Tool

6.3 Assignment of the physical address

The physical address, group address and parameters are assigned and programmed in ETS.

The device features a *Programming* button for physical address assignment. The red *Programming* LED lights up after the button has been pressed. It goes off once ETS has assigned the physical address or the *Programming* button is pressed again.

The device performs an ETS reset during physical address programming. This resets all states.

6.4 Software/application

6.4.1 Download reaction

Together with ETS 5, the gateways support programming with long frame telegrams to permit faster downloads between ETS and the gateway. This significantly cuts the programming time for a full download.
Corresponding system devices such as line couplers and interfaces must also support long frames. We recommend the ABB LK/S 4.2 Line Coupler, ABB USB Interface USB/S 1.2, IPR/S 3.1.1 IP Router and IP Interface IPS/S 3.1.1 or later.

6.4.2 Copying, exchanging and converting

The *ABB Update Copy Convert* ETS application can be used to copy or exchange parameter settings and to convert the application version. The application is available free of charge from the KNX online shop.

It also provides the following functions:

- *Update:* Changes the application program to a later or earlier version while retaining current configurations
- *Convert:* Transfers/adopts a configuration from an identical or compatible source device
- *Channel Copy:* Copies a channel configuration to other channels on a multichannel device
- *Channel Exchange:* Exchanges configurations between two channels on a multichannel device
- *Import/Export:* Saves and reads device configurations as external files

7 Parameters

7.1 General

ETS (Engineering Tool Software) version 5.0 or later is used to parametrize the device.

The current application program is available for download at www.abb.com/knx. Once imported, the application is located in ETS in the *Catalogs* window under *Manufacturers/ABB/Lighting/DALI*.

The following sections describe the device parameters based on the parameter windows. Parameter windows are structured dynamically so that further parameters may be enabled depending on the parametrization and function of the outputs.

The default values of the parameters are underlined, e.g.:

Options: No (checkbox cleared)
Yes (checkbox ticked)

Note

Where the group objects *Switch* or *Brightness value* are mentioned in the rest of this document, the same information applies to the group objects *Switch/Status* or *Brightness value/Status*.

Note

If a DALI device is controlled individually, it cannot also be assigned to a DALI group. A DALI device can be controlled either individually via ballast commands or in a group via group commands. Overlapping DALI groups are not supported.

If a ballast is assigned to a group but is set to individual control in ETS, or is set to group control in ETS but is not assigned to a group, this is referred to as a ballast-group conflict.

A ballast-group conflict is indicated as an incorrect state by a yellow caution field in the i-bus® Tool. Depending on which type of control is required (group G or individual S), the device must be assigned to a DALI group or removed from its existing group.

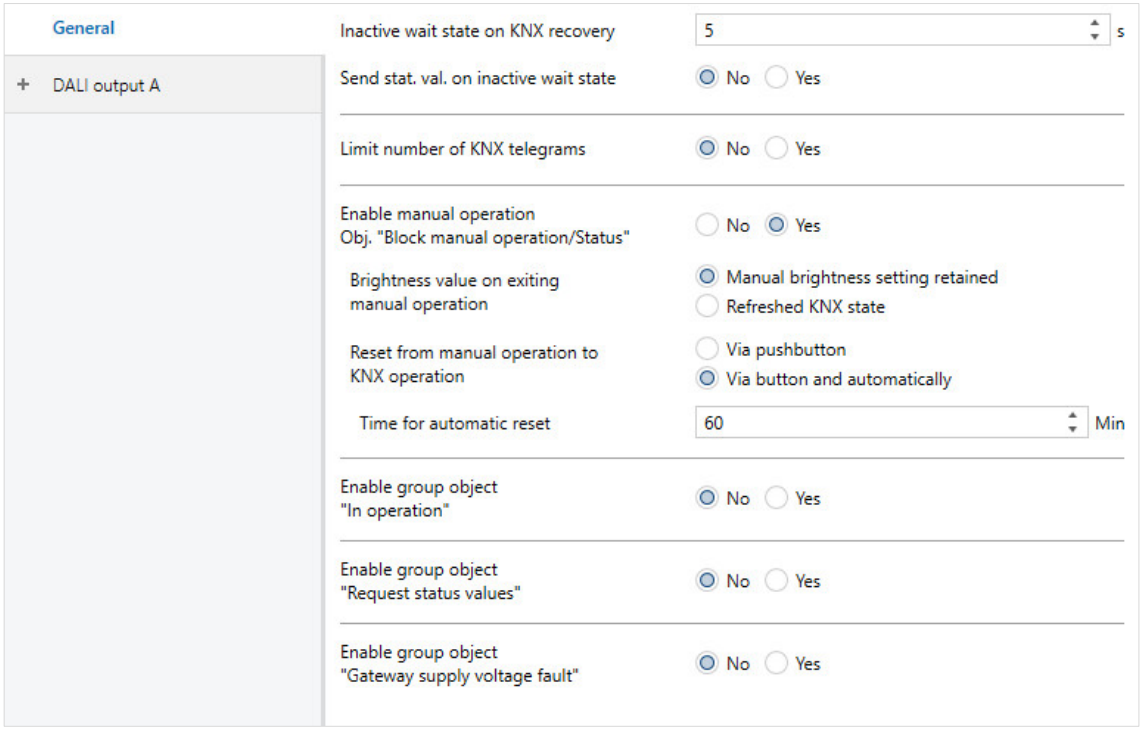
To control individual DALI devices and groups together, a joint KNX group assignment is required.

Note

We recommend keeping the lamp type in a DALI group the same as far as possible.

7.2 General parameter window

Global parameter settings for the whole device are made in this window.



Inactive wait state on KNX recovery

Options: 2…5…255 s

When in wait state, the gateway does not send any KNX telegrams. Incoming KNX telegrams are received, and updated in the background. In other words, switching, brightness value and scene commands are updated in the background, immediately memorizing the end brightness value without transition time. Dimming commands are ignored. The updated values are not executed until the wait state ends; they are then sent as per the parametrization.

Send stat. val. on inactive wait state

Options: No
Yes

This parameter defines whether or not the KNX commands that arrive during wait state are sent once wait state is inactive. It is the updated KNX value that is sent.

Limit number of KNX telegrams

Options: No
Yes

This parameter limits the device generated bus load. This limit relates to all telegrams sent by the device.

—

Dependent parameter
Selection of *Yes* option:

Maximum number of sent telegrams

Options: 1…20…255

—

Dependent parameter
Selection of *Yes* option:

In period

Options: 50, 100, 200, 500 ms
1, 2, 5, 10, 30 s
1 min

This parameter defines the number of telegrams sent by the device within a certain period of time. The telegrams are sent as quickly as possible at the start of a period.

Note

The device counts the number of telegrams sent within the parameterized period. As soon as the maximum number of sent telegrams is reached, no further telegrams are sent on KNX until the end of the period. A new period commences at the end of the previous period. The telegram counter is reset to zero, and telegram sending is allowed again. The current group object value at the time of sending is always sent.

The first period (break time) is not precisely predefined. This period be anywhere between zero seconds and the parametrized period. The subsequent sending times correspond to the parametrized time.

Enable manual operation
Obj. "Block manual operation/Status"

Options: No
<u>Yes</u>

This parameter blocks or enables the pushbutton on the front of the DG/S.
If manual operation is enabled, it can be blocked or enabled by the *Block manual operation/Status* group object. Its blocked status is also displayed.

- *No*: The pushbutton is blocked. Manual operation not possible.
- *Yes*: Manual operation is enabled. Pressing the pushbutton for 2-5 seconds activates test mode. In this mode, all DALI devices can be switched on and off to check the cable connections and verify that they are correct. Pressing the button for more than 5 seconds triggers DALI addressing, which assigns a DALI address to any DALI devices without one.

—

Dependent parameter
Selection of *Yes* option:

Brightness value on exiting manual operation

Options: <u>Manual brightness setting retained</u>
Refreshed KNX state

This parameter defines the brightness value of DALI devices on the output on exiting manual operation.

- *Manual brightness setting retained:* The last brightness value set during manual operation is retained on exiting manual operation.
- *Refreshed KNX state:* The brightness value set before manual operation is updated and set when manual operation ends. Therefore, any incoming KNX commands during manual operation are executed in the background.

—

Dependent parameter
Selection of *Yes* option:

Reset from manual operation to KNX operation

Options: Via pushbutton
<u>Via button and automatically</u>

This parameter defines how and when the system exits manual operation.

- *Via pushbutton:* You can exit manual mode only by pressing (> 2 sec.< 5 sec.). The system does not end manual mode automatically.
- *Via button and automatically:* You can exit manual mode by pressing (> 2 sec.< 5 sec.). If you do not press , manual mode will end after the parametrized time.

—

Dependent parameter
Selection of *Via button and automatically* option:

Time for automatic reset

Options: 2…<u>60</u>…255 min

This sets the interval after which manual mode automatically ends if no manual operations have been performed. This interval restarts whenever a manual operation is performed.

Enable group object "In operation"

Options: <u>No</u>
Yes

The *In operation* group object indicates the presence of the DG/S on KNX. This cyclic telegram can be monitored by an external device. If a telegram is not received, the device may be defective or the KNX cable to the transmitting device may be interrupted.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled.

—

Dependent parameter
Selection of *Yes* option:

Sending

Options: Value 0
<u>Value 1</u>

The *In operation* group object is sent cyclically on KNX.

—

Dependent parameter
Selection of *Yes* option:

Sending cycle

Options: 1…<u>60</u>…65,535 s

The time interval at which the *In operation* group object cyclically sends a telegram is set here.

Note

After a bus voltage recovery the group object sends its value after the set inactive wait state defined in the *General* parameter window has elapsed.

Enable group object
"Request status values"

Options: No
Yes

All status messages can be requested via this group object provided that they are set to *After change or on request* or *On request*.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled.

—

Dependent parameter
Selection of *Yes* option:

Request on group object value

Options: 0
1
0 or 1

- *0:* Sending status messages is requested with the value 0.
- *1:* Sending status messages is requested with the value 1.
- *0 or 1:* Sending status messages is requested with the values 0 or 1.

Enable group object
"Gateway supply voltage fault"

Options: No
Yes

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

—

Dependent parameter
Selection of *Yes* option:

Enable acknowledgment via gr. obj.
"Acknowledge gateway supply voltage fault"

Options: No
Yes

This parameter enables the *Acknowledge gateway supply voltage fault* group object. Enabling this means that a fault report on the *Gateway supply voltage fault* group object can be reset only after an acknowledgment (value 1 telegram) on the *Acknowledge gateway supply voltage fault* group object or via the i-bus® Tool.

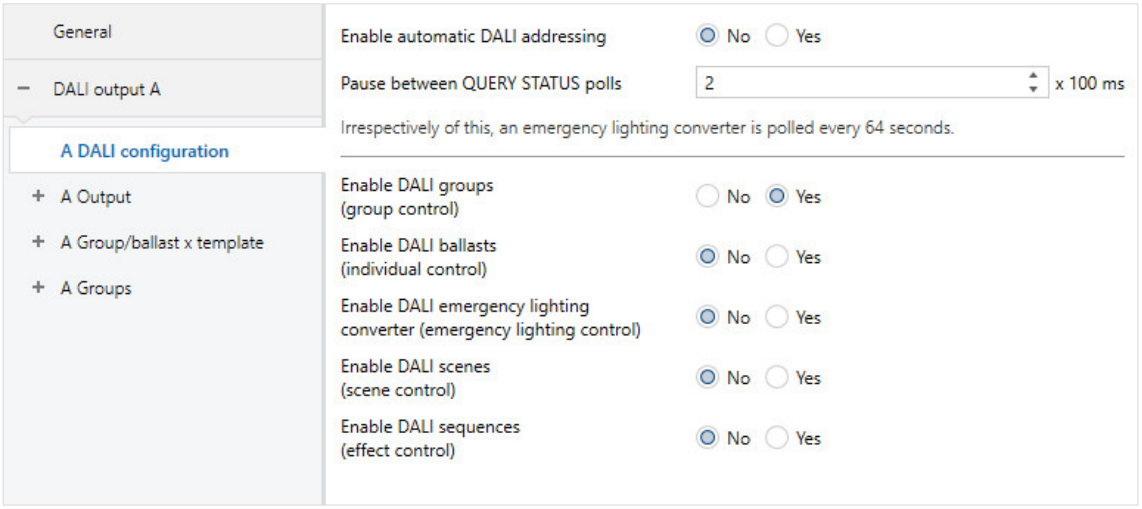
- *No:* The *Gateway supply voltage fault* group object requires no acknowledgment. The group object value is updated after a change.
- *Yes:* The *Acknowledge Gateway supply voltage fault* group object is enabled. The fault is reset only by an acknowledgment (a value 1 telegram) via the *Acknowledge Gateway supply voltage* fault group object, or via the i-bus® Tool. For the acknowledgment to be accepted, the fault must no longer be present.

7.3 DALI output X parameter window

General parameter settings for output X are made in this window.

7.3.1 X DALI configuration parameter window

The main parameter settings defining the entire DALI output are made in this window. Various control options for the DALI devices are enabled here.



Enable automatic DALI addressing

Options: No
Yes

This parameter switches on the automatic DALI addressing process at the DALI output.

- *No:* The DALI Gateway Premium does not assign DALI addresses, either in normal mode or on gateway supply voltage recovery. If a DALI device without an address has been installed, the gateway can control it only using a broadcast telegram (manual operation). A DALI address is not necessary for this purpose. If a DALI device with an existing address has been installed, the gateway will not change it.
- *Yes:* If the DALI Gateway Premium locates a DALI device without a DALI address, the gateway automatically allocates it the first free DALI address.

Note

DALI addressing without gaps makes it possible to replace a defective DALI device without additional addressing or commissioning. All that is required is to connect a new DALI device without a DALI address.
The DALI gateway addresses the new device with the first free DALI address of the removed failed device, and transfers its properties to the new device. If this DALI device does not yet have a group address (it is new from the factory), it will also receive the group assignment and scene settings. If another group assignment exists in the DALI device, a conflict will be indicated in the ABB i-bus® Tool. This can be remedied with the ABB i-bus® Tool by applying the gateway or ballast information.
If the DALI gateway detects several DALI devices with the same DALI address, it deletes these addresses and automatically assigns them the first free DALI addresses in the address range.

Pause between two DALI QUERY polls

Options: 0…2…255 x 100 ms

This parameter sets the interval between DALI QUERY polls. The gateway automatically and cyclically sends a brightness value query on the DALI to each possible DALI device (Actual Level DALI query).

A 0 setting runs the QUERY poll as quickly as possible. The interval between QUERY telegrams is around 30...40 ms.

The gateway uses this poll to establish whether a DALI device with a DALI address is present. If it does not receive a response from the monitored DALI device, the gateway interprets this as a device fault. If it does receive a response, it polls other properties of the DALI device (e.g. lamp faults and DALI device type).

This parameter setting has an impact on the DALI telegram bus load. A long interval reduces the load significantly. However, a fault on a DALI device may not be detected straight away. Likewise, it takes longer to detect a new or recovered device.

The setting has no influence on telegram rate. DALI commands (e.g. switching, dimming and brightness value settings) and status signals (e.g. brightness values, emergency lighting information) or functions in progress (e.g. staircase lighting, forced operation) are neither influenced nor delayed.

Note

We recommend that you keep the default settings. The only time that it makes sense to increase the interval between DALI QUERY polls is, for example, if an emergency lighting switch is installed in the DALI line, so as to allow more time for switching.

Enable DALI groups (group control)

Options: No
Yes

- *No:* DALI group activation is not supported on the DALI output. No corresponding parameter windows and group objects are enabled, so the ETS parameter structure here is clear and concise.
- *Yes:* DALI group activation is supported on the DALI output. Corresponding parameter windows and group objects are enabled. DALI groups are compiled with DALI devices via the ABB i-bus® Tool. There are 16 DALI groups available per DALI output. Individual DALI groups can be selected in the *Group x* parameter window.

  Note

  DALI devices that are assigned to a group cannot be used for individual activation. This configuration is shown in the i-bus® Tool and needs to be removed.

Enable DALI ballasts (individual control)
Options: No
Yes

- *No:* Individual device control is not supported on the DALI output. No corresponding parameter windows and group objects are enabled, so the ETS parameter structure here is clear and concise.
- *Yes:* Individual device control is supported on the DALI output. Corresponding parameter windows and group objects are enabled. DALI addressing can be flexibly handled in the ABB i-bus® Tool. Up to 64 DALI devices can be connected to each output. Individual DALI devices can be hidden in the *X ballasts* parameter window to provide a clear, compact parameter structure.

Note

DALI devices that are assigned to a group cannot be used for individual activation. This configuration is shown in the i-bus® Tool and needs to be removed.

Note

If a DALI device is controlled individually, it cannot also be assigned to a DALI group. A DALI device can be controlled either individually via ballast commands or in a group via group commands. Overlapping DALI groups are not supported.

Initially the DALI gateway assumes that group control is in use. If a ballast is to be individually controlled, it must be specifically parametrized in ETS. The ballast concerned must be enabled in the *X ballasts* parameter window. The *X ballasts* parameter window is enabled by selecting individual control in the *X DALI configuration* parameter window.

A ballast group conflict occurs if

- a ballast is assigned to a group but is set to individual control in ETS;
- a ballast is not set to individual control in ETS and is not assigned to a group.

A ballast-group conflict is indicated as an incorrect state by a yellow caution field in the i-bus® Tool. Depending on which type of control is required (group G or individual S), the device must be assigned to a DALI group or removed from its existing group.

To control individual DALI devices and groups together, a joint KNX group assignment is required.

Enable DALI emergency lighting converter (emergency lighting control)

Options: No
Yes

- *No:* Emergency lighting converter control is not supported on the DALI output. No corresponding parameter windows and group objects are enabled, so the ETS parameter structure here is clear and concise.
- *Yes:* The DALI output supports control of DALI emergency lighting converters (type 1 DALI devices, self-contained emergency lights to IEC 62386-202). Corresponding parameter windows and group objects are enabled. DALI addressing for the emergency lighting converters can be flexibly handled in the ABB i-bus® Tool. Up to 64 DALI emergency lighting converters can be connected to each output. Individual DALI emergency lighting converters can be hidden in the *enables the x converter* parameter window to provide a clear, compact parameter structure.
  DALI emergency lighting converters can also be assigned to a DALI group for a clearer overview. Again, in such cases the converters can be controlled only individually. They have no group function.

Enable DALI scenes (scene control)
Options: <u>No</u>
Yes

- *No:* The DALI output does not support the *Scenes* function. No corresponding parameter windows and group objects are enabled, so the ETS parameter structure here is clear and concise.
- *Yes:* The DALI output supports control for up to 16 scenes. The corresponding parameter window *X Scenes* and the *Scene 1…16* group object are enabled.
  There are 16 DALI light scenes available on each DALI output; these can be assigned to any of the 16 KNX scenes.

Note

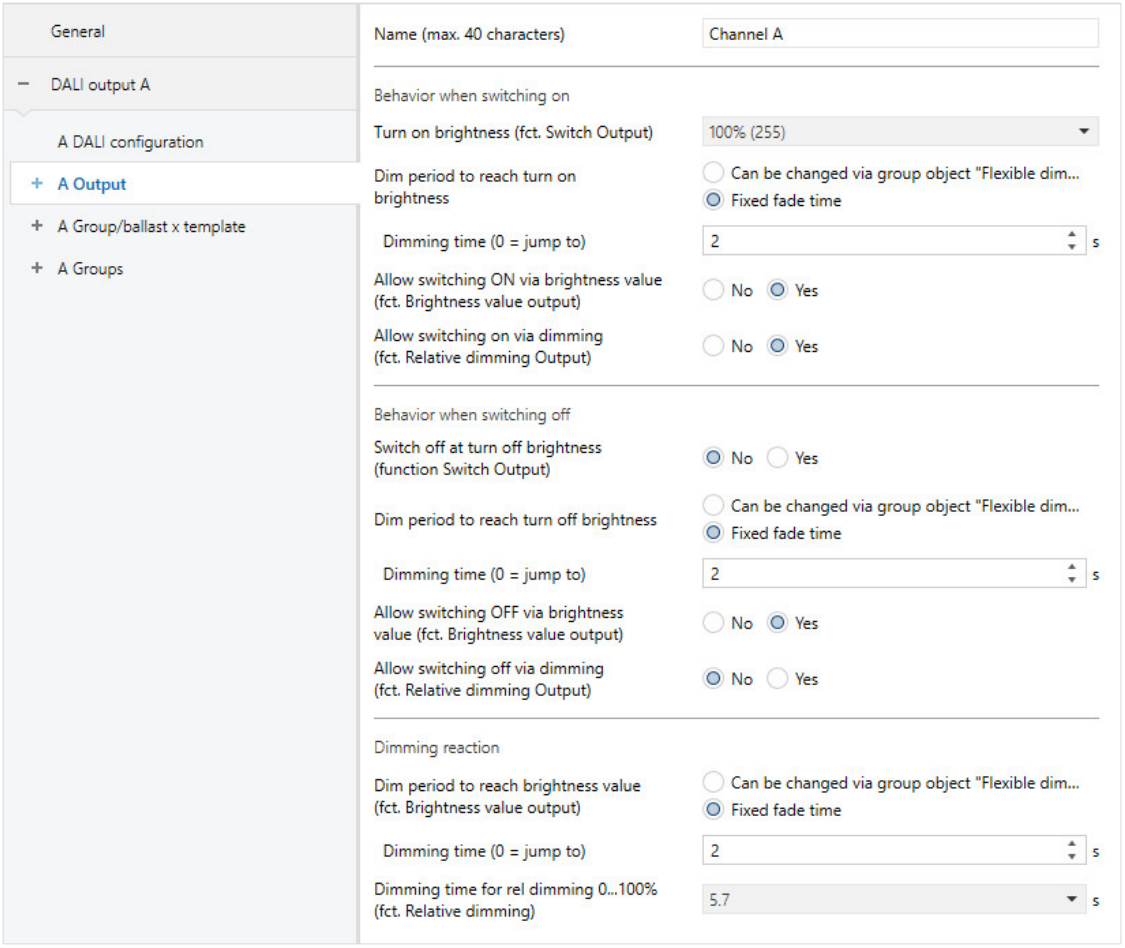
Scene numbers 1 to 16 shown in the gateway are mapped to scenes 0 to 15 on the DALI.

Enable DALI sequences (effect control)
Options: No
<u>Yes</u>

- *No:* The DALI output does not support the Sequences function. No corresponding parameter windows and group objects are enabled, so the ETS parameter structure here is clear and concise.
- *Yes:* The DALI output supports control for up to 4 sequences. The corresponding parameter window *X Sequences* is enabled. There are 4 sequences available on each DALI output. They can be parametrized independently of each other.

7.3.2 X Output parameter window

Parameter settings for the DALI output are made in this window.



Note

The DALI output is usually controlled by broadcast commands, i.e. a DALI command controls all the DALI devices at once. This requires no DALI device/group address.

Note that it is not possible to use broadcast commands when individual DALI devices or a group are subject to a forced operation or block, or are in active partial failure state, as these safety functions take priority over broadcast commands. In such cases, the devices and groups are individually controlled. Due to the relatively slow DALI telegram rate, there may be a visible difference between the brightness of the devices if more than 6 control commands are in process. Also, with relative dimming, the status value may differ from the actual brightness value. The faster the dimming time, the greater the difference. This is equalized only on the next switching or brightness value command, which may cause a visible jump in brightness.

Name (max. 40 characters)

Options: Channel A

The output can be assigned a name with a maximum of 40 characters.

The name is stored in the ETS database, and in the device by downloading the application.

Turn on brightness (fct. Switch Output)

Options: Previous value
100% (255)
99% (252)
…
0.4% (1)
0% (OFF)

This parameter defines the brightness value used when the DALI output switches on after receiving an ON telegram.

The dimming thresholds set for the group/ballast apply to the individual ballasts and groups.

- *Previous value:* The output switches on at the brightness value it was switched off at by the *Switch* group object. The brightness values of each group/ballast are saved when they are switched off, and restored when they are switched back on.
  If a group/ballast is OFF when switched off, the previous brightness value is saved as 0% (OFF) and is switched back on in the same state. This means that the group/ballast will be switched off unless it has a brightness value other than 0 when switched back on.

Note

The previous brightness value is saved with every OFF telegram on the output unless the output is already switched off. If this is the case, the OFF state is not saved as the last brightness value on receipt of another OFF telegram. The output is not switched off if every group/ballast is already switched off.

If a new OFF telegram is received during dimming down, the current brightness value is saved as the last brightness value.

In the event of a KNX voltage failure, download or restart, the previous brightness value is lost and is set to the parametrized turn on brightness value when the gateway supply voltage is restored.

Separate previous brightness values are saved for the ballast/group and the output.

This means that if the output is dimmed or switched on/off by a central telegram, the previous brightness value for the ballast/group remains unchanged.

Dim period to reach turn on brightness

Options: Can be changed via group object "Flexible dimming/fade time"
Fixed fade time

This group object can change the dimming time via KNX.

- *Can be changed via group object "Flexible dimming/fade time":* The dimming time can be changed via KNX with the *Flexible dimming/fade time* group object.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *A Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

- *Fixed fade time:* Dimming time is permanently set and cannot be changed via KNX.

—

Dependent parameter
Selection of *Fixed fade time* option:

Dimming time (0 = jump to)

Options: 0…2…65,535 s

This parameter can be used to set a soft start by defining how long the output takes to dim up from 0% brightness to the turn on brightness when it receives an ON telegram. *0 s:* jump to: The output switches ON immediately (DALI ON command).

- *1…65,535 s:* During this time, the output is dimmed from 0% brightness to the turn on brightness.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Note – dependency
Selection of *Can be changed via group object "Flexible dimming/fade time":*

Enable group object on "Output Functions" page

Allow switching ON via brightness value (fct. Brightness value output)

Options: No
Yes

This parameter defines the output's behavior when switching on with a brightness value set via the *Brightness value* group object.

- *No:* Switching on using the Brightness telegram is not allowed. The output must be switched on in order for a brightness value to be set.
- *Yes*: Switching on using the Brightness telegram is allowed.

Allow switching on via dimming (fct. Relative dimming Output)

Options: No
Yes

This parameter defines the output's behavior when switching on with dimming via the *Relative dimming* group object.

- *No:* Switching on using the Dim telegram is not allowed. The output must be switched on in order to be dimmed.
- *Yes:* Switching on using the Dim telegram is allowed.

Switch off at turn off brightness (function Switch Output)

Options: No
Yes

This parameter defines whether receipt of an OFF telegram turns off the lighting immediately or whether it must first reach a turn off brightness.

Note

The *Turn off brightness* function can be used, for example, to prevent the lighting from switching off completely at night in retirement homes or hospitals, so that there is always a basic brightness – the turn off brightness.

- *No:* The lighting switches off at the parametrized dimming time (OFF, brightness value 0%).
- *Yes:* A parametrizable brightness value, the turn off brightness, triggers switch-off, while a value of 0 does not.

—

Dependent parameter
Selection of *Yes* option:

Turn off brightness

Options: 100% (255)
99% (252)
…
30% (77)
…
0.8% (2)
0.4% (1)

This parameter defines the brightness value for the *Turn off brightness* function, i.e. the brightness at which the output switches off when it receives an OFF telegram.

Values set outside the thresholds (maximum/minimum dimming value) are automatically adjusted to the maximum or minimum.

—

Dependent parameter
Selection of *Yes* option:

Activate Turn off brightness via group object "Fct. Activate Turn off brightness" (enable in "Output functions")

Options: No
Yes

Turn off brightness can be activated/deactivated via KNX using the *Fct. Activate Turn off brightness* group object. This means a timer can be used, for example, to set the lighting to a parametrizable turn off brightness at night instead of switching it off.

- *No:* The output does not evaluate the *Fct. Activate Turn off brightness* group object. The system always switches off at the parametrized turn off brightness.
- *Yes:* The output evaluates the *Fct. Activate Turn off brightness* group object. If the gateway receives a telegram via this group object on the output, the system reacts as follows:

  1: The turn off brightness is set to the parametrized brightness value. The Turn off brightness function is activated. An OFF command will then apply this brightness value instead of OFF, 0%.

  0: The turn off brightness is set to 0. The Turn off brightness function is not activated and an OFF command switches the system off via the Switch group object, applying a brightness value of OFF, 0%.

Note

The *Turn off brightness* function can be applied to the whole DALI output, all ballasts and all groups. The function must first be enabled in the *X Output x functions* parameter window along with the *Fct. Activate Turn off brightness* group object.
To define whether the output, a ballast or a group reacts to the *Turn off brightness* function on the output, make the settings in the relevant parameter window: *A Output,Ballast x or Group x*.

Dim period to reach turn off brightness

Options: Can be changed via *group object*
"Flexible dimming/fade time"
Fixed fade time

This group object can change the dimming time via KNX.

- *Can be changed via group object "Flexible dimming/fade time":* The dimming time can be changed via KNX with the *Flexible dimming/fade time* group object.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *A Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

- *Fixed fade time:* Dimming time is permanently set and cannot be changed via KNX.

—

Dependent parameter
Selection of *Fixed fade time* option:

Dimming time (0 = jump to)
Options: 0…2…65,535 s

This parameter can be used to set a soft stop. This defines how long it takes for the output to switch off from the current brightness on receipt of an OFF telegram. The dimming time still applies even if the Turn off brightness function is parametrized.

- *0 s:* jump to: The output switches immediately, either OFF or to the turn off value.
- *1…65,535 s:* During this time, the output is dimmed to OFF or to the turn off value.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Note – dependency
Selection of *Can be changed via group object "Flexible dimming/fade time":*

Enable group object on "Output Functions" page

Allow switching OFF via brightness value (fct. Brightness value Output)
Options: No
Yes

This parameter defines the output's behavior when switching off with a brightness value set via the *Brightness value* group object.

- *No:* Switch off using the brightness telegram is not allowed. The output must be switched off using the *Switch* group object, or if allowed, dimmed down.
- *Yes*: Switch off using the brightness telegram is allowed.

Allow switching off via dimming
(fct. Relative dimming Output)

Options: No
Yes

This parameter defines the behavior of the output when switching off during dimming.

- *No:* Switch off using the Dim telegram is not allowed. The output dims to the minimum dimming value and stops there. The output must be switched off using the *Switch* group object, or if allowed, via the *Brightness value* group object.
- *Yes:* Switch off using the Dim telegram is allowed.

Dim period to reach brightness value
(fct. Brightness value output)

Options: Can be changed via *group object* "Flexible dimming/fade time"
Fixed fade time

This group object can change the dimming time via KNX.

- *Can be changed via group object "Flexible dimming/fade time":* The dimming time can be changed via KNX with the *Flexible dimming/fade time* group object.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *A Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

- *Fixed fade time:* Dimming time is permanently set and cannot be changed via KNX.

—

Dependent parameter
Selection of *Fixed fade time* option:

Dimming time (0 = jump to)

Options: 0…2…65,535 s

This parameter defines how long it takes to dim up to the set brightness value. This time relates only to the output's Brightness value telegram (8-bit).

- *0 s:* jump to: The output immediately switches to the brightness value.
- *1…65,535 s:* During this time, the output is dimmed to the brightness value.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Note – dependency
Selection of *Can be changed via group object "Flexible dimming/fade time":*

Enable group object on "Output Functions" page

Dimming time for rel dimming 0...100%
(fct. Relative dimming)

Options: 0.7 s
1 s
1.4 s
…
5.7 s
…
64 s

This parameter defines the time in which a dimming process goes from 0...100%. This dimming time affects only dimming actions received by the *Relative dimming* group object.

The dimming times correspond to the DALI fade times stored in the ballast.

7.3.2.1 X Output: Status parameter window

Settings for the status response of output A are made in this window. With the DG/S 2.64.5.1, the two DALI outputs are mutually independent and can be parametrized separately.

The status response of the individual ballast and group can be set in the respective ballast/group in the *Group x status* and *Ballast x status* parameter windows. The ballast/group template window does not apply to the output.

Note

If a ballast stops signaling on the DALI, the gateway supply voltage fails or there a lamp fault, the ballast's switch status changes to *OFF* and its brightness value status to *0*. This is also taken into account when the system calculates the status values for the DALI output.

Enable group object "Output x status byte"

Options: No
Yes

This group object sends collective status signals to the output.

- *No*: The group object is not enabled.
- *Yes:* The (DALI output X) *Status byte* group object is enabled. This group object displays specific DALI output statuses, which can be helpful for fault diagnostics, for example. For information on which statuses are displayed, please refer to the description of the *(DALI output X) Status byte* group object.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
<u>After change or on request</u>

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request*: The status is sent after a change or on request.

Enable group object "Status Switch"

Options: <u>No</u>
Yes

- *No:* The status of the switch state is not actively sent on KNX.
- *Yes:* The (DALI output X) *Status Switch* group object is enabled. It sends a 1-bit telegram on KNX, signaling the current switch status.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
<u>After change or on request</u>

- *After change:* The status is sent after a change.
- *On request*: The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

—

Dependent parameter
Selection of *Yes* option:

Value for different switching states at DALI output

Options: OFF
<u>ON</u>

This parameter defines the status to be sent if DALI devices with different states are present on the output.

- *OFF:* The switch status is sent as ON (telegram value 1) only if all DALI devices are switched on.
- *ON:* The switch status is sent as ON (telegram value 1) if at least one DALI device is switched on.

Enable group object "Status Brightness value"

Options: No
Yes

The parameter defines how the current status of the DALI output brightness value is sent on KNX.

- *No:* The brightness value is not actively sent on KNX.
- *Yes:* Yes: The (DALI output x) *Status Brightness value* group object is enabled for the brightness value.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

—

Dependent parameter
Selection of *Yes* option:

Send interim values on transfers (e.g. Dim up, scene transfer)

Options: No
Yes

This parameter defines whether the brightness value status is sent only at the end of the brightness value transition or whether interim values are sent.

- *No:* The brightness status is sent on KNX once the final brightness value has been reached.
- *Yes:* The brightness value status is also sent during a brightness value transition.

—

Dependent parameter
Selection of *Yes* option:

Send interval

Options: 0…2…65,535 s

This parameter defines how often the brightness value status is sent during a brightness value transition (e.g. dimming up, scene transition).

Enable group object "Status Switch addressed"

Options: No
Yes

- *No:* The addressed status of the switch state of a ballast or group is not actively sent on KNX.
- *Yes:* The coded group object *Status Switch addressed* is enabled. This coded 2-byte group object (address plus status) sends the contact position of a ballast or group on KNX.

The group object value is sent only on request with the ballast or group number.

Enable group object "Status Brightness value addressed"

Options: No
Yes

- *No:* The addressed status of the brightness value of a ballast or group is not actively sent on KNX.
- *Yes:* The coded group object *Status Brightness value addressed* is enabled. This coded 2-byte group object (address plus status) sends the contact position of an individual ballast or group on KNX.

The group object value is sent only on request with the ballast or group number.

Enable group object "Status Color temperature addressed"

Options: No
Yes

- *No:* The addressed status of the color temperature of a ballast or group is not actively sent on KNX.
- *Yes:* The coded group object *Status Color temperature addressed* is enabled. This coded 3-byte group object (address plus status) sends the color temperature status of an individual ballast or group on KNX.

The group object value is sent only on request with the ballast or group number.

Value for different brightness states (DALI output/DALI group)

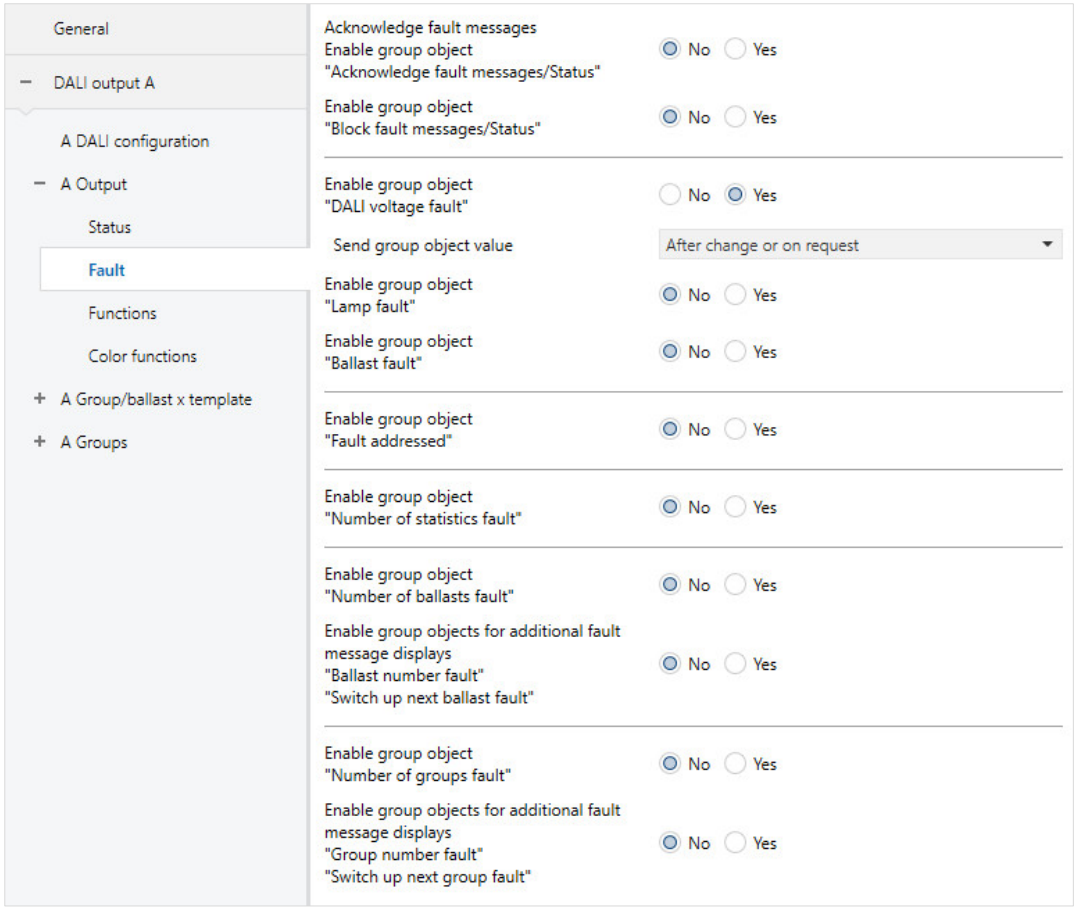
Options: Medium brightness of all lamps in the output
Highest brightness of all lamps in the output
Lowest brightness of all lamps in the output

This parameter defines the status to be sent if DALI devices with different states are present on the output.

- *Medium brightness of all lamps in the output*: The medium brightness value of all the DALI devices is sent on KNX as the status of the DALI output.
- *Highest brightness of all lamps in the output*: The highest brightness value of the DALI devices is sent on KNX as the status of the DALI output.
- *Lowest brightness of all lamps on the output*: The lowest brightness value of the DALI devices is sent on KNX as the status of the DALI output.

7.3.2.2 X Output: Fault parameter window

This parameter window is used to define how output A reacts in the event of a fault. With the DG/S 2.64.5.1, the two DALI outputs are mutually independent and can be parametrized separately.



The status response of the individual ballast and group can be set in the respective ballast/group in the *Group x Fault* and *Ballast x Fault* parameter windows. The ballast/group template window does not apply to the output.

Note

A ballast with a fault (ballast fault or lamp fault) receives OFF status and a brightness value of 0.

Acknowledge fault messages
Enable group object
"Acknowledge fault messages/Status"

Options: No
Yes

This parameter enables the *Acknowledge fault messages* function and its required group object.

- *No:* The *Acknowledge fault messages* function and its required group object are not enabled.
- *Yes:* The *Acknowledge faults* function and its required group object are enabled.

Fault messages are usually automatically reset once the fault has been corrected. With the *Acknowledge fault messages* function, the message is cleared only by acknowledgment, at which point the corresponding group object sends a value 0 telegram. This function can be very helpful when detecting sporadic faults or events that take place during unmanned monitoring periods.

Note

The *Acknowledge fault messages* function relates to the whole DALI output and fault messages for ballasts and groups, with the exception of the *Gateway supply voltage* fault, which can be acknowledged separately.

Enable group object
"Block fault messages/Status"

Options: No
Yes

This parameter enables the *Block fault messages/Status* group object. At the same time, it makes the *Block fault messages* function available. While fault messages are blocked the faults are evaluated but not sent on KNX. The values of the group objects are also not updated.

The *Block fault messages/Status* group object not only activates and deactivates the function but also sends or reads its status.

Blocking fault messages minimizes system latency by reducing the KNX load.

When fault messages are enabled, all faults are sent in accordance with their parametrization. If a fault still exists after fault messages are enabled, this fault is recorded and the information is sent on KNX as per the parametrization.

- *No:* The *Block fault messages* function and group object are not enabled.
- *Yes:* The *Block fault messages* function and group object are enabled.

Enable group object "DALI voltage fault"

Options: No
Yes

This group object indicates a DALI voltage fault. The fault may be a surge, overload or short circuit. For more detailed information please see the Output X *Status byte* group object.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group object "Lamp fault"

Options: No
Yes

This group object indicates a fault on a lamp in the DALI output.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled.

Note

A ballast fault takes priority over a lamp fault. The ballast fault masks and hides the lamp fault.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group object "Ballast fault"

Options: No
Yes

This group object indicates a fault on a ballast in the DALI output.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled.

Note

A ballast fault takes priority over a lamp fault. The ballast fault masks and hides the lamp fault.

Note

To detect a ballast fault correctly the gateway needs to monitor all connected DALI devices. Monitoring can be triggered either via the *Monitor DALI addresses* group object or via the commissioning tool (i-bus® Tool). There is no automatic detection, e.g. after KNX bus voltage recovery or gateway supply voltage recovery.

Activation should be carried out straight after commissioning or when adding or removing DALI devices.

The DALI devices are continually monitored regardless of whether the lamp is active or not. The DALI devices must be properly installed and have a supply voltage.

Any existing lamp fault is reset, as it is no longer possible to state information about the group/ballast.

At what point a ballast fault is detected depends on when the gateway polls the DALI devices. To set this time, use the *Pause between two DALI QUERY polls* parameter in the *Output X – X DALI configuration* parameter window.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group object "Fault addressed"

Options: No
Yes

Depending on parametrization, this group object sends the status of a group/ballast fault in the 2-byte coded group object *Fault addressed*. However, the parameters can also be queried.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled. As soon as there is a ballast, lamp or other fault on a DALI device on the output, this is indicated by a value of 1 in the corresponding bit.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group object "Number of statistics fault"

Options: No
Yes

This group object consists of four bytes. The individual bytes contain the number of faults for the DALI output as a whole.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled. This coded 4-byte group object indicates the number of ballast, lamp and emergency lighting converter faults as well as the error state.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group object "Number of ballasts fault"

Options: No
Yes

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled. This group object indicates the number of faulty DALI devices on the output. In this case a fault means a lamp or ballast fault.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group objects for additional fault message displays "Ballast number fault" "Switch up next ballast fault"

Options: No
Yes

This parameter enables two group objects. The first indicates the number of the faulty ballast. If there are several faults, the address of the next device with a fault can be displayed via the *Switch up next ballast fault* group object. Here, a fault means a lamp or ballast fault.

- *No:* The additional group objects for number-dependent device fault display are not enabled.
- *Yes:* The expanded ballast fault message display is enabled.

Enable group object "Number of groups fault"

Options: No
Yes

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled. This group object indicates the number of faulty groups on the output. Here, a fault means a lamp or ballast fault.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group objects for additional fault message displays "Group number fault" "Switch up next group fault"

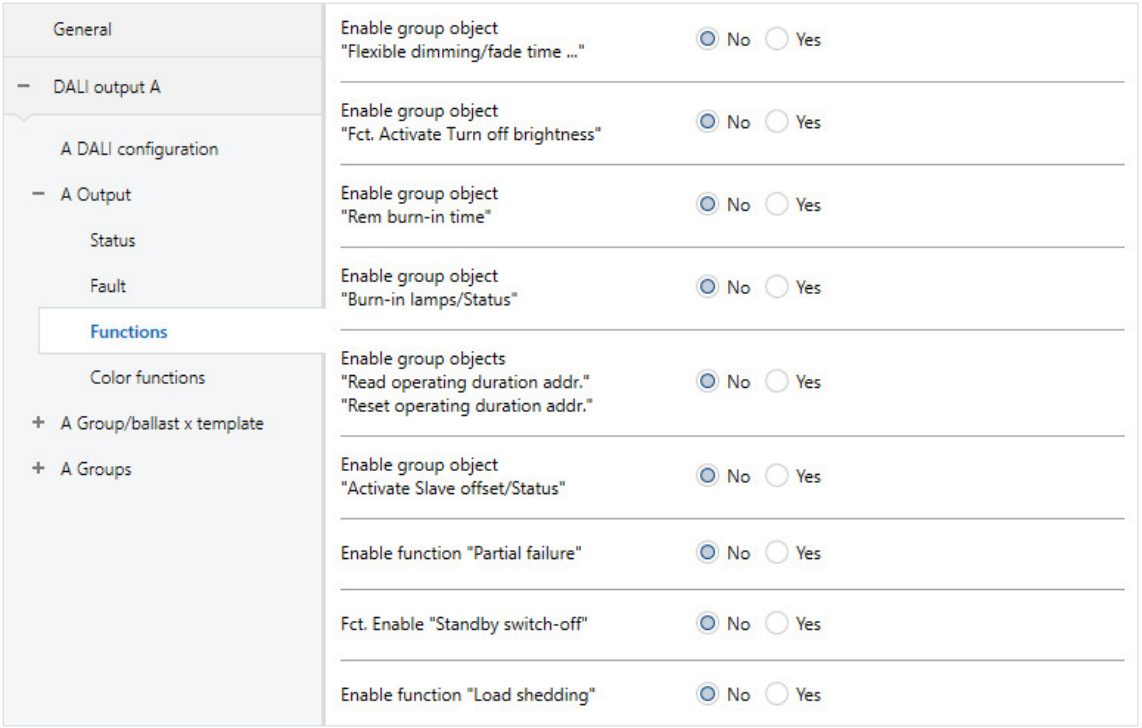
Options: No
Yes

This parameter enables two group objects. The first indicates the number of the faulty group. If there are several faults, the address of the next group with a fault can be displayed via the *Switch up next group fault* group object. Here, a fault means a lamp or ballast fault.

- *No:* The additional group objects for number-dependent group fault display are not enabled.
- *Yes:* The expanded group fault message display is enabled.

7.3.2.3 X Output: Functions parameter window

Settings for output X (A and/or B) functions are made in this window.



The functions have a priority order:

- Manual operation
- *Block* or *Forced operation* function
- *Partial failure* function
- *Load shedding* function
- *Slave* or *Staircase lighting* function, scenes, sequences or KNX commands

For instance, this means that if a ballast or the group is in burn-in mode, a forced operation is mapped from 50% to 100%.

If either the *Forced operation/Block* or *Partial failure* function is activated, the gateway executes incoming KNX commands only in the background. The system reacts as follows in this case:

Switching, brightness value and scene commands are invisibly updated in the background, memorizing the end brightness values immediately without transition times. Dimming commands are ignored.

Once the higher-level function ends, the ballast or group adopts the brightness value that would have occurred if the higher-level function had not been executed. This also applies to the operating state for the *Slave* and *Staircase lighting* functions. As long as a *Staircase lighting* function is activated it remains in standby. If slave mode is active, it responds to its master again as soon as the higher-level function ends.

Enable group object
"Flexible dimming/fade time…"

Options: No
Yes

This group object changes various dimming times via KNX. This group object can affect various ballasts, groups and the output. Whether the ballast, group or output evaluates this group object is defined in the corresponding ballast, group or output. This group object can influence the following functions.

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

Note

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *x Output* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

- *No:* The group object is not enabled.
- *Yes:* The *Flexible time for dimming/fade time ...* group object is enabled. This group object can be used to change the dimming time for various functions.

—

Dependent parameter
Selection of *Yes* option:

***Group object format* for dimming/fade time**

Options: DALI format (1...14)
KNX format time 100 ms
KNX format time 1 s

- *DALI format (1...14):* The values received via the group object are interpreted by the gateway as a discreet numeric value, which is directly converted to the DALI value for the fade time. These values comply with the specified fade times according to the DALI standard. For example, the value 0 means immediate activation of the value, and 14 corresponds to 64.0 seconds. For details, please refer to the description of the *Flexible dimming/fade time (DALI format [0...14])* group object.
- *KNX format (time 100 ms):* The gateway interprets the values received via the group object as a 100 ms value and directly rounds it to the nearest DALI value if required (see description of *Flexible dimming time* group object). For details, please refer to the description of the *Flexible dimming/fade time (100 ms)* group object.
- *KNX format (time 1 s):* The gateway interprets the values received via the group object as a 1 s value and directly rounds it to the nearest DALI value if required (see description of *Flexible dimming time* group object). For details, please refer to the description of the *Flexible dimming/fade time (1 s)* group object.

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

If the gateway supply voltage fails, the set fade time is retained.

If the KNX bus voltage fails, the fade time is lost and must be reset.

The default value is set at 2.0 s until a new value is received.

Enable group object
"Fct. Activate Turn off brightness"

Options: No
Yes

Linked group object: Fct. Activate Turn off brightness

On receipt of an OFF command from the *Switch* group object, the *Turn off brightness* function sets the lighting to a turn off brightness instead of switching it off (brightness value 0).

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled. This group object is evaluated in the output, group/ballast in order to switch to the turn off brightness on receipt of an OFF command.

Whether a ballast or group evaluates this group object is defined for each ballast/group in the corresponding *Ballast x* or *Group x* parameter window.

Note

The *Relative dimming* function via the *Dimming* group object and the *Set brightness value* function via the *Brightness value* group object are unaffected.

Note

Whether the group/ballast evaluates the telegram received is defined in the corresponding group/ballast parameter windows. The *Fct. Activate Turn off brightness* group object can therefore influence any or all of the ballasts or groups on the output.

Note

The function can be used, for example, to prevent the lighting from switching off completely at night in retirement homes or hospitals, so that there is always a basic brightness – the turn off brightness.

Enable group object "Rem burn-in time"

Options: No
Yes

- *No:* The group object is not enabled. It is not possible to send the remaining burn-in time on KNX.
- *Yes:* The group object is enabled. This group object can send the remaining burn-in time for a group/ballast on KNX. This is a coded group object that includes a ballast number and remaining burn-in time.

Note

The *Burn-in* function itself is enabled in the group/ballast in the *Functions* parameter window. If the function is not enabled, the remaining burn-in time is 0.

Note

The remaining burn-in time can also be read by the i-bus® Tool.

Enable group object "Burn-in lamps/Status"

Options: No
Yes

This parameter enables a group object that triggers burn-in for the whole output. However, burn-in must first be enabled in the ballast and group in the *Functions* parameter window. This group object also detects the *Burn-in* status of the output provided at least one ballast is in burn-in mode, as this sets the status.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled. This group object is evaluated in the output, group/ballast in order to trigger burn-in.

Whether a ballast or group evaluates this group object is defined for each ballast/group in the corresponding *Ballast x* or *Group x* parameter window.

Note

Burn-in can be triggered for individual ballasts or groups via the i-bus® Tool.

Note

Continuous dimming of lamps that are not burnt in can prevent the lamp from reaching its maximum defined brightness, making the required brightness value in the area unachievable.

To guarantee maximum lamp life and correct lamp function in the dimmed state, lamps must be operated for a certain number of hours at 100% brightness during initial operation before they can be permanently dimmed.

For details, please see the technical data for the lamps.

Enable group objects

"Read operating duration addr."
"Reset operating duration addr."

Options: No
Yes

- *No:* The group object for the *Operating duration* function on the output is not enabled.
- *Yes:* The group objects are enabled and can read and reset the operating duration of the groups and ballasts.

Enable group object "Activate Slave offset/Status"

Options: No
Yes

- *No:* The group object for the *Slave offset* function on the output is not enabled.
- *Yes:* The group object is required in order to activate or deactivate the offset for the *Slave* function via KNX. The group object affects all groups and ballasts on the output that are set to *Enable Group object "Activate Slave offset"*, *Yes* in the *Slave* parameter window.

—

Dependent parameter
Selection of *Yes* option:

Function Slave offset on KNX recovery and download

Options: Not activated
Activated

This parameter defines the state of the *Slave offset* function after a KNX recovery or a download.

- *Not activated:* The *Slave offset* function is not activated after a download or after KNX bus voltage recovery. The *Activate slave offset* group object receives a value of 0.
- *Activated:* The *Slave offset* function is activated after a download or after KNX bus voltage recovery. In other words, an offset is applied to the slave. The *Activate slave offset* or *Activate Slave offset/Status* group object receives a value of 1.

Whether a ballast or group evaluates this group object is defined for each ballast/group in the corresponding *Ballast x* or *Group x* parameter window.

Note

Whether the group/ballast evaluates the telegram received is defined in the corresponding group/ballast parameter windows. The *Activate Slave offset/Status* group object can therefore influence any or all of the ballasts or groups on the output.

Note

The *Activate offset* function can be used, for example, to deactivate the offset between two office lighting strips when it gets dark. During the day, if the offset is active, the lighting strip nearest the window provides a brightness value reduced by the offset, thus saving energy.

Enable function "Partial failure"

Options: No
Yes

The *Partial failure* function allows lighting to be controlled regardless of a failed component.

- *No:* The *Partial failure* function is not enabled.
- *Yes:* The *Partial failure* function is enabled. Based on a defined number of failed lamps, other ballasts or groups can still be controlled via an external group object, *Activate Partial failure/Status*, or directly in the DALI output. How the lamp reacts on partial failure is defined in the *Functions* parameter window in the group/ballast.

Partial-failure criterion:

The following parameters define what is counted as partial failure. The whole DALI output is taken into consideration. The criteria are OR-linked. The reaction to a partial failure is triggered as soon as one criterion is met.

—

Dependent parameters
Selection of *Yes* option:

DALI voltage fault

Options: No
Yes

- *No:* A DALI voltage fault is not counted as a partial failure.
- *Yes:* A DALI voltage fault will trigger the reaction to partial failure. A DALI voltage fault is, for example, a gateway supply voltage failure or a DALI short circuit. Note that in this case it is not possible to communicate with ballasts or groups on the DALI output that is down. However, the partial failure can be forwarded via the *Activate partial failure/Status* group object.

—

Dependent parameters
Selection of *Yes* option:

Active em. lighting event reported by em. lighting converter

Options: No
Yes

- *No:* An emergency lighting event is not counted as a partial failure.
- *Yes:* An emergency lighting event will trigger the reaction to partial failure. The number of emergency lighting events is defined by the next parameter.

—

Dependent parameter
Selection of *Yes* option:

No. of detected em. lighting events must be greater than or equal to

Options: 1…64

If the number of emergency lighting events reaches the number defined here, this meets a criterion for partial failure and the set actions are executed.

—

Dependent parameters
Selection of *Yes* option:

Lamp/ballast fault

Options: No
Yes

- *No:* A lamp or ballast fault is not counted as a partial failure.
- *Yes:* A lamp or ballast fault will trigger the reaction to partial failure. The number of faults is defined by the next parameter. The DALI output must be monitored in order to detect a ballast fault.

—

Dependent parameter
Selection of *Yes* option:

No. of detect. lamp-/ballast faults must be greater than or equal to

Options: 1…64

If the number of lamp/ballast faults reaches the number defined here, this meets a criterion for partial failure and the set actions are executed.

Forward partial failure information

The *Partial failure* function allows lighting to be controlled regardless of a failed component. The information can be forwarded internally or via an external group object.

—

Dependent parameters
Selection of *Yes* option:

Internal to DALI output

Options: No
Yes

- *No:* The information from the *Partial failure* function is not forwarded internally on the DALI output.
- *Yes:* The information from the *Partial failure* function is forwarded internally on the DALI output. No group object is required.

—

Dependent parameters
Selection of *Yes* option:

Externally via *group object*
"Activate partial failure/Status"

Options: No
Yes

- *No:* The information from the *Partial failure* function is not forwarded on KNX.
- *Yes:* The group object is enabled. This group object sends information on KNX indicating that a partial lighting failure has been detected. The status of the partial failure is also indicated.

Whether a ballast or group evaluates this group object is defined for each ballast/group in the corresponding *Ballast x* or *Group x* parameter window.

Enable standby switch-off

Options: No
Yes

This parameter determines whether standby switch-off is enabled. Standby switch-off is when the ballast supply voltage switches off if all connected ballasts on an output are in standby.

- *No:* The Standby switch-off function is not enabled.
- *Yes:* The Standby switch-off function is enabled. If all the ballasts on an output are switched off, the ballast supply voltage can be switched off too. However, this requires the "Standby switch-off" group object to be linked with a switch actuator channel.

Note

The *Standby switch-off* function saves energy by switching off the supply voltage of all ballasts if they are all in standby.
The DALI gateway sends a value 1 group object on the bus. A switch actuator channel set to respond to this group object switches off the ballast supply voltage. If one or more DALI devices are switched on, the gateway value 0 group object, and the switch actuator switches the ballast supply voltage back on.

Note

If only one ballast remains on, standby switch-off is feasible. Standby switch-off is available for each output, not for each group/ballast.

—

Dependent parameters
Selection of *Yes* option:

Delay time to switch-off

Options: 1…300…65,535 s

This parameter can be used to set a ballast supply voltage standby switch-off delay time before the "Standby switch-off" group object is sent on KNX and switches off all the ballasts on DALI output A/B.

—

Dependent parameters

Selection of *Yes* option:

Enabling also via group object "Fct. Enable standby switch-off"

Options: No
Yes

This parameter allows you to also enable ballast supply voltage switch-off using the "Enable Standby switch-off" group object.

- *No:* Standby switch-off using the "Enable standby switch-off" group object is disabled.
- *Yes:* Standby switch-off using the "Enable standby switch-off" group object is enabled. This group object can be used to enable or block standby switch-off.

—

Dependent parameters

Selection of *Yes* option:

Delay time after switching back on

Options: 1…10 s

This parameter sets a delay time before the ballast supply voltage is switched back on by a switch actuator. The delay time delays transmission of the first DALI commands after the ballast supply voltage is switched on (thus taking account of ballast start up behavior).

Note

Each time the supply voltage is switched off, the current values (brightness and color temperature) are saved to the ballast's flash memory. Note that the lifetime of the ballast memory and associated storage space reduces each time. We therefore recommend switching off no more than once a day.

Enable function "Load shedding"

Options: No
Yes

This parameter enables the *Load shedding* function and the *Receive load shedding stage* group object.

The maximum brightness of the groups/ballasts can be temporarily limited via the *Receive load shedding stage* group object. The group object applies to the entire output.

- *No:* The *Load shedding* function is not enabled.
- *Yes:* The *Load shedding* function and the *Receive load shedding stage* group object are enabled.

Load shedding parameter table

This parameter table is used to set the dependent parameters of the *Load shedding* function. The maximum brightness of the groups/ballasts can be temporarily limited via the *Receive load shedding stage* group object. The gateway supports up to 4 limits. These limits define up to 4 reactions to the load shedding stage. Each reaction can be individually set. They are prioritized by the load shedding stage.

Limit	Use	From load shedding stage	Maximum brightness
1	☐		
2	☐		
3	☐		
4	☐		

Use

Options: No
Yes

This parameter defines whether Limit x (x = 1 … 4) is used.

- *No:* Limit x is not used.
- *Yes:* Limit x is used.

—

Dependent parameters

Selection of *Yes* option:

From load shedding stage

Options: 1 … 15

This parameter defines the load shedding stage at which the output reacts when Limit x (x = 1 … 4) is used.

—

Dependent parameters

Selection of *Yes* option:

Maximum brightness

Options: 0.4% (1) … 80% (204) … 100% (255)

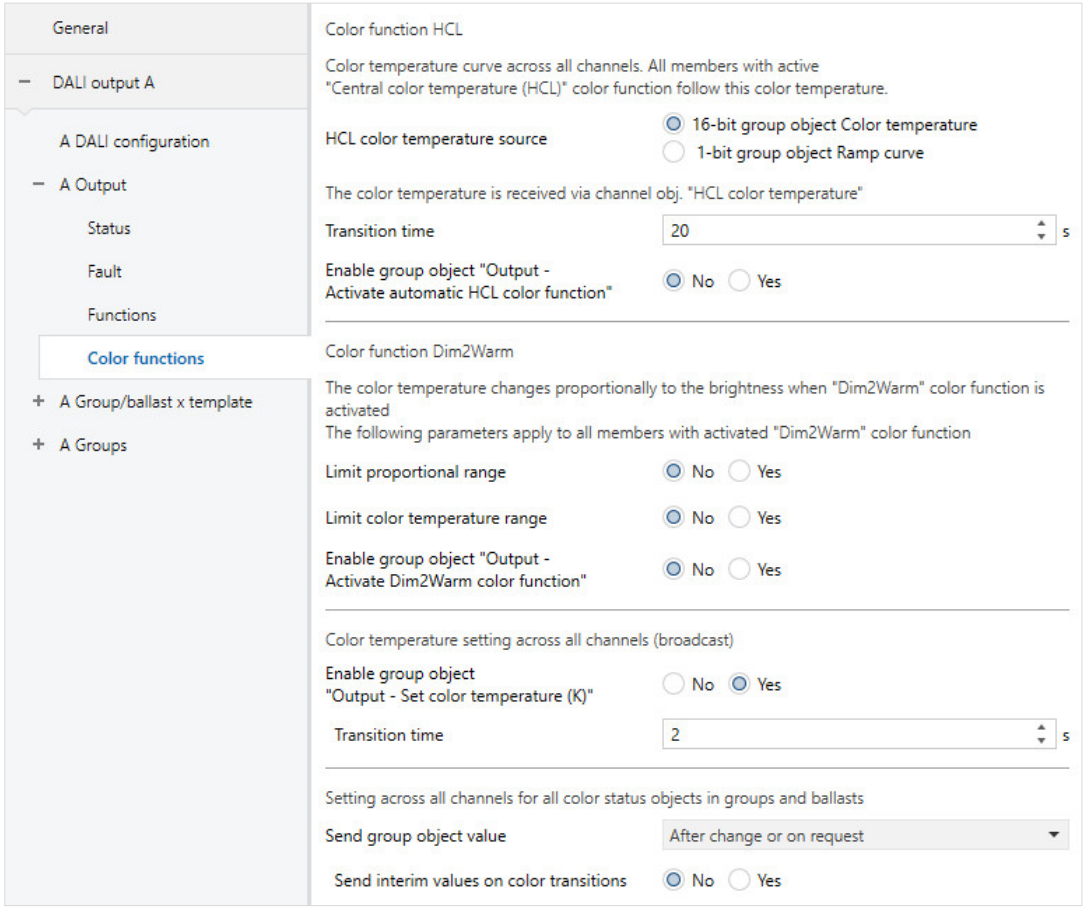
This parameter defines the maximum brightness when a load shedding stage is active.

Note

During active load shedding the maximum brightness of the load shedding stage overwrites the maximum dimming value of the ballast (see Maximum dimming value parameter).
When a load shedding stage is active the maximum brightness is set as quickly as possible. Transition times do not affect this.
After a download or a bus voltage recovery, no load shedding stage is available at first. The ballast retains its parametrized maximum dimming value. Once a load shedding stage is received, the maximum brightness of the load shedding stage replaces the maximum dimming value. This reaction is the same regardless of whether a load shedding stage was active before the download or bus voltage failure.
An active load shedding stage has an immediate impact on other running functions (e.g. staircase lighting). The maximum brightness will be set as quickly as possible. This also applies when the load shedding stage is canceled.

7.3.2.4 X Output: Color functions parameter window

Settings for output X (A and/or B) color functions are made in this window.



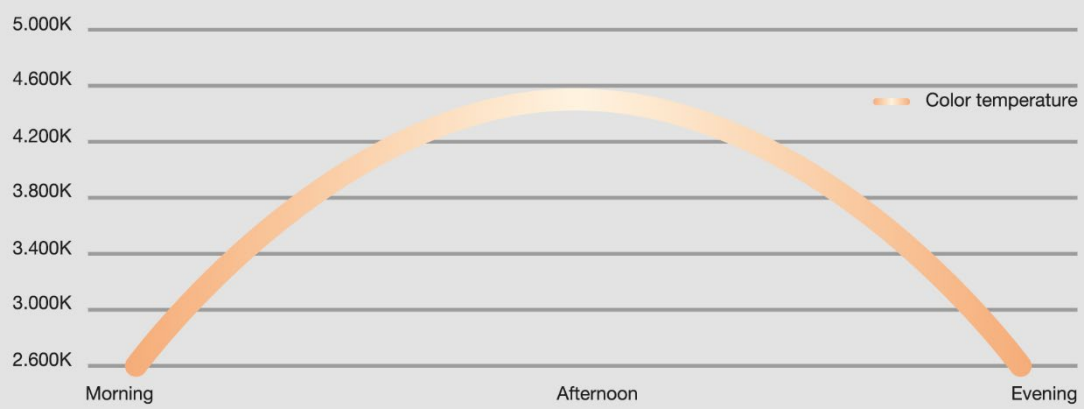
7.3.2.4.1 Human Centric Lighting (HCL) color function

Note

Human Centric Lighting (HCL) is a color scheme that makes use of the visual, emotional and biological effects of light in integrated lighting planning. HCL mimics the natural passage of the day by using color-controllable lamps to emulate the color temperature outside.

The chart below shows a typical daily progression.

A large number of studies have demonstrated the merits of HCL. It improves people's long-term health, well-being and performance.
In complex lighting installations, illumination levels (brightness), area, direction and color temperature vary. It also takes account of daily and seasonal dynamics at a particular location.



HCL color temperature source

Options: 16-bit *group object* Color temperature
1-bit *group object* Ramp curve

This parameter specifies the HCL color temperature sources. Each source option produces different HCL characteristics.

- *16-bit group object Color temperature:*
  The 16-bit group object is the source for the HCL characteristic. The HCL function follows the values this group object sends. The DALI gateway dims all included ballasts/groups to the color temperature sent. The more often the group object sends new values, the more accurately the lighting mimics the passage of the day.
- *1-bit group object Ramp curve:*
  The 1-bit group object starts a parametrizable color temperature ramp curve.

Note

We recommend using the Color temperature 16-bit group object in combination with a display system.

—

Dependent parameters
Selection of *16-bit group object Color temperature:*

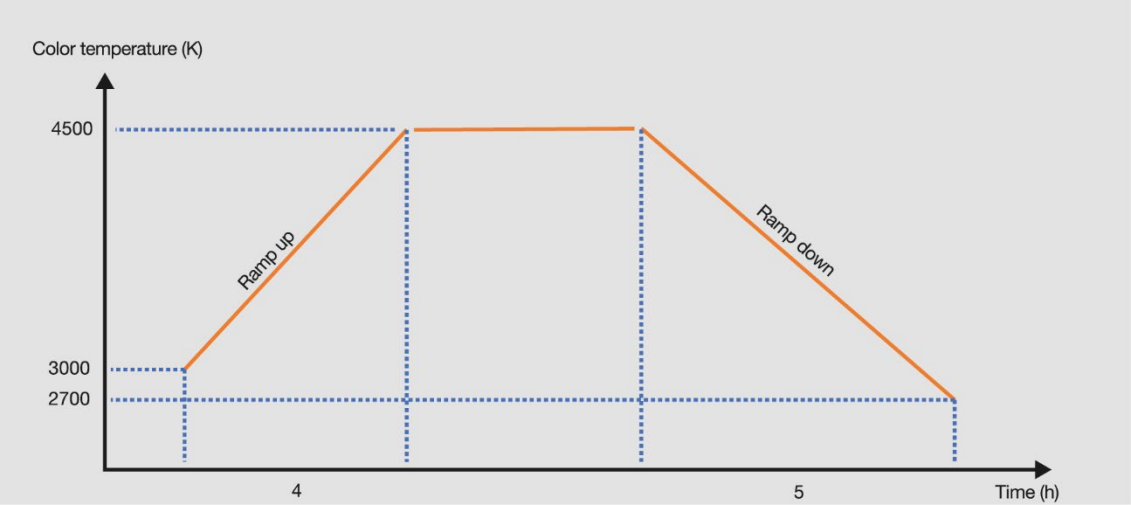
Transition time

Options: 0…20…65,535 s

This parameter defines the time it takes for the HCL curve to adopt the new color temperature values.

Note

The HCL ramp curve can easily mimic the passage of the day using color temperature. The parameters below set the ramp (up/down). The chart (see below) illustrates an example. The rising ramp is triggered by a 1-bit group object, "HCL ramp up/down" (value 1). The ramp up starts at a color temperature of 3,000 K. After 4 hours, it reaches the setpoint value of 4,500 K (final color temperature). The color temperature value then stays at the setpoint until the "HCL ramp up/down" group object triggers the falling ramp. This starts at 4,500 K and after 5 hours, reaches 2,700 K. It is also possible to set the start of the falling edge to a different color temperature value to the one previously set for the end of the ramp up.



Note

When the "HCL ramp up/down" group object triggers the rising ramp, it takes a fixed transition time of 4 seconds to dim the group/ballast to the color temperature value set for the start of the ramp up. If a group/ballast is switched on while an HCL ramp is running, it will be dimmed to the current color temperature within 4 seconds as well. The gateway starts the ramp up 20 seconds after triggering. This starts the devices at the same time and at the same temperature.

Note

When used with an ABB KNX radio time switch (FW/S 8.2.1) combined with a DCF77 or GPS antenna, the HCL ramp curve can be triggered by sunset or sunrise, for example.

—

Dependent parameters
Selection of *1-bit group object Ramp curve:*

Rising ramp

Initial color temperature

Options: 1,000…2,700…20,000 K

This parameter defines the color temperature at the start of the ramp up. The adjustment range is from 1,000 to 20,000 kelvin.

—

Dependent parameters
Selection of *1-bit group object Ramp curve:*

Rising ramp

Final color temperature

Options: 1,000…6,000…20,000 K

This parameter defines the color temperature at the end of the ramp up. The adjustment range is from 1,000 to 20,000 kelvin.

—

Dependent parameters
Selection of *1-bit group object Ramp curve:*

Rising ramp

Transition time

Options: 1…7,200…65,535 s

This parameter defines the rising ramp time, i.e. how long it takes for the ramp to go from beginning to end.

—

Dependent parameters
Selection of *1-bit group object Ramp curve:*

Falling ramp

Initial color temperature

Options: 1,000…6,000…20,000 K

This parameter defines the color temperature at the start of the ramp down. The adjustment range is from 1,000 to 20,000 kelvin.

—

Dependent parameters
Selection of *1-bit group object Ramp curve:*

Falling ramp

Final color temperature

Options: 1,000…2,700…20,000 K

This parameter defines the color temperature at the end of the ramp down. The adjustment range is from 1,000 to 20,000 kelvin.

—

Dependent parameters
Selection of *1-bit group object Ramp curve:*

Falling ramp

Transition time

Options: 1…7,200…65,535 s

This parameter defines the falling ramp time, i.e. how long it takes for the ramp to go from beginning to end.

Enable group object "Output – Activate automatic HCL color function"

Options: No
Yes

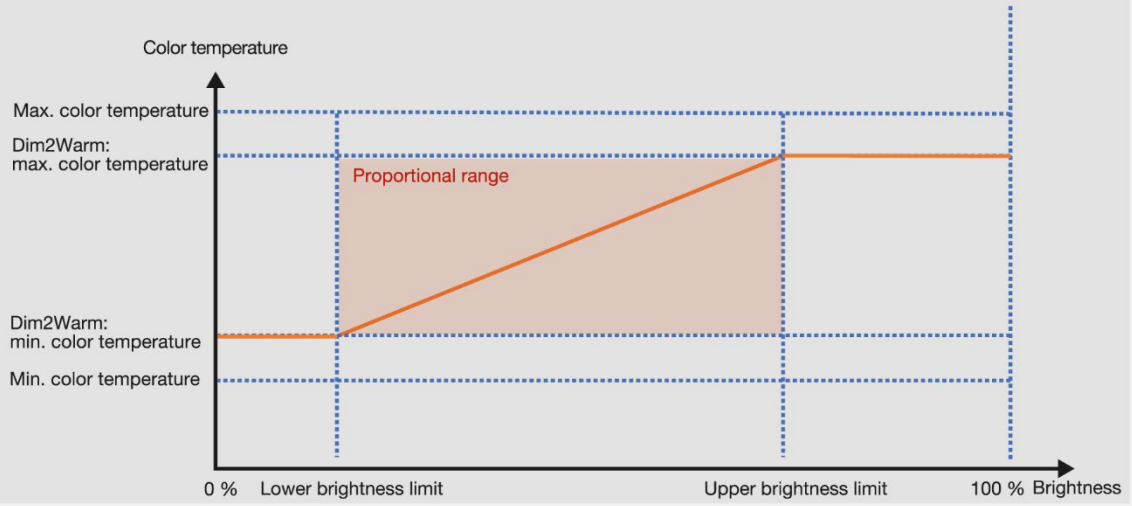
This parameter enables the "Output – Activate automatic HCL color function" group object, which automatically activates and deactivates the HCL function for the whole output.

- *No:* The output's function cannot be activated/deactivated with the "Output – Activate automatic HCL color function" group object.
- *Yes:* The "Output – Activate automatic HCL color function" group object is enabled and can automatically activate/deactivate the parametrized HCL color function on all ballasts/groups on the output.

7.3.2.4.2 Color function Dim2Warm

Note

The DALI gateway has an additional function called Dim2Warm, which changes the color temperature based on the brightness. This dependency is similar to the dimming reaction of a light bulb. The higher the brightness, the higher the color temperature, i.e. the cooler the light color, and vice versa.



The chart shows the relationship between the parameters.
The proportional range is the range with a linear relationship between color temperature and brightness. There are two factors that can limit this range. First, you can reduce the brightness range by setting an upper and lower brightness limit. Second, you can adjust the color temperature range by setting a minimum and maximum (with Dim2Warm).
The proportional area always stays within the parametrized limits (limited or not limited).
When the Dim2Warm function is active and a group/ballast is actuated with a brightness value outside the limits, its color temperature remains at the value of the exceeded limits (Dim2Warm minimum or maximum color temperature).

Note

When you activate Dim2Warm on a group/ballast, it will jump to the corresponding color temperature within 2 seconds. If the group/ballast is already in the process of dimming, the function ensures it reaches the appropriate color temperature by the end of the dimming process.

Limit proportional range

Options: No
Yes

This parameter limits the proportional range, i.e. the range with a linear dependency between brightness and color temperature.

- *No:* The proportional range is not limited.
- *Yes:* The proportional range is limited by a lower and upper brightness limit. Between these limits the color temperature changes in proportion to the brightness. Below/above the limit, the system uses the minimum/maximum color temperature, respectively.

—

Dependent parameters
Selection of *Yes* option:

Lower brightness limit

Options: 100% (255)
99% (252)
…
20% (51)
…
0.4% (1)

This parameter is used to set the lower brightness limit. Below this limit the color temperature remains constant. Above it the color temperature changes in proportion to the brightness.

—

Dependent parameters
Selection of *Yes* option:

Upper brightness limit

Options: 100% (255)
99% (252)
…
80% (204)
…
0.4% (1)

This parameter is used to set the upper brightness limit. Above this limit the color temperature remains constant. Below it the color temperature changes in proportion to the brightness.

Limit color temperature range

Options: No
Yes

This parameter limits the color temperature range, reducing the proportional range where color temperature has a linear dependence on brightness.

- *No:* The color temperature is not limited. The color temperature range is specified purely by the min/max color temperature (*X Groups/ballasts – Color temperature or X Group/ballast x template – Color temperature Tc template*).
- *Yes:* The color temperature has additional limits for the Dim2Warm function.

—

Dependent parameters
Selection of *Yes* option:

Minimum color temperature

Options: 1,000…2,700…20,000 K

This parameter defines the minimum color temperature of the Dim2Warm color temperature range. The adjustment range is from 1,000 to 20,000 kelvin.

—

Dependent parameters
Selection of *Yes* option:

Maximum color temperature

Options: 1,000…4,000…20,000 K

This parameter defines the maximum color temperature of the Dim2Warm color temperature range. The adjustment range is from 1,000 to 20,000 kelvin.

Enable group object "Output – Activate Dim2Warm color function"

Options: No
Yes

This parameter enables the "Output – Activate Dim2Warm color function" group object, which activates/deactivates the Dim2Warm color function.

- *No:* The "Output – Activate Dim2Warm color function" group object is not enabled.
- *Yes:* The "Output – Activate Dim2Warm color function" group object is enabled. This group object controls all groups/ballasts for which the Dim2Warm function is parametrized, i.e. the function can be activated/deactivated centrally.

Enable group object
"Output – Set color temperature (K)"

Options: No
Yes

This parameter enables the "Output – Set color temperature (K)" group object, which sets a color temperature for all DALI devices on the output.

- *No:* The "Output – Set color temperature (K)" group object is not enabled.
- *Yes:* The "Output – Set color temperature (K)" group object is enabled. This group object can broadcast a command that sets a color temperature for the DALI output. This 2-bit group object sends the color temperature in kelvin.

—

Dependent parameters
Selection of *Yes* option:

Transition time

Options: 0…2…65,535 s

This parameter defines how long the lighting takes to reach the color temperature setpoint.

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Send interim values on color transitions

Options: No
Yes

This parameter sends interim values on KNX during color transitions.

- *No:* No interim values are sent during color transitions.
- *Yes:* Interim values are sent on the bus during color transitions.

—

Dependent parameters
Selection of *Yes* option:

Send interval

Options: 0…2…65,535 s

This parameter defines how often interim values are sent during color transitions.

7.3.3 X Group/ballast x template parameter window

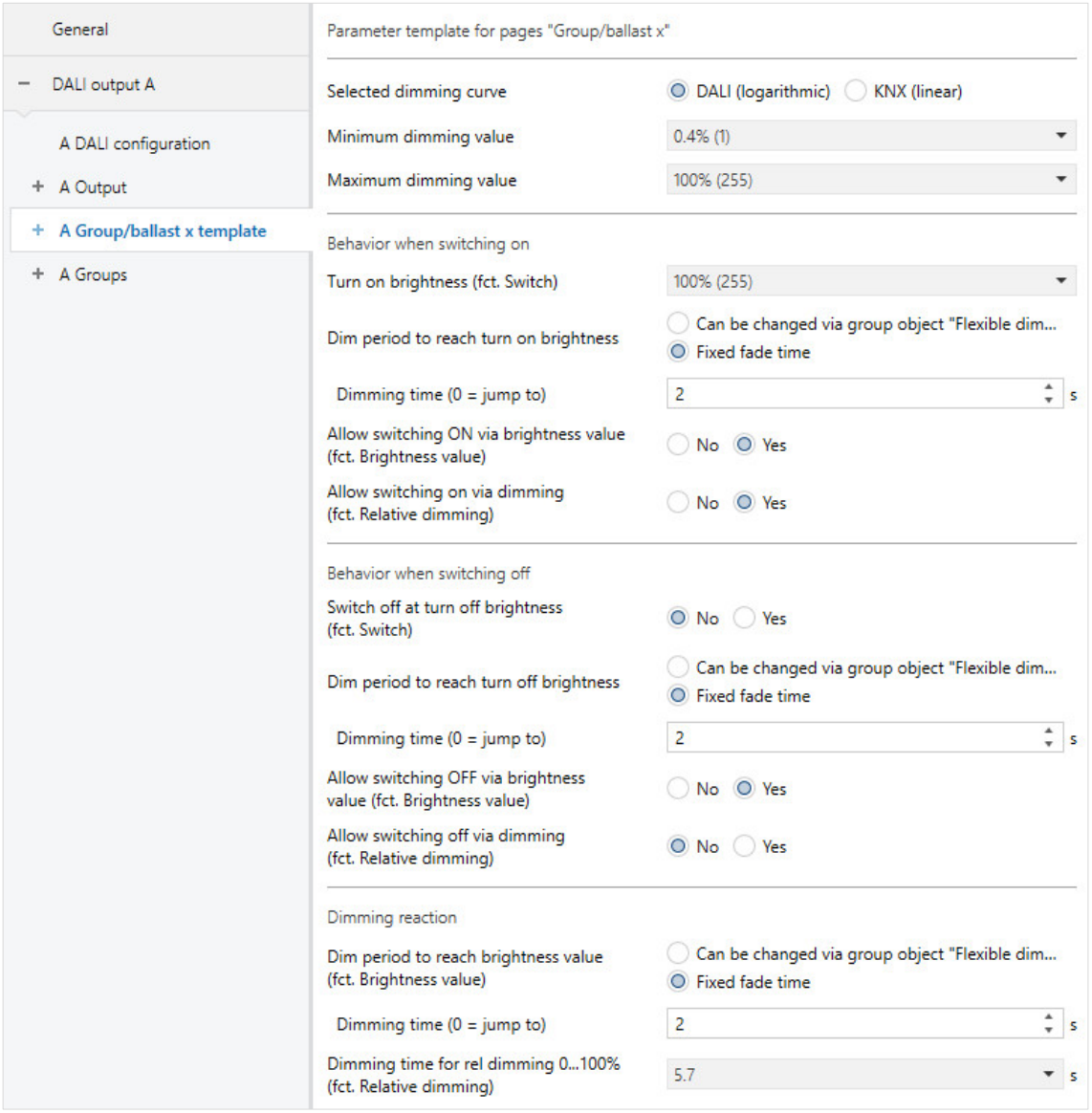
Basic settings such as the dimming range and switching and dimming reaction of the DALI output or a group or ballast are made in this parameter window.

The *Group/ballast x template* parameter tab provides access to template parameter windows that can relate to any group/ballast on the DALI output. Whether they relate to the parametrization of a group or ballast in the template window or in an individual parameter window is selected when first parametrizing the groups/ballasts.

The template windows have a major advantage in that the settings made here relate to all groups/ballasts, so each group/ballast on the DALI output reacts in the same way.

Using the template windows also considerably reduces the amount of parametrization work involved and provides a clearer overview. As a parameter change in the template window affects every group/ballast, the programmer needs to change only one parameter rather than up to 16 group and 64 ballast parameters. For example, if the maximum brightness value for the system needs to be limited to 90%, making this setting in the template window applies it to all groups and ballasts.

The template parameter windows are illustrated and described below. They are the same as the individual parameter windows except for the fact that they relate to all groups and ballasts while the individual windows relate only to a particular group or specific ballast.



Note

References to a central or broadcast telegram below mean a telegram received via one of the *Output x* group objects. The group object's function relates to the whole DALI output and all its connected DALI devices and groups.

References to a group telegram below mean a telegram received via one of the *Output x – group y* group objects. The group object's function relates to a DALI group.

References to a ballast or a DALI device below mean a telegram received via one of the *Output x – ballast y* group objects. The group object's function relates to a single DALI device or ballast.

Note

If an individual group/ballast telegram is in progress when a central telegram comes in, the former is immediately interrupted and the central telegram for the DALI output is executed. Ballasts or groups that are blocked or under forced operation are not controlled as part of the central telegram, as these two functions have a higher priority. Note that broadcast commands cannot be used under these circumstances, which can cause brightness differences on the output.

If all groups/ballasts are controlled with a central telegram and a telegram for a group/ballast then comes in, this group/ballast is immediately controlled by the group/individual command and no longer follows the central command.

The last incoming telegram takes priority and is executed.

Selected dimming curve

Options: DALI (logarithmic)
KNX (linear)

The dimming curve is the basis for the logarithmic DALI characteristic. You can define whether the KNX setpoint and KNX status value refer to the DALI control value (x-axis) or luminous flux (y-axis).

- *DALI:* The KNX value refers to the DALI control value (logarithmic).
- *KNX:* The KNX value refers to the luminous flux (linear).

You will find more information on dimming curves in 12.6 DALI dimming curves.

Minimum dimming value

Options: 100% (255)
99% (252)
…
0.4% (1)

This parameter defines the minimum brightness value that the group/ballast assumes. This value is stored in the DALI devices and thus applies for all functions. If the defined minimum dimming value exceeds the maximum brightness value, the DG/S sets it at the maximum.

If the *Burn-in lamps* function is activated, the group/ballast is operated at 0% (OFF) or 100% brightness, regardless of the minimum dimming/maximum brightness setting.

If a brightness value below the defined minimum dimming value is received via one of the *Brightness value* group objects, the minimum value is adopted.

The minimum dimming value also applies with dimming and with the *Staircase lighting, Slave* and *Scenes* functions.

The DALI output itself has no separate minimum dimming value. The minimum dimming values defined for the group/ballast apply.

Note

When setting brightness values in the individual gateway functions, make sure that they are actually feasible in relation to the basic settings made here for minimum dimming/maximum brightness value. The same applies to the forced operation brightness values and to the parameters set in the *Fault* parameter window, such as Power-On Level.

Note

The DALI output itself has no separate minimum dimming value. The minimum dimming/maximum brightness values defined for the group/ballast remain applicable even on receipt of a central telegram via the Output x group objects.

Example: Group 1 is assigned a minimal dimming value of 20%, Group 2 10% and a ballast, 15%. If the DG/S receives a central telegram *Set brightness value at 5%* in this configuration, these group and ballast settings will not change.

Maximum dimming value

Options: <u>100% (255)</u>
99% (252)
…
1% (3)

This parameter defines the maximum brightness value that the group/ballast can assume. This value is stored in the DALI devices and thus applies for all functions. If a maximum brightness value is set that is below the minimum dimming value, the DG/S sets it to the minimum.

If the *Burn-in lamps* function is activated, the group, ballast or output is operated at 0% (OFF) or 100% brightness, regardless of the minimum dimming/maximum brightness setting.

If a brightness value above the defined maximum brightness value is received via one of the *Brightness value* group objects, the maximum value is adopted.

The same applies with dimming and with the *Staircase lighting*, *Slave* and *Scenes* functions.

Note

The DALI output itself has no separate maximum brightness value. The minimum dimming/maximum brightness values defined for the group/ballast remain applicable even on receipt of a central telegram via the Output x group objects.

Example: Group 1 is assigned a maximum dimming value of 80%, Group 2 90% and a ballast, 85%. If the DG/S receives a central telegram *Set brightness value at 100%* in this configuration, these group and ballast settings will not change.

Turn on brightness (fct. Switch)

Options: Previous value
<u>100% (255)</u>
99% (252)
…
1% (3)

This parameter defines the brightness value used to switch on the ballast, group or DALI output when an ON telegram is received.

Values set outside the thresholds (*maximum*/*minimum dimming value*) are automatically adjusted to the maximum or minimum.

If the ballast, group or DALI output receives an ON telegram while at a brightness value other than the turn on brightness – e.g. due to dimming – it adopts the turn on brightness.

- *Previous value:* The ballast, group or output switches on at the brightness value it was switched off at by the *Switch* group object.

Note

The previous brightness value is saved with every OFF telegram unless the ballast, group or output is already switched off. If this is the case, the OFF state is not saved as the last brightness value on receipt of another OFF telegram.

If a new OFF telegram is received during dimming down, the current brightness value is saved as the last brightness value.

In the event of a KNX voltage failure, download or restart, the previous brightness value is lost, and set to a turn on brightness of 100%.

Separate previous brightness values are saved for the ballast/group and the output.
This means that if the output is dimmed or switched on/off by a central telegram, the previous brightness value for the ballast/group remains unchanged.

Dim period to reach turn on brightness

Options: Can be changed via *group object* "Flexible dimming/fade time"
Fixed fade time

This group object changes the dimming time via KNX.

- *Can be changed via group object "Flexible dimming/fade time":* The dimming time can be changed via KNX with the Flexible dimming/fade time group object.
- *Fixed fade time:* Dimming time is permanently set and cannot be changed via KNX.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *A Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

—

Dependent parameter
Selection of *Fixed fade time* option:

Dimming time (0 = jump to)
Options: 0…2…65,535 s

This parameter can be used to set a soft start by defining how long the output takes to dim up from 0% brightness to the turn on brightness when it receives an ON telegram. This time period refers to ON telegrams only (1 bit).

- *0 s:* jump to: The output switches ON immediately (DALI ON command).
- *1…65,535 s:* During this time, the output is dimmed from 0% brightness to the turn on brightness.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Note – dependency
Selection of *Can be changed via group object "Flexible dimming/fade time":*

Enable group object on "Output Functions" page

Allow switching ON via brightness value (fct. Brightness value)

Options: No
Yes

This parameter defines the ballast, group or output's behavior when switching on with a brightness value set via the *Brightness value* group object.

- *No:* Switching on using the Brightness telegram is not allowed. The ballast, group or output must be switched on in order for a brightness value to be set.
- *Yes*: Switching on using the Brightness telegram is allowed.

Allow switching on via dimming (fct. Relative dimming)

Options: No
Yes

This parameter defines the ballast, group or output's behavior when switching on with dimming via the *Relative dimming* group object.

- *No:* Switching on using the Dim telegram is not allowed. The ballast, group or output must be switched on in order to be dimmed.
- *Yes:* Switching on using the Dim telegram is allowed.

Switch off at turn off brightness (fct. Switch)

Options: No
Yes

This parameter defines whether receipt of an OFF telegram turns off the lighting immediately or whether it must first reach a turn off brightness.

Note

The *Turn off brightness* function can be used, for example, to prevent the lighting from switching off completely at night in retirement homes or hospitals, so that there is always a basic brightness – the turn off brightness.

- *No:* The lighting switches off at the parametrized dimming time (OFF, brightness value 0%).
- *Yes:* A parametrizable brightness value, the turn off brightness, triggers switch-off, while a value of 0 does not.

—

Dependent parameter
Selection of *Yes* option:

Turn off brightness

Options: 100% (255)
99% (252)
…
30% (77)
…
0.8% (2)
0.4% (1)

This parameter defines the brightness value for the Turn off brightness function, i.e. the brightness at which the ballast, group or output switches off when it receives an OFF telegram.

Values set outside the thresholds (maximum/minimum dimming value) are automatically adjusted to the maximum or minimum.

—

Dependent parameter
Selection of *Yes* option:

Activate Turn off brightness via group object "Fct. Activate Turn off brightness" (enable in "Output functions")

Options: No
Yes

Turn off brightness can be activated/deactivated via KNX using the *Fct. Activate Turn off brightness* group object. This means a timer can be used, for example, to set the lighting to a parametrizable turn off brightness at night instead of switching it off.

- *No:* The ballast, group or output does not evaluate the *Fct. Activate Turn off brightness* group object. The system always switches off at the parametrized turn off brightness.
- *Yes:* The ballast, group or output evaluates the *Fct. Activate Turn off brightness* group object. If the gateway receives a telegram via this group object on the output, the system reacts as follows:

  1: The turn off brightness is set to the parametrized brightness value. The Turn off brightness function is activated. An OFF command will then apply this brightness value instead of OFF, 0%.

  0: The turn off brightness is set to 0. The Turn off brightness function is not activated and an OFF command switches the system off via the *Switch* group object, applying a brightness value of OFF, 0%.

For more information, see Fct. Activate Turn off brightness/Status group object.

Note

The *Turn off brightness* function can be applied to the whole DALI output, all ballasts and all groups. The function must first be enabled in the *X Output x functions* parameter window along with the *Fct. Activate Turn off brightness* group object.
To define whether a ballast or a group reacts to the output's *Turn off brightness* function, make the settings in the relevant *Ballast x or Group x* parameter window.

Dim period to reach turn off brightness

Options: Can be changed via *group object* "Flexible dimming/fade time"
Fixed fade time

This group object changes the dimming time via KNX.

- *Can be changed via group object "Flexible dimming/fade time":* The dimming time can be changed via KNX with the Flexible dimming/fade time group object.
- *Fixed fade time:* Dimming time is permanently set and cannot be changed via KNX.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *A Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

—

Dependent parameter
Selection of *Fixed fade time* option:

Dimming time (0 = jump to)

Options: 0…2…65,535 s

This parameter can be used to set a soft stop by defining how long the group/ballast takes to switch off from the current brightness when it receives an OFF telegram. The dimming time still applies even if the Turn off brightness function is parametrized.

- *0 s:* jump to: The group/ballast switches immediately, either OFF or to the turn off value.
- *1…65,535 s:* During this time, the output is dimmed from 0% brightness to the turn on brightness.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Note – dependency
Selection of *Can be changed via group object "Flexible dimming/fade time":*

Enable group object on "Output Functions" page

Allow switching OFF via brightness value (fct. Brightness value)

Options: No
Yes

This parameter defines the group/ballast's behavior when switching off with a brightness value set via the *Brightness value* group object.

- *No:* Switch off using the Brightness telegram is not allowed. The group/ballast must be switched off using the *Switch* group object, or if allowed, dimmed down.
- *Yes:* Switch off using the Brightness telegram is allowed.

Allow switching off via dimming (fct. Relative dimming)

Options: No
Yes

This parameter defines the behavior of the group/ballast when switching off during dimming.

- *No:* Switch off using the Dim telegram is not allowed. The group/ballast dims to the minimum dimming value and stops there. It must be switched off using the *Switch* group object, or if allowed, via the *Brightness value* group object.
- *Yes:* Switch off using the Dim telegram is allowed.

Dim period to reach brightness value (fct. Brightness value)

Options: Can be changed via *group object* "Flexible dimming/fade time"
Fixed fade time

This group object changes the dimming time via KNX. The *Dim period to reach brightness value* is the time required to transition from the current brightness value to the new one.

- *Can be changed via group object "Flexible dimming/fade time":* The dimming time can be changed via KNX with the *Flexible dimming/fade time* group object.
- *Fixed fade time:* Dimming time is permanently set and cannot be changed via KNX.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *A Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

—

Dependent parameter
Selection of *Fixed fade time* option:

Dimming time (0 = jump to)
Options: 0…2…65,535 s

This parameter defines how long it takes to dim up to the set brightness value. This time relates only to the output's Brightness value telegram (8-bit).

- *0 s:* jump to: The output immediately switches to the brightness value.
- *1…65,535 s:* During this time, the output is dimmed to the brightness value.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Note – dependency
Selection of *Can be changed via group object "Flexible dimming/fade time":*

Enable group object on "Output Functions" page

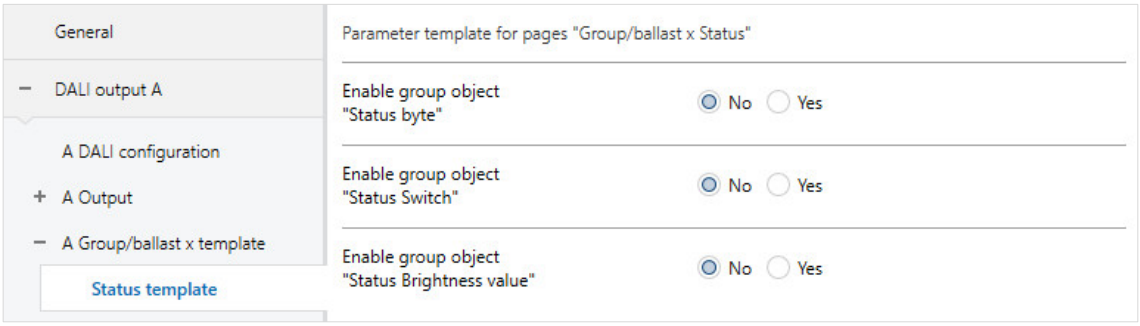
Dimming time for rel dimming 0...100%
(fct. Relative dimming)
Options: 0.7 s
1 s
…
5.7 s
…
64.0 s

This parameter defines the time in which a dimming process goes from 0...100%. This dimming time affects only dimming actions received by the *Relative dimming* group object.

The dimming times correspond to the DALI fade times stored in the ballast.

7.3.3.1 (Group/ballast x) Status template parameter window

This parameter window is a template for all ballasts or groups. If required, each ballast and group can also be individually parametrized. In this case, the parameter windows are the same as the template window but the parameter settings are applied to the individual ballast or group.



The status response of the individual ballast and group can be set in the respective ballast/group in the *Group x status* and *Ballast x status* parameter windows. The ballast/group template window does not apply to the output.

Note

If a ballast stops signaling on the DALI or has a lamp fault, its switch status changes to *OFF* and its brightness value status to *0*. This is also taken into account when the system calculates the status values for the DALI output.

Enable group object "Status byte"

Options: No
Yes

All ballast or group status messages can be requested via this group object provided that they have been set to *After change or on request* or *On request*.

- *No:* The group object is not enabled.
- *Yes:* The *Status byte* group object is enabled. This group object displays specific group/ballast statuses, which can be helpful for fault diagnostics, for example. For information on which statuses are displayed, please see the description of the *Status byte* group object.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group object "Status Switch"

Options: No
Yes

- *No:* The status of the switch state is not actively sent on KNX.
- *Yes:* The *Status Switch* group object is enabled. This group object sends a 1-bit telegram on KNX, signaling the current switch status.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable group object "Status Brightness value"

Options: No
Yes

This parameter defines how the current status of the group/ballast brightness value is sent on KNX.

- *No:* The brightness value is not actively sent on KNX.
- *Yes:* The *Status Brightness value* group object is enabled.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

—

Dependent parameter
Selection of *Yes* option:

Send interim values on transfers (e.g. Dim up, scene transfer)

Options: No
Yes

This parameter defines whether the brightness value status is sent only at the end of the brightness value transition or whether interim values are sent.

- *No:* The brightness status is sent on KNX once the final brightness value has been reached.
- *Yes:* The brightness value status is also sent during a brightness value transition.

—

Dependent parameter
Selection of *Yes* option:

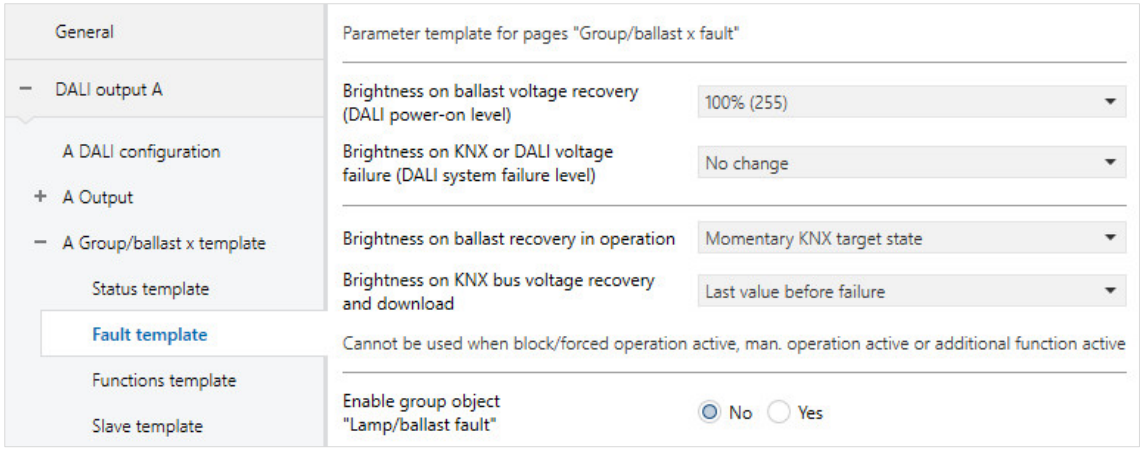
Send interval

Options: 0…2…65,535 s

This parameter defines how often the brightness value status is sent during a brightness value transition (e.g. dimming up, scene transition).

7.3.3.2 (Group/ballast x) Fault template parameter window

Settings for the reaction of the ballast or group to KNX/DALI voltage or gateway supply voltage failure and recovery are made in this parameter window.



Note

The minimum dimming value and maximum brightness value (dimming thresholds) set for the DALI devices in the *Ballast x* and *Group x* parameter windows apply as basic settings for the ballast. Certain of these thresholds are stored in the ballast and also apply to the setting in the *Fault* parameter window.

Brightness on ballast voltage recovery (DALI Power-On Level)

Options: Current KNX value
100% (255)
99% (252)
…
0% (OFF)

This parameter defines the reaction of a ballast, or all the ballasts in a group, on ballast supply voltage recovery. A storage location is provided in the ballast for this purpose. The brightness value (DALI Power-On Level) that the ballast uses to switch on the lamp when the ballast supply voltage recovers is stored in this location.
The brightness value of the ballast is factory set at the maximum brightness (100%). This has the advantage that without any DALI programming or commissioning requirement, the ballast is switched on and off normally via its ballast supply voltage. This can be especially helpful during the commissioning phase. If no DALI commissioning has been performed, the lighting can be switched on and off via the ballast supply voltage using a normal circuit-breaker.

In "normal" mode, this reaction may not be desirable: if there is a ballast supply voltage failure and recovery, all the ballasts switch on at maximum brightness. This can lead to increased inrush currents and, in the worst case, can cause a circuit-breaker to trip. Moreover, the entire building is fully illuminated and must be switched off manually.

So that users can override the factory-set behavior when switching on after the ballast supply voltage recovers, this parameter can be used to set any brightness value between 0% (OFF) and 100% (maximum brightness). It can also be set to restore the last brightness before the voltage failure.

- *Current KNX value:* The DALI device (ballast) is switched on using the last (previous) set brightness value used before ballast voltage failure. This function must be supported by the DALI devices. Since the end of 2009, this property has been defined in the standard for DALI devices. Please contact the ballast manufacturer in case of doubt. The DALI gateway writes the "MASK" command to the ballast for the DALI Power-On Level.
- *Maximum brightness value (100%):* The ballast/group ballasts switch on at or dim to the maximum brightness value.
- *Min. brightness value (0.4%):* The ballast/group ballasts switch on at or dim to the minimum brightness value.
- *OFF:* The ballast/group ballasts switch off.

Note

This parameter changes the factory setting of the ballast.

Brightness on KNX or DALI voltage failure (DALI System Failure Level)

Options: No change
100% (255)
99% (252)
…
0% (OFF)

This parameter defines how the ballast or group ballasts react if the gateway cannot communicate via KNX due to a KNX voltage failure, or if there is a DALI voltage failure (e.g. a DALI short circuit or a gateway supply voltage failure).

- *No change:* The brightness of the ballast/group ballasts does not change. DALI devices that are switched off remain off. The time functions, such as *Staircase lighting and Burn-in*, are not continued.
- *Maximum brightness value (100%):* The ballast/group ballasts switch on at or dim to the maximum brightness value.
- *Min. brightness value (0.4%):* The ballast/group ballasts switch on at or dim to the minimum brightness value.
- *OFF:* The ballast/group ballasts switch off.

Note

The factory default setting of the ballast is changed with this parameter (system failure level).

Note

Reaction between (ballast) Power-on and absent DALI voltage (interface failure/system failure)

According to the DALI standard, no exact priority has been defined between these two functions. The reaction depends on when the ballast is ready to receive again and when it detects that there is no DALI voltage. Both depend on the electronics and firmware of the ballast.

In most cases, the following reaction is expected:

After the ballast supply voltage is applied, the Power-On Level is started by the ballast. However, a few hundred ms later, the ballast will detect that there is no DALI voltage. This in turn triggers the system fault *Level* (no DALI voltage). Therefore, visually, the user will detect only the system fault (the parametrized reaction on a DALI voltage failure).

Brightness on ballast recovery in operation

Options: Momentary KNX target state
No change
100% (255)
99% (252)
…
0% (OFF)

This parameter defines how a failed ballast reacts if it has already been detected by the gateway and does not respond (has failed) and is detected by the gateway again.

- *Momentary KNX target state:* The ballast adopts the brightness value it would have adopted on receiving a KNX telegram had it not failed.
- *No change:* The ballast does not change its current brightness value after recovery.
- *Maximum brightness value (100%):* After recovery, the ballast switches on at or is dimmed to the maximum brightness value.
- *Min. brightness value (0.4%):* After recovery, the ballast switches on at or is dimmed to the minimum brightness value.
- *OFF (0%):* The ballast switches off after recovery.

Note

The minimum dimming/maximum brightness values (dimming thresholds) still remain valid.

The *Scene, Staircase lighting, Block and Forced operation* functions as well as dimming processes are interrupted. The state of the timer functions after a download or after KNX bus voltage recovery must be set separately in the appropriate timer function parameter window.

The supply voltage applied to DALI equipment, e.g. ballasts, is a prerequisite for the equipment to respond correctly.

Note

Interaction between Power-On and DALI voltage recovery (interface failure)

After the supply voltage is restored to the DALI ballast, its Power-On Level is set. This brightness value is stored in the ballast and is set by the DALI device (ballast) once its supply voltage recovers.

Simultaneously, the gateway starts to receive responses from the DALI device (ballast) again on the DALI. The *Brightness on ballast recovery in operation* parameter takes effect at this point, setting the brightness value parametrized here.

If one setting has a higher priority than the other, the other must be set to *No change*.

Brightness on KNX bus voltage recovery and download

Options: Last value before failure
No change
100% (255)
99% (252)
…
0% (OFF)

This parameter defines how the ballast/group ballasts react after a download, on KNX bus voltage recovery, or after light controller supply voltage recovery.

- *Last value before failure:* The ballast/group is restored to its pre-failure state. To be reinstated after KNX bus voltage recovery the brightness value must have been set for at least two seconds before a KNX voltage failure or a download.
- *No change:* The brightness of the ballast/group does not change. Ballasts or groups that are switched off remain off.
- *Maximum brightness value (100%):* The ballast/group ballasts switch on at or dim to the maximum brightness value.
- *Min. brightness value (0.4%):* The ballast/group switches on at or dims to the minimum brightness value.
- *OFF (0%):* The ballast/group switches off.

Note

The minimum dimming/maximum brightness values (dimming thresholds) still remain valid. If the set brightness values are outside the dimming thresholds, the threshold value is adopted.

The *Scene, Staircase lighting, Block* and *Forced operation* functions as well as dimming processes are interrupted. The state of the functions after a download or after KNX bus voltage recovery must be set separately in the appropriate function parameter window.

For the correct response to trigger, the DALI equipment must have a voltage applied and must be operated according to the standard.

Enable group object "Lamp/ballast fault"

Options: No
Yes

This group object indicates a fault in the ballast or group. The fault type (lamp or ballast) is parametrizable.

- *No:* The group object is not enabled.
- *Yes:* The group object is enabled.

The next parameter is used to select the fault type that the *Fault* group object will indicate

—

Dependent parameter
Selection of *Yes* option:

Content of group object

Options: Lamp fault
Ballast fault
Lamp/ballast fault

This parameter defines which fault is provided on the *Fault* group object.

- *Lamp fault:* The *Fault* group object sends information on KNX indicating whether the ballast/a group ballast has a lamp fault.
- *Ballast fault:* The *Fault* group object sends information on KNX indicating whether the ballast/a group ballast has a ballast fault.
- *Lamp or ballast fault:* The *Fault* group object sends information on KNX indicating whether the ballast/a group ballast has a lamp or ballast fault.

Note

To detect a ballast fault correctly the gateway needs to monitor all DALI devices. Monitoring can be triggered either via the *Monitor DALI addresses* group object or via the commissioning tool (i-bus® Tool). There is no automatic detection, e.g. after KNX bus voltage recovery or gateway supply voltage recovery.

Activation should be carried out straight after commissioning or when adding or removing DALI devices.

The DALI devices must be properly installed and have a supply voltage.

At what point a ballast fault is detected depends on when the gateway polls the DALI devices. To set this time, use the *Pause between two DALI QUERY polls* parameter in the *Output X – X DALI configuration* parameter window.

—

Dependent parameter
Selection of *Yes* option:

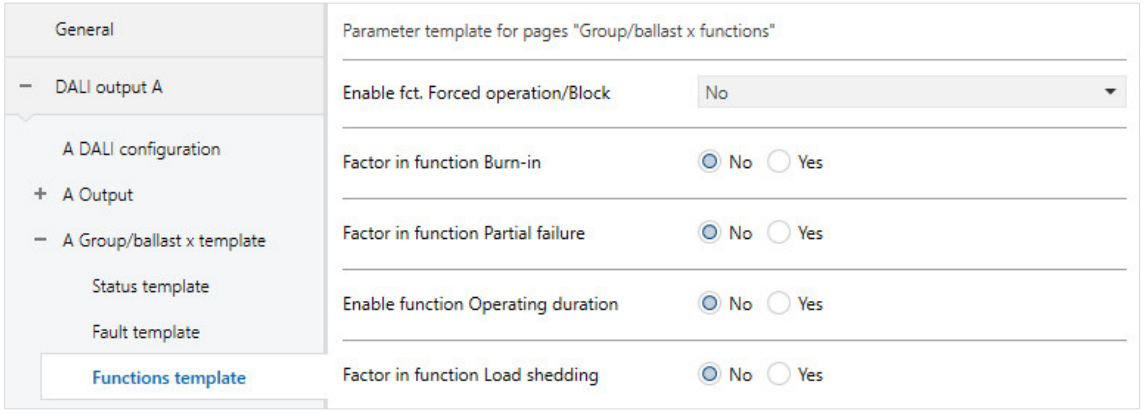
Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

7.3.3.3 (Group/ballast x) Functions template parameter window

Settings for ballast and DALI group functions are made in this window.



Enable fct. Forced operation/Block

Options: No
Forced operation, 1-bit
Forced operation, 2-bit
Block 1 bit

Note

Note that it is not possible to use broadcast commands when individual DALI devices or groups are subject to a forced operation or block, or are in active partial failure state, as these safety functions take priority over broadcast commands. In such cases, the devices and groups are individually controlled. Due to the relatively slow DALI telegram rate, there may be a visible difference between the brightness of the devices if more than 6 control commands are in process.

- *No:* The *Forced operation/Block* function for the ballast and group is not enabled.
- *Forced operation, 1-bit:* The *Forced operation, 1-bit* group object is enabled. If the gateway receives a value 1 telegram via this group object, the ballast/group is forcibly operated. When it receives a value 0 telegram the forced operation is lifted and the ballast/group re-enabled.
- *Forced operation, 2-bit:* The *Forced operation, 2-bit* group object is enabled. If the gateway receives a telegram with the value 2 or 3 via this group object, the ballast/group is forcibly operated.
  The reaction to another telegram value is described in the table below:

Value	Bit 1	Bit 0	State	Description
0	0	0	Any	If the *Forced operation* group object receives a telegram with the value 0 (binary 00) or 1 (binary 01), the group/ballast is enabled and can be actuated via different group objects.
1	0	1	Any	
2	1	0	Forced OFF	If the *Forced operation* group object receives a telegram with the value 2 (binary 10), the output of the group/ballast is forced OFF and remains blocked until Forced operation is again deactivated. Control via another group object is ignored as long as Forced operation is active. Telegrams are updated in the background and the end values are saved. When Forced operation is deactivated the brightness value, which is continuously updated in the background, is set.
3	1	1	Forced ON	If the *Forced operation* group object receives a telegram with the value 3 (binary 11), the output of the group/ballast is forced ON at the parametrized brightness value and remains blocked until Forced operation is again deactivated. Control via another group object is ignored as long as Forced operation is active. Telegrams are updated in the background and the end values are saved. When Forced operation is deactivated the brightness value, which is continuously updated in the background, is set.

The transition to forced operation is a jump at the DALI fade time of 0.7 s.

- *Block 1 bit*: The *Block* function for the ballast/group is enabled. The *Block* function is activated by a telegram with the value 1 and deactivated with the value 0. The ballast/group can be blocked using this group object so that it cannot be changed via the bus.

  The current brightness value of the ballast/group is frozen. Incoming telegrams are processed in the background. Dimming processes are not simulated in the background; with time sequences the end brightness value is immediately memorized. When the block is revoked, the value updated in the background is set.

  Blocking during a dimming process or scene operation interrupts the dimming process and freezes the current brightness value. Color changes and color functions are not interrupted. Blocking during the *Staircase lighting* or *Slave* function immediately blocks the ballast/group and freezes the brightness value. After re-enabling, the *Staircase lighting* function continues in standby.

  If Slave mode was active before the block, it will be re-established.

Forced operation and Block have a higher priority than manual operation.

During DALI commissioning, the Block and Forced operation functions are deactivated if the i-bus® Tool is in configuration mode.

—

Dependent parameter
Selection of *Forced operation, 1-bit* or *Forced operation, 2-bit:*

Brightness value when switched on by force

Options: <u>100% (255)</u>
99% (252)
…
0.4% (1)
0% (OFF)

This parameter defines the brightness value used to switch on the ballast or group during activated forced operation. Forced switch off of the or the group/ballast is also parametrizable.

Note

Note that it is not possible to use broadcast commands when individual DALI devices or groups are subject to a forced operation or block, or are in active partial failure state, as these safety functions take priority over broadcast commands. In such cases, the devices and groups are individually controlled. Due to the relatively slow DALI telegram rate, there may be a visible difference between the brightness of the devices if more than 6 control commands are in process.

How does forced operation work?

The active Forced operation, irrespective of whether it is 1-bit or 2-bit control, has an influence on the overall reaction of the ballast or group. When Forced operation is called, the brightness value parametrized in ETS is set. Any Dim telegrams or slave or staircase lighting functions etc. in progress are interrupted.

Brightness values received during Forced operation are not set, although they are processed in the background and saved. Switch telegrams and slave values are also saved in the background. Relative dimming telegrams and dimming ramps are ignored. With time sequences (e.g. Staircase lighting or Scene), the end brightness value is immediately memorized. When the forced operation is revoked, the value updated in the background is set.

When Forced operation ends, the brightness value updated in the background is set. The ballast or group returns to the state it was in before forced operation. If an additional function was active, e.g. *Staircase lighting* or *Slave*, it will also be active after Forced operation. If the *Staircase lighting* function was activated before Forced operation, the *Staircase lighting* function goes into standby when Block/Forced operation is removed. If the *Slave* function was activated before Forced operation, the *Slave* function continues once forced operation is removed and responds to the master again.

—

Dependent parameter
Selection of *Forced operation, 1-bit* or *Forced operation, 2-bit:*

State after KNX bus voltage recovery

and download

Options: Inactive
Switch off by force
Switch on by force
State before KNX voltage failure

This parameter defines the Forced operation state after KNX bus voltage recovery.

- *Inactive:* The ballast/group is enabled after bus voltage recovery and is no longer subject to Forced operation.
  Any parametrized Staircase lighting functions will be active in standby if they were activated before Forced operation. A slave will start responding to the master again if it was activated before Forced operation.
- *Switch off by force:* The ballast or the group is forcibly operated and switched off. This option is available only with Forced operation, 2-bit.
- *Switch on by force*: The ballast/group is forcibly operated and switched on at the brightness parametrized in *Brightness value when switched on by force*.
- *State before KNX voltage failure:* The ballast or group is reset to the state it was in before the KNX voltage failure.

—

Dependent parameter
Selection of *Block 1 bit* option:

State after KNX bus voltage recovery

and download

Options: Not blocked
Blocked:
State before KNX voltage failure

This parameter defines the block state after KNX bus voltage recovery.

- *Not blocked:* The group/ballast is enabled after KNX bus voltage recovery and is no longer subject to the Block.
  Any parametrized *Staircase lighting* or *Slave* functions will be active if they were activated before the Block.
- *Blocked:* The group/ballast is blocked after KNX bus voltage recovery and retains the brightness value parametrized for this event.
- *State before KNX voltage failure:* The ballast or group is reset to the state it was in before the KNX voltage failure.

Factor in function Burn-in

Options: No
Yes

This parameter takes into consideration the Burn-in function for a ballast or group. The *Burn-in lamps/Status* group object activates this function on any ballast/group. The group object is enabled in the "X Output: Functions" parameter window.

Note

Note that it is not possible to use broadcast commands when individual DALI devices or groups are subject to a forced operation or block, or are in active partial failure state, as these safety functions take priority over broadcast commands. In such cases, the devices and groups are individually controlled. Due to the relatively slow DALI telegram rate, there may be a visible difference between the brightness of the devices if more than 6 control commands are in process.

- *No:* The *Burn-in* function is not taken into consideration.
- *Yes:* The *Burn-in* function for the ballast/group is taken into account. Burn-in is started with the *Burn-in lamps/Status* group object of the output or the i-bus® Tool (not download).

—

Dependent parameter
Selection of *Yes* option:

Burn-in time

Options: 1…100…255 h

This parameter defines the time period for the *Burn-in* function. Until this time has elapsed, the ballast/group can be operated only at 100% and OFF on the DALI output, i.e. at every set brightness value other than 0%, the lamp is switched on at 100% brightness.

Once the burn-in time has run or the Burn-in function is deactivated, e.g. if the *Burn-in lamps/Status* group object of the output receives a value 0 telegram, the lamp can be dimmed as usual.

The burn-in time is counted only if a DALI device is connected to the output, ready for operation with a supply voltage, and switched on.

The burn-in time function remains activated in the event of a KNX bus voltage failure. The time is not lost but stops counting during the failure.

With a gateway supply voltage failure, the remaining burn-in time is saved and reused after gateway supply voltage recovery. This also applies after an ETS download.

Reaction with activated *Burn-in* function

If the *Burn-in lamps/Status* group object of the output receives a value 1 telegram, the gateway activates the *Burn-in* function and sets the programmed burn-in time. The function can also be activated for each ballast or group via the i-bus® Tool.

During the *Burn-in* function, the lamp can adopt only the state 0% (OFF) or 100% (ON). Every device has its own "burn-in counter", which decrements when the device is switched on. The counter has a counting interval of five minutes, i.e. if the lamp has been switched on for five minutes, the burn-in time is reduced by five minutes. As soon as a device has completed its burn-in time, it is enabled for normal dimming operation.

The internal burn-in counter has a timer with five-minute intervals and a maximum value of 255 hours.

Reaction on KNX bus voltage failure and gateway supply voltage failure

The elapsed burn-in time is retained and continues to count down after KNX bus voltage recovery and gateway supply voltage recovery.

Factor in function Partial failure

Options: No
Yes

Partial failure can be sent and received internally on the DALI output or externally via the *Activate partial failure/Status* group object. The relevant settings are made in the X Output x functions parameter window. Properties in the event of a partial failure are also set here. Partial failure is dependent on the number of lamp/ballast faults, on whether emergency lighting is activated (emergency lighting converter in emergency mode) and on DALI voltage faults.

- *No:* The *Reaction on partial failure* function is not taken into account for the ballast or group.
- *Yes:* The *Reaction on partial failure* function is taken into account for the ballast or group.

—

Dependent parameter
Selection of *Yes* option:

Brightness during partial failure

Options: 100% (255)
99% (252)
…
0.4% (1)
0% (OFF)

This parameter defines the brightness value that controls the ballast or group during partial failure.

Note

Note that it is not possible to use broadcast commands when individual DALI devices or groups are subject to a forced operation or block, or are in active partial failure state, as these safety functions take priority over broadcast commands. In such cases, the devices and groups are individually controlled. Due to the relatively slow DALI telegram rate, there may be a visible difference between the brightness of the devices if more than 6 control commands are in process.

Enable function Operating duration

Options: No
Yes

- *No:* The *Operating duration* function for the ballast/group is not enabled.
- *Yes:* The *Operating duration* function and the *Operating duration DPT xx.yyy* group object are enabled.

For more information, see 12.2.6, Operating duration

—

Dependent parameter
Selection of *Yes* option:

Group object data type

"Operating duration DPT xx.yyy"

Options: DPT 7.007 (2 bytes [h])
DPT 13.100 (4 bytes [s])
DPT 12.101 (4 bytes [h])

This parameter defines the data type of the *Operating duration DPT xx.yyy* group object of the ballast or group.

For more information, see 12.2.6, Operating duration

Note

The operating duration can be set with the *Reset operating duration addr.* group object.

—

Dependent parameter
Selection of *Yes* option:

Enable function "Operating duration alarm"

Options: No
Yes

- *No:* The *Operating duration alarm* function is not enabled.
- *Yes:* The *Operating duration alarm* function and the *Reset operating duration/Alarm* group object for the ballast/group are enabled. This makes the group object bidirectional.

—

Dependent parameter
Selection of *Yes* option:

Operating duration alarm threshold

Options: 10 … 10,000 … 65,535 h

This parameter defines the alarm threshold for the group or ballast.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

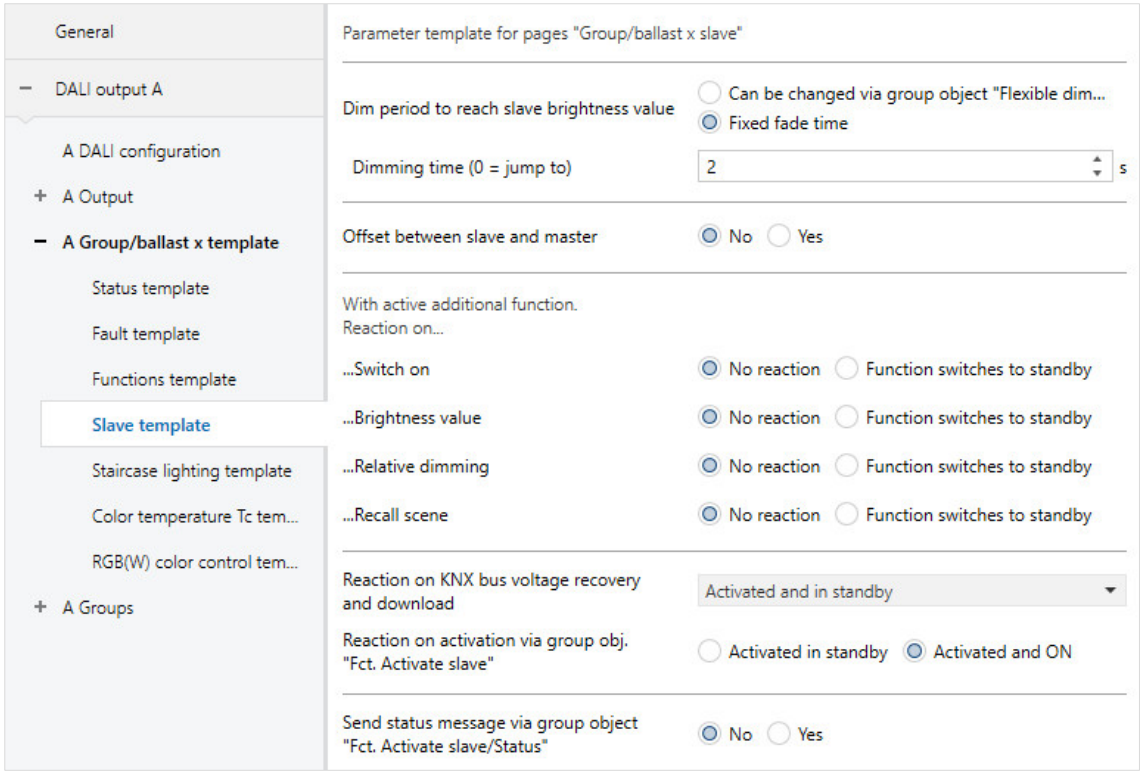
Factor in function Load shedding

Options: No
Yes

- *No:* The *Load shedding* function is not taken into consideration.
- *Yes:* The *Load shedding* function for the ballast/group is taken into consideration. When a load shedding stage is active the maximum brightness is limited.

7.3.3.4 (Group/ballast x) Slave template parameter window

The parameter window is enabled by selecting *Enable additional function*, *Slave* in the *X Groups* / *Group X* or *X ballasts* / *Ballast X* parameter windows.



When the *Slave* function is operational, the group/ballast follows the brightness value provided by a master via the *Slave brightness value* group object. Alternatively, the master can be a ballast or group connected to the same gateway output, in which case the slave brightness value can be sent direct to the slave internally.

Color temperature values received while Slave mode is active have no effect on the *Slave* function. The master will not transmit the color temperature values to the slave; they must be transmitted to it using the *Set color temperature* group object instead.

Reaction to Switch on, Dim, Brightness value, Relative dimming or Recall scene telegrams can be individually parametrized.

As the function and the parameter window for the group and the ballast are identical, only the group is referred to below. Group can be substituted with ballast.

Using the *Slave* function, each individual group on the gateway can be integrated in constant lighting control implemented, for example, by an ABB i-bus® light controller or KNX presence detector as a master.

The operating state of the slave after a download or KNX bus voltage recovery can be parametrized.

Note

If the gateway receives a central *Switch*, *Relative dimming* or *Brightness value* telegram via a group object for the DALI output while Slave mode is running, the telegram is executed. The slave goes to standby. To respond to the master again the group has to receive an ON telegram via the *Switch* group object or be reactivated by the *Fct. Activate slave* group object.

Note

The additional function *Slave* can adopt three operating states:

- **Additional function Slave is not active:**
  The additional function is deactivated if its *Fct. Activate slave* group object receives a value 0 telegram. In the deactivated state the group reacts like a normal group. The properties set in the *Group x* parameter window apply. In this state, an ON telegram does not start the additional function. The group switches to slave state only after a value 1 telegram is received on the *Fct. Activate slave* group object.
- **Additional function is active in standby:**
  The additional function is active but has been interrupted, e.g. by an OFF telegram. The group is in standby. An ON telegram (telegram on the *Switch* group object) retriggers the additional function and the slave starts responding to the *Slave brightness value* group object or internally to its master again. **Additional function running**:
  The *Slave* function receives its brightness value from the master. This can be direct, internally from a ballast or group on the output without a KNX connection, or via the *Slave brightness value* group object. The master is assigned in the *Group x Slave* parameter window using the *Source (slave is controlled via)* parameter.

Depending on individual parametrization, the active Slave function can be put on standby by a Switch-on, Brightness value, Relative dimming or Scene recall command.

For more information about dependencies with other functions, see 12.3, Function circuit diagrams and priorities.

Dim period to reach slave brightness value

Options: Can be changed via *group object*
"Flexible dimming/fade time"
Fixed fade time

This group object changes the dimming time via KNX.

- *Can be changed via group object "Flexible dimming/fade time":* The dimming time can be changed via KNX with the *Flexible dimming/fade time* group object.
- *Fixed fade time:* Dimming time is permanently set and cannot be changed via KNX.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the *Flexible dimming time* function you first need to enable the output's *Flexible dimming/fade time* group object in the *A Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

—

Dependent parameter
Selection of *Fixed fade time* option:

Dimming time (0 = jump to)
Options: 0…2…65,535 s

This parameter defines the transition between the current and slave brightness, by setting how long it takes for the slave to dim to slave brightness.

- *0 s:* jump to: The output immediately switches to the slave brightness value.
- *1…65,535 s:* During this time, the slave is dimmed from the current brightness value to the slave brightness value.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness.
If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Note – dependency
Selection of *Can be changed via group object "Flexible dimming/fade time":*

Enable group object on "Output Functions" page.

Offset between slave and master

Options: No
Yes

A brightness offset can be factored in between the master and slave.

- *No:* No brightness value offset is taken into account for the slave; it is controlled by the master brightness value.
- *Yes:* An offset from the specified master brightness is taken into account for the slave. The *Activate offset* group object is also enabled. This allows the offset to be switched off e.g. in darkness to restore uniform lighting levels in the room.

—

Dependent parameter
Selection of *Yes* option:

Offset between slave and master (% difference from master value)

Options: -99…-30…99

This parameter defines the offset that controls the slave relative to the master. The setting is expressed as a percentage difference from the master brightness value.

Evaluate group object "Activate slave offset"
Enable *group object* on page "Output functions"

Options: No
Yes

- *No:* The Slave offset function is always active.
- *Yes:* The Slave offset function can be activated/deactivated via the group object for the output. This means that, for example, in darkness the offset can be switched off so that the master and slave are the same brightness. The *Activate Slave offset* group object must be enabled in the X Output: Functions parameter window. The reaction of the slave offset on KNX recovery and after a download is also parametrized in this window.

Note

To use the *Slave offset* function you first need to enable the output's *Activate Slave offset* group object in the *A Output Functions* parameter window. You also need to select the function for group x. Group x is enabled in the *Group x Slave* parameter window for the group in question. The *Activate Slave offset* information affects all groups on the output. Depending on the parametrization, the group decides whether to respond to the *Activate Slave offset* group object.

With active additional function.
Reaction on...

...Switch on

Options: No reaction
Function switches to standby

When the *Slave* function is activated, this parameter defines the reaction to an ON telegram on the *Switch* group object.

- *No reaction:* An ON telegram on the *Switch* group object is ignored.
- *Function switches to standby:* An ON telegram on the *Switch* group object puts slave mode in standby. The group executes the Brightness value telegram via the *Brightness value* group object. The *Slave* function is latent and waits for reactivation via the *Fct. Activate slave* group object or via an ON telegram on the *Switch* group object.

Note

The reaction to an OFF telegram on the *Switch* group object cannot be parametrized.
An OFF telegram always interrupts the *Slave* function. The *Slave* function switches to standby mode, in which the brightness values on the *Slave brightness value* group object are ignored.
The *Slave* function is reactivated when an ON telegram is received on the *Switch* group object.
The reaction to a value 1 telegram received on the *Fct. Activate slave* group object can be parametrized.

...Brightness value

Options: No reaction
Function switches to standby

When the *Slave* function is activated, this parameter defines the reaction to a Brightness value telegram on the *Brightness value* group object.

- *No reaction:* A Brightness value telegram is ignored.
- *Function switches to standby:* A Brightness value telegram ends the *Slave* function; the group executes the telegram via the *Brightness value* group object. The *Slave* function goes into standby and waits for reactivation via the *Fct. Activate slave* group object or via an ON telegram on the *Switch* group object.

...Relative dimming

Options: No reaction
Function switches to standby

When the *Slave* function is activated, this parameter can be used to define the reaction to a Dim telegram on the *Relative dimming* group object.

- *No reaction:* A Dim telegram is ignored.
- *Function switches to standby*: A Dim telegram ends the *Slave* function; the group executes the telegram. The *Slave* function goes into standby and waits for reactivation via the *Fct. Activate slave* group object or via an ON telegram on the *Switch* group object.

...Recall scene

Options: No reaction
Function switches to standby

When the *Slave* function is activated, the parameter can be used to define the reaction to a scene recall.

- *No reaction:* A scene recall is ignored.
- *Function switches to standby*: A scene recall ends the *Slave* function; the group executes the recall. The *Slave* function goes into standby and waits for reactivation via the *Fct. Activate slave* group object or via an ON telegram on the *Switch* group object.

Reaction on KNX bus voltage recovery and download

Options: Deactivated
Activated and in standby
Activated and ON
Like before failure

This parameter defines the state of the *Slave* function after KNX bus voltage recovery or a download.

The *Slave* function can be parametrized with the following states:

- *Deactivated:* The *Slave* function is not activated after KNX bus voltage recovery. The group reacts like a normal group without an additional function.
- *Activated and in standby:* The *Slave* function is activated after a download or KNX bus voltage recovery and is in standby. The group can be reactivated by an ON telegram or via the *Fct. Activate Slave* group object.
- *Activated and ON:* After a download or KNX bus voltage recovery, the *Slave* function is activated, i.e. it immediately responds to the master.
- *Like before failure:* The *Slave* function retains the operating state (standby or not active) that it had before download or KNX bus voltage recovery.

Reaction on activation via *group obj.*
"Fct. Activate slave"

Options: Activated in standby
Activated and ON

This parameter defines the state of the *Slave* function after it has been activated by the *Fct. Activate slave* group object.

- *Activated in standby:* The *Slave* function switches to standby when activated via the *Fct. Activate slave* group object. In other words the slave does not respond direct to the master. The slave responds to the master if it receives an ON command via the *Switch* group object.
- *Activated and ON:* The *Slave* function switches on immediately when activated via the *Fct. Activate slave* group object. In other words the slave immediately responds to the master.

Send status message via *group object*
"Fct. Activate slave/Status"

Options: No
Yes

Linked group object: Fct. Activate slave/Status

- *No:* The status of the *Activate Slave* function is not transmitted on KNX.
- *Yes:* The *Fct. Activate Slave/Status* group object does not just activate or deactivate the *Slave* function. It also transmits the activation status on KNX.

—

Dependent parameter
Selection of *Yes* option:

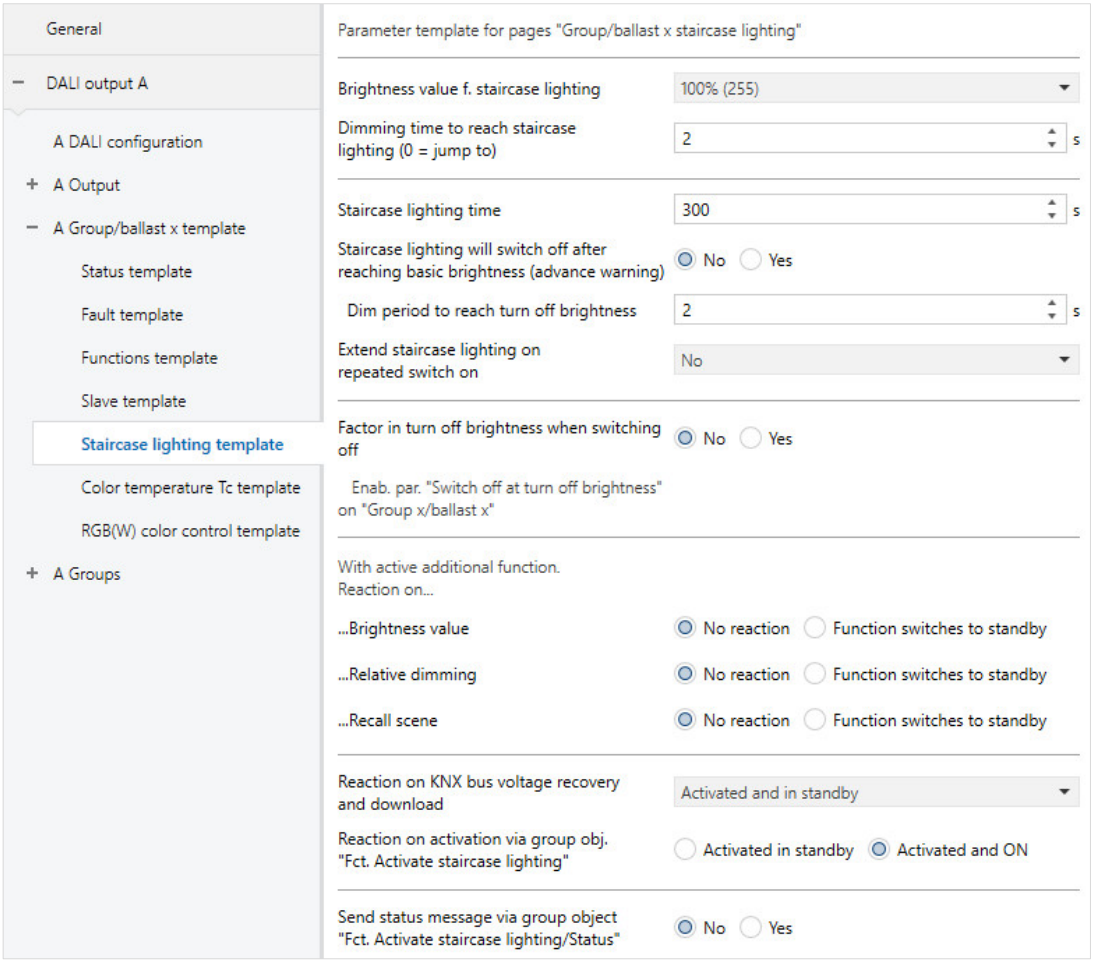
Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

7.3.3.5 (Group/ballast x) Staircase lighting template parameter window

The parameter window is enabled by selecting *Enable additional function*, *Staircase lighting* in the *X Groups or X Ballasts / Ballast X* parameter window.



The gateway has a *Staircase lighting* function that can trigger or stop individual groups/ballasts via individual Switch telegrams.

As the function and the parameter window for the group and the ballast are identical, only the group is referred to below. Group can be substituted with ballast.

Each group can be parametrized with its own individual staircase lighting sequence. This can have two switch-off levels – a basic brightness and a turn off brightness. The lighting can switch to or from the turn off brightness via KNX, e.g. depending on the time (day/night). This makes it possible to program a nighttime mode in retirement homes or hospitals so that the lighting does not switch off completely at night.

When staircase lighting mode is active, the effects of other KNX telegrams on the staircase lighting, such as brightness value, relative dimming or scene recall, are parametrizable. The reaction on KNX bus voltage recovery can be parametrized, as can staircase lighting triggering and extension (pumping up).

Note

If the gateway receives a central Switch, Relative dimming or Brightness value telegram via a group object for the DALI output while Staircase lighting mode is running, the telegram is executed. The staircase lighting goes to standby and its sequence is re-executed by the next ON command on the *Switch* group object.

The staircase lighting can also be completely deactivated via the *Fct. Activate Staircase lighting* group object or a forced operation.

Note

The additional function *Staircase lighting* can adopt three operating states:

- **Additional function Staircase lighting is not active:**
  The additional function is deactivated if its *Fct. Activate Staircase lighting* group object receives a value 0 telegram. In the deactivated state the group reacts like a normal group. The properties set in the *Group x* parameter window apply. In this state, an ON telegram does not start the additional function. The group switches to staircase lighting state only after the *Fct. Activate Staircase lighting* group object receives a value 1 telegram.
- **Additional function is active in standby:**
  The additional function is active but has been interrupted, e.g. by an OFF telegram. The group is in standby. The additional function is retriggered by an ON telegram (a telegram on the *Switch* group object), i.e. *Staircase lighting* is running.
- **Additional function active and running**:
  The *Staircase lighting* function is running and processes the timer program.
- **State on download and KNX recovery:**
  This can be programmed in the *Staircase lighting* parameter window for the group.

Depending on individual parametrization, the active *Staircase lighting* function can be put on standby by a Brightness value, Relative dimming or Scene retrieval command.

For more information about dependencies with other functions, see Function circuit diagrams and priorities.

Brightness value f. staircase lighting

Options: 100% (255)
99% (252)
…
0.4% (1)
0% (OFF)

This parameter defines brightness when the *Staircase lighting* function is running. This is the brightness value that is set after a dimming up phase and before dimming down (advance warning phase).

- *100% (255)…0% (OFF)*: Brightness value to which the group is set when the *Staircase lighting* function is running after dimming up.

Dimming time to reach staircase lighting (0 = jump to)

Options: 0…2…65,535 s

This parameter defines the transition to the staircase lighting brightness value via a dimming up phase.

- *0 s:* jump to: The group immediately switches on the staircase lighting brightness.
- *1…65,535 s:* During this time the staircase lighting is dimmed to its brightness value.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness.
If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

Staircase lighting time

Options: 0…300…65,535 s

This parameter sets the staircase lighting time, i.e. how long the group is controlled with the staircase lighting brightness. The dimming up and dimming down times are not included.

Staircase lighting will switch off after reaching basic brightness (advance warning)

Options: No
Yes

This parameter defines whether the staircase lighting switches off at the turn off brightness or via a basic brightness.

- *No:* The lighting switches to the turn off brightness over a parametrized dimming time. If there is no turn off brightness set for the group, the lighting switches off (0% brightness value).
- *Yes:* Before switching off the lighting dims to the basic brightness over a parametrized dimming time. Only at this point does it switch off at the turn off brightness. If no turn off brightness has been set, it switches OFF (0% brightness value).

—

Dependent parameter
Selection of *No* option:

Dim period to reach turn off brightness

Options: 0…2…65,535 s

This parameter can be used to set a soft stop for the staircase lighting by defining how long it takes for the group to set the staircase lighting to the turn off value. The turn off value must not be 0.

Note

The turn off brightness applies to the group, including the additional function. Therefore, it is parametrized in the *X Group/Group x* parameter window.
There is also an option to deactivate the turn off brightness for the whole output using the *Fct. Activate Turn off brightness* group object.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness.
If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Dependent parameter
Selection of *Yes* option:

Basic brightness f. stairc. lighting

Options:
100% (255)
99% (252)
…
30% (77)
…
0.4% (1)
0% (OFF)

This parameter defines the basic brightness at which the group switches off when the staircase lighting time has elapsed.

Values set outside the thresholds (maximum/minimum dimming value) are automatically adjusted to the maximum or minimum.

—

Dependent parameter
Selection of *Yes* option:

Dim period to reach basic brightness

Options: 0…2…65,535 s

This parameter is used to set a dimming transition to the basic brightness for the staircase lighting.

Note

When setting dimming times of less than 32 seconds, note that they will be mapped to the nearest DALI fade time. The conversion is as follows:

Switch-on value in 1 s	Fade time in s to IEC 62386-102
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness.
If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

—

Dependent parameter
Selection of *Yes* option:

Basic brightness hold time (0 = infinite)

Options: 0…10…65,535 s

This parameter defines how long the group is maintained at the basic staircase lighting brightness before it is finally switched off or set to the turn off brightness. This time can be indefinite.

- *1…65,535 s:* During this time, the group maintains the basic brightness before finally switching off.
- *0 s:* The hold time is indefinite, i.e. the group does not switch off and remains at the basic brightness.

Extend staircase lighting on repeated switch on

Options: No
Yes - retrigger staircase lighting
Yes - Extend staircase lighting time up to max 2 x (pumping up)
Yes - Extend staircase lighting time up to max 3 x (pumping up)
Yes - Extend staircase lighting time up to max 4 x (pumping up)
Yes - Extend staircase lighting time up to max 5 x (pumping up)

If the Switch group object receives a further ON telegram during the staircase lighting sequence (including dimming down/advance warning), the remaining staircase lighting time can be extended. This is possible by repeated operation of the pushbutton ("pumping up") until the maximum parametrized number of retriggering operations is reached. The maximum time can be set to 2, 3, 4 or 5 times the staircase lighting time.

Let's say the staircase lighting time has been extended to the maximum time by pumping up. If some of the time has already elapsed, the staircase lighting time can be extended to the maximum time again by pumping up.

However, the parametrized maximum time may not be exceeded.

- *No (not retriggerable)*: The receipt of an ON telegram is ignored. The staircase lighting time continues unmodified to completion.
- *Yes - restart staircase lighting time (retrigger)*: The staircase light time is reset with each new ON telegram and starts to count again. This option allows the process to be repeated as often as desired.
- *Yes - Extend staircase lighting time up to max 2/3/4/5x times (pumping up):* New ON telegrams extend the staircase lighting time by 2/3/4/5 times.

Factor in turn off brightness when switching off
Enab. par. "Switch off at turn off brightness" on "Group x"/"ballast x"

Options: No
Yes

Turn off brightness can be activated/deactivated via KNX using the *Fct. Activate Turn off brightness* group object. This means a timer can be used, for example, to set the lighting to a parametrizable turn off brightness at night instead of switching it off.

- *No:* The ballast, group or output does not evaluate the *Fct. Activate Turn off brightness* group object. The system always switches off at the parametrized turn off brightness.
- *Yes:* The ballast, group or output evaluates the *Fct. Activate Turn off brightness* group object. If the gateway receives a telegram via this group object on the output, the system reacts as follows:

  1: The turn off brightness is set to the parametrized brightness value. The *Turn off brightness* function is activated. An OFF command will then apply this brightness value instead of OFF, 0%.

  0: The *Turn off brightness* function is not activated and an OFF command switches the system off via the *Switch* group object, applying a brightness value of OFF, 0%.

For more information, see Fct. Activate Turn off brightness/Status group object.

Note

The *Turn off brightness* function can be applied to the whole DALI output, all ballasts and all groups. The function must first be enabled in the *X Output x functions* parameter window along with the *Fct. Activate Turn off brightness* group object.

To define whether a ballast or a group reacts to the output's *Turn off brightness* function, make the settings in the relevant *Ballast x or Group x* parameter window.

With active additional function.
Reaction on...

...Brightness value

Options: No reaction
Function switches to standby

When the *Staircase lighting* function is activated, this parameter defines the reaction to a Brightness value telegram on the *Brightness value* group object.

- *No reaction:* A Brightness value telegram is ignored.
- *Function switches to standby*: A Brightness value telegram ends the *Staircase lighting* function; the group executes the telegram via the *Brightness value* group object. The *Staircase lighting* function goes into standby and waits for reactivation via the *Fct.. Activate staircase lighting* group object or via an ON telegram on the *Switch* group object.

...Relative dimming

Options: No reaction
Function switches to standby

When the *Staircase lighting* function is activated, this parameter defines the reaction to a Dim telegram on the *Relative dimming* group object.

- *No reaction:* A Dim telegram is ignored.
- *Function switches to standby*: A Dim telegram ends the *Staircase lighting* function; the group executes the telegram. The *Staircase lighting* function goes into standby and waits for reactivation via the *Fct.. Activate staircase lighting* group object or via an ON telegram on the *Switch* group object.

...Recall scene

Options: No reaction
Function switches to standby

When the *Slave* function is activated, the parameter can be used to define the reaction to a scene recall.

- *No reaction:* A scene recall is ignored.
- *Function switches to standby*: A scene recall ends the *Staircase lighting* function; the group executes the recall. The *Staircase lighting* function goes into standby and waits for reactivation via the *Fct.. Activate staircase lighting* group object or via an ON telegram on the *Switch* group object.

Reaction on KNX bus voltage recovery and download

Options: Deactivated
Activated and in standby
Activated and ON
Like before failure

This parameter defines the state of the *Staircase lighting* function after KNX bus voltage recovery or a download.

The *Staircase lighting* function can be parametrized with the following states:

- *Deactivated:* The *Staircase lighting* function is not activated after KNX bus voltage recovery. The group reacts like a normal group without an additional function.
- *Activated and in standby*: The *Staircase lighting* function is activated after a download or KNX bus voltage recovery and is in standby. The group can be reactivated by an ON telegram or via the *Fct. Activate Staircase lighting* group object.
- *Activated and ON:* The *Staircase lighting* function is activated immediately after KNX bus voltage recovery or a download.
- *Like before failure:* The *Staircase lighting* function retains the operating state (standby or not active) that it had before the KNX bus failure or the download.

Reaction on activation via *group obj.* "Fct. Activate Staircase lighting"

Options: Activated and in standby
Activated and ON

This parameter defines the state of the *Staircase lighting* function after it has been activated by the *Fct. Activate Staircase lighting* group object.

- *Activated and in standby:* When activated by the *Fct. Activate Staircase lighting* group object, the *Staircase lighting* function goes into standby and can be started with an ON telegram.
- *Activated and ON:* The *Staircase lighting* function switches on immediately when activated via the *Fct. Activate Staircase lighting* group object.

Note

The ON function via the *Fct. Activate Staircase lighting* group object has no effect on the extension (pumping up) of the staircase lighting time.

Send status message via *group object* "Fct. Activate staircase lighting/Status"

Options: No
Yes

Linked group object: Fct. Activate stairc. light./Status

- *No:* The status of the *Activate staircase lighting* function is not sent on KNX.
- *Yes: Fct. Activate staircase lighting/Status* group object does not just activate or deactivate the *Staircase lighting* function. This group object also transmits the activation status on KNX.

—

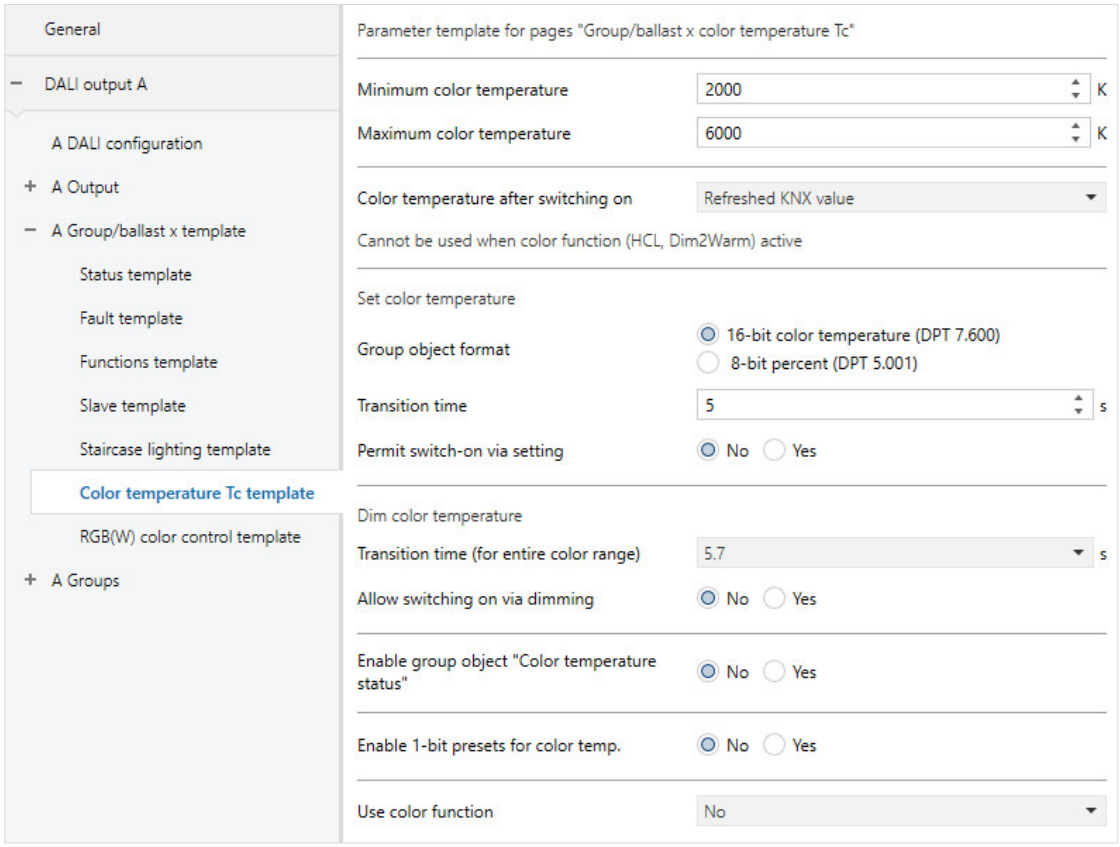
Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

7.3.3.6 (Group/ballast x) Color temperature Tc template parameter window



Minimum color temperature

Options: 1,000…2,000…20,000 K

This parameter sets the minimum color temperature of the group/ballast. If the set color temperature value is below the physical minimum color temperature limit, the setting defaults to this limit.

Maximum color temperature

Options: 1,000…6,000…20,000 K

This parameter sets the maximum color temperature of the group/ballast. If the set color temperature value is above the physical maximum color temperature limit, the setting defaults to this limit.

Note

The lower the color temperature, the warmer the light, and vice versa.

Color temperature after switching on

Options: Value on last switch-off
Refreshed KNX value
Fixed value

This parameter sets the color temperature after switching on.

- *Value on last switch-off:* The group/ballast switches on at the color temperature value the group/ballast was switched off at by the *Switch* group object.
- *Refreshed KNX value:* The color temperature value that was set before switching off is updated and set when switching on. Any incoming commands on KNX while the group/ballast is switched off are updated in the background.
- *Fixed value:* The group/ballast switches on at a fixed color temperature value.

Note

The parameter does not apply if HCL or Dim2Warm is active. In these cases, the group/ballast switches on at the corresponding color temperature (with HCL, the current updated color temperature; with Dim2Warm, the color temperature dependent on brightness).

—

Dependent parameter
Selection of *Fixed color temperature value*:

Switch-on value

Options: 1,000…3,000…20,000 K

This parameter sets the color temperature at which the group/ballast switches on. This can be a value between 1,000 and 20,000 kelvin.

Group object format

Options: 16-bit color temperature (DPT 7.600)
8-bit percent (DPT 5.001)

This parameter defines the format of the group object in order to set a color temperature. It can be set by either a 16-bit color temperature value or by an 8-bit percentage value.

- *16-bit color temperature (DPT 7.600):* This group object format sets the color temperature via a 16-bit value.
- 8-bit percent (DPT 5.001): This group object format sets the color temperature via an 8-bit percentage value. The minimum and maximum settings are 0% and 100%, respectively.

Transition time

Options: 0…5…65,535 s

This parameter defines how long it takes to reach the set color temperature.

Permit switch-on via setting

Options: No
Yes

This parameter switches on a group/ballast by setting a color temperature.

- *No:* The group/ballast cannot be switched on by setting a color temperature.
- *Yes:* The group/ballast can be switched on by setting a color temperature. Pay attention to the format of the group object.

Transition time (for entire color temperature range)

Options: 0.7 s
1.0 s
…
5.7 s
…
64.0 s

This parameter defines how long it takes to transition through the whole color temperature range, i.e. from the minimum color temperature to the maximum.

Allow switching on via dimming

Options: No
Yes

This parameter switches on a group/ballast by dimming a color temperature.

- *No:* The group/ballast cannot be switched on by dimming a color temperature.
- *Yes:* The group/ballast can be switched on by dimming a color temperature. The color temperature is dimmed according to the transition time (for the whole color temperature range).

Enable *group object*
"Color temperature status"

Options: No
Yes

This parameter defines whether the "Color temperature status" group object is enabled. The group object returns the current status of the color temperature in kelvin.

- *No:* The *Color temperature status* group object is not enabled.
- *Yes:* The *Color temperature status* group object is enabled.

Enable 1-bit presets for color temp.

Options: No
Yes

This parameter enables two presets that can recall predefined color temperatures using a 1-bit command.

- *No:* The 1-bit presets are not enabled.
- *Yes:* The 1-bit presets are enabled. The predefined temperatures for these are set with the parameters below.

—

Dependent parameter
Selection of *Yes* option:

Color temperature preset 1

Options: 1,000…3,000…20,000 K

This parameter sets the color temperature for Preset 1. This can be a value between 1,000 and 20,000 kelvin.

—

Dependent parameter
Selection of *Yes* option:

Color temperature preset 2

Options: 1,000…5,000…20,000 K

This parameter sets the color temperature for Preset 2. This can be a value between 1,000 and 20,000 kelvin.

—

Dependent parameter
Selection of *Yes* option:

Transition time

Options: 0…5…65,535 s

This parameter defines how long it takes to reach the set color temperature.

Use color function

Options: No
Dim2Warm
Central color temperature (HCL)

This parameter determines whether a color function is used. The options here are no color function, or one of the two additional color functions Dim2Warm or central color temperature (HCL).

- *No:* No color function is used.
- *Dim2Warm:* The *Dim2Warm* color function is used. All *Dim2Warm* settings are active.
- *Central color temperature (HCL):* The central color temperature (HCL) color function is used. All HCL settings are active.

—

Dependent parameter
Selection of *Dim2Warm* and *Central color temperature (HCL):*

State after KNX recovery and download

Options: Deactivated
Activated
Like before failure

This parameter defines the state of the Color function after KNX bus voltage recovery or a download.

The Color function can be parametrized with the following states:

- *Deactivated:* The Color function is deactivated after KNX bus voltage recovery. The group reacts like a normal group without an additional function.
- *Activated:* The Color function is activated after KNX bus voltage recovery or a download.
- *Like before failure:* The Color function retains the operating state (activated or deactivated) that it had before the KNX bus voltage recovery or download.

When color function is active.

Reaction on...

... Set color temperature

Options: Ignore
Deactivate function

This parameter describes how the group/ballast responds if a color temperature is set while a color function (Dim2Warm or HCL) is active.

- *Ignore:* The color temperature setting is ignored. The color function remains active.
- *Deactivate function:* Setting a color temperature deactivates the color function and the group/ballast adopts the set color temperature.

… Dim color temperature

Options: Ignore
Deactivate function

This parameter describes how the group/ballast responds if the color temperature is dimmed while a color function (Dim2Warm or HCL) is active.

- *Ignore:* The Color function remains active and the color temperature dimming is ignored.
- *Deactivate function:* Dimming a color temperature deactivates the color function and the group/ballast adopts the dimmed color temperature.

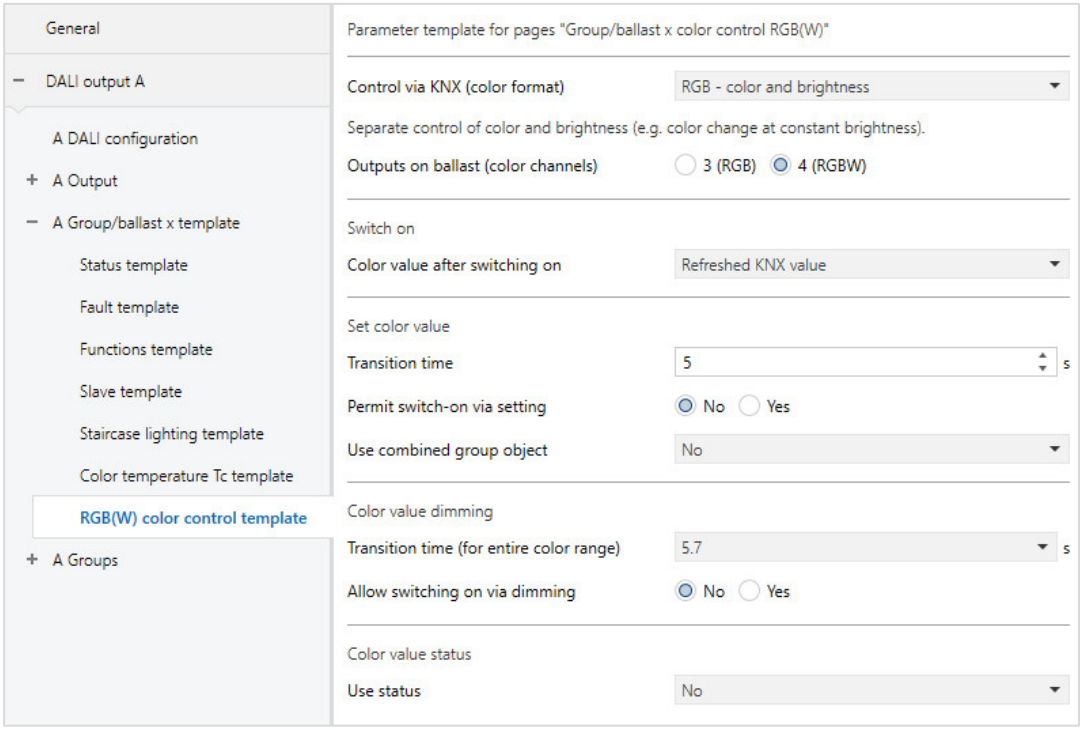
… Color change by scene

Options: Ignore
Deactivate function

This parameter defines how the group/ballast responds if a color is recalled by a scene retrieval while a color function (Dim2Warm or HCL) is active.

- *Ignore:* The Color function remains active and the scene retrieval color change is ignored.
- *Deactivate function:* The function is deactivated as soon as a color change is recalled by a scene retrieval. The group/ballast adopts the color temperature of the scene.

7.3.3.7 (Group/ballast x) RGB(W) color control template parameter window



Control via KNX (color format)

Options: RGB - only color, no brightness
RGB - color and brightness
HSV - hue, saturation and value

This parameter specifies the color format of the control via KNX.

- *RGB - only color, no brightness:* Direct control of color channels. The brightness is from the sum of the color components and cannot be separately changed. The *Relative dimming* and *Brightness value* group objects are not available. The following group objects are enabled:
  - *RGB(W) relative dimming red*
  - *RGB(W) relative dimming green*
  - *RGB(W) relative dimming blue*
  - *Set RGB(W) value red*
  - *Set RGB(W) value green*
  - *Set RGB(W) value blue*

Note

The group/ballast can be switched off by dimming the color channels. The "Allow switching off via dimming" parameter has no effect on this.

- *RGB - color and brightness:* Separate control of color and brightness. The *Relative dimming* and *Brightness value* group objects are available. The following group objects are enabled:
  - *RGB(W) relative dimming red*
  - *RGB(W) relative dimming green*
  - *RGB(W) relative dimming blue*
  - *Set RGB(W) value red*
  - *Set RGB(W) value green*
  - *Set RGB(W) value blue*
- *HSV - hue, saturation and value:* Separate control of hue (H), saturation (S) and value (V). The following group objects are enabled:
  - *HSV(W) relative dimming hue (H)*
  - *HSV(W) relative dimming saturation (S)*
  - *HSV(W) relative dimming brightness (V)*
  - *HSV(W) set value hue (H)*
  - *Set HSV(W) value saturation (S)*
  - *Set HSV(W) brightness value (V)*

Note

The behavior of the value (V) is defined by the brightness parameters in the *Group/ballast x* parameter window.

Note

When dimming (step ±100%) the hue (H), the colors are continuously dimmed from 0°...360° (see 12.2.1, HSV(W)). When they reach 360° the dimming process automatically restarts at 0° and continues.

Outputs on ballast (color channels)

Options: 3 (RGB)
4 (RGB(W))

This parameter defines how many color channels are used for color control on the ballast.

- *3 (RGB):* 3 color channels are used to control the ballast. The color format – RGB (red, green, blue) or HSV (hue, saturation, value) – determines which group object is used.
- *4 (RGB(W)):* 4 color channels are used to control the ballast. The white value can be customized. Depending on the color format (RGB or HSV), the following group objects are enabled:
  - RGB(W) relative dimming white/HSV(W) relative dimming white
  - Set RGB(W) value white/Set HSV(W) value white

Color value after switching on

Options: Value on last switch-off
Refreshed KNX value
Fixed value

This parameter sets the color value after switching on.

- *Value on last switch-off:* The group/ballast switches on at the color value the group/ballast was switched off at by the *Switch* group object.
- *Refreshed KNX value:* The color value that was set before switching off is updated and set when switching on. Any incoming commands on KNX while the group/ballast is switched off are updated in the background.
- *Fixed value:* The group/ballast switches on at a fixed color value.

—

Dependent parameter
Selection of *Fixed value*:

Color value RGB/HSV

Options: #000000 ... #FFFFFF

This parameter determines the color value.

For more information, see: 12.2.2 Entering color settings

White value (W)

Options: 0 ... 255

This parameter is used to customize the White value using a slider.

Transition time

Options: 0 … 65,535 s

This parameter defines how long it takes to reach the set color value.

Permit switch-on via setting

Options: No
Yes

This parameter defines whether the group/ballast is switched by setting a color value.

- *No:* The group/ballast is not switched on by setting a color value.
- *Yes:* The group/ballast is switched on by setting a color value.

Use combined group object

Options: No
Yes, 3 bytes (DPT_color_RGB_232.600)
Yes, 6 bytes (DPT_color_RGB(W) 251.600)

This parameter enables an additional group object for RGB(W) color control.

- *No:* No combined group object is enabled.
- *Yes, 3 bytes (DPT_color_RGB_232.600):* A 3 byte combined group object of type DPT 232.600 is enabled.
- *Yes, 6 bytes (DPT_color_RGB(W) 251.600):* A 6 byte combined group object of type DPT 251.600 is enabled.

Transition time (for entire color range)

Options: 0.7 … 5.7 … 64 s

This parameter defines how long it takes to cycle through the entire color range.

Allow switching on via dimming

Options: No
Yes

This parameter defines the switch-on behavior of the ballast or group in relative dimming on a color channel via the corresponding group objects.

- *No:* Switching on using a Dim telegram is not allowed. The ballast or group must be switched on in order to be dimmed.
- *Yes:* Switching on using a Dim telegram is allowed.

Use status

Options: No
Yes, single objects
Yes, 3 bytes combined
Yes, 6 bytes combined

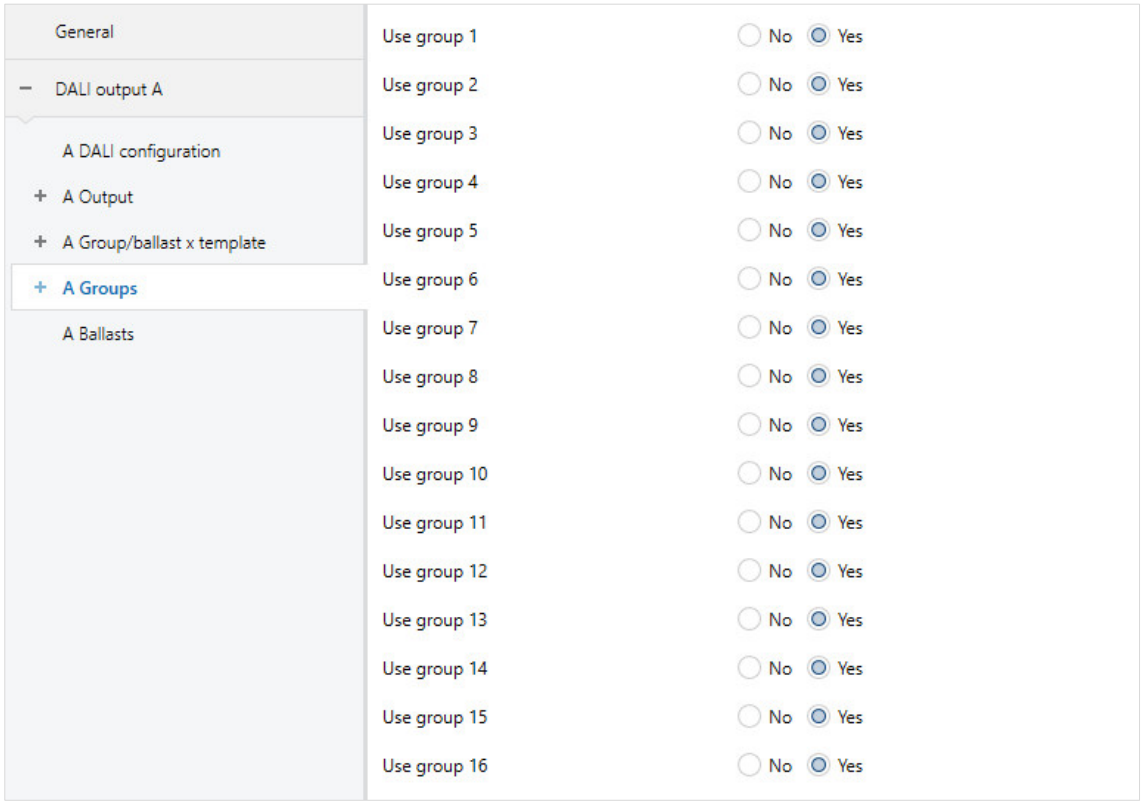
These parameters enable the Color control Status group objects.

- *No:* The Status group objects will not be enabled.
- *Yes, single objects:* The Status group objects are enabled depending on the option selected in the *Control via KNX (color format)* parameter.
- *Yes, 3 bytes combined:* The combined Status group object is enabled depending on the option selected in the *Control via KNX (color format)* parameter.
- *Yes, 6 bytes combined:* The combined Status group object is enabled depending on the option selected in the *Control via KNX (color format)* parameter.

7.3.4 X Groups/X Ballasts parameter window

This window is where groups or ballasts are enabled for use on the DALI output. As a group and a ballast are equivalents on the DALI output, they have the same functions and parameter windows. The group parameter window and its properties are described below. The corresponding parameter window for the ballast looks exactly the same, except with the word *ballast* instead of *group*.

The *X Groups* and *X Ballasts* parameter windows are enabled by selecting *Enable DALI groups (group control)* or *Enable DALI ballasts (individual control)*, *Yes* in the *A DALI configuration* parameter window.



Use group x

Options: No
Yes

This parameter specifies which group/ballast the gateway output controls.

- *No:* Group x is not enabled for the output. The corresponding parameter windows and group objects are hidden. This produces a clear, concise ETS view.
- *Yes:* Group x is enabled for the output. This in turn enables further parameter windows and group objects for that group.

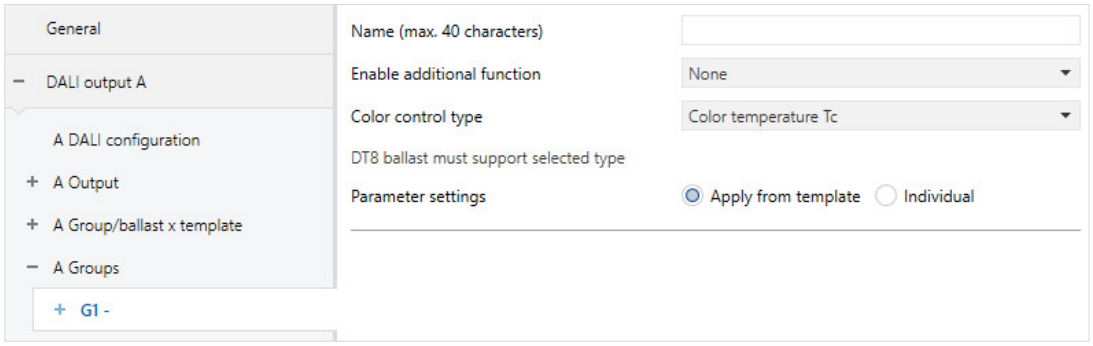
Note

Enabling a ballast in the *A Ballasts* parameter window makes it an individual DALI device. It has been specified for individual activation and cannot be assigned to a group.

Note

DALI groups are assigned in the i-bus® Tool.

7.3.4.1 Group x parameter window



Name (max. 40 characters)

Options: Free text entry

Each group/ballast can be assigned a name consisting of up to 40 characters.

The name is stored in the ETS database, and also stored in the gateway by downloading the application. The name is therefore also available in the i-bus® Tool.

Unambiguous, consistent naming simplifies project planning.

Enable additional function

Options: None
Slave
Staircase lighting

This parameter defines an additional function for the group/ballast. At the same time, it enables a corresponding parameter window where settings can be made for the additional function.

- *None:* This group/ballast operates as "normal", without an additional function.
- *Slave:* This group/ballast is defined as a slave. The slave is forcibly controlled by a master. The *Group x Slave* parameter window is enabled. This is where the properties of the slave are parametrized. The slave receives the required brightness value from a master ballast or group via the *Slave brightness value* group object or internally via the gateway itself.
- *Staircase lighting*: When the *Staircase lighting* function is activated, the group/ballast is switched on, and after a defined time it is automatically switched off or dimmed down slowly as an advance warning. The staircase lighting function has two levels. The turn off brightness can be activated/deactivated via KNX for nighttime operation.

Note

The additional functions *Slave* and *Staircase lighting* can adopt three operating states:

Additional function is not active:
The additional function has been deactivated via a telegram with value 0 received on the function's *Enable additional function* group object. In this state, the group/ballast behaves normally. Accordingly, the group/ballast settings apply.

In this state, an ON telegram does not start the additional function. The additional function can be started only after the *Enable additional function* group object receives a value 1 telegram.

Additional function is in standby:
The additional function is active but has been interrupted, e.g. by an OFF telegram. The group/ballast is in standby. An ON telegram (telegram on the *Switch* group object) retriggers the additional function, i.e. the staircase lighting runs and the slave starts responding to the *Slave brightness value* group object or internally to its master group/ballast again.

Additional function running:
Staircase lighting runs; the *Slave* function receives brightness values from the master. With corresponding parametrization of the Switch telegrams, the additional functions can be set to standby mode.

State on download and KNX recovery:
This can be programmed in the *Slave* or *Staircase lighting* parameter window for the group/ballast.

When the corresponding group object for the status message of the additional function is enabled via the settings, the status of the additional function (activated/deactivated) is sent via the respective *Activate additional function/Status* group object.

Color control type

Options: None
Color temperature Tc
RGB(W) color control

This parameter sets the color control type.

- *None:* No color control is used. Color functionality is deactivated. Only the brightness of the DALI devices can be controlled.
- *Color temperature Tc: Color temperature Tc color control* is used. The "Group x Color temperature Tc" window is enabled. This option can control both the brightness and the color temperature of DT8 devices. All additional functions – *HCL* and *Dim2Warm* – can be used.
- *RGB(W) color control:*

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is taken from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

Note

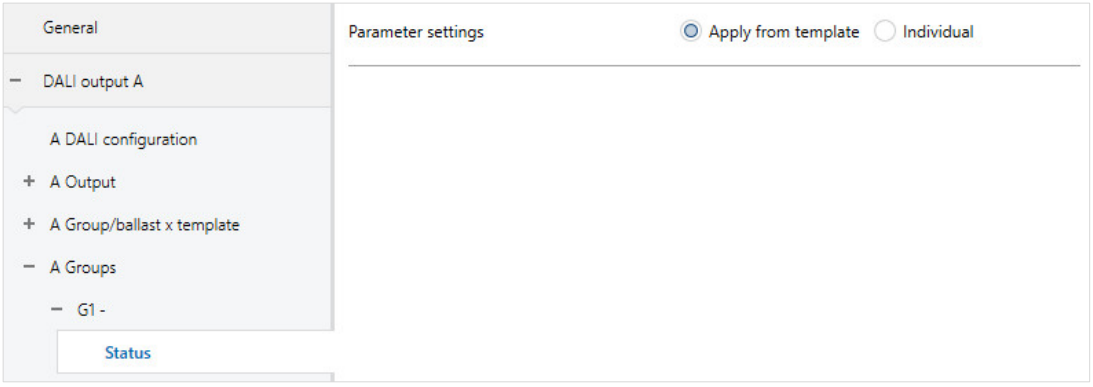
The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in the X Group/ballast x template parameter window.

7.3.4.1.1 Group x status parameter window

Settings for the status response the group/ballast are made in this parameter window.



You can program the *Status* function individually by group/ballast or adopt the parameters from the *Status* template.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is adopted from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

Note

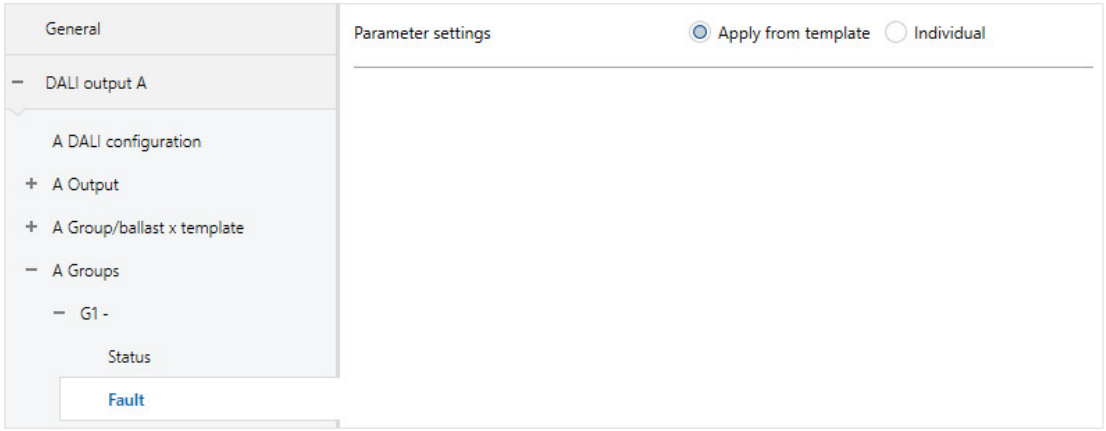
The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in the (Group/ballast x) Status template parameter window.

7.3.4.1.2 Group x Fault parameter window

Settings for the reaction of the ballast or group to KNX/DALI voltage or gateway supply voltage failure and recovery are made in this parameter window.



You can program the *Fault* function individually by group/ballast or adopt the parameters from the *Fault* template.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is taken from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

Note

The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

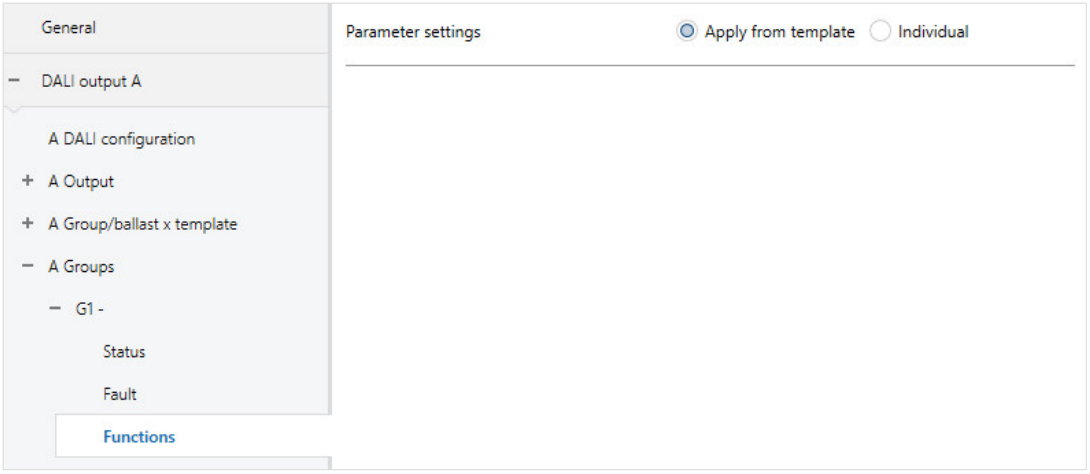
The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in the (Group/ballast x) Fault template parameter window.

Note

The minimum dimming value and maximum brightness value (dimming thresholds) set for the DALI devices in the *Ballast x* and *Group x* parameter windows apply as basic settings for the ballast. Certain of these thresholds are stored in the ballast and also apply to the setting in the *Fault* parameter window.

7.3.4.1.3 Group x functions parameter window

Settings for ballast and group functions are made in this window.



You can program the *Functions* function individually by group/ballast or adopt the parameters from the *Functions* template.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is taken from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

Note

The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in 7.3.3.3, X (Group/ballast x) Functions template parameter window.

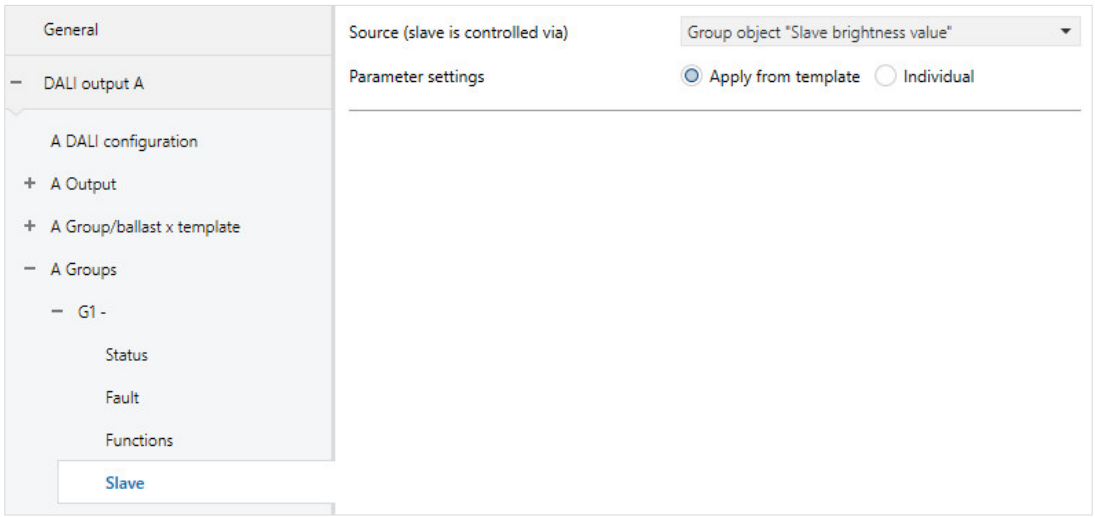
Note

The minimum dimming value and maximum brightness value (dimming thresholds) set for the DALI devices in the *Ballast x* and *Group x* parameter windows apply as basic settings for the ballast. Certain of these thresholds are stored in the ballast and also apply to all functions. Therefore, when setting the brightness value for the function, make sure that it is feasible given the basic ballast settings.

7.3.4.1.4 Group x slave parameter window

This parameter window is visible if the additional function *Slave* has been enabled in the X Groups/Group x parameter window.

Settings for the ballast and group *Slave* function are made in this window.



You can program the *Slave* function individually by group/ballast or adopt the parameters from the *Slave* template.

Source (slave is controlled via)

Options: *Group object* "Slave brightness value"
Group 1
…
Group 16
Ballast 1
…
Ballast 64

This parameter defines whether the slave receives its brightness value KNX from another KNX device (e.g. a presence detector with a controller function) via the *Slave brightness value* group object, or internally, directly from a ballast or group on the output.

- *Group object "Slave brightness value":* The slave group/ballast receives its brightness value via the *Slave brightness value* group object. In this case, the master is another KNX device. This allows groups/ballasts on the gateway to be integrated in constant light control, for example.
- *Group x:* The slave group/ballast receives its brightness value internally from group x. No KNX communication connection is required for this.
- *Ballast x:* The slave group/ballast receives its brightness value internally from ballast x. No KNX communication connection is required for this.

Note

Note that any ballast or group number can be used as a master. Programmers must ensure that the group/ballast is correctly connected to the output.
If a ballast is assigned to a DALI group, it cannot be individually controlled and therefore nor can it be used as a master. In this case, the corresponding DALI group must be selected as the master.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is taken from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

Note

The advantages of using the template for parametrization are:

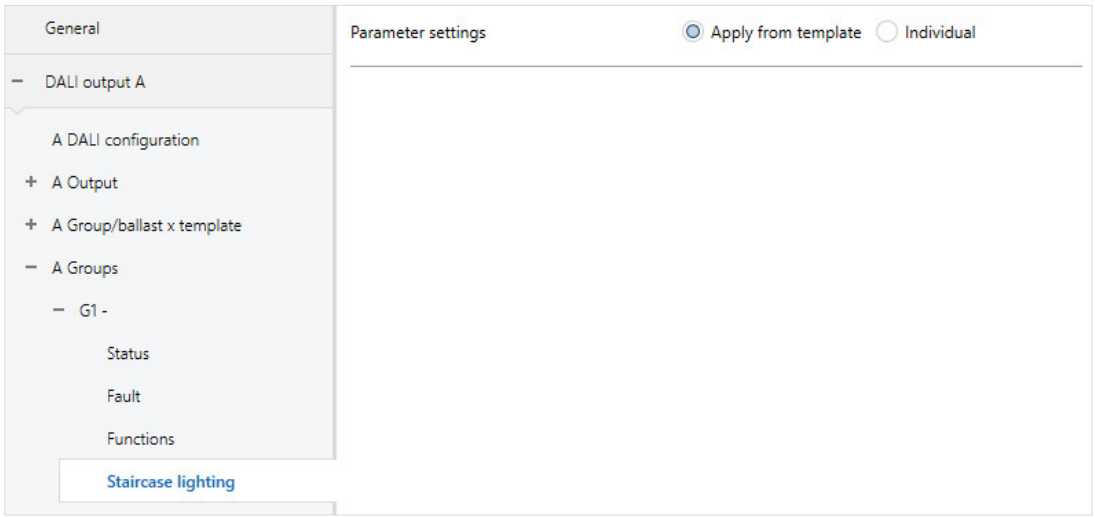
- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in 7.3.3.4, X (Group/ballast x) Slave template parameter window.

7.3.4.1.5 Group x Staircase lighting parameter window

This parameter window is visible if the additional function *Staircase lighting* has been enabled in the X Groups/Group x parameter window.

Settings for the ballast and group *Staircase lighting* function are made in this window.



You can program the *Staircase lighting* function individually by group/ballast or adopt the parameters from the *Staircase lighting* template.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is taken from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

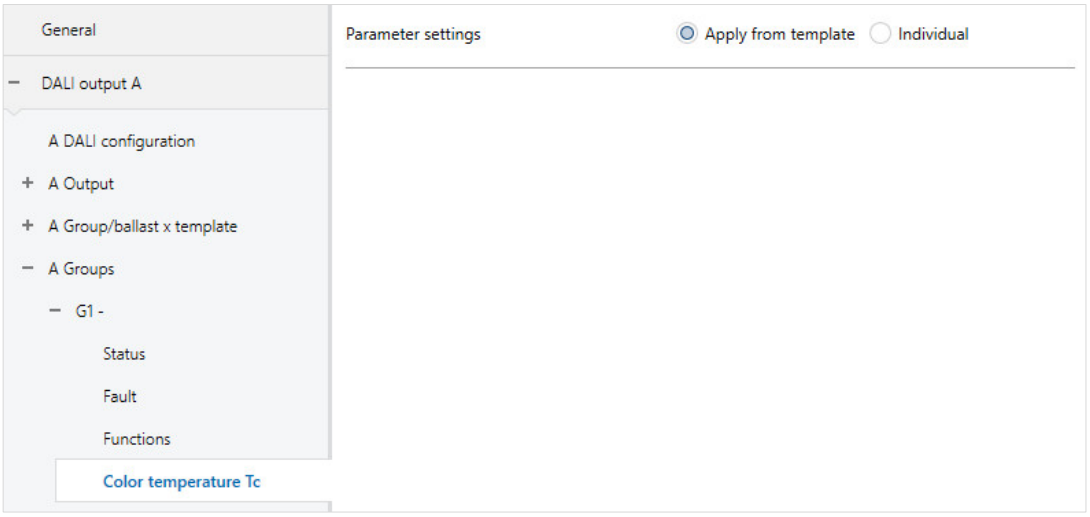
Note

The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in 7.3.3.5, X (Group/ballast x) Staircase lighting template parameter window.

7.3.4.1.6 Group x Color temperature Tc parameter window



You can program the *Color temperature* function individually by group/ballast or adopt the parameters from the *Color temperature* template.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is taken from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

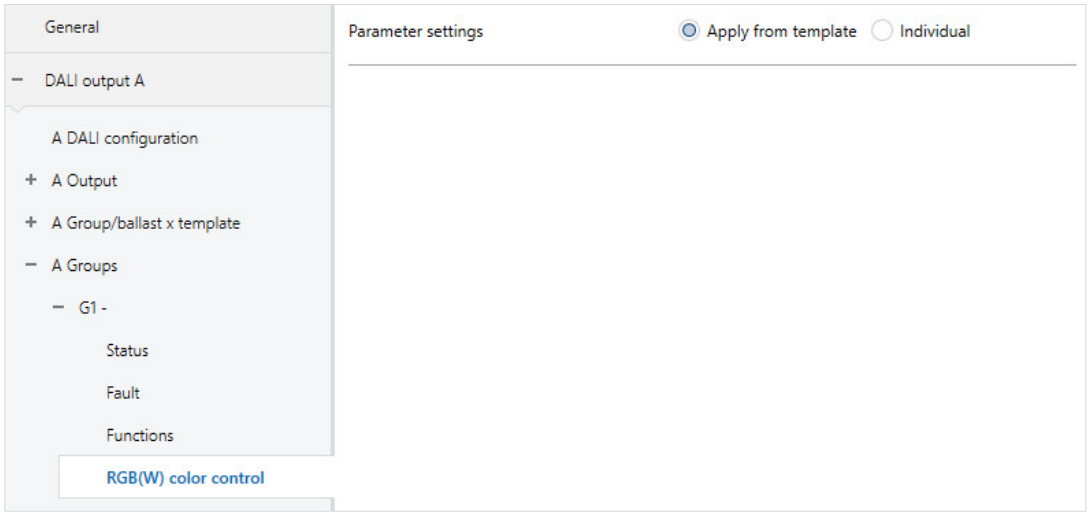
Note

The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in 7.3.3.6, X (Group/ballast x) Color temperature Tc template parameter window.

7.3.4.1.7 Group x RGB(W) color control parameter window



You can parametrize the *RGB(W) color control* function individually by group/ballast or adopt the parameters from the *RGB(W) color control* template.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the group/ballast parametrization is taken from the template or individually set.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

Note

The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

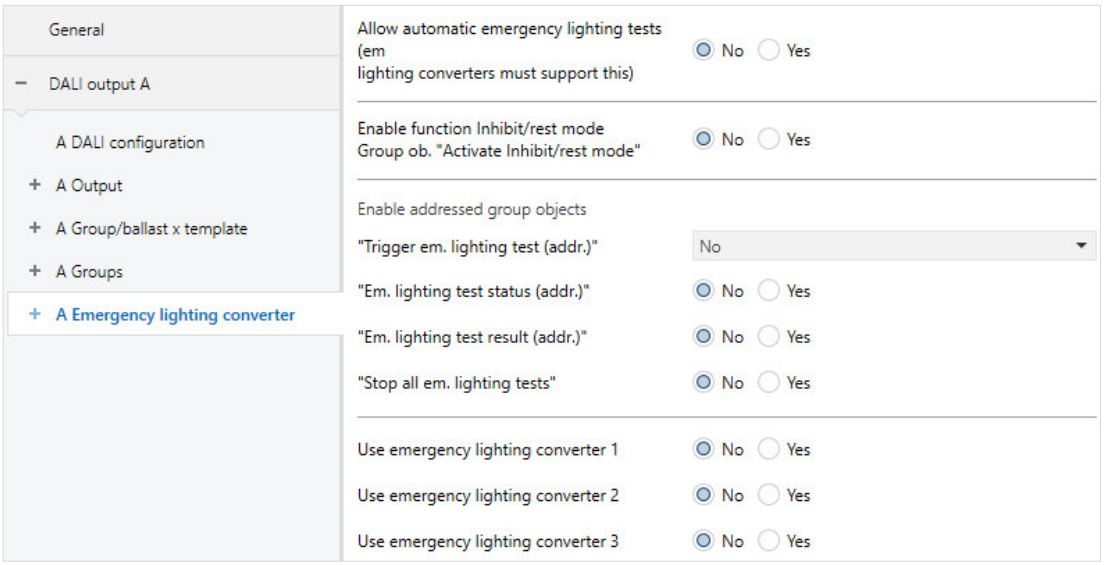
The individual parameter windows and parameters are identical to those in the templates described in 7.3.3. and so are not covered in any further detail here. You will find this information in 7.3.3.7, X (Group/ballast x) RGB(W) color control template parameter window.

7.3.5 X Emergency lighting converter parameter window

This window is where the emergency lighting converters are enabled for use on the DALI output. It is also used to set the emergency lighting properties and tests that affect all the emergency lighting converters on the output.

- Automatic emergency lighting test
- Inhibit/rest mode function
- Enable emergency lighting converter

The *X Emergency lighting converter* parameter window is enabled by selecting *Enable DALI emergency lighting converter (emergency lighting control)*, *Yes* in the *X DALI configuration* parameter window.



Allow automatic emergency lighting tests (em lighting converters must support this)

Options: No
Yes

- *No:* The automatic emergency lighting test function is not enabled for the output.
- *Yes:* The automatic emergency lighting test function is enabled. In the *Emergency light x* parameter window for each emergency lighting converter you can define whether that converter is included in the test.

  Due to the different and sometimes very large tolerances of emergency lighting converters, it is preferable to control the automatic emergency lighting test with a higher-level emergency lighting controller.

  Note

  The automatic emergency lighting test (test sequence) is an optional function of the DALI standard for emergency lighting converters to IEC 62386-202. Therefore, check in advance whether the emergency lighting converter has the capability to run an automatic test. Otherwise the test can be triggered only via the higher-level controller.

—

Dependent parameter
Selection of *Yes* option:

Offset time between testing two consecutive emergency lighting converters
Options: 0…1…255 x15 min

This parameter defines an offset at 15 minute intervals between automatic test starts for two neighboring emergency lighting converters. This offset can be used to avoid a situation where all the emergency lighting converters at once are being tested or in the post-test recharging cycle.

The formula used for the offset is the *DALI short address multiplied by the offset*. In other words, an offset of 1 (= 15 minutes) means that converter 1 is offset by 15 minutes, converter 2 by 30 minutes, and so on.

The gateway can set this time but is not responsible for the timing tolerances that the emergency lighting converter uses to implement it. Also note that a test will not run immediately if an emergency light is in the post-test recharging cycle.

As soon as a time for automatic testing is written to the converter, it must trigger the emergency lighting test.

—

Dependent parameter
Selection of *Yes* option:

Enable fct. Automatic emergency lighting tests
***Group object* "Synch. auto emergency lighting tests"**
Options: No
Yes

- *No:* The *Automatic emergency lighting test* function is not enabled.
- *Yes:* The gateway sends the start request for the automatic emergency lighting test to the emergency lighting converter. The request is sent only to those converters to be included. Settings for this are made in the *Emergency light x* parameter window using the parameters *Include in automatic functional test* or *Include in automatic duration/partial duration test*.

  The automatic emergency lighting test is a standalone function on an emergency lighting converter. The converter runs the tests cyclically based on its own stipulated timing. There is no need for additional triggering via the gateway or an emergency lighting controller when automatic testing is active. The test result is provided by the converter in the converter, read by the gateway and sent on KNX.

  Note that there is a *Pause between two DALI QUERY polls* parameter in the *A DALI configuration* parameter window. The longer the pause selected, the later the gateway will read the test result from the converter.

Enable function Inhibit/rest mode
Group ob. **"Activate Inhibit/rest mode"**

Options: No
Yes

- *No:* The *Inhibit/rest mode* function is not enabled for the output.
- *Yes:* The *Inhibit/rest mode* function and the *Activate Inhibit/rest mode* group object on the output are enabled. Whether or not an emergency lighting converter evaluates the group object and executes the *Inhibit/rest mode* function is defined in the *Emergency light x* parameter window.

This means it is possible to deactivate the emergency lighting function so as to conserve the battery charge, for example, during a construction/commissioning phase.

Note

Rest mode is a state in which the emergency light is switched off during its emergency lighting operation. Inhibit mode is a timed state in which the emergency light does not switch to emergency operation in the event of a mains voltage failure.

DANGER –

In both cases, the emergency light no longer fulfills its safety function and remains off.
For this reason, use this function with great care. It can be helpful to use Inhibit/rest mode during the construction phase when the power supply is often switched off, to prevent the emergency lighting battery from constantly charging/discharging and thus conserve the emergency light.

—

Dependent parameter
Selection of *Yes* option:

Automatically exit
Inhibit/rest mode after

Options: 1…8…48 h

This parameter defines how long the emergency lighting converter stays in Inhibit/rest mode. There will be no emergency lighting function during this time. The emergency lighting converter does not switch on the emergency lighting in the event of a mains voltage failure.

Note

The time interval is 15 minutes. The gateway repeats the DALI Inhibit and Rest command for the emergency lighting converter approximately every 5 minutes.

—

Dependent parameter
Selection of *Yes* option:

Send status mess. Inhibit/rest mode

Options: No
Yes

- *No:* No Inhibit/rest mode activation status is sent on KNX.
- *Yes:* The *Activate emergency lighting Inhibit/rest mode/Status* group object not only activates Inhibit/rest mode but also displays the status, i.e. whether at least one emergency lighting converter on the output is in Inhibit/rest mode. Information on individual emergency lighting converters is determined by the *Emergency light. converter status* group object

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change*: The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

Enable addressed group objects "Trigger em. lighting test (addr.)"

Options: No
Yes, KNX format DPT_CTC
Yes, DGN/S1.16.1 format

- *No:* No addressed group object for the output is enabled to start an emergency lighting test. Regardless of this, a test can be started via the group object for the individual emergency lighting converters.
- *Yes, KNX format DPT_CTC:* This enables an addressed group object for the output which triggers and stops an emergency lighting test. The coding of the group object corresponds to the KNX DPT specification for interworking between KNX devices.
- *Yes, DGN/S1.16.1 format:* This enables an addressed group object for the output which triggers and stops an emergency lighting test. The coding for the group object corresponds to the predecessor device DGN/S 1.16.1. This means that an existing KNX emergency lighting controller that has already operated with the DGN/S 1.16.1 can still be used, without the need for new decoding.

"Em. lighting test status (addr.)"

Options: No
Yes

- *No:* The status of the emergency lighting test is not sent on KNX in an addressed group object for the output.
- *Yes:* The *Em lighting test status (addr)* addressed group object for the output is enabled. This group object sends the status of the emergency lighting test (pending, running, finished) on KNX.

The status is sent after every change, so no status is lost provided there is a connection between the emergency lighting converter and the gateway.

On KNX recovery the latest status values are sent if they are different from the previous ones sent.

The last status of the currently selected emergency lighting converter is sent on request.

"Em. lighting test result (addr.)"

Options: No
Yes

- *No:* The result of the emergency lighting test is not sent for the output on KNX.
- *Yes:* The *Em. lighting test result (addr.)* group object is enabled. This group object sends the result of the emergency lighting test on KNX.

The result is sent after every change, so no result is lost provided there is a connection between the emergency lighting converter and the gateway.

On KNX recovery the latest results are sent if they are different from the previous ones sent.

The last result of the currently selected emergency lighting converter is sent on request.

"Stop all em. lighting tests"

Options: No
Yes

- *No:* The *Stop all em. lighting tests* group object is not enabled.
- *Yes:* The *Stop all em. lighting tests* group object is enabled. This group object is used to stop all emergency lighting tests. Running tests are interrupted. Pending tests are canceled.

Use emergency lighting converter x

Options: No
Yes

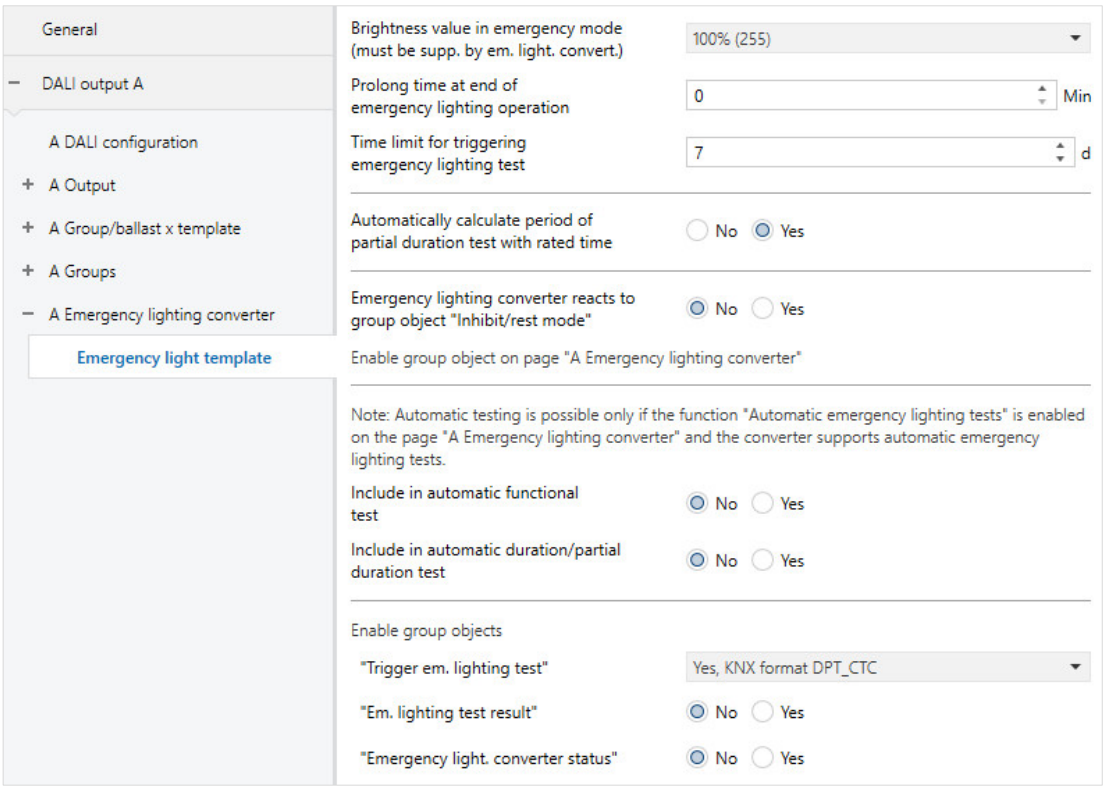
- This parameter specifies which emergency lighting converters the gateway output controls. *No:* Emergency lighting converter x is not enabled for the output. The corresponding parameter windows and group objects are hidden. This produces a clear, concise ETS view.
- *Yes:* Emergency lighting converter x is enabled for the output. This in turn enables further parameter windows and group objects for emergency light x.

7.3.5.1 Emergency light template parameter window

This parameter window is enabled if *Enable DALI emergency lighting converter* is set to *Yes* in the *X DALI configuration* parameter window.

The template window has a major advantage in that the settings made here relate to all emergency lighting converters, so each converter on the DALI output reacts in the same way.

The template parameter window is illustrated and described below. It is the same as the individual parameter window except for the fact that it relates to all emergency lighting converters while the individual window relates only to a particular converter.



The basic settings for the individual emergency lighting converters and the settings for their tests are made in this window. In addition, group objects to start the test and feed back the result can be parametrized with various codes, again by individual converter. These objects are alternatives to the addressed group objects parametrized in the *A Emergency lighting converter* parameter window. The function is redundant.

Brightness value in emergency mode (must be supp. by em. light. convert.)

Options: 100% (255)
99% (252)
…
0.4% (1)

This parameter defines the brightness value adopted in emergency mode.

The value set by this parameter is stored in the emergency lighting converter and therefore remains available even if there is no connection to the gateway.

- *100% (255)…1%:* Brightness value adopted by the emergency light in the event of a mains voltage failure.

  This setting cannot be lower than the minimum dimming value for the emergency lighting converter, which is stored in the converter and cannot be changed by the gateway.

Note

The emergency lighting converters must support brightness value parametrization. Most converters have a fixed emergency brightness in order to ensure an emergency mode compatible with the battery and the lamp power.
For an emergency lighting converter, DALI value 255 is specified as an undefined brightness value. Therefore, the maximum brightness value setting of 255 is mapped to DALI 254.

Prolong time at end of emergency lighting operation

Options: 0…127 min

This parameter defines in minutes how long the emergency light remains on at this brightness value when emergency mode ends, before it is re-enabled for KNX telegrams.

Time limit for triggering emergency lighting test

Options: 0…7…255 d

A converter may not always be able to implement a requested emergency lighting test immediately – for example, because the battery charge is low.

This parameter defines a time span (TEST EXECUTION TIME TIMEOUT) in days, within which the test must be run. This time is stored in the emergency lighting converter and evaluated.

A setting of 0 means that the emergency lighting test must be run within 15 minutes.

Note

The status of an emergency lighting test is sent via group objects (e.g. *Emergency light.converter status* or *Em. lighting test status (addr.)*), or can be queried if necessary.

Automatically calculate period of partial duration test with rated time

Options: No
Yes

The period for the partial duration test is independent of whether the test is triggered automatically, or manually via a group object.

- *No:* The partial duration test period must be set manually.
- *Yes:* The gateway reads the rated duration of the battery from the emergency lighting converter and uses this to calculate how long the partial duration test should run for (test time = 10% of rated duration).

—

Dependent parameter
Selection of *No* option:

Period for partial duration test

Options: 1…35…600 min

This parameter defines the runtime for the partial duration test. The value set here is multiplied by 2 to obtain a time in minutes.

For example, if the default value is 35, the partial duration test will run for 70 minutes.

Note

The partial duration test is a duration test that is terminated by the gateway after the partial duration test period. If there is no connection between the gateway and the emergency lighting converter, it cannot stop the test once it has started. In such cases, the emergency lighting battery fully discharges. The partial duration test then shows as failed.

Emergency lighting converter reacts to *group object* "Inhibit/rest mode"

Options: No
Yes

- *No:* The *Activate emergency lighting Inhibit/rest mode* group object is not evaluated for the converter. The mode functions cannot be influenced by the gateway.
- *Yes:* The *Activate emergency lighting Inhibit/rest mode* group object is evaluated so that the emergency lighting converter receives the Inhibit/rest command via the gateway.
  This means it is possible to deactivate the emergency lighting function so as to conserve the battery charge, for example, during a construction/commissioning phase.

Note

To use the *Inhibit/rest* function you first need to enable the output's *Activate emergency lighting Inhibit/rest mode* group object in the *A Emergency lighting converter* parameter window. You also need to select the function for the individual emergency lighting converters.

Note

Rest mode is a state in which the emergency light is switched off during its emergency lighting operation. Inhibit mode is a timed state in which the emergency light does not switch to emergency operation in the event of a mains voltage failure.

DANGER –

The automatic emergency lighting test (test sequence) is an optional function of the DALI standard for emergency lighting converters to IEC 62386-202. Therefore, check in advance whether the emergency lighting converter has the capability to run an automatic test. Otherwise the test can be triggered only via the higher-level controller.

Automatic emergency lighting test

The automatic emergency lighting test is controlled by the emergency lighting converter itself. It is possible to specify which tests run (duration or function) at what intervals and whether there is a time offset between tests for individual converters.

There is no longer any need to trigger emergency lighting tests via the gateway. The test result is provided by the converter itself, and on request it can be sent via DALI and forwarded by the gateway on KNX.

It is preferable to trigger emergency lighting tests via a central emergency lighting controller managed by building automation. The advantage of this is precise triggering, logging, monitoring and saved results. The same controller handles the control and logging. In the case of automatic emergency lighting tests, the test is triggered by the emergency lighting converters, and only the logging is handled by the controller. Another reason for using a controller is the sometimes very large tolerances on converter timers, which make time-based logging imprecise.

Include in automatic functional test

Options: No
Yes

- *No:* The emergency lighting converter does not run an automatic function test. The test can be explicitly triggered by an emergency lighting controller via one of the *Trigger em. lighting test...* group objects.
- *Yes:* the emergency lighting converter runs the automatic function test. The cycle time for repeating the test can be set in the next parameter.

—

Dependent parameter
Selection of *Yes* option:

Test cycle

Options: 1…7…255 d

This parameter defines the time interval, in days, that the emergency lighting converter uses to automatically and cyclically run the function test. The standard value of 7 days corresponds to the default factory setting on the converter.

Include in automatic duration/partial duration test

Options: No
Yes

- *No:* The emergency lighting converter does not run any automatic duration/partial duration tests. The test can be explicitly triggered by an emergency lighting controller via one of the *Trigger em. lighting test...* group objects.
- *Yes:* The emergency lighting converter runs the automatic duration/partial duration test. The cycle time for repeating the test can be set in the next parameter.

—

Dependent parameter
Selection of *Yes* option:

Test cycle

Options: 1…52…97 weeks

This parameter defines the time interval, in weeks, that the emergency lighting converter uses to automatically and cyclically run the duration/partial duration test.

—

Dependent parameter
Selection of *Yes* option:

Test mode

Options: Duration test
Partial duration test
Duration and partial duration test

This parameter defines the type of emergency lighting test.

- *Duration test*: The emergency lighting converter automatically starts a duration test. The start of the test is executed at a fixed interval. The *Test cycle* parameter in this parameter window is used to set the test cycle.
- *Partial duration test*: The emergency lighting converter automatically starts a partial duration test. The start of the test is executed at a fixed interval. The *Test cycle* parameter in this parameter window is used to set the test cycle.

  Note

  The partial duration test is a duration test that is terminated by the gateway after the partial duration test period. If there is no connection between the gateway and the emergency lighting converter, it cannot stop the test once it has started. In such cases, the emergency lighting battery fully discharges. The partial test becomes a full duration test.
- *Duration and partial duration test*: The emergency lighting converter automatically starts a partial duration or duration test. The start of the test is executed at a fixed interval. The *Test cycle* parameter in this parameter window is used to set the test cycle. There is also a further parameter that determines how often the test is a full duration test.

—

Dependent parameter
Selection of *Duration and partial duration test* option:

Duration test every n tests

Options: 2…12…100

With alternating duration and partial duration tests, this parameter defines how often the test is a duration test.

There are three parameters below that can be used to enable group objects for each emergency lighting converter; the group objects are used to start an emergency lighting test, to obtain the test result, or to transmit converter status. These group objects relate to one converter only. The addressed emergency lighting group objects for the output (e.g. numbers 40 to 42 for output A) receive equivalent information. But there is only one addressed group object for all the converters. The information indicating which converter the group object concerns is stored in the first byte of the object – the address byte.

Enable group object
"Trigger em. lighting test"

Options: No
Yes, KNX format DPT_CTC
Yes, DGN/S1.16.1 format
Yes, DGN/S1.16.1 format with status

- *No:* No group object is enabled for the emergency lighting converters to start an emergency lighting test. Regardless of this, a test can be started for the converters via the addressed group object.
- *Yes, KNX format DPT_CTC:* This enables a group object for the individual emergency lighting converters which triggers and stops an emergency lighting test. The coding of the group object corresponds to the KNX DPT specification for interworking between KNX devices.
- *Yes, DGN/S1.16.1 format:* This enables a group object for the individual emergency lighting converters which triggers and stops an emergency lighting test. The coding for the group object corresponds to the predecessor device DGN/S 1.16.1. This means that an existing KNX emergency lighting controller that has already operated with the DGN/S 1.16.1 can still be used, without the need for new decoding.
- *Yes, DGN/S1.16.1 format with status:* This enables a group object for the individual emergency lighting converters which triggers and stops an emergency lighting test. This object not only controls the test but can also provide its status. The coding for the group object corresponds to the predecessor device DGN/S 1.16.1. This means that an existing KNX emergency lighting controller that has already operated with the DGN/S 1.16.1 can still be used, without the need for new decoding.

—

Dependent parameter
Selection of *Yes, DGN/S1.16.1 format with status:*

Send group object value

Options: After change
On request
After change or on request

- *After change*: The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

"Em. lighting test result"

Options: No
Yes

- *No:* The status of the emergency lighting test is not sent on KNX in a group object for each emergency lighting converter.
- *Yes:* The *Em. lighting test result* group object is enabled for the individual emergency lighting converters. This group object sends the result of the emergency lighting test on KNX.

—

Dependent parameter
Selection of *Yes* option:

Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

"Emergency light. converter status"

Options: No
Yes

- *No:* The status of the emergency lighting converter is not sent on KNX in a group object for each emergency lighting converter.
- *Yes:* The *Emergency light. converter status* group object is enabled. This group object sends the status of the emergency lighting converter on KNX.

—

Dependent parameter
Selection of *Yes* option:

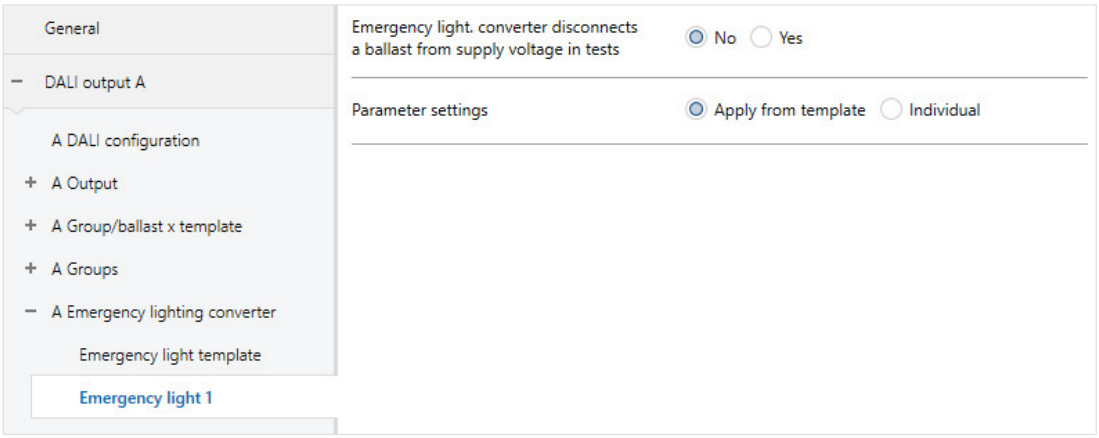
Send group object value

Options: After change
On request
After change or on request

- *After change:* The status is sent after a change.
- *On request:* The status is sent on request.
- *After change or on request:* The status is sent after a change or on request.

7.3.5.2 Emergency light x parameter window

Settings for an emergency lighting converter test on self-contained emergency lights are made in this window. Tests are automatically triggered by the converter, or by a higher-level controller via KNX and the gateway. The tests themselves are run by the converter. The converter sends the test results on the DALI. The gateway sends them on KNX, where they can be stored and documented by a controller.



Emergency light. converter disconnects a ballast from supply voltage in tests

Options: No
Yes

This parameter is designed for emergency lighting where the converter and ballast use the same lighting equipment.

In such cases, the converter cuts off the ballast's supply voltage during an emergency lighting test. This triggers a ballast fault that is sent via the DALI and displayed in the DALI gateway. This parameter determines whether the fault is ignored or displayed.

- *No:* The DALI gateway displays the resulting ballast fault. The fault is not inhibited.
- *Yes:* The resulting ballast fault is ignored. No fault is displayed on the DALI gateway.

—

Dependent parameter
Selection of *Yes* option:

Ballast address

Options: 1 … 64

This parameter defines which ballast the emergency lighting converter switches off.

Parameter setting

Options: Apply from template
Individual

This parameter defines whether the *Color temperature* function settings are taken from the template or set individually.

- *Apply from template:* The group/ballast takes its parameters from the template.
- *Individual:* The group/ballast is individually parametrized. Corresponding parameters for the group/ballast are shown. The content of the individual parameters is the same as that in the template parameters.

Note

The advantages of using the template for parametrization are:

- A clearly organized, compact ETS parameter interface (one template parameter window rather than 64 individual ones)
- All groups and ballasts react in the same way (the same properties apply to all groups/ballasts, e.g. dimming thresholds)
- Fast parameter changes (changes need to be made only in the template rather than 64 times, for each ballast)

The individual parameter windows and parameters are identical to those in the templates described in 7.3.5.1 and so are not covered in any further detail here. You will find this information in 7.3.5.1, Emergency light template parameter window.

7.3.6 X scenes parameter window

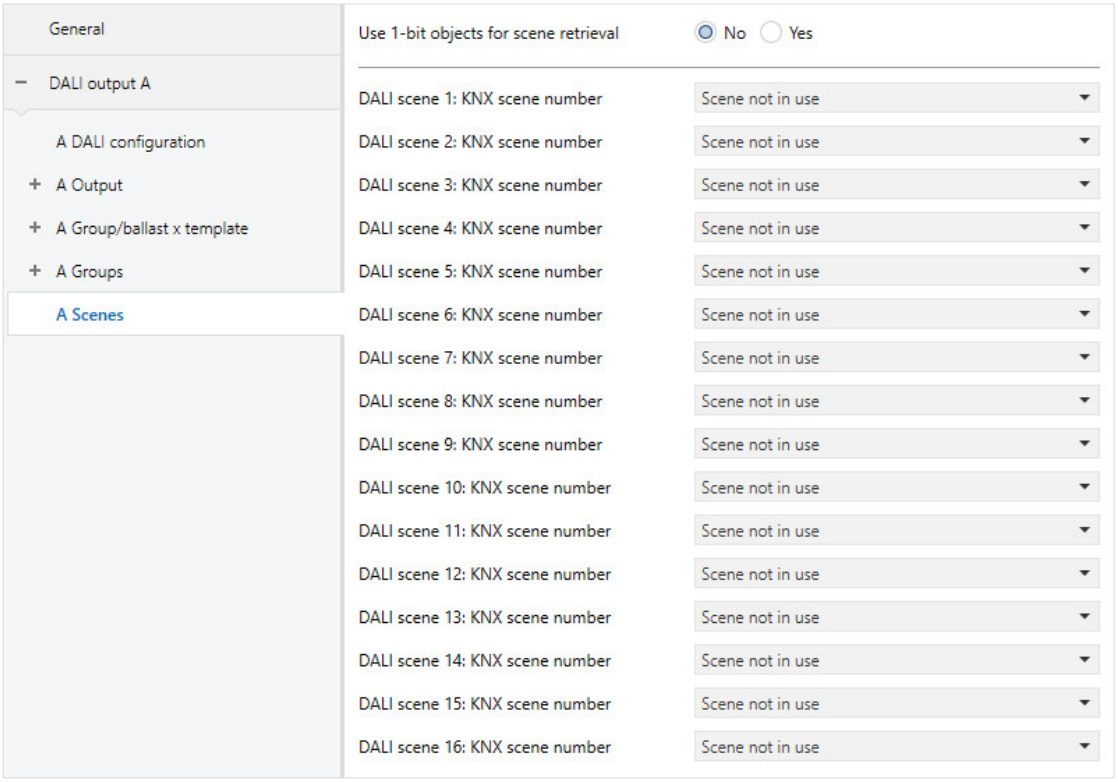
The DALI gateway has 16 scenes per output. These correspond to DALI scenes. Each scene can be assigned to any ballasts and/or groups on the output. These are referred to as scene members below. A scene member can be a member of several scenes.

This parameter window is visible if DALI scenes are enabled in the *X DALI configuration* parameter window.

DALI scenes are assigned to KNX scenes in this window. This makes it possible to integrate any of the 64 KNX scenes into the DALI.

Note

Scenes can include only members from the same output. A scene with ballasts and groups from both outputs requires two scenes linked by a common KNX group address.



Use 1-bit group objects for scene retrieval

Options: No
Yes

This parameter enables the 1-bit group object "DALI Scene x", which can be used to retrieve scenes.

- *No:* The group objects are not enabled.
- *Yes: The 1-bit group objects are enabled.* Scenes can be retrieved with a "0" or "1" on these group objects.

DALI scene x: KNX scene number

Options: 1…64
Scene not in use

This parameter links a DALI scene to a KNX scene. This allows all 64 possible KNX scene numbers to be used for the 16 DALI scenes.

- *1…64:* KNX scene y (1…64) is assigned to DALI scene x.
  This enables the *X Scenes/Scene x* parameter window.
- *Scene not in use*: DALI scene x is not in use.

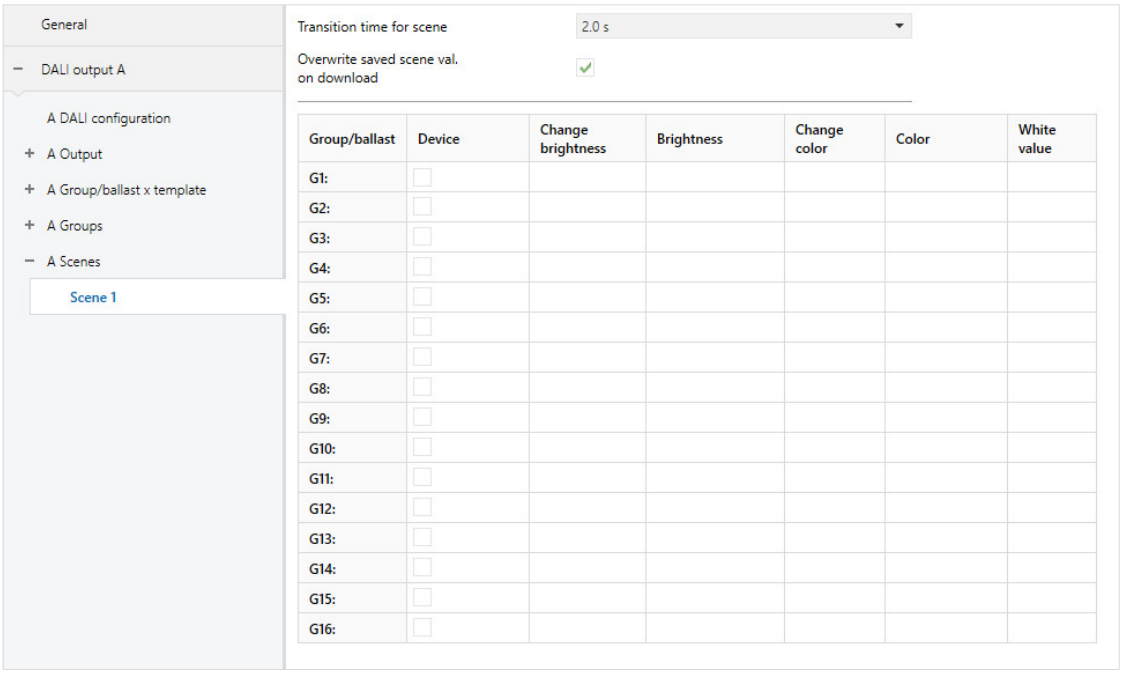
7.3.6.1 Scene x parameter window

This parameter window is visible if DALI scene x is assigned to a KNX scene in the *X Scenes* parameter window.

The properties of the scenes and their members are parametrized in this window. A scene member can be any ballast or group on the DALI output.

Note

All enabled groups and ballasts are shown in this parameter window. The person commissioning the system must ensure that the required members are also connected to the output. ETS and the gateway do not check this.



Transition time for scene

Options:
Jump to
0.7 s
…
2.0 s
…
64.0 s
Via group object
"Flexible dimming/fade time"

This parameter defines how long it takes for scene members to reach their scene value (brightness value) after a scene is recalled. If the dimming process is complete, the scene members have reached the set brightness for the scene. These times are specified by the DALI standard and are stored in the ballast.

Example

Group 1, which is dimmed from 10% to 100%, and ballast 2, which is dimmed from 90% to 100%, reach the set brightness value of the scene simultaneously.

- *Jump to:* When a scene is recalled, the scene members are switched on immediately at the set brightness value of the scene.
- *0.7 s…64.0 s:* When a scene is recalled, all the lighting scene members are dimmed from their current brightness value to the set brightness value within this time.
- *Via group object "Flexible dimming/fade time":* When a scene is recalled, all the scene members are dimmed from their current brightness value to the parametrized brightness value using flexible dimming time which can be adjusted via KNX. The value can be changed via the *Flexible dimming/fade time (...)* group object.

For more information see *"Flexible dimming time"* group object.

Note

Flexible dimming time is received via the *Output x Flexible dimming/fade time* group object and affects various output functions:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

To use the Flexible dimming time function you first need to enable the output's *Flexible dimming/fade time* group object in the *X Output/Functions* parameter window. You also need to select the function for the parameter that can be changed via KNX. We recommend that you change only one time via KNX. Otherwise the dimming time has to be rewritten on the ballast every time a function is called, which impairs function performance.

Overwrite saved scene val. on download

Options: No
Yes

When a download occurs, the parametrized scene values are usually transferred to the gateway. This parameter can prohibit the transfer so as to prevent manually set scene values from being overwritten. Instead, the scene values saved via KNX are retained.

- *No:* After a download or KNX bus voltage recovery, the scene values for the scene members are not overwritten with the values set in ETS. If no scene values have been stored, the gateway sets them to the maximum brightness.
- *Yes:* After a download or KNX bus voltage recovery, the scene values for the scene members are overwritten with the values set in ETS.

Note

When a scene is recalled or stored, only the ballasts or groups in that scene are taken into consideration.

Note

Even if the scene values are not overwritten after a download, the scene members have to be selected in order to tell the gateway which ballasts or groups are members of the scene.

Note

When a download occurs, the parametrized scene values are usually transferred to the gateway. If no change has been made in the ETS application, ETS does not transfer these values again when a partial ETS download occurs. To transfer the values to the gateway even when no parameters have been changed, run a normal download using "Program application program".

Scene X parameter table

Group/ballast	Device	Change brightness	Brightness	Change color	Color	White value
G1:	☐					
G2:	☐					
G3:	☐					

This table is used to configure scenes.

- Scenes, groups and ballasts used must be enabled.

The parameters that can be set in the table are as follows:

Device

Options: No
Yes

These parameters define which ballasts/groups are members of the scene. Only enabled groups/ballasts can be assigned to a scene.

- *No:* The group/ballast is not in the scene.
- *Yes:* The group/ballast is in the scene.

—

Dependent parameter
Selection of *Yes* option:

Change brightness

Options: No
Yes

This parameter determines whether the brightness value of the group/ballast changes when the scene is recalled.

- *No:* The member's brightness does not change when the scene is recalled.
- *Yes:* The member's brightness changes when the scene is recalled.

Note

If no color control is selected for the group/ballast in the "Color control type" parameter in the *X Groups/Group x / X Ballasts/ballast x* parameter window, the *Change brightness*, *Change color* and *Color* parameters are hidden.

—

Dependent parameter
Selection of *Yes* option:

Brightness

Options: 100% (255)
99% (252)
…
0.4% (1)
0% (OFF)

This parameter defines the brightness value of the device on scene recall.

If the set brightness value is above or below the maximum brightness or minimum dimming value defined scene member in question, the dimming value is stored in the scene.

—

Dependent parameter
Selection of *Yes* option:

Change color

Options: No
Yes

This parameter determines whether the color of the group/ballast changes when the scene is recalled.

- *No:* The member's color does not change when the scene is recalled.
- *Yes:* The member's color changes when the scene is recalled.

—

Dependent parameter
Selection of *Yes* option:

Color

Options: 1,000…3,000…20,000
#000000 … #FFFFFF

Note

The options depend on the setting in the *Color control type* parameter.

This parameter defines the color of the device on scene recall.

For more information, see: 12.2.2 Entering color settings

—

Dependent parameter
Selection of *Yes* option:

White value

Options: 0 … 255

Note

Settings can only be made in this parameter if the *Color control type* parameter is set to *RGB(W) color control* and the *Outputs on ballast (color channels)* parameter is set to *4*.

This parameter defines the white component in the color of the device on scene recall.

7.3.7 X Sequences parameter window

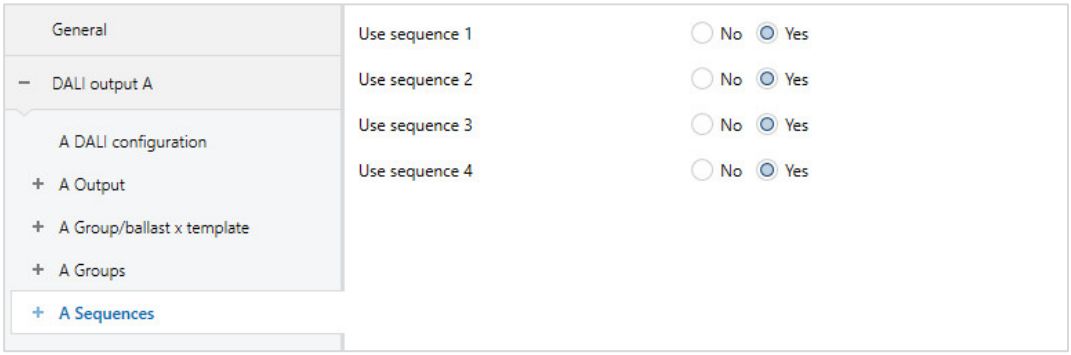
This parameter window is visible if sequences are enabled in the *X DALI configuration* parameter window.

A sequence is a series of brightness values or color gradients. A sequence consists of up to 10 steps and an optional end step. Each step can apply to a scene, a group, a ballast or the output. Technically speaking, a step is simply a normal KNX command (brightness value or scene).

The KNX command's property is such that it can also influence the Staircase lighting or Slave functions for example. The reaction can be set in the corresponding function, using the *Reaction to brightness value* or *Recall scene* parameters.

A maximum of 4 sequences can be used on each output.

For more information, see 12.2.7, Sequences



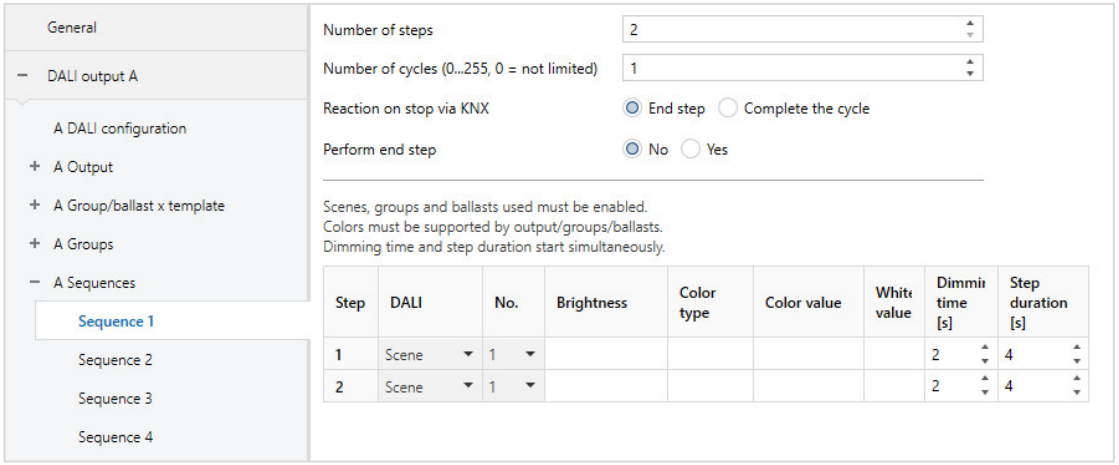
Use sequence x

Options: No
Yes

This parameter enables sequence x.

- *No:* Sequence x is not enabled for the output. The corresponding parameter windows and group objects are hidden. This produces a clear, concise ETS view.
- *Yes:* Sequence x is enabled for the output. The *Sequence x* parameter and the *Sequence x start-stop/Status* group object are enabled.

7.3.7.1 Sequence x parameter window



Number of steps

Options: 2 … 10

This parameter defines the number of steps in sequence x.

Number of cycles (0 … 255, 0 = not limited)

Options: 0 … 1 … 255

This parameter defines the number of cycles (repetitions) in sequence x. Selecting 0 repeats the cycle indefinitely.

Reaction on stop via KNX

Options: End step
Complete the cycle

This parameter defines how sequence x is stopped when the *Sequence x start-stop/Status* group object receives a Stop command.

- *End step:* The started step runs until the end and the sequence is stopped. If there is an end step configured, the started step is canceled and the end step is executed.
- *Complete the cycle*: The started cycle runs until the end and the sequence is stopped. If there is an end step configured, the started cycle is ended and the end step is executed.

Perform end step

Options: No
Yes

This parameter defines whether an end step is executed before ending the sequence.

The end step is no longer part of the sequence. It defines the transition from the sequence to normal KNX operation.

Step configuration parameter table

Step	DALI	No.	Brightness	Color type	Color value	White value	Dimmi time [s]	Step duration [s]
1	Scene	1					2	4
2	Scene	1					2	4

This table is used to configure each step.

- Scenes, groups and ballasts used must be enabled.
- Colors must be supported by the output.
- Dimming time and step duration start simultaneously.

The number of steps (i.e lines in the parameter table) in a sequence is set with the *Number of steps* parameter. Selecting *Yes* in the *Perform end step* parameter adds a final (end) step to the sequence.

The parameters that can be set in the table are as follows:

DALI

Options: Scene
Output
Group
Ballast

This parameter assigns a DALI scene, an output, a group or a ballast to the step.

No.

Options: 1 … 16
1 … 64

Note

The options depend on the setting in the *DALI* parameter.

This parameter sets the number of the DALI scene, group or ballast for the step.

- *1 … 16:* Uses DALI scene or group 1 … 16.
- *1 … 64:* Uses ballast 1 … 64.

Brightness

Options: No change
100% (255)
99% (252)
…
0.4% (1)
0% (OFF)

Note

The options depend on the setting in the *DALI* parameter.

This parameter sets the brightness of the output, group or ballast for the step.

Color type

Options: None
Tc
HCL
RGB
RGB(W)

Note

The options depend on the setting in the *DALI* parameter and the output configuration.

This parameter determines the color type of the output, group or ballast and defines the input format for the *Color value* and *White value* parameters.

For more information, see: Color types

Color value

Options: 1000 … 3000 … 20000 K
#000000 … #FFFFFF

Note

The options depend on the settings in the *DALI* and *Color type* parameters.

This parameter sets the color value of the output, group or ballast.

- *1000 … 3000 … 20000 K:* There is a color temperature setting for color types Tc and HCL.
- *#000000 … #FFFFFF:* There is a color temperature setting for color types RGB and RGB(W). For more information, see: 12.2.2 Entering color settings

White value

Options: 0 … 255

Note

This parameter is only available if you select the RGB(W) color type.

It sets the White value of the output, group or ballast.

Dimming time [s]

Options: 0 … 2 … 65,535 s

This parameter defines the dimming time in seconds. The dimming time is the time it takes to go from the current brightness and color setting to the setpoint values (brightness, color).

The dimming time and step duration start simultaneously.

The dimming time of the scene step replaces the group/ballast dimming time parametrized in the *Group/ballast x* parameter window. When a scene is used, the sequence dimming time replaces the scene transition time.

Step duration [s]

Options: 0 … 4 … 65,535

This parameter defines the duration of the step in seconds.

The step duration and dimming time start simultaneously.

8 Group objects

This section describes the group objects for the DALI Gateway DG/S x.64.5.1.

As the DALI outputs and their functions, parameters and group objects are identical, only DALI output A is described below.

The description is divided into blocks that relate to the name of the group object.

- General - Group objects for the entire DALI gateway
- Output x - Group objects that relate to the DALI output as a whole
- Output x - Group x - Group objects for a group x
- Output x - Ballast x - Group objects for a single lamp x
- Output x - Lighting converter x- Group objects for an emergency lighting converter x

To provide a rapid overview of the DALI gateways' functional capability, all the group objects are listed in an overview table. The function can be examined in more detail in the subsequent description of the individual group objects.

Note

Some group objects are dynamic and are visible only if the corresponding parameters are activated in the application program. In the following description, Group x represents a group, Ballast x an individual lamp, Emergency lighting converter x an emergency lighting converter, Scene x a scene, and Sequence x a Sequence.

8.1 Summary of group objects

GO no. A	GO no. B	Function	Name	Data point type (DPT)	Length	Flags			
						K	L	S	T
1	-	In operation	General	1,002	1 bit	x	x		x
2	-	Block manual operation/Status	General	1,003	1 bit	x	x	x	x
3	-	Gateway supply voltage fault	General	1,005	1 bit	x	x		x
4	-	Acknowledge gateway supply voltage fault	General	1,015	1 bit	x		x	
5	-	Request status values	General	1,017	1 bit	x		x	
6	2029	Status byte	Output A	Non DPT	2 bytes	x	x		x
7	2030	Trigger DALI addressing	Output A	1,003	1 bit	x		x	
8	2031	Monitor DALI addresses	Output A	1,010	1 bit	x		x	
9	2032	Flexible dimming/fade time (DALI format [0..14])	Output A	20,602	1 byte	x	x	x	
		Flexible dimming/fade time (100 ms)	Output A	7,004	2 bytes	x	x	x	
		Flexible dimming/fade time (1 s)	Output A	7,005	2 bytes	x	x	x	
10	2033	Switch	Output A	1,001	1 bit	x		x	
11	2034	Status Switch	Output A	1,001	1 bit	x	x		x
12	2035	Fct. Activate Turn off brightness/Status	Output A	1,003	1 bit	x	x	x	x
13	2036	Relative dimming	Output A	3,007	4 bit	x		x	
14	2037	Brightness value	Output A	5,001	1 byte	x		x	
15	2038	Status Brightness value	Output A	5,001	1 byte	x	x		x

GO no. A	GO no. B	Function	Name	Data point type (DPT)	Length	Flags			
						K	L	S	T
16	2039	Set color temperature (K)	Output A	7,600	2 bytes	x		x	
17	2040	Status Switch addressed	Output A	Non DPT	2 bytes	x	x	x	x
18	2041	Status Brightness value addressed	Output A	Non DPT	2 bytes	x	x	x	x
19	2042	Status Color temperature addressed	Output A	Non DPT	3 bytes	x	x	x	x
20	4043	DALI voltage fault	Output A	1,005	1 bit	x	x		x
21	2044	Lamp fault	Output A	1,005	1 bit	x	x		x
22	2045	Ballast fault	Output A	1,005	1 bit	x	x		x
23	2046	Fault addressed	Output A	237,600	2 bytes	x	x	x	x
24	2047	Number of statistics fault	Output A	Non DPT	4 bytes	x	x		x
25	2048	Number of ballasts fault	Output A	5,010	1 byte	x	x		x
26	2049	Ballast number fault	Output A	5,010	1 byte	x	x		x
27	2050	Switch up next ballast fault	Output A	1,008	1 bit	x		x	
28	2051	Number of groups fault	Output A	5,010	1 byte	x	x		x
29	2052	Group number fault	Output A	5,010	1 byte	x	x		x
30	2053	Switch up next group fault	Output A	1,008	1 bit	x		x	
31	2054	Acknowledge fault messages/Status	Output A	1,015	1 bit	x	x	x	x
32	2055	Block fault messages/Status	Output A	1,003	1 bit	x		x	
33	2056	Status Partial failure active	Output A	1,010	1 bit	x	x		x
		Activate partial failure/Status	Output A	1,010	1 bit	x	x	x	x
34	2057	Receive load shedding stage	Output A	23,601	1 byte	x		x	
35	2058	KNX scene 1…64	Output A	18,001	1 byte	x		x	
36..51	2059… 2074	DALI scene x	Output A	1,011	1 bit	x		x	
52	2075	Burn-in lamps/Status	Output A	1,010	1 bit	x	x	x	x
53	2076	Rem burn-in time	Output A	Non DPT	3 bytes	x	x	x	x
54	2077	Read operating duration addr.	Output A	Non DPT	3 bytes	x		x	
55	2078	Reset operating duration addr.	Output A	Non DPT	3 bytes	x		x	
56	2079	Activate Slave offset/Status	Output A	1,010	1 bit	x	x	x	x
57	2080	Synchronize auto emerg. lighting tests	Output A	1,010	1 bit	x		x	x
58	2081	Trigger em. light. test addr. (DGN/S)	Output A	Non DPT	2 bytes	x		x	x
		Trigger em. lighting test (addr.)	Output A	Non DPT	2 bytes	x	x	x	x
59	2082	Em. lighting test status (addr.)	Output A	Non DPT	2 bytes	x	x	x	x
60	2083	Em. lighting test result (addr.)	Output A	Non DPT	4 bytes	x	x	x	x
61	2084	Stop all em. lighting tests	Output A	1,010	1 bit	x		x	x
62	2085	Activate emergency lighting Inhibit/rest mode	Output A	1,010	1 bit	x		x	x
63	2086	HCL color temperature	Output A	7,600	2 bytes	x		x	
		HCL ramp up/down	Output A	1,008	1 bit	x		x	
64	2087	Activate automatic HCL color function	Output A	1,010	1 bit	x		x	
65	2088	Activate Dim2Warm color function	Output A	1,010	1 bit	x		x	
66	2089	Standby switch-off	Output A	1,001	1 bit	x	x		x
67	2090	Enable standby switch-off	Output A	1,003	1 bit	x		x	
68	2091	Sequence 1 start-stop/Status	Output A	1,001	1 bit	x	x	x	x
69	2092	Sequence 2 start-stop/Status	Output A	1,001	1 bit	x	x	x	x
70	2093	Sequence 3 start-stop/Status	Output A	1,001	1 bit	x	x	x	x
71	2094	Sequence 4 start-stop/Status	Output A	1,001	1 bit	x	x	x	x

GO no. A	GO no. B	Function	Name	Data point type (DPT)	Length	Flags			
						K	L	S	T
76, 98…	2099, 2121…	Status byte	Output A - Group x	Non DPT	2 bytes	x	x		x
77, 99…	2100, 2122...	Lamp/ballast fault	Output A - Group x	1,005	1 bit	x	x		x
78, 100…	2101, 2123...	Forced operation, 1-bit	Output A - Group x	1,003	1 bit	x	x	x	
		Forced operation, 2-bit	Output A - Group x	2,001	2 bit	x	x	x	
		Block	Output A - Group x	1,003	1 bit	x	x	x	
79, 101…	2102, 2124…	Read/write operating duration DPT 13.100 [s]	Output A - Group x	13,100	4 bytes	x	x	x	x
		Read/write operating duration DPT 12.102 [h]	Output A - Group x	12,102	4 bytes	x	x	x	x
		Read/write operating duration DPT 7.007 [h]	Output A - Group x	7,007	2 bytes	x	x	x	x
80, 102…	2103, 2125…	Reset operating duration	Output A - Group x	1,005	1 bit	x	x		x
		Reset operating duration/Alarm	Output A - Group x	1,005	1 bit	x	x	x	x
81, 103…	2104, 2126…	Fct. Activate staircase lighting	Output A - Group x	1,010	1 bit	x	x		
		Fct. Activate stairc. light./Status	Output A - Group x	1,010	1 bit	x	x	x	x
		Fct. Activate Slave	Output A - Group x	1,010	1 bit	x	x		
		Fct. Activate slave/Status	Output A - Group x	1,010	1 bit	x	x	x	x
82, 104..	2105, 2127…	Slave brightness value	Output A - Group x	5,001	1 byte	x		x	x
83, 105..	2106, 2128…	Switch	Output A - Group x	1,001	1 bit	x		x	
84, 106…	2107, 2129…	Status Switch	Output A - Group x	1,001	1 bit	x	x		x
85, 107…	2108, 2130…	Relative dimming	Output A - Group x	3,007	4 bit	x		x	
86, 108…	2109, 2131…	Brightness value	Output A - Group x	5,001	1 byte	x		x	
87, 109…	2110, 2132…	Status Brightness value	Output A - Group x	5,001	1 byte	x	x		x
88, 110…	2111, 2133…	RGB(W) relative dimming red	Output A - Group x	3,007	4 bit	x		x	
		HSV(W) relative dimming hue (H)	Output A - Group x	3,007	4 bit	x		x	
89, 111…	2112, 2134…	RGB(W) relative dimming green	Output A - Group x	3,007	4 bit	x		x	
		HSV(W) relative dimming saturation (S)	Output A - Group x	3,007	4 bit	x		x	
90, 112…	2113, 2135…	RGB(W) relative dimming blue	Output A - Group x	3,007	4 bit	x		x	
		HSV(W) relative dimming brightness (V)	Output A - Group x	3,007	4 bit	x		x	
91, 113…	2114, 2136…	Dim color temperature	Output A - Group x	3,007	4 bit	x		x	
		RGB(W) relative dimming white	Output A - Group x	3,007	4 bit	x		x	
		HSV(W) relative dimming white (W)	Output A - Group x	3,007	4 bit	x		x	
92, 114…	2115, 2137…	Set color temperature (percent)	Output A - Group x	5,001	1 byte	x		x	
		Set color temperature (K)	Output A - Group x	Non DPT	3 bytes	x		x	
		Set RGB value combined (3 bytes)	Output A - Group x	7,600	2 bytes	x		x	
		Set RGB(W) value combined (6 bytes)	Output A - Group x	232,600	3 bytes	x		x	
		Set HSV value combined (3 bytes)	Output A - Group x	251,600	6 bytes	x		x	
		Set HSVW value combined (6 bytes)	Output A - Group x	Non DPT	6 bytes	x		x	
93, 115…	2116, 2138…	Activate Dim2Warm color function/Status	Output A - Group x	5,001	1 byte	x	x	x	x
		Activate automatic HCL color function/Status	Output A - Group x	5,003	1 byte	x		x	
		Set RGB(W) value red	Output A - Group x	5,001	1 byte	x	x	x	x
		Set RGB(W) value red/Status	Output A - Group x	5,003	1 byte	x	x	x	x
		HSV(W) set value hue (H)	Output A - Group x	1,010	1 bit	x		x	
		Set HSV(W) value hue (H)/Status	Output A - Group x	1,010	1 bit	x		x	

GO no. A	GO no. B	Function	Name	Data point type (DPT)	Length	Flags			
						K	L	S	T
94, 116…	2117, 2139…	Activate color temperature preset 1/2	Output A - Group x	5,001	1 byte	x	x	x	x
		Set RGB(W) value green	Output A - Group x	1,022	1 bit	x		x	
		Set RGB(W) value green/Status	Output A - Group x	5,001	1 byte	x		x	
		Set HSV(W) value saturation (S)	Output A - Group x	5,001	1 byte	x	x	x	x
		Set HSV(W) value saturation (S)/Status	Output A - Group x	5,001	1 byte	x		x	
95, 117…	2118, 2140…	Set RGB(W) value blue	Output A - Group x	5,001	1 byte	x		x	
		Set RGB(W) value blue/Status	Output A - Group x	5,001	1 byte	x		x	
		Set HSV(W) brightness value (V)	Output A - Group x	5,001	1 byte	x	x	x	x
		Set HSV(W) brightness value (V)/Status	Output A - Group x	5,001	1 byte	x	x	x	x
96, 118…	2119, 2141…	Set RGB(W) value white	Output A - Group x	5,001	1 byte	x		x	
		Set RGB(W) value white/Status	Output A - Group x	5,001	1 byte	x	x	x	x
		Set HSV(W) value white (W)	Output A - Group x	5,001	1 byte	x		x	
		Set HSV(W) value white (W)/Status	Output A - Group x	5,001	1 byte	x	x	x	x
97, 119…	2120, 2142…	Color temperature status	Output A - Group x	7,600	2 bytes	x	x		x
		RGB status combined (3 bytes)	Output A - Group x	232,600	3 bytes	x	x		x
		RGB(W) status combined (6 bytes)	Output A - Group x	251,600	6 bytes	x	x		x
		HSV status combined (3 bytes)	Output A - Group x	Non DPT	6 bytes	x	x		x
		HSVW status combined (6 bytes)	Output A - Group x	Non DPT	3 bytes	x	x		x
428, 450…	2451, 2473…	Status byte	Output A - Ballast x	Non DPT	2 bytes	x	x		x
429, 451…	2452, 2474…	Lamp/ballast fault	Output A - Ballast x	1,005	1 bit	x	x		x
430, 452…	2453, 2475…	Forced operation, 1-bit	Output A - Ballast x	1,003	1 bit	x	x	x	
		Forced operation, 2-bit	Output A - Ballast x	2,001	2 bit	x	x	x	
		Block	Output A - Ballast x	1,003	1 bit	x	x	x	
431, 453…	2454, 2476…	Read/write operating duration DPT 13.100 [s]	Output A - Ballast x	13,100	4 bytes	x	x		x
		Read/write operating duration DPT 12.102 [h]	Output A - Ballast x	12,102	4 bytes	x	x		x
		Read/write operating duration DPT 7.007 [h]	Output A - Ballast x	7,007	2 bytes	x	x		x
432, 454…	2455, 2477…	Reset operating duration	Output A - Ballast x	1,005	1 bit	x	x		x
		Reset operating duration/Alarm	Output A - Ballast x	1,005	1 bit	x	x	x	x
433, 455…	2456, 2478…	Fct. Activate staircase lighting	Output A - Ballast x	1,010	1 bit	x	x		
		Fct. Activate stairc. light./Status	Output A - Ballast x	1,010	1 bit	x	x	x	x
		Fct. Activate Slave	Output A - Ballast x	1,010	1 bit	x	x		
		Fct. Activate slave/Status	Output A - Ballast x	1,010	1 bit	x	x	x	x
434, 456…	2457, 2479…	Slave brightness value	Output A - Ballast x	5,001	1 byte	x		x	x
435, 457…	2458, 2480…	Switch	Output A - Ballast x	1,001	1 bit	x		x	
436, 458…	2459, 2481…	Status Switch	Output A - Ballast x	1,001	1 bit	x	x		x
437, 459…	2460, 2482…	Relative dimming	Output A - Ballast x	3,007	4 bit	x		x	
438, 460…	2461, 2483…	Brightness value	Output A - Ballast x	5,001	1 byte	x		x	
439, 461…	2462, 2484…	Status Brightness value	Output A - Ballast x	5,001	1 byte	x	x		x

GO no. A	GO no. B	Function	Name	Data point type (DPT)	Length	Flags			
						K	L	S	T
440, 462…	2463, 2485…	RGB(W) relative dimming red	Output A - Ballast x	3,007	4 bit	x		x	
		HSV(W) relative dimming hue (H)	Output A - Ballast x	3,007	4 bit	x		x	
441, 463…	2464, 2486…	RGB(W) relative dimming green	Output A - Ballast x	3,007	4 bit	x		x	
		HSV(W) relative dimming saturation (S)	Output A - Ballast x	3,007	4 bit	x		x	
442, 464…	2465, 2487…	RGB(W) relative dimming blue	Output A - Ballast x	3,007	4 bit	x		x	
		HSV(W) relative dimming brightness (V)	Output A - Ballast x	3,007	4 bit	x		x	
443, 465…	2466, 2488…	Dim color temperature	Output A - Ballast x	3,007	4 bit	x		x	
		RGB(W) relative dimming white	Output A - Ballast x	3,007	4 bit	x		x	
		HSV(W) relative dimming white (W)	Output A - Ballast x	3,007	4 bit	x		x	
444, 466…	2467, 2489…	Set color temperature (percent)	Output A - Ballast x	5,001	1 byte	x		x	
		Set color temperature (K)	Output A - Ballast x	7,600	3 bytes	x		x	
		Set RGB value combined (3 bytes)	Output A - Ballast x	232,600	2 bytes	x		x	
		Set RGB(W) value combined (6 bytes)	Output A - Ballast x	251,600	3 bytes	x		x	
		Set HSV value combined (3 bytes)	Output A - Ballast x	Non DPT	6 bytes	x		x	
		Set HSVW value combined (6 bytes)	Output A - Ballast x	Non DPT	6 bytes	x		x	
445, 467…	2468, 2490…	Activate Dim2Warm color function	Output A - Ballast x	5,001	1 byte	x		x	
		Activate automatic HCL color function	Output A - Ballast x	5,003	1 byte	x		x	
		Set RGB(W) value red	Output A - Ballast x	5,001	1 byte	x	x	x	x
		Set RGB(W) value red/Status	Output A - Ballast x	5,003	1 byte	x	x	x	x
		HSV(W) set value hue (H)	Output A - Ballast x	1,010	1 bit	x		x	
		Set HSV(W) value hue (H)/Status	Output A - Ballast x	1,010	1 bit	x		x	
446, 468…	2469, 2491…	Activate color temperature preset 1/2	Output A - Ballast x	5,001	1 byte	x	x	x	x
		Set RGB(W) value green	Output A - Ballast x	1,022	1 bit	x		x	
		Set RGB(W) value green/Status	Output A - Ballast x	5,001	1 byte	x		x	
		Set HSV(W) value saturation (S)	Output A - Ballast x	5,001	1 byte	x	x	x	x
		Set HSV(W) value saturation (S)/Status	Output A - Ballast x	5,001	1 byte	x		x	
447, 469…	2470, 2492…	Set RGB(W) value blue	Output A - Ballast x	5,001	1 byte	x		x	
		Set RGB(W) value blue/Status	Output A - Ballast x	5,001	1 byte	x		x	
		Set HSV(W) brightness value (V)	Output A - Ballast x	5,001	1 byte	x	x	x	x
		Set HSV(W) brightness value (V)/Status	Output A - Ballast x	5,001	1 byte	x	x	x	x
448, 470…	2471, 2493…	Set RGB(W) value white	Output A - Ballast x	5,001	1 byte	x		x	
		Set RGB(W) value white/Status	Output A - Ballast x	5,001	1 byte	x	x	x	x
		Set HSV(W) value white (W)	Output A - Ballast x	5,001	1 byte	x		x	
		Set HSV(W) value white (W)/Status	Output A - Ballast x	5,001	1 byte	x	x	x	x
449, 471…	2472, 2494…	Color temperature status	Output A - Ballast x	7,600	2 bytes	x	x		x
		RGB status combined (3 bytes)	Output A - Ballast x	Non DPT	3 bytes	x	x		x
		HSV status combined (3 bytes)	Output A - Ballast x	Non DPT	6 bytes	x	x		x
		RGB(W) status combined (6 bytes)	Output A - Ballast x	251,600	6 bytes	x	x		x
		HSVW status combined (6 bytes)	Output A - Ballast x	232,600	3 bytes	x	x		x
1836, 1840…	3859, 3863…	Trigger em. lighting test (CTC)	Output A - Emergency light x	DPT_CTC	1 byte	x		x	
		Trigger em. light. test (DGN/S)	Output A - Emergency light x	LEGACY CTT 2.8.2.8	1 byte	x		x	
		Trigger em light. test/Status (DGN/S)	Output A - Emergency light x	LEGACY CTT 2.8.2.5	1 byte	x	x	x	
1837, 1841…	3860, 3864…	Em. lighting test result	Output A - Emergency light x	DPT_CTR	6 bytes	x	x		x
1838, 1842…	3861, 3865…	Emergency light. converter status	Output A - Emergency light x	DPT_CS	2 bytes	x	x		x

8.2 Group objects, general

No.	Function	Group object name	Data type	Flags
1	**In operation**	**General**	**1 bit** **DPT 1.002**	**C, R, T**
	Dependent on parameters	Enable group object "In operation"		
This group object is enabled if *Enable group object "In operation"* is set to *Yes* in the General parameter window. In order to regularly monitor the presence of the device on KNX, an in operation monitoring telegram can be sent cyclically on the bus. As long as the group object is activated, it sends a parametrizable In operation telegram.				
2	**Block manual operation/Status**	**General**	**1 bit** **DPT 1.003**	**C, R, W, T**
	Dependent on parameters	Enable manual operation Obj "Block manual operation/Status"		
This group object blocks manual operation. When manual operation is blocked, connected DALI devices cannot be manually switched via the DALI gateway. Activating the *Trigger DALI addressing* function by pressing and holding the pushbutton (> 5 s) is also disabled. However, the status of manual operation – blocked (1) and enabled (0) – can be queried and/or sent via KNX with this group object. Telegram value: 0 = Manual operation/ pushbutton is enabled. 1 = Manual operation/ pushbutton is blocked.				
3	**Gateway supply voltage fault**	**General**	**1 bit** **DPT 1.005**	**C, R, T**
	Dependent on parameters	Enable group object "Gateway supply voltage fault"		
This group object is enabled if *Enable group object "Gateway supply voltage fault"* is set to *Yes* in the General parameter window. If the gateway supply voltage fails for more than five seconds, a Fault message telegram is sent immediately. The time depends on the DALI load: it is < 5 seconds when idling and < 1 second at full load. Telegram value: 0 = No fault 1 = Fault				
4	**Acknowledge gateway supply voltage fault**	**General**	**1 bit** **DPT 1.015**	**C, W**
	Dependent on parameters	Enable acknowledgment via gr. obj. "Acknowledge gateway supply voltage fault"		
This group object is enabled if *Enable acknowledgment via gr. obj. "Acknowledge gateway supply voltage fault"* is set to *Yes* in the General parameter window. This group object is used to reset the Gateway supply voltage fault. The fault is reset after acknowledgment only if it has been corrected. Telegram value: 0 = No function 1 = Reset fault messages				
5	**Request status values**	**General**	**1 bit** **DPT 1.017**	**C, W**
	Dependent on parameters	Enable group object "Request status values"		
This group object is enabled if *Enable group object "Request status values"* is set to *Yes* in the General parameter window. This group object triggers the sending of status values on KNX. This requires the *After change and/or On request* option for the relevant group object to be set to *On request*. Telegram value: 0 = No status values sent, no function 1 = All status messages are sent, provided set to *On request*				

8.3 Output A group objects

This section describes the group objects for DALI output A. The same objects are available on output B of the 2-fold DALI Gateway DG/S 2.64.5.1 but named accordingly as *Output B* objects.

DALI outputs A and B are mutually independent and have no overarching function in the gateway. For example, a common KNX group is required in order to assign groups or individual lamps from both outputs to an overarching group or scene.

No.	Function	Group object name	Data type	Flags
6	**Status byte**	**Output A**	**2 bytes** **Non DPT**	**C, R, T**
	Dependent on parameters	None		

This group object is always enabled.
This group object consists of two bytes. Each bit contains a DALI output status.

The following numbering applies to the list below:

High byte Low byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}	2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0:	1 = DALI controller failure in gateway, which occurs when the gateway supply voltage fails 0 = There is communication with the DALI controller in the gateway
Bit 1:	1 = DALI fault. This may be a DALI short circuit or overload. But a DALI fault also occurs when the gateway supply voltage fails (see bit 0). 0 = DALI voltage present
Bit 2:	1 = DALI overvoltage (>30 V) 0 = No DALI overvoltage
Bit 3:	1 = DALI overcurrent/short circuit (> 160 mA) 0 = No DALI overcurrent
Bit 4:	1 = More than 64 DALI devices are connected to the DALI output. 0 = No more than 64 DALI devices are connected to the DALI output.
Bit 5:	1 = DALI groups conflict. A group conflict occurs if a DALI device is parametrized as an individual device in ETS but also assigned to a DALI group. 0 = No DALI group conflict
Bit 6:	1 = DALI device type conflict. This occurs if the device type setting in ETS does not match the DALI device. For example, DALI device 37 is enabled as an emergency lighting converter (DALI type 1) in ETS, but the device with DALI address 37 is not a converter (type 1). 0 = No DALI device type conflict
Bit 7:	1 = Overlapping DALI groups. This occurs if a DALI device is a member of two different DALI groups. This cannot be done with the i-bus® Tool. But an overlapping DALI group can arise if a previously parametrized DALI device with a preprogrammed DALI group is connected to the DALI output. 0 = No overlapping DALI groups
Bit 8 to 15	0, not in use

The telegrams are sent as soon as the status is detected.

No.	Function	Group object name	Data type	Flags
7	**Trigger DALI addressing**	**Output A**	**1 bit** **DPT 1.003**	**C, W**
	Dependent on parameters	None		

This group object is always enabled.

If the gateway receives a value 1 telegram on this group object, one-time DALI addressing is triggered. All DALI devices without a DALI address receive one. DALI devices with duplicate addresses are deduplicated.

This function is of particular interest when the parametrization prohibits automatic DALI addressing (see X DALI configuration parameter window).

DALI addressing can also be triggered via the i-bus® Tool.

Telegram value: 0 = No reaction
1 = Trigger DALI addressing

No.	Function	Group object name	Data type	Flags
8	**Monitor DALI addresses**	**Output A**	**1 bit** **DPT 1.010**	**C, W**
	Dependent on parameters	None		

This group object is always enabled.

This group object stores the current gateway status as the reference state.

In order to correctly detect a ballast fault, the gateway must have identified all connected DALI devices and thus know how many of them are to be monitored. This identification process runs autonomously and fully automatically in the background after the gateway receives a value 1 telegram via this group object. The gateway notes the current system configuration as a reference state. To this end, all DALI (short) addresses are stored in the gateway. Should a DALI address now be lost, e.g. by a ballast fault or cable break, the gateway interprets this as a ballast fault and depending on the parametrization, sends it on KNX as a fault.

Telegram value: 1 = Activate DALI address monitoring
0 = No function

Note

DALI address monitoring should be carried out straight after commissioning or when adding or removing DALI devices. The DALI devices are continually monitored, regardless of whether the lighting equipment is activated or deactivated. The DALI devices must be properly installed and have a supply voltage if necessary.

DALI address monitoring can also be triggered via the i-bus® Tool independently of ETS.

No.	Function	Group object name	Data type	Flags
9	**Flexible dimming/fade time (DALI format [0…14])**	**Output A**	**1 byte DPT 20.602**	**C, W**
	Dependent on parameters	Group object format for dimming/fade time		

This group object is enabled if *Enable group object "Flexible dimming/fade time..."* is set to *Yes* in the X Output: Functions parameter window.

This group object defines whether the dimming time can be changed via KNX.

There is only one flexible dimming time per DALI output; it affects all parametrized flexible dimming times on the output:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

Whether the group/ballast responds to flexible dimming time is defined in the *Group x* or *Ballast x* parameter window.

The dimming times correspond to the fade times defined in DALI standard IEC 62386-102.

Telegram value: 0…14: Corresponds to the fade times according to DALI

Telegram value	Fade time[s] to IEC 62386-102
0	Jump to
1	0.7
2	1.0
3	1.4
4	2.0
5	2.8
6	4.0
7	5.7
8	8.0
9	11.3
10	16.0
11	22.6
12	32.0
13	45.3
14	64.0
> 14	Mapped to 14 (64.0 seconds)

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness.

If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

The default value is set at 2.0 s until the first value is received.

During a KNX failure or download, the fade time received via KNX is lost and replaced by the default value of 2.0 s.

See the next group object description for other group object formats.

No.	Function	Group object name	Data type	Flags
9	**Flexible dimming/fade time (100 ms)**	**Output A**	**2 bytes DPT 7.004**	**C, W**
	Dependent on parameters	Group object format for dimming/fade time		

This group object is enabled if *Enable group object "Flexible dimming/fade time..."* is set to *Yes* in the X Output: Functions parameter window.

This group object defines whether the dimming time can be changed via KNX.

There is only one flexible dimming time per DALI output; it affects all parametrized flexible dimming times on the output:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

Whether the group/ballast responds to flexible dimming time is defined in the *Group x* or *Ballast x* parameter window.

Note that it is not the sent KNX value in the DALI devices that is used for the transition, but the nearest DALI value defined as a fade time in DALI standard IEC 62386-102. The gateway runs a mathematical rounding operation in order to determine the most suitable DALI value.

For switching off/on and for setting brightness values, when setting times longer than 32,000 ms the exact time value is used instead of the rounded DALI value. In this case there is a tolerance of ± 3 s. Scene transition times are an exception to this rule. For scenes, the rounded DALI times apply to the whole range, with a maximum transition time of 64,000 ms.

Telegram value: 0…65,535 x 100 ms:

Telegram value in ms	**Effective fade time[s] to IEC 62386-102**
0…340	jump to
350…840	0.7
850…1,190	1.0
1,200…1,690	1.4
1,700…2,390	2.0
2,400…3,390	2.8
3,400…4,840	4.0
4,850…6,840	5.7
6,850…9,640	8.0
9,650…13,640	11.3
13,650…19,290	16.0
19,300…27,290	22.6
27,300…32,000	32.0
> 32,000…65,535	Time values with an error tolerance of ±3 s
Scene	For scene transition time the rounded DALI times applies to the whole range.
27,300…38,640	32.0
38,650…54,640	45.3
54,650…77,240	64.0
> 77,240	Mapped to 64.0 seconds for scene

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness.
If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

The default value is set at 2.0 s until the first value is received.

During a KNX failure or download, the fade time received via KNX is lost and replaced by the default value of 2.0 s.

See the next group object description for other group object formats.

No.	Function	Group object name	Data type	Flags
9	**Flexible dimming/fade time (time 1 s)**	**Output A**	**2 bytes DPT 7.002**	**C, W**
	Dependent on parameters	Group object format for dimming/fade time		

This group object is enabled if *Enable group object "Flexible dimming/fade time..."* is set to *Yes* in the X Output: Functions parameter window.

This group object defines whether the dimming time can be changed via KNX.

There is only one flexible dimming time per DALI output; it affects all parametrized flexible dimming times on the output:

- Dimming time for turn on/off value
- Dimming time for brightness value
- Dimming time for slave brightness value
- Scene transition time

Whether the group/ballast responds to flexible dimming time is defined in the *Group x* or *Ballast x* parameter window.

Note that it is not the sent KNX value in the DALI that is used for the scene transition, but the nearest DALI value defined as a fade time in DALI standard IEC 62386-102. The gateway runs a mathematical rounding operation in order to determine the most suitable DALI value.

For switching off/on and for setting brightness values, when setting times longer than 32 s the exact time value is used instead of the rounded DALI value. In this case there is a tolerance of ± 3 s. Scene transition times are an exception to this rule. For scenes, the rounded DALI times apply to the whole range, with a maximum transition time of 64.0 s.

Telegram value: 0…65,535 x 1 s:

Telegram value in 1 s	**Effective fade time[s] to IEC 62386-102**
0	jump to
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7…9	8
10…13	11.3
14…18	16.0
19…26	22.6
27…32	32.0
> 32…65,535	Time values with an error tolerance of ±3 s
Scene	For scene transition time the rounded DALI times applies to the whole range.
27…38	32.0
39…54	45.3
55…77	64.0
> 91…65,535	Mapped to 64.0 seconds for scene

The fade time is specified as the time required to change the lamp power from the current brightness value to the required target brightness.
If a lamp is switched off, the preheat and ignition time are excluded from the fade time.

The default value is set at 2.0 s until the first value is received.

During a KNX failure or download, the fade time received via KNX is lost and replaced by the default value of 2.0 s.

No.	Function	Group object name	Data type	Flags
10	**Switch**	**Output A**	**1 bit** **DPT 1.001**	**C, W**
	Dependent on parameters	None		

This group object switches all the DALI devices connected to the DALI output on or off at the predefined brightness values in the X Output parameter window.

Telegram value: 0 = OFF: all lamps switched off
1 = ON: all lamps switched on

When an ON telegram is received, the parameter settings define whether a predefined brightness value or the value before switch-off is set. If DALI devices are already switched on and the DALI gateway receives an ON telegram, all DALI devices are set to the parametrized switch-on value.

You can define whether the DALI gateway dims up to or jumps to the brightness values. Switch-on values above or below the maximum brightness/minimum dimming values (dimming thresholds) are set to the respective threshold.

Note

The activated *Burn-in* function can influence the brightness of the DALI devices.

If the additional function *Staircase lighting* is activated, this function is triggered with an ON telegram (value 1) and the corresponding time sequence starts.

No.	Function	Group object name	Data type	Flags
11	**Status Switch**	**Output A**	**1 bit** **DPT 1.001**	**C, R, T**
	Dependent on parameters	Enable group object "Status Switch"		

This group object is enabled if *Enable group object "Status Switch"* is set to *Yes* in the X Output: Status parameter window.

The value of the group object indicates the current contact position of the DALI output.

Telegram value: 0 = OFF, all DALI devices are switched off
1 = ON, at least one or all DALI devices are switched on

You can define whether the ON status is indicated if at least one lamp is on, or if all lamps are on. The status can be sent after a change and/or on request.

No.	Function	Group object name	Data type	Flags
12	**Fct. Activate Turn off brightness/Status**	**Output A**	**1 bit** **DPT 1.003**	**C, R, W, T**
	Dependent on parameters	Enable group object "Fct. Activate Turn off brightness/Status"		

This group object is enabled if *Enable group object "Fct. Activate Turn off brightness/Status"* is set to *Yes* in the X Output: Functions parameter window.

This group object activates/deactivates the turn off brightness when switching off. The function is also used with the *Staircase lighting* function.

Telegram value: 0 = Turn off brightness function deactivated.
1 = Turn off brightness function activated.
The turn off brightness is set to the parametrized brightness value.

Turn off brightness is a function that can be used with the following functions:

- *Switch off* function (output, group, ballast)
- *Staircase lighting* function

The *Turn off brightness* function defines whether the output/group/ballast is switched off completely or switched to a turn off brightness.

Turn off brightness has no influence on the Block, Forced operation, Slave or Scenes functions. Nor is it used for dimming and brightness value setting commands.

After a download, the state of the turn off brightness is retained. If no value is recognized at this point, the group object is written with 0 and the *Turn off brightness* function is deactivated.
You can define whether the output, group or ballast responds to the *Fct. Activate Turn off brightness/Status* group object.

Brightness value threshold priorities:

- Physical min (cannot be changed, predefined by the physics of the ballast)
- Min dimming value (parametrizable, written in ballast)
- Turn off brightness (parametrizable; values lower than the min. dimming value are mapped to that value)
- With staircase lighting, basic brightness is equivalent to turn off brightness.

No.	Function	Group object name	Data type	Flags
13	**Relative dimming**	**Output A**	**4 bit** **DPT 3.007**	**C, W**
	Dependent on parameters	None		
This group object receives the *Relative dimming* telegram for all DALI devices connected to the DALI output. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the brightness value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends or the maximum brightness or minimum dimming value is reached, the dimming process is interrupted and the brightness value reached is retained. The minimum and maximum dimming thresholds apply and cannot be exceeded. The dimming thresholds for the individual groups/ballasts also continue to apply. Switch-off via dimming is parametrizable. In other words, selecting this setting switches off the DALI lamps on the output if all the devices have reached the minimum dimming value. Dimming time cannot be changed via KNX.				
14	**Brightness value**	**Output A**	**1 byte** **DPT 5.001**	**C, W**
	Dependent on parameters	None		
This group object receives a brightness value for all the DALI devices connected to the DALI output. Any burn-in time currently running has a higher priority, so under certain circumstances individual devices can adopt only a brightness of 100% or OFF. Brightness values above or below the predefined max. brightness or min. dimming values (dimming thresholds) are mapped to the threshold values. Telegram value: 0 = 0% (OFF), or min. dimming threshold if parametrized … 255 = 100%				
15	**Status Brightness value**	**Output A**	**1 byte** **DPT 5.001**	**C, R, T**
	Dependent on parameters	Enable group object "Status Brightness value"		
This group object is enabled if *Enable group object "Status Brightness value"* is set to *Yes* in the X Output parameter window. Telegram value: 0 = 0% (OFF) … 255 = 100%, max. brightness value This group object signals the status of the current DALI output brightness value. If the DALI devices have different brightness values you can define whether the gateway displays the lowest, highest or average value. You can also define whether the value of the group object is updated during a dimming process or whether the status is sent only once the final value has been reached. You can define whether the status is sent *After change* and/or *On request*.				
16	**Set color temperature (K)**	**Output A**	**2 bytes** **DPT 7.600**	**C, W**
	Dependent on parameters	Enable group object "Output – Set color temperature (K)"		
This group object is enabled if *Enable group object "Output – Set color temperature (K)"* is set to Yes in the X Output: Color functions parameter window. This group object broadcasts a color temperature value command to the DALI output, which sets all the DALI devices on the output to the same color temperature.				

No.	Function	Group object name	Data type	Flags
17	**Status Switch addressed**	**Output A**	**2 bytes** **Non DPT**	**C, R, T**
	Dependent on parameters	Enable group object "Status Switch addressed"		

This group object is enabled if *Enable group object "Status Switch addressed"* is set to *Yes* in the X Output: Status parameter window.

This group object consists of two bytes. The High byte contains the switch status of the corresponding device or group. The Low byte contains the device or group number, the information as to whether a device or a group is selected and whether it is a status request or a sent status.

Dest addr	Data	Destination	R	DPT
4/1/15	00 00 00	A Status Switch addressed	6	2-octet unsigned

High byte Low byte

You will obtain the hexadecimal representation if, for example, you select DPT 7.001 2-octet unsigned. This setting is set as a data type under Properties (select group object and right click).

The following numbering applies to the list below:

High byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0...5	Corresponds to the device address (0...63) or the number of a group (0...15)
Bit 6 (2^6)	Determines whether the status value relates to a group (value 1) or an individual device (value 0)
Bit 7	1 = Status request. If a telegram with a set bit 7 is received, it is interpreted as a status request and the switch status of the requested group or device is sent. When the answer is sent, the value of bit 7 is reset to 0.
Bit 8	Indicates the switch status: 1 = lamp(s) switched on, 0 = lamps(s) switched off
Bit 9…15	Value = 0 with a status feedback. These bits are not evaluated with a request (bit 7 = 1).

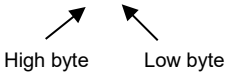
The group object value is sent only on request.

No.	Function	Group object name	Data type	Flags
18	**Status Brightness value addressed**	**Output A**	**2 bytes** **Non DPT**	**C, R, T**
	Dependent on parameters	Enable group object "Status Brightness value addressed"		

This group object is enabled if *Enable group object "Status Brightness value addressed"* is set to *Yes* in the X Output: Status parameter window.

This group object consists of two bytes. The High byte contains the brightness value of the corresponding device or group. The Low byte contains the device or group number, the brightness value and the information as to whether it is a status request or a sent status.

Dest addr	Data	Destination	R	DPT
4/1/15	00 00	A Status Brightness value addressed	6	2-octet unsigned



2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}	2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

You will obtain the hexadecimal representation if, for example, you select DPT 7.001 2-octet unsigned. This setting is set as a data type under Properties (select group object and right click).

The following numbering applies to the list below:
High byte Low byte

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0...5	Corresponds to the device address (0...63) or the number of a group (0...15)
Bit 6 (2^6)	Determines whether the status value relates to a group (value 1) or an individual device (value 0)
Bit 7	1 = Status request. If a telegram with a set bit 7 is received, it is interpreted as a status request and the switch status of the requested group or device is sent. When the answer is sent, the value of bit 7 is reset to 0.
Bit 8…15	Contains the brightness value of the selected group or individual device as a value between 0 and 255.

The group object value is sent only on request.

No.	Function	Group object name	Data type	Flags
19	**Status Color temperature addressed**	**Output A**	**3 bytes Non DPT**	**C, R, W, T**
	Dependent on parameters	Enable group object "Status Color temperature addressed"		

This group object is enabled if *Enable group object "Status Color temperature addressed"* is set to *Yes* in the X Output: Status parameter window.

This group object consists of three bytes. The High bytes contain the color temperature value of the corresponding device or group. The Low byte contains the device or group number, the color temperature value and the information as to whether it is a status request or a sent status.

Dest addr	Data	Destination	R	DPT
4/1/15	00 00 00	A Status Color temperature addressed	6	3-octet unsigned

High byte Low byte

The following numbering applies to the list below:

High byte

2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}	2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0...5	Corresponds to the device address (0...63) or the number of a group (0...15)
Bit 6 (2^6)	Determines whether the status value relates to a group (value 1) or an individual device (value 0)
Bit 7	1 = Status request. If a telegram with a set bit 7 is received, it is interpreted as a status request and the switch status of the requested group or device is sent. When the answer is sent, the value of bit 7 is reset to 0.
Bit 8…23	Contains the color temperature value of the selected group or individual device as a value between 0 and 65,535.

The group object value is sent only on request.

Example:

The following bits must be set in order to read the current color temperature status of group 14.

2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}	2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0				0				0			

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}
1	1	0	0	1	1	0	1
C				D			

Bits 0–5 are used for the group number. To read a group, set bit 6 to 1. Set bit 7 to 1 since this is a status request. The value "$00 $00 $CD" is then sent to the bus.

The group returns "$0B $B8 $4D" on the bus. This produces the following:

2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}	2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}
0				B				B				8			
0	0	0	0	1	0	1	1	1	0	1	1	1	0	0	0

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}
4				D			
0	1	0	0	1	1	0	1

Bits 8 to 23 indicate the current color temperature, which in this case is 3,000 K. Bit 7 is set to 0 as it is the response to the status request. All other bits remain unchanged as they give the ballast/group address.

No.	Function	Group object name	Data type	Flags
20	**DALI voltage fault**	**Output A**	**1 bit** **DPT 1.005**	**C, R, T**
	Dependent on parameters	Enable group object "DALI voltage fault"		

This group object is enabled if *Enable group object "DALI voltage fault"* is set to *Yes* in the X Output: Fault parameter window.
This group object sends or reads a DALI fault.
A DALI fault occurs when there is a:

- DALI failure
- DALI short-circuit (longer than 500 ms)
- DALI overload (>30 V)

Telegram value: 1 = DALI fault
0 = No DALI fault

No.	Function	Group object name	Data type	Flags
21	**Lamp fault**	**Output A**	**1.Bit** **DPT 1.005**	**C, R, T**
	Dependent on parameters	Enable group object "Lamp fault"		

This group object is enabled if *Enable group object "Lamp fault"* is set to *Yes* in the X Output: Fault parameter window.
Telegram value: 1 = Lamp fault
(at least one connected DALI device has sent a lamp fault)
0 = No lamp fault

Note

This function must be supported by the DALI device and sent via DALI by the gateway on request.

Using DALI devices that do no not monitor their lamps and therefore do not provide this information on the DALI means that the gateway cannot detect a lamp fault. The *Monitor DALI addresses* function need not be explicitly activated in order to monitor a lamp fault.

In most cases, a lamp fault is determined or indicated by the gateway only when the lighting equipment should be switched on. Therefore, the gateway cannot signal a fault in advance.

No.	Function	Group object name	Data type	Flags
22	**Ballast fault**	**Output A**	**1 bit** **DPT 1.005**	**C, R, T**
	Dependent on parameters	Enable group object "Ballast fault"		

This group object is enabled if *Enable group object "Ballast fault"* is set to *Yes* in the X Output: Fault parameter window.
This group object sends or reads a ballast fault.
Telegram value: 1 = Ballast fault (at least one connected ballast has a fault)
0 = No ballast fault
A ballast fault can occur in one of the following situations:

- The ballast malfunctions and does not send telegrams on the DALI control line.
- The ballast has no ballast supply voltage and does not send telegrams on the DALI control line.
- The DALI control line to the ballast is interrupted and the gateway does not receive a status response.
- The ballast has lost its address and a query from the gateway remains unanswered.

Note

To ensure that ballast faults are correctly evaluated, the gateway needs to know how many DALI devices require monitoring. This is done by one-time activation of the *Monitor DALI addresses* group object (no. 8). Using this function, the gateway independently determines which DALI devices (DALI devices/DALI addresses) are connected and uses this state as a reference value. Here, not only the number but also the address of the DALI device is registered. If the system is changed, the *Monitor DALI addresses* option has to be reactivated.

The process need not be repeated when exchanging one DALI device with the same address. The new DALI device contains the old DALI address and adopts the position of the DALI device it is replacing.

The *Monitor DALI addresses* function can be triggered either by the group object of the same name or by the i-bus® Tool via the *Monitor all DALI addresses* interface in the *DALI* window.

No.	Function	Group object name	Data type	Flags
23	**Fault addressed**	**Output A**	**2 bytes** **237,600**	**C, R, W, T**
	Dependent on parameters	Enable group object "Fault addressed"		

This group object is enabled if *Enable group object "Fault addressed"* is set to *Yes* in the X Output: Fault parameter window.

This group object consists of two bytes. The High byte contains the fault status of the corresponding device or group. The Low byte contains the device or group number and the information as to whether it is a status request or a sent status.

Using this group object, the gateway transmits the status of a fault on any group or any individual DALI device on KNX.

The following numbering applies to the list below:

High byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0 to 5	Corresponds to the device address (0...63) or the number of a group (0...15)
Bit 6	Indicates the group/device reference. The value 1 indicates that the status value relates to a group, the value 0 relates to an individual device (value 0).
Bit 7	The value 1 triggers a status feedback. If a telegram with a set bit 7 is received, it is interpreted as a status request, and the switch status of the requested group or device is sent. When the answer is sent, the value of bit 7 is reset to 0.
Bit 8	Indicates a lamp fault
Bit 9	Indicates a ballast fault
Bit 10	Indicates a converter fault

A logical 1 indicates the fault.

The telegrams are sent as soon as the fault is detected. Should several faults occur at the same time, the telegrams are sent consecutively on KNX. If a fault is corrected, this is also signaled on the group object.

Note: Depending on the situation and parametrization, it can take some time to detect fault status.

No.	Function	Group object name	Data type	Flags
24	**Number of statistics fault**	**Output A**	**4 bytes** **Non DPT**	**C, R, T**
	Dependent on parameters	Enable group object "Number of statistics fault"		

This group object is enabled if *Enable group object "Number of statistics fault"* is set to *Yes* in the X Output: Fault parameter window.

This group object consists of four bytes. The individual bytes contain the number of faults on output A as a whole.

The following numbering applies to the list below:

2^{31}	2^{30}	2^{29}	2^{28}	2^{27}	2^{26}	2^{25}	2^{24}	2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}	High byte
2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}	2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}	Low byte

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0 to 5	= Number of ballasts on the output that are currently signaling on the DALI. (without emergency lighting converters)
Bit 6	= 0, without function
Bit 7	= 0, without function
Bit 8 to 13	= Number of emergency lighting converters on the output (without ballasts) that are signaling the DALI.
Bit 14	= 0, without function
Bit 15	= 0 = all emergency lighting converters are OK = 1 = At least one emergency lighting converter has a hardware fault
Bit 16 to 21	= Number of lamp faults on the output
Bit 22	= 0 = None of the emergency lighting converters has signaled a lamp fault = 1 = At least one emergency lighting converter has signaled a lamp fault
Bit 23	= 0 = None of the ballasts has signaled a lamp fault = 1 = At least one of the ballasts has signaled a lamp fault
Bit 24 to 29	= Number of malfunctioning DALI devices on the output (without ballasts and emergency lighting converters) that are no longer signaling on the DALI. DALI device monitoring is required.
Bit 30	= 0 = None of the emergency lighting converters have a ballast fault = 1 = At least one emergency lighting converter has a ballast fault
Bit 31	= 0 = None of the ballasts have a ballast fault = 1 = At least one normal light has a ballast fault

The telegrams are sent as soon as the fault is detected. Should several faults occur at the same time, the telegrams are sent consecutively on KNX. If a fault is corrected, this is also signaled on the group object.

Note: Depending on the situation and parametrization, it can take some time to detect fault status.

No.	Function	Group object name	Data type	Flags
25	**Number of ballasts fault**	**Output A**	**1 byte** **DPT 5.010**	**C, R, T**
	Dependent on parameters	Enable group object "Number of ballasts fault"		

This group object is enabled if *Enable group object "Number of ballasts fault"* is set to *Yes* in the X Output: Fault parameter window.

This group object displays the number of individual DALI devices with at least one lamp or ballast fault (referred to on an emergency lighting converter as a converter fault). The value of the group object is sent on KNX after a change.

Telegram value: 0…64 = Number of individual DALI devices (ballasts or emergency lighting converters) with a fault

If there is a ballast fault, this is not simultaneously signaled as a lamp fault.

No.	Function	Group object name	Data type	Flags
26	**Ballast number fault**	**Output A**	**1 byte** **DPT 5.010**	**C, R, T**
	Dependent on parameters	Enable group object for additional fault message displays "Number of ballasts fault" "Switch up next ballast fault"		

This group object is enabled if *Enable group objects for additional fault message displays "Ballast number fault" "Switch up next ballast fault"* is set to *Yes* in the X Output: Fault parameter window.

This group object displays the first DALI device (ballast or emergency lighting converter) with a fault as a numeric value. A correction by 1 as required for the values in *Fault addressed* group objects is not necessary here.

Telegram value: 1…64 = Number of individual ballasts (DALI devices or emergency lighting converters) with a fault

All the DALI devices with a fault can be displayed successively in conjunction with the group object *Switch up next ballast fault* (no. 25). Adding the *Number of ballasts fault* group object also detects how often switch up is required in order to display all the faults.

No.	Function	Group object name	Data type	Flags
27	**Switch up next ballast fault**	**Output A**	**1 bit** **DPT 1.008**	**C, W**
	Dependent on parameters	Enable group object for additional fault message displays "Number of ballasts fault" "Switch up next ballast fault"		

This group object is enabled if *Enable group objects for additional fault message displays "Number of ballasts fault" "Switch up next ballast fault"* is set to *Yes* in the X Output: Fault parameter window.

This group object should be considered in conjunction with the *Ballast number fault* group object. If there are several ballast faults (ballasts or emergency lighting converters), this group object can be used to switch to the next number on the *Ballast number fault* object. Value 0 switches to the next number and value 1 to the previous number.

Telegram value: 1 = "switch up": Displays the next highest ballast number with a fault on the *Ballast number fault* group object (no. 24).
Telegram value:0 = "switch down": Displays the next lowest ballast number with a fault on the *Ballast number fault* group object (no. 24).

The telegram will not switch up or down any further if it encounters the highest/lowest number.

No.	Function	Group object name	Data type	Flags
28	**Number of groups fault**	**Output A**	**1 byte** **DPT 5.010**	**C, R, T**
	Dependent on parameters	Enable group object "Number of groups fault"		

This group object is enabled if *Enable group object "Number of groups fault"* is set to *Yes* in the X Output: Fault parameter window.

This group object displays the number of DALI groups with at least one lamp or ballast fault (referred to on an emergency lighting converter as a converter fault). The value of the group object is sent on KNX after a change.

Telegram value: 0…16 = Number of DALI groups (lamps, ballasts or emergency lighting converters) with a fault

If there is a ballast fault, this is not simultaneously signaled as a lamp fault.

No.	Function	Group object name	Data type	Flags
29	**Group number fault**	**Output A**	**1 byte** **DPT 5.010**	**C, R, T**
	Dependent on parameters	Enable group object for additional fault message displays "Number of groups fault" "Switch up next group fault"		

This group object is enabled if *Enable group objects for additional fault message displays "Group number fault" "Switch up next group fault"* is set to *Yes* in the X Output: Fault parameter window.

This group object displays the first DALI group with a fault as a numeric value. A correction by 1 as required for the values in *Fault addressed* group objects (no. 21) is not necessary here.

Telegram value: 1…16 = Number of the DALI group with a fault

All the DALI groups with a fault can be displayed successively in conjunction with the group object *Switch up next group fault* (no. 28). Adding the *Number of groups fault* group object also detects how often switch up is required in order to display all the faults.

No.	Function	Group object name	Data type	Flags
30	**Switch up next group fault**	**Output A**	**1 bit** **DPT 1.008**	**C, W**
	Dependent on parameters	Enable group object for additional fault message displays "Number of groups fault" "Switch up next group fault"		

This group object is enabled if *Enable group objects for additional fault message displays "Number of groups fault" "Switch up next group fault"* is set to *Yes* in the X Output: Fault parameter window.

This group object should be considered in conjunction with the *Group number fault* group object. If there are several group faults, this group object can be used to switch to the next number on the *Group number fault* object. Value 0 switches to the next number and value 1 to the previous number.

Telegram value: 1 = "switch up": Displays the next highest group number with a fault on the *Group number fault* group object (no. 27).
0 = "switch down": Displays the next lowest group number with a fault on the *Group number fault* group object (no. 27).

The telegram will not switch up or down any further if it encounters the highest/lowest number.

No.	Function	Group object name	Data type	Flags
31	**Acknowledge fault messages/Status**	**Output A**	**1 bit** **DPT 1.015**	**C, R, W, T**
	Dependent on parameters	Acknowledge fault messages Enable group object "Acknowledge fault messages/Status"		

This group object is enabled if *Acknowledge fault messages Enable group object "Acknowledge fault messages/Status"* is set to *Yes* in the X Output: Fault parameter window.

This group object is used to reset a *DALI output fault*. The fault may be a lamp, ballast or emergency lighting converter fault relating to individual devices or a DALI group. The fault is reset after acknowledgment only if it has been corrected.

Telegram value: 0 = No function
1 = Reset fault messages

No.	Function	Group object name	Data type	Flags
32	**Block fault messages/Status**	**Output A**	**1 bit** **DPT 1.003**	**C, R, W, T**
	Dependent on parameters	Enable group object "Block fault messages/Status"		

This group object is enabled if *Enable group object "Block fault messages/Status"* is set to *Yes* in the X Output: Fault parameter window.

This group object can block the (lamp, ballast and converter) fault messages of the DALI output. The gateway will continue to checking for lamp, ballast and converter faults even when the fault messages are blocked.

While fault messages are blocked the faults are evaluated but not sent on KNX. The values of the group objects are also not updated.

Blocking fault messages minimizes system latency by reducing the KNX load.

When fault messages are enabled, all faults are sent in accordance with their parametrization. If a fault still exists after fault messages are enabled, this fault is recorded and the information is sent on KNX as per the parametrization.

Telegram value: 1 = blocks fault messages (lamp, ballast and converter fault)
0 = Enables fault messages (lamp, ballast and converter fault)

Note

This function can be useful, for example, for systems with emergency lighting applications for daily lamp checks that disconnect the lamps from the DALI control line, and thus from the DALI master (gateway). In this case, the gateway detects the loss of the DALI device and sends a ballast fault even though this is a normal operating state. If fault messages are blocked before disconnection from the DALI control line, no fault is signaled on the gateway. Operation can continue as normal. When the lamp checks are complete, normal monitoring can be reactivated via the *Block fault messages* group object.

No.	Function	Group object name	Data type	Flags
33	**Status Partial failure active**	**Output A**	**1 bit** **DPT 1.010**	**C, R, T**
	Dependent on parameters	Enable function "Partial failure"		

This group object is enabled if *Enable function "Partial failure"* is set to *Yes* in the X Output: Functions parameter window.

This group object sends information on KNX indicating a partial lighting failure on output A.

Telegram value: 1 = *Reaction on partial failure* active
0 = *Reaction on partial failure* function inactive

Note

What constitutes a partial failure for the DALI output can be defined in the *A Output Functions* parameter window. The criteria are:

- Gateway supply voltage failure
- Emergency lights in emergency mode
- Lamp/ballast fault
- Signaled externally via group object *Activate partial failure/Status*

How the group or an individual ballast reacts to a partial failure is defined in the *Group/Functions or Ballast/Functions* parameter window.

No.	Function	Group object name	Data type	Flags
33	**Activate partial failure/Status**	**Output A**	**1 bit** **DPT 1.010**	**C, R, W, T**
	Dependent on parameters	Externally via group object "Activate partial failure/Status"		

This group object is enabled if *Enable function "Partial failure"* and *Externally via group object "Activate partial failure/Status"* are set to *Yes* in the X Output: Functions parameter window.

This group object sends (status) information on KNX from the gateway, indicating a partial lighting failure.

This group object also receives information via KNX that there is a partial failure, so that the gateway triggers a partial failure on output A.

Telegram value: 1 = Activate *Reaction on partial failure* function
0 = Deactivate *Reaction on partial failure* function

Note

What constitutes a partial failure for the DALI output can be defined in the *A Output Functions* parameter window. The criteria are:

- Gateway supply voltage failure
- Emergency lights in emergency mode
- Lamp/ballast fault
- Signaled externally via *group object Activate partial failure/Status*

How the group or an individual ballast reacts to a partial failure is defined in the *Group/Functions or Ballast/Functions* parameter window.

No.	Function	Group object name	Data type	Flags
34	**Receive load shedding stage**	**Output A**	**1 byte** **DPT 236.001**	**C, W**
	Dependent on parameters	Enable function "Load shedding"		

This group object is enabled if *Enable function "Load shedding"* is set to *Yes* in the X Output: Functions parameter window.
This group object is used to receive the current load shedding stage via the bus.
The group object applies to the entire output of the device. The load shedding can be set for each output.
For more information, see:
Load shedding function
Load shedding parameter table

35	**KNX scene 1…64**	**Output A**	**1 byte** **DPT 18.001**	**C, W**
	Dependent on parameters	Use DALI scenes		

This group object is enabled if *Enable DALI scenes* is set to *Yes* in the X DALI configuration parameter window.
This 8-bit group object sends a coded Scene telegram that integrates the groups in a KNX scene. The telegram contains the number of the scene concerned as well as the information as to whether to recall it or assign the current brightness values in the scene to the groups in the scene.
Telegram value (1 byte): M0SS SSSS
(MSB) (LSB)
M: 0 = Scene is recalled
1 = Scene is stored (if allowed)
S: Number of the scene (1… 13: 00000000…00001101)

KNX 8-bit telegram value		Meaning
Decimal	**Hexadecimal**	
00	00h	Recall scene 1
01	01h	Recall scene 2
02	02h	Recall scene 3
…	…	…
128	80h	Store scene 1
129	81h	Store scene 2
130	82h	Store scene 3
…	…	…

Other numeric values do not affect the *Store scene* or *Recall scene* group objects.
For more information see: 8-bit scene code table (group object 35)

36…51	**DALI scene x**	**Output A**	**1 bit** **DPT 1.011**	**C, W**
	Dependent on parameters	Use 1-bit group objects for scene retrieval		

This group object is enabled if *Use 1-bit group objects for scene retrieval* is set to *Yes* in the X Scenes parameter window.
This 1-bit group object can be used to send a Scene telegram.

Telegram value: 1 = Scene x is retrieved
0 = Scene x is retrieved

No.	Function	Group object name	Data type	Flags
52	**Burn-in lamps/Status**	**Output A**	**1 bit** **DPT 1.010**	**C, R, W, T**
	Dependent on parameters	Enable group object "Burn-in lamps/Status"		

This group object is enabled if *Enable group object "Burn-in lamps/Status"* is set to *Yes* in the X Output: Functions parameter window.

This group object activates or deactivates the *Burn-in* function. This *group object* also displays the status. If at least one ballast is executing the *Burn-in* function, the value of the object is 1.

After receiving a value 1 telegram, all ballasts intended for burn-in can be controlled only at 0% (OFF) or 100% brightness. Whether or not a ballast or group is taken into account during burn-in is defined in the *A groups* or *A ballasts* parameter window using the *Enable function Lamp burn-in Group object "Burn-in lamps"* group object. Incoming telegrams affect all ballasts and groups on the DALI output intended for burn-in.

Burn-in time is set individually for each ballast or group. After it has elapsed, the group/ballast can be dimmed as usual, and the programmed light scene can be recalled.

If the *Burn-in lamps/Status* group object receives another value 1 telegram during the burn-in time, the time restarts from the beginning.

A value 0 telegram deactivates the *Burn-in* function and enables "normal" operation.

The burn-in time is counted only if a ballast is connected to output A and has a supply voltage. The burn-in time counts in five minute steps.

Telegram value: 1 = Activate function
0 = Deactivate function

The DALI values are invisibly updated in the background and set after the burn-in process.

Note
Burn-in can be started or stopped for individual ballasts or groups via the i-bus® Tool.

53	**Rem burn-in time**	**Output A**	**3 bytes** **Non DPT**	**C, R, T**
	Dependent on parameters	Enable group object "Rem burn-in time"		

This group object is enabled if *Enable group object "Rem burn-in time"* is set to *Yes* in the X Output: Functions parameter window.

This group object consists of three bytes. Both of the High bytes contain the remaining burn-in time (KNX DPT 7.007) for the device. The Low byte (address byte) contains the device and the information as to whether it is a status request or a sent status.

The following numbering applies to the list below:

High byte

2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}

Middle byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte (address byte)

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…5 = Contains a binary number (0…15 or 0...63). This number is the number of the DALI device that the High byte information relates to, plus 1.
Bit 6 = 0, without function or not taken into account in the request evaluation.
Bit 7 = 1, status request. If a telegram with a set bit 7 is received, it is interpreted as a request for the remaining burn-in time and corresponding feedback is sent. When the answer is sent, the value of bit 7 is reset to 0.
Bit 8…23 = The numeric value (DPT 7.007) corresponds to the remaining burn-in time in hours of the DALI device set in the Low byte. The hour value is always rounded to the next highest whole hour, e.g. 25 minutes is shown as 1 h in the group object. The internal timer has 5 minute intervals.

No.	Function	Group object name	Data type	Flags
54	**Read operating duration addr.**	**Output A**	**3 bytes** **Non DPT**	**C, R, W, T**
	Dependent on parameters	Enable group objects "Read operating duration addr." and "Reset operating duration addr."		

This group object is enabled if *Enable group object "Read operating duration addr."* *"Reset operating duration addr."* is set to *Yes* in the X Output: Functions parameter window.

This group object consists of three bytes. The High and Middle bytes contain the operating duration in hours (2-byte value, DPT 7.007) of the corresponding device or group. The Low byte contains the device or group number and the information as to whether it is a status request or a sent status.

Using this group object, the gateway transmits the operating duration of any group or any individual DALI device on KNX.

The following numbering applies to the list below:

High byte

2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}

Middle byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte (address byte)

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…5 = Contains a binary number (0…15 or 0...63). This number is the number of the DALI device that the High byte information relates to, plus 1.

Bit 6 = Indicates the group/device reference. The value 1 indicates that the value relates to a group, the value 0 relates to an individual device.

Bit 7 = 1, status request. If a telegram with a set bit 7 is received, it is interpreted as an operating duration request and corresponding feedback is sent. When the answer is sent, the value of bit 7 is reset to 0.

Bit 8…23 = The numeric value (DPT 7.007) corresponds to the operating duration in hours of the DALI device set in the Low byte. For more information, see 12.2.6, Operating duration

No.	Function	Group object name	Data type	Flags
55	**Reset operating duration addr.**	**Output A**	**3 bytes** **Non DPT**	**C, R, W, T**
	Dependent on parameters	Enable group objects "Read operating duration addr." and "Reset operating duration addr."		

This group object is enabled if *Enable group object "Read operating duration addr." "Reset operating duration addr."* is set to *Yes* in the X Output: Functions parameter window.

This group object consists of three bytes. The High and Middle bytes contain the operating duration to be set, in hours (2-byte value, DPT 7.007), of the corresponding device or group. The Low byte contains the device or group number and the information that this is incoming information for the gateway.

Using this group object, the gateway transmits the required operating duration of any group or any individual DALI device on KNX.

The following numbering applies to the list below:

High byte

2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}

Middle byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte (address byte)

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…5 = Contains a binary number (0…15 or 0...63). This number is the number of the DALI device that the High byte information relates to, plus 1.

Bit 6 = Indicates the group/device reference. The value 1 indicates that the value relates to a group, the value 0 relates to an individual device.

Bit 7 = If a telegram with a set bit 7 is received, it is interpreted as a save command to set the received operating duration as a new operating duration.

Bit 8…23 = The numeric value (DPT 7.007) corresponds to the required operating duration in hours of the DALI device set in the Low byte. For more information, see 12.2.6, Operating duration

No.	Function	Group object name	Data type	Flags
56	**Activate Slave offset/Status**	**Output A**	**1 bit** **DPT 1.010**	**C, R, W, T**
	Dependent on parameters	Enable group object "Activate Slave offset/Status"		

This group object is enabled if *Enable group object "Activate Slave offset/Status"* is set to *Yes* in the X Output: Functions parameter window.

This group object activates or deactivates the *Slave offset* function. This *group object* also displays the status. If at least one ballast is executing the *Slave offset* function, the value of the object is 1.

Whether a slave evaluates telegrams via the *Activate Slave offset* group object and thus executes the *Slave offset* function can be individually defined for each slave.

Telegram value: 0 = Offset is deactivated. The slave is directly controlled by the master brightness value.
1 = Offset is activated. The slave brightness is controlled by its offset from the master

No.	Function	Group object name	Data type	Flags
57	**Synchronize auto emerg. lighting tests**	**Output A**	**1 bit** **DPT 1.010**	**C, W, T**
	Dependent on parameters	Enable fct Automatic emergency lighting tests Group object "Synch. auto emergency lighting tests"		

This group object is enabled if *Enable fct Automatic emergency lighting tests Group object "Synch. auto emergency lighting tests"* is set to *Yes* in the X Emergency lighting converter parameter window.

This group object transmits the start request for automatic emergency lighting tests from the gateway to the emergency lighting converter. The start itself is triggered by the converter if it is ready (e.g. battery must be charged).

An automatically triggered emergency lighting test can be a function test or duration test. The test must be supported by the emergency lighting converter (DT1 to IEC 62386-202). This is only an optional requirement according to the standard.

To prevent all emergency lights being in the emergency lighting test or recharging cycle at the same time, a time offset for two neighboring converters can be defined in the A Emergency lighting converter parameter window. The formula used for the offset is the *DALI short address multiplied by the offset*. In other words, setting a delay of 1 (= 15 minutes) means that converter 1 is offset by 15 minutes, converter 2 by 30 minutes, and so on.

Telegram value 1 = Start automatic emergency lighting test
0 = Stop automatic emergency lighting test

The gateway gives this time – exactly as it is in the actual emergency lighting test trigger signal – only to the converter. Whether and with which of the timing tolerances the conditions actually start depends on the state of the emergency lighting converter and its timing tolerances. The converter may, for example, be in the recharging cycle (20 hours is not uncommon) and the (pending) test does not start.

No.	Function	Group object name	Data type	Flags
58	**Trigger em. light. test addr. (DGN/S)**	**Output A**	**2 bytes** **non DPT (ACTT)**	**C, W, T**
	Dependent on parameters	Trigger em. lighting test (addr.)		

This group object is enabled if *Trigger em. lighting test (addr.)* is set to *Yes, DGN/S1.16.1 format* in the X Emergency lighting converter parameter window.

This group object triggers an emergency lighting test. This group object does not send the status or the emergency lighting test result from the gateway on KNX.

This group object consists of two bytes:

- The High byte contains a numeric value that determines which emergency lighting test to trigger.
- The Low byte contains the number of the emergency lighting converter.

The following numbering applies to the list below:

High byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…5 = Contains a binary number (0…63). This number is the number of the DALI emergency lighting converter that the High byte information relates to, plus 1.
Bit 6 = 0
Bit 7 = 1

Bit 8 and 10
Value 0 (000) = Stops the test currently running
Value 1 (001) = function test requested (corresponds to DALI Cmd. 227)
Value 2 (010) = Partial duration test requested
Value 3 (011) = duration test requested (corresponds to DALI Cmd. 228)
Value 4 (100) = Battery query
Value 5 (101) = Without function or not taken into account in evaluation
Value 6 (110) = Without function or not taken into account in evaluation
Value 7 (111) = Without function or not taken into account in evaluation

Bit 11…15 = 0, without function or not taken into account in the request evaluation

Note

The result of the emergency lighting test for each converter (emergency light) can be sent via the addressed group object *Em. lighting test result* (no. 42) or the *Em. lighting test status* group object (no. 929ff).

No.	Function	Group object name	Data type	Flags
58	**Trigger em. lighting test (addr.)**	**Output A**	**2 bytes DPT_CTC**	**C, W, T**
	Dependent on parameters	Trigger em. lighting test (addr.)		

This group object is enabled if *Trigger em. lighting test (addr.)* is set to *Yes, KNX Format DPT_CTC* in the X Emergency lighting converter parameter window.

This group object triggers an emergency lighting test. This group object does not send the status or the emergency lighting test result from the gateway on KNX.

This group object consists of two bytes:

- The High byte contains a numeric value that determines which emergency lighting test to trigger.
- The Low byte contains the number of the emergency lighting converter.

The following numbering applies to the list below:

High byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…5 = Contains a binary number (0…63). This number is the number of the DALI emergency lighting converter (Emergency light x) that the High byte information relates to, plus 1.
Bit 6 = 0
Bit 7 = 1

The value of the High byte contains the information on which emergency lighting test to trigger:

Value 0 (000) = Reserved, no function
Value 1 (001) = function test requested (corresponds to DALI Cmd. 227)
Value 2 (010) = duration test requested (corresponds to DALI Cmd. 228)
Value 3 (011) = Partial duration test requested
Value 4 (100) = Stops the test currently running (corresponds to DALI Cmd 229)
Value 5 (101) = Function test flag reset (corresponds to DALI Cmd 230). This means that if a function test is requested and not executed, a flag is set in the emergency lighting converter indicating that the test is pending. This flag can be canceled so that a function test is no longer pending.
Value 6 (110) = Duration test flag reset (corresponds to DALI Cmd 231). This means that if a duration test is requested and not executed, a flag is set in the emergency lighting converter indicating that the test is pending. This flag can be canceled so that a duration test is no longer pending.
Value 7...255 = Reserved, no function

Note

The result of the emergency lighting test for each converter can also be sent via the addressed group object *Em. lighting test result* (no. 42) or the *Em. lighting test status* group object (no. 929ff).

No.	Function	Group object name	Data type	Flags
59	**Em. lighting test status (addr.)**	**Output A**	**2 bytes non DPT (ACTS)**	**C, R, W, T**
	Dependent on parameters	Em. lighting test status (addr.)		

This group object is enabled if *Em. lighting test status (addr.)* is set to *Yes* in the X Emergency lighting converter parameter window.

This group object consists of two bytes.

The High byte contains the emergency lighting converter test state given in the Low byte, but in coded form. Automatic status feedback is sent only for the set DALI emergency lighting converters. The emergency lighting test itself is requested for each converter via the addressed group object *Trigger em. lighting test* (no. 40) or the *Trigger em. lighting test/Status* group object (no. 928ff).

The following numbering applies to the list below:

High byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…5 = Contains a binary number (0…63). This number is the number of the DALI device that the High byte information relates to, plus 1.

Bit 6 = 0, without function or not taken into account in the request evaluation.

Bit 7 = 1, status value request. If a telegram with a set bit 7 is received, it is interpreted as a test state status request and corresponding feedback is sent. When the answer is sent, the value of bit 7 is reset to 0.

Bit 8 … 10
= 000, no test
= 001, function test
= 010, partial duration test
= 011, duration test
= 100, battery query (does not require a time and therefore is not displayed)
= 101 and 110 without function or not taken into account in evaluation
= 111, there is no valid test state or the queried DALI device does not support DALI standard IEC 62386-202 for emergency lighting converters. The content of bit 8…15 is invalid.

Bit 11 and 12
= 00, test finished (the em. lighting test result group object shows whether the test is a pass or fail)
= 01, testing pending, not yet started
= 10, test running
= 11, test interrupted

Bit 13 = 1, testing manually started

Bit 14 = 1, lamp fault (emergency lighting converter)

Bit 15 = 1, device (emergency lighting converter) fault

Bit 14 and 15 relate only to an emergency lighting converter. If the device is a normal DALI device, bit 6 and 7 are not evaluated.

No.	Function	Group object name	Data type	Flags
60	**Em. lighting test result**	**Output A**	**4 bytes non DPT (FEOT)**	**C, R, W, T**
	Dependent on parameters	Em. lighting test result (addr.)		

This group object is enabled if *Em. lighting test result (addr.)* is set to *Yes* in the X Emergency lighting converter parameter window.
This group object consists of four bytes. The individual bytes contain information about a DALI emergency lighting converter.
If a normal DALI device is queried, bit 15 is set to value 1. The other bits are invalid.
The sending behavior for this group object is defined in the *Emergency light* parameter window.

The following numbering applies to the list below:

2^{31}	2^{30}	2^{29}	2^{28}	2^{27}	2^{26}	2^{25}	2^{24}	2^{23}	2^{22}	2^{21}	2^{20}	2^{19}	2^{18}	2^{17}	2^{16}	High byte
2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}	2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}	Low byte

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…5	= Contains a binary number (0…63). This number is the number of the DALI device that the High byte information relates to, plus 1.
Bit 6	= 0 indicates that the information concerns an individual emergency lighting converter
Bit 7	= 1, status value request. If a telegram with a set bit 7 is received, it is interpreted as a request for various status messages about the DALI device and corresponding feedback is sent. When the answer is sent, the value of bit 7 is set to 0.
Bit 8	= 1, last test was a function test
Bit 9	= 1, last test was a partial duration test
Bit 10	= 1, last test was duration test
Bit 11	= 1, if there is at least one fault in bit 16…23 or it is not possible to poll the emergency lighting converter battery
Bit 12	= 1, battery query finished (must be supported by the converter, optional only in DALI standard)
Bit 13…14	= 0, without function
Bit 15	= 1, there is no valid test state or the queried DALI device does not support DALI standard IEC 62386-202 for emergency lighting converters. The content of the other bits is invalid.
Bit 16…23	= Correspond to DALI telegram 252 ("query failure status")
Bit 16	= 1, switching defective. The emergency lighting converter did not respond during the test.
Bit 17	= 1, battery fault (battery fully discharged before rated operating time completed)
Bit 18	= 1, battery defective, battery fault
Bit 19	= 1, emergency lighting lamp fault
Bit 20	= 1, function test was triggered but could not be started in the predefined time
Bit 21	= 1, duration test was triggered but could not be started in the predefined time
Bit 22	= 1, function test fault, fail
Bit 23	= 1, duration test fault, fail
Bit 24…31	= Depending which test has been performed, this highest byte contains the battery charge state (0…255 = 0…100%) or the duration of the test until the battery was discharged. The value corresponds to the time in 2 x min.

61	**Stop all em. lighting tests**	**Output A**	**1 bit DPT 1.010**	**C, W, T**
	Dependent on parameters	Stop all em. lighting tests		

This group object is enabled if *Stop all em. lighting tests* is set to *Yes* in the X Emergency lighting converter parameter window.
Telegram value: 1 = All emergency lighting tests are stopped
0 = No function

No.	Function	Group object name	Data type	Flags
62	**Activate emergency lighting Inhibit/rest mode**	**Output A**	**1 bit DPT 1.010**	**C, W, T**
	Dependent on parameters	Enable function Inhibit/rest mode Group ob. "Activate Inhibit/rest mode"		

This group object is enabled if *Enable function Inhibit/rest mode Group ob. "Activate Inhibit/rest mode"* is set to *Yes* in the X Emergency lighting converter parameter window.

This group object activates or deactivates the *Inhibit/rest mode* function for an emergency lighting converter.

Whether the converter evaluates and reacts to the *Activate Inhibit/rest mode* group object is defined for each converter in the *A Emergency lighting converter/Emergency light x* parameter window.

Telegram value: 1 = Inhibit/rest mode is activated. In the event of a mains voltage failure the emergency light does not switch to emergency operation, and if it is already in this mode when Inhibit/rest mode is activated, it exits emergency operation.
0 = Inhibit/rest mode is deactivated. The emergency light is in normal mode and switches to emergency operation in the event of a mains voltage failure.

Attention

Note that when Inhibit/rest mode is activated, the emergency light has no emergency lighting function. In the event of a mains voltage failure the emergency light stays dark and does not switch to emergency operation.

Note

Rest mode is a state in which the emergency light is switched off during its emergency lighting operation. The system automatically exits rest mode in the event of a mains voltage failure. The emergency light is then in normal mode again.

Inhibit mode is a timed emergency lighting converter state in which the emergency light does not switch to emergency operation in the event of a mains voltage failure. The emergency light remains off. If the emergency lights are not switched off within 15 minutes (of Inhibit mode being activated), emergency operation is not activated and the light stays off. The system exits Inhibit mode:

- After 15 minutes unless the Inhibit command is repeated.
- If the mains voltage fails. On mains voltage recovery the emergency light is in normal mode.
- On receipt of DALI command 226 "RE-LIGHT/RESET INHIBIT".

Note

If Inhibit/rest mode is active, the DALI gateway resends the inhibit and rest command to the emergency lighting converter every 5 minutes. This continues until:

- the parametrized timeout has elapsed
- the "Inhibit/rest mode" group object receives a "0"

63	**HCL color temperature**	**Output A**	**2 bytes DPT 7.600**	**C, W**
	Dependent on parameters	HCL color temperature source		

This group object is enabled if *HCL color temperature source* is set to *16-bit group object Color temperature* in the X Output: Color functions parameter window.

This group object receives a color temperature value that is used to control the HCL.

63	**HCL ramp up/down**	**Output A**	**1 bit DPT 1.008**	**C, W**
	Dependent on parameters	HCL color temperature source		

This group object is enabled if *HCL color temperature source* is set to *1-bit group object Ramp curve* in the X Output: Color functions parameter window.

This group object triggers the HCL ramp curve.

Telegram value: 0 = Starts rising ramp
1 = Starts falling ramp

No.	Function	Group object name	Data type	Flags
64	**Activate automatic HCL color function**	**Output A**	**1 bit** **DPT 1.010**	**C, W**
	Dependent on parameters	Enable group object "Output – Activate automatic HCL color function"		
This group object is enabled if *Enable group object "Output – Activate automatic HCL color function"* is set to *Yes* in the X Output: Color functions parameter window. This group object activates or deactivates the automatic HCL color function. Telegram value: 1 = The activate automatic HCL color function is active 0 = The activate automatic HCL color function is inactive				
65	**Activate Dim2Warm color function**	**Output A**	**1 bit** **DPT 1.010**	**C, W**
	Dependent on parameters	Enable group object "Output – Activate Dim2Warm color function"		
This group object is enabled if *Enable group object "Output – Activate Dim2Warm color function"* is set to *Yes* in the X Output: Color functions parameter window. This group object blocks or enables the Dim2Warm color function. Telegram value: 1 = The activate Dim2Warm color function is active 0 = The activate Dim2Warm color function is inactive				
66	**Standby switch-off**	**Output A**	**1 bit** **DPT 1.001**	**C, R, T**
	Dependent on parameters	Enable standby switch-off		
This group object is enabled if *Enable standby switch-off* is set to *Yes* in the X Output: Color functions parameter window. This group object can be linked to a switch actuator channel. When standby switch-off is active, the switch actuator switches off the ballast supply voltage. Telegram value: 1 = Standby switch-off is active 0 = Standby switch-off is inactive				
67	**Enable standby switch-off**	**Output A**	**1 bit** **DPT 1.003**	**C, W**
	Dependent on parameters	Standby switch-off		
This group object is enabled if *Enabling also via group object "Fct. Enable standby switch-off"* is set to *Yes* in the X Output: Color functions parameter window. This group object can also be used to enable or block standby switch-off. Telegram value: 1 = Standby switch-off is enabled 0 = Standby switch-off is blocked				
68…71	**Sequence x start-stop/Status**	**Output A**	**1 bit** **DPT 1.001**	**C, R, W, T**
	Dependent on parameters	Use sequence x		
This group object is enabled if *Use sequence x* is set to *Yes* in the X sequences parameter window. This group object is used to start or stop sequence x and to read the status of sequence x. Telegram value: 0 = Sequence x is stopped/sequence x inactive 1 = Sequence x is started/sequence x active				

8.4 Ballast x/template x group objects

As the lighting groups (groups) and individual DALI devices (ballasts) have the same functions and group objects, this section describes them jointly. The *group object* names are distinguished by the term "group" or "ballast". If their functions differ, this is specified.

In the No. column (*group object* number) the first line gives the *group object* numbers for the first two groups and the second line the *group object* numbers for the first two ballasts.

The group object numbers for groups 3…16 and ballasts 3…64 are multiples of the first two *group object* numbers.

Likewise, references to a group or ballast parameter window differ only by name – group, or ballast.

References to a group in this section mean a DALI group.

Output B, the second DALI output on the DG/S 2.64.1.1, is a mirror image of output A as described in this section. Therefore, output B has the same group objects as output A; only the names differ.

Output A group object names:

- Output A - Group x
- Output A - Ballast x
- Output A - Emergency light x

Output B group object names:

- Output B - Group x
- Output B - Ballast x
- Output B - Emergency light x

Note

Ballasts are assigned to a DALI group by means of the i-bus® Tool. This is a diagnostics and commissioning tool that can be used to change DALI device numbers and make group assignments. The tool can also test functions and read operating states.

If a DALI device is controlled individually, it cannot also be assigned to a DALI group. A DALI device can be controlled either individually via ballast commands, or in a group via group commands. Overlapping DALI groups are not supported.

No.	Function	Group object name	Data type	Flags
76, 98… 428, 450…	**Status byte**	**Output A - Group x Output A - Ballast x**	**2 bytes Non DPT**	**C, R, T**
	Dependent on parameters	Use group x Use ballast x		

This group object is always enabled if a group/ballast is in use.
This group object consists of two bytes. Each bit contains a group/ballast status.
The following numbering applies to the list below:

High byte

2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}

Low byte

2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0: 1 = Ballast switch status ON
0 = Ballast switch status OFF
For groups: the switch status is 1 if at least one device in the group is ON. 0, if all group devices are OFF.

Bit 1: 1 = Ballast monitored
0 = Ballast not monitored
For groups: 1, if all devices in the group are monitored. 0, if at least 1 device is not monitored.

Bit 2: 1 = Ballast unavailable, i.e. not responding to DALI QUERY requests
0 = Ballast available, i.e. responds to DALI QUERY request
For groups: 1, if at least 1 device in the group is not available. 0, all devices in the group are available.

Bit 3: 1 = Ballast/group is in blocked state
0 = Ballast/group is not in blocked state

Bit 4: 1 = Ballast/group is in forced operation state
0 = Ballast/group is not in forced operation state

Bit 5: 1 = Ballast/group has activated an additional function and is in standby or running
0 = Ballast/group has not activated additional function

Bit 6: 1 = Ballast/group has activated an additional function and is running
0 = Ballast/group has not activated additional function

Bit 7: 1 = Ballast burn-in function active
0 = Ballast burn-in function not active
For groups: 1 if at least 1 device in the group is in burn-in state. 0, no devices in the group are in burn-in state.

Bit 8: 1 = Ballast has a lamp fault
0 = Ballast has no lamp fault
For groups: 1 if at least 1 device in the group has a lamp fault. 0, no devices in the group have a lamp fault.

Bit 9: 1 = Ballast has a ballast fault
0 = Ballast has no ballast fault
For groups: 1 if at least 1 device in the group has a ballast fault. 0, no devices in the group have a ballast fault.

Bit 10: 1 = Ballast/group turn off brightness active
0 = Ballast/group turn off brightness not active

Bit 11 to 15 0, not in use

For groups, the group status is generated by the OR combination of the individual devices in the group.
The telegrams are sent as soon as the status is detected.

No.	Function	Group object name	Data type	Flags
77, 99… 429, 451…	**Lamp/ballast fault**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.005**	**C, R, T**
	Dependent on parameters	Enable group object "Fault"		

This group object is enabled if *Enable group object "Lamp/ballast fault"* is set to *Yes* in the X (Group/ballast x) template parameter window.

In the *A Output, Group/ballast x Fault* parameter window you can define whether a lamp fault, ballast fault or lamp/ballast fault is displayed.

Telegram value: 1 = Fault (depending on the setting – lamp, ballast, lamp/ballast fault)
For groups: at least one device in the group has a fault.
0 = No fault

Note

Lamp fault must be supported by the DALI device. Using DALI devices that do no not monitor their lamps and therefore do not provide this information on the DALI means that the gateway cannot detect a lamp fault. The *Monitor DALI addresses* function need not be explicitly activated in order to monitor a lamp fault.

In most cases a lamp fault is determined or signaled by the gateway only when the lighting equipment should be switched on. Therefore, the gateway cannot signal a fault in advance.

Ballast fault is determined by the gateway. To ensure that ballast faults are correctly evaluated, the gateway needs to know how many DALI devices require monitoring. This is done by one-time activation of the *Monitor DALI addresses* group object (no. 8). Using this function, the gateway independently determines which DALI devices (DALI devices/DALI addresses) are connected and uses this state as a reference value. Here, not only the number but also the address of the DALI device is registered. If the system is changed, the *Monitor DALI addresses* option has to be reactivated.

The process need not be repeated when exchanging **one** DALI device with the same address. The new DALI device contains the old DALI address and adopts the position of the DALI device it is replacing.

The *Monitor DALI addresses* function can be triggered either by the group object of the same name or by the i-bus® Tool via the *Monitor all DALI addresses* interface in the *DALI* window.

A ballast fault can occur in one of the following situations:

- The ballast malfunctions and does not send telegrams on the DALI control line.
- The ballast has no ballast supply voltage and does not send telegrams on the DALI control line.
- The DALI control line to the ballast is interrupted and the gateway does not receive a status response.
- The ballast has lost its address and a query from the gateway remains unanswered.

No.	Function	Group object name	Data type	Flags
78, 100… 430, 452…	**Forced operation, 1-bit Forced operation, 2-bit Block**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.003 2 bit DPT 2.001 1 bit DPT 1.003**	**C, R, T**
	Dependent on parameters	Enable fct. Forced operation/Block		

This group object is enabled if *Enable fct. Forced operation/Block* is set to the required option *(Forced operation, 1-bit/Forced operation, 2-bit/Block 1 bit)* in the X Group/ballast x template parameter window. Depending on the parametrization this group object can therefore assume only one of the following functions:

- Forced operation, 1-bit
- Forced operation, 2-bit
- Block

The *Forced operation, 1-bit* group object forcibly operates group x or ballast x, e.g. by higher-level control. The value of the group object directly defines the forced position of the group:

Telegram value: 0 = The group/ballast is not forcibly operated; existing forced operations are removed.
1 = The group/ballast is forcibly operated and switched on at the parametrized brightness value. Forced operation is active.

The *Forced operation, 2-bit* group object forcibly operates group x or ballast x, e.g. by higher-level control. The value of the group object directly defines the forced position of the group:

Telegram value: 0 or 1 = The group/ballast is not forcibly operated; existing forced operations are removed.
2 = The group/ballast is forcibly switched off. Forced operation is active.
3 = The group/ballast is forcibly operated and switched on at the parametrized brightness value. Forced operation is active.

Even during forced operation the brightness value of the group/ballast is calculated when an incoming telegram arrives, but not displayed. Dimming speeds are not taken into account in the calculation, i.e. the immediate end values are stored in the background. When forced operation is complete the brightness values updated in the background are set.

A dim, scene or staircase lighting recall will not be reinitiated.

After a download, the *Forced operation* group object has the value 0. Forced operation is not activated.

The State on bus voltage recovery is parametrizable.

The *Block* group object is used to block a group/ballast to prevent unwanted operation. Any further incoming telegrams are ignored but are updated in the background. When the group is released, the updated brightness values are set and incoming telegrams immediately processed again.

Telegram value: 0 = Remove block
1 = Activate block

Blocking during the staircase lighting time immediately blocks the group/ballast and freezes the brightness. After re-enabling, the *Staircase lighting* function continues with dimming (advance warning). If the *Slave* function was active before the block, it is reinitiated.

After KNX bus voltage recovery or download, the block is set as it was before the failure or download. If the *Block* function is no longer required, the group must be released and the group object value set to 0.

No.	Function	Group object name	Data type	Flags
79, 101… 431, 453…	**Read/write operating duration DPT 13.100 [s] Read/write operating duration DPT 12.102 [h] Read/write operating duration DPT 7.007 [h]**	**Output A - Group x Output A - Ballast x**	**4 bytes DPT 13.100 4 bytes DPT 12.101 2 bytes DPT 7.007**	**C, R, W, T**
	Dependent on parameters	Enable function Operating duration		

This group object is enabled if *Enable function Operating duration* is set to *Yes* in the Functions template parameter window.

The data type for the group object is parametrized with the *Group object data type "Operating duration DPT xx.yyy"* parameter and indicates the operating duration in hours or seconds.
For more information, see 12.2.6, Operating duration

The group object can also be used to set an operating duration.

Note
The gateway only permits positive values.

80, 102.. 432, 454…	**Operating duration alarm**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.005**	**C, R, T**
	Dependent on parameters	Enable function "Operating duration alarm"		

This group object is enabled if *Enable function "Operating duration alarm"* is set to *Yes* in the Functions template parameter window.

The group object triggers an alarm when the operating duration reaches its alarm threshold.

Telegram value: 0 = operating duration alarm threshold not reached
1 = operating duration alarm threshold reached

81, 103… 433, 455…	**Fct. Activate staircase lighting**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.010**	**C, W**

This group object is enabled if the additional function *Staircase lighting* has been enabled in the (Group/ballast x) Staircase lighting template parameter window.

This group object is used to activate/deactivate the *Staircase lighting* function. On deactivation the group/ballast reacts like a "normal" gateway group/ballast without a *Staircase lighting* function. The *Staircase lighting* function can be reactivated when the gateway receives a value 1 telegram via this group object.

Telegram value: 0 = *Staircase lighting* is deactivated
1 = *Staircase lighting* is activated
Depending on the parametrization, Depending on the parametrization, staircase lighting time and staircase lighting activation can be started simultaneously. However, the pumping up option is not supported.

Provided the *Staircase lighting* function is activated, It is triggered by a value 1 telegram on either the *Switch* or *Status Switch* group object.

In the *A Output, Group/ballast x Staircase lighting* parameter window you can define whether a Brightness value, Relative dimming or Scenes telegram interrupts the *Staircase lighting* function.

81, 103… 433, 455…	**Fct. Activate stairc. light./Status**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.010**	**C, R, W, T**

This group object is enabled if the additional function *Staircase lighting* is enabled in the (Group/ballast x Staircase lighting template parameter window) and the *Send status via object "Fct. Activate stairc. light./Status"* is set to *Yes* in the *A Output, Group/ballast x Staircase lighting* parameter window.

In this case, the status of the *Staircase lighting* function is sent via this group object on the bus in addition to the functions described above.

Telegram value: 0 = *Staircase lighting* function not active
1 = *Staircase lighting* function active

Depending on the parametrization, Depending on the parametrization, staircase lighting time and staircase lighting activation can be started simultaneously. However, the pumping up option is not supported.

You can define whether the status is sent After change and/or On request.

No.	Function	Group object name	Data type	Flags
81, 103… 433, 455…	**Fct. Activate Slave**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.010**	**C, W**

This group object is enabled if the additional function Slave is enabled in the X (Group/ballast x) Slave template parameter window.

This group object is used to activate/deactivate the *Slave* function. On deactivation the group/ballast reacts like a "normal" gateway group/ballast without the *Slave* function. The *Slave* function can be reactivated when the gateway receives a value 1 telegram via this group object.

Telegram value: 0 = *Slave* is deactivated
1 = *Slave* is activated and started

In the *A Output, Group/ballast x Slave* parameter window you can define whether a Brightness value, Relative dimming or Scenes telegram interrupts the *Slave* function.

No.	Function	Group object name	Data type	Flags
81, 103… 433, 455…	**Fct. Activate slave/Status**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.010**	**C, R, W, T**

This group object is enabled if the additional function Slave is enabled in the (Group/ballast x) Slave template parameter window and the *Send status via object "Fct. Activate slave/Status"* parameter is set to *Yes* in the *A Output, Group/ballast x Slave* parameter window.

In this case, the status of the *Slave* function is sent via this group object on the bus in addition to the functions described above.

Telegram value: 0 = *Slave* function not active
1 = *Slave* function active

You can define whether the status is sent After change and/or On request.

No.	Function	Group object name	Data type	Flags
82, 104… 434, 456…	**Slave brightness value**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W, T**

This group object is enabled if the additional function *Slave* has been enabled in the (Group/ballast x) Slave template parameter window and *Source (slave is controlled via)* is set to *Object "slave brightness value"* in the *A Output, Group/ballast x slave* parameter window.

The Slave (group/ballast) receives the brightness value via this group object, e.g. from a higher-level light controller acting as the master.

If the *Slave* function is not active or the *Slave* function is latent (standby) after an OFF telegram with the value 0 on the *Switch* or *Status Switch* group object, telegrams on the *Slave brightness value* group object have no effect.

In the *A Output, Group/ballast x Slave* parameter window you can define whether a Switch, Brightness value, Relative dimming or Scenes telegram interrupts the *Slave* function.

Brightness values above or below the predefined maximum brightness/minimum dimming values (dimming thresholds) are not set. In this case, the dimming thresholds are set.

Telegram value: 0 = 0% (OFF), the group or ballast is switched off, the *Slave* function remains active.
…
255 = 100%

No.	Function	Group object name	Data type	Flags
83, 105… 435, 457…	**Switch**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.001**	**C, W**
	Dependent on parameters	Use group x Use ballast x		

This group object switches the group or individual lamps (ballasts) on or off at the brightness value set in the X Group/ballast x template parameter window.

Telegram value: 0 = OFF: group/ballast switched off
1 = ON: group/ballast switched on

When an ON telegram is received, the parameter settings define whether a predefined brightness value or the value before switch-off is set. If DALI devices are already switched on and the DALI gateway receives an ON telegram, all DALI devices are set to the parametrized switch-on value.

You can define whether the DALI gateway dims up to or jumps to the brightness values. Switch-on values above or below the maximum brightness/minimum dimming values (dimming thresholds) are set to the respective threshold.

Note

The activated *Burn-in* function can influence the brightness of the DALI devices.

If the additional function *Staircase lighting* is activated, this function is triggered with an ON telegram (value 1) and the corresponding time sequence starts.

No.	Function	Group object name	Data type	Flags
84, 106… 436, 458…	**Status Switch**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.001**	**C, R, T**
	Dependent on parameters	Enable group object "Status Switch"		

This group object is enabled if *Enable group object "Status Switch"* is set to *Yes* in the X (Group/ballast x) template parameter window.

The value of the group object indicates the current contact position of the group/ballast.

Telegram value: 0 = OFF, ballast or all devices in the group are switched off
1 = ON, ballast or at least one of the devices in the group are switched on

The status can be sent after a change and/or on request.

Note

If a DALI device is configured as an individual ballast in the DALI gateway, it can no longer be a member of a DALI group. Therefore, devices in the DALI group can be controlled only jointly via group commands. This is why the group also has a uniform switch status.

No.	Function	Group object name	Data type	Flags
85, 107… 437, 459…	**Relative dimming**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	None		

This group object receives the *Relative dimming* telegram for a group/ballast on the DALI output. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the brightness value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the brightness value reached is retained.

The minimum and maximum dimming thresholds apply and cannot be exceeded.

No.	Function	Group object name	Data type	Flags
86, 108… 438, 460…	**Brightness value**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	None		

This group object receives a brightness value for the corresponding group/ballast. Any burn-in time currently running has a higher priority, so under certain circumstances individual devices can adopt only a brightness of 100% or OFF.

In the X (Group/ballast x) template parameter window it is possible to set a dimming time to reach the brightness value.

Brightness values above or below the predefined maximum brightness/minimum dimming values (dimming thresholds) are not set.

Telegram value: 0 = OFF
…
255 = 100%

No.	Function	Group object name	Data type	Flags
87, 109… 439, 461…	**Status Brightness value**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, R, T**
	Dependent on parameters	Enable group object "Status Brightness value"		

This group object is enabled if *Enable group object "Status Brightness value"* is set to *Yes* in the X (Group/ballast x) template parameter window.

Telegram value: 0 = OFF
…
255 = 100%

This group object reports the status of the current brightness value of the group/ballast.

The brightness value displayed can be limited by the minimum/maximum dimming thresholds.

You can define:

- Whether the value of the group object is updated during a dimming process or whether the status is sent only once the final value has been reached.
- Whether the status is sent *After change* and/or *On request*.

No.	Function	Group object name	Data type	Flags
88, 110… 440, 462…	**RGB(W) relative dimming red**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Control via KNX (color format)		
This group object is enabled if the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* in the X RGB(W) Color control template parameter window. This group object receives the Red color channel Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the Red value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the Red value reached is retained.				
88, 110… 440, 462…	**HSV(W) relative dimming hue (H)**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Control via KNX (color format)		
This group object is enabled if the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* in the X RGB(W) Color control template parameter window. This group object receives the Hue Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the Hue is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the Hue reached is retained.				
89, 111… 441, 463…	**RGB(W) relative dimming green**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Control via KNX (color format)		
This group object is enabled if the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* in the X RGB(W) Color control template parameter window. This group object receives the Green color channel Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the Green value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the Green value reached is retained.				
89, 111… 441, 463…	**HSV(W) relative dimming saturation (S)**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters			
This group object is enabled if the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* in the X RGB(W) Color control template parameter window. This group object receives the Saturation Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the Saturation is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the saturation reached is retained.				
90, 112… 442, 464…	**RGB(W) relative dimming blue**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Control via KNX (color format)		
This group object is enabled if the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* in the X RGB(W) Color control template parameter window. This group object receives the Blue color channel Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the Blue value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the Blue value reached is retained.				

No.	Function	Group object name	Data type	Flags
90, 112… 442, 464…	**HSV(W) relative dimming brightness (V)**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Control via KNX (color format)		
This group object is enabled if the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* in the X RGB(W) Color control template parameter window. This group object receives the Value (brightness) Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the Value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the Value reached is retained.				
91, 113… 443, 465…	**Dim color temperature**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Color control type		
This group object is enabled if *Color control type* is set to *Color temperature Tc* in the Group x parameter window. These are COOLER, WARMER and STOP telegrams. After a START telegram is received, the color temperature is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the color temperature reached is retained. The lower and upper dimming thresholds equate to the minimum and maximum color temperature of a DALI device.				
91, 113… 443, 465…	**RGB(W) relative dimming white**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels)		
This group object is enabled if in the X RGB(W) Color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))*. This group object receives the White color channel Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the White value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the White value reached is retained.				
91, 113… 443, 465…	**HSV(W) relative dimming white (W)**	**Output A - Group x Output A - Ballast x**	**4 bit DPT 3.007**	**C, W**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels)		
This group object is enabled if in the X RGB(W) Color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))*. This group object receives the White color channel Relative dimming telegram for a group/ballast. These are BRIGHTER, DARKER and STOP telegrams. After a START telegram is received, the White value is changed in the defined direction at the parametrized speed. If a STOP telegram is received before the dimming process ends, the dimming process is interrupted and the White value reached is retained.				

No.	Function	Group object name	Data type	Flags
92, 114… 444, 466…	**Set color temperature (percent)**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Group object format		
This group object is enabled if *Group object format* is set to *8-bit percent (DPT 5.001)* in the Group x color temperature Tc parameter window. Telegram value: 0 = 0% (minimum color temperature) … 255 = 100% (maximum color temperature) This group object sets the color temperature with an 8-bit percentage value within the color range.				
92, 114… 444, 466…	**Set color temperature (K)**	**Output A - Group x Output A - Ballast x**	**2 bytes DPT 7.600**	**C, W**
	Dependent on parameters	Group object format		
This group object is enabled if *Group object format* is set to *16-bit color temperature (DPT 7.600)* in the Group x color temperature Tc parameter window. This group object sets the color temperature with a 16-bit color temperature value.				
92, 114… 444, 466…	**Set RGB value combined (3 bytes)**	**Output A - Group x Output A - Ballast x**	**3 bytes DPT 232.600**	**C, W**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use combined group object		
This group object is enabled if in the X RGB(W) Color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))* and the *Use combined group object* parameter is set to *Yes, 3 bytes (DPT_Color_RGB 232.600)*. This group object sets a color value for each color channel: Red, Blue and Green. High byte 2^{23} - 2^{16} Middle byte 2^{15} - 2^{8} Low byte 2^{7} - 2^{0} Bit 0 - 7: Blue color channel color value Bit 8 - 15: Green color channel color value Bit 16 - 23: Red color channel color value				

No.	Function	Group object name	Data type	Flags
92, 114… 444, 466…	**Set RGB(W) value combined (6 bytes)**	**Output A - Group x Output A - Ballast x**	**6 bytes DPT 251.600**	**C, W**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use combined group object		

This group object is enabled if in the X RGB(W) Color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))* and the *Use combined group object* parameter is set to *Yes, 6 bytes (DPT_Color_RGB 251.600)*.

This group object sets a color value for each color channel: Red, Blue, Green and White.

6th byte	5th byte	4th byte	3rd byte	2nd byte	1st byte
2^{47} - 2^{40}	2^{39} - 2^{32}	2^{31} - 2^{24}	2^{23} - 2^{16}	2^{15} - 2^{8}	2^{7} - 2^{0}

Bit 0	1 = White color channel color value valid 0 = White color channel color value invalid
Bit 1	1 = Blue color channel color value valid 0 = Blue color channel color value invalid
Bit 2	1 = Green color channel color value valid 0 = Green color channel color value invalid
Bit 3	1 = Red color channel color value valid 0 = Red color channel color value invalid
Bit 4 - 7	Not used
Bit 8 - 15	Not used
Bit 16 - 23	White color channel color value
Bit 24 - 31	Blue color channel color value
Bit 32 - 39	Green color channel color value
Bit 40 - 47	Red color channel color value

No.	Function	Group object name	Data type	Flags
92, 114… 444, 466…	**Set HSV value combined (3 bytes)**	**Output A - Group x** **Output A - Ballast x**	**3 bytes** **Non DPT**	**C, W**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use combined group object		

This group object is enabled if in the X RGB(W) Color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))* and the *Use combined group object* parameter is set to *Yes, 3 bytes HSVW*.

This group object sets a value for the hue, saturation and value (brightness).

High byte	Middle byte	Low byte
2^{23} - 2^{16}	2^{15} - 2^{8}	2^{7} - 2^{0}

Bit 0 - 7: Value (brightness) value
Bit 8 - 15: Saturation value
Bit 16 - 23: Hue value

No.	Function	Group object name	Data type	Flags
92, 114… 444, 466…	**Set HSVW value combined (6 bytes)**	**Output A - Group x** **Output A - Ballast x**	**6 bytes** **Non DPT**	**C, W**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use combined group object		

This group object is enabled if in the X RGB(W) Color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))* and the *Use combined group object* parameter is set to *Yes, 6 bytes HSVW*.

This group object sets a value for hue, saturation, value (brightness) and white value.

6th byte	5th byte	4th byte	3rd byte	2nd byte	1st byte
2^{47} - 2^{40}	2^{39} - 2^{32}	2^{31} - 2^{24}	2^{23} - 2^{16}	2^{15} - 2^{8}	2^{7} - 2^{0}

Bit 0	1 = White value valid 0 = White value invalid
Bit 1	1 = Value (brightness) value valid 0 = Value (brightness) value invalid
Bit 2	1 = Saturation value valid 0 = Saturation value invalid
Bit 3	1 = Hue value valid 0 = Hue value invalid
Bit 4 - 7	Not used
Bit 8 - 15	Not used
Bit 16 - 23	White value
Bit 24 - 31	Value (brightness) value
Bit 32 - 39	Saturation value
Bit 40 - 47	Hue value

No.	Function	Group object name	Data type	Flags
93, 115… 445, 467…	**Activate Dim2Warm color function/Status**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.010**	**C, R, W, T**
	Dependent on parameters	Use color function		
This group object is enabled if *Use color function* is set to Dim2Warm in the Group x Color temperature Tc parameter window. This group object blocks or enables the Dim2Warm color function. It also indicates the status of the color function. Telegram value: 1 = Activate Dim2Warm color function/Status active 0 = Activate Dim2Warm color function/Status inactive				
93, 115… 445, 467…	**Activate automatic HCL color function/Status**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.010**	**C, R, W, T**
	Dependent on parameters	Use color function		
This group object is enabled if *Use color function* is set to *Central color temperature (HCL)* in the Group x color temperature Tc parameter window. This group object activates or deactivates the automatic HCL color function. It also indicates the status of the color function. Telegram value: 1 = Activate automatic HCL color function/Status active 0 = activate automatic HCL color function/Status inactive				
93, 115… 445, 467…	**Set RGB(W) value red**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format)		
This group object is enabled if the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* in the X RGB(W) Color control template parameter window. This group object receives a Red value for the group/ballast. In the X RGB(W) color control template parameter window you can set a transition time for reaching the value. Telegram value: 0 = OFF … 255 = 100%				
93, 115… 445, 467…	**Set RGB(W) value red/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, R, W, T**
	Dependent on parameters	Control via KNX (color format) Use status		
This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Use status* parameter is set to *Yes, single objects*. This group object receives a Red value for the group/ballast. In the X RGB(W) color control template parameter window you can set a transition time for reaching the value. Telegram value: 0 = OFF … 255 = 100% The group object can also be used as a status object.				

No.	Function	Group object name	Data type	Flags
93, 115… 445, 467…	**HSV(W) set value hue (H)**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.003**	**C, W**
	Dependent on parameters	Control via KNX (color format)		

This group object is enabled if the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* in the X RGB(W) Color control template parameter window.
This group object receives a Hue value for the for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = 0°
…
255 = 360°

No.	Function	Group object name	Data type	Flags
93, 115… 445, 467…	**Set HSV(W) value hue (H)/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.003**	**C, R, W, T**
	Dependent on parameters	Control via KNX (color format) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Use status* parameter is set to *Yes, single objects*.
This group object receives a Hue value for the for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = 0°
…
255 = 360°

The group object can also be used as a status object.

No.	Function	Group object name	Data type	Flags
94, 116… 446, 468…	**Activate color temperature preset 1/2**	**Output A - Group x Output A - Ballast x**	**1 bit DPT 1.002**	**C, W**
	Dependent on parameters	Enable 1-bit presets for color temp.		

This group object is enabled if *Enable 1-bit presets for color temp.* is enabled in the Group x color temperature Tc parameter window.
This group object can be used to set two different color temperatures.

Telegram value: 0 = Sets color temperature preset 1
1 = Sets color temperature preset 2

No.	Function	Group object name	Data type	Flags
94, 116… 446, 468…	**Set RGB(W) value green**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format)		

This group object is enabled if the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* in the X RGB(W) Color control template parameter window.
This group object receives a Green value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = OFF
…
255 = 100%

No.	Function	Group object name	Data type	Flags
94, 116… 446, 468…	**Set RGB(W) value green/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, R, W, T**
	Dependent on parameters	Control via KNX (color format) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Use status* parameter is set to *Yes, single objects*.
This group object receives a Green value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = OFF
…
255 = 100%

The group object can also be used as a status object.

No.	Function	Group object name	Data type	Flags
94, 116… 446, 468…	**Set HSV(W) value saturation (S)**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format)		

This group object is enabled if the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* in the X RGB(W) Color control template parameter window.
This group object receives a Saturation value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = 0%
…
255 = 100%

No.	Function	Group object name	Data type	Flags
94, 116… 446, 468…	**Set HSV(W) value saturation (S)/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, R, W, T**
	Dependent on parameters	Control via KNX (color format) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Use status* parameter is set to *Yes, single objects*.
This group object receives a Saturation value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = 0%
…
255 = 100%

The group object can also be used as a status object.

No.	Function	Group object name	Data type	Flags
95, 117… 447, 469…	**Set RGB(W) value blue**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format)		

This group object is enabled if the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* in the X RGB(W) Color control template parameter window.
This group object receives a Blue value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = OFF
…
255 = 100%

No.	Function	Group object name	Data type	Flags
95, 117… 447, 469…	**Set RGB(W) value blue/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, R, W, T**
	Dependent on parameters	Control via KNX (color format) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Use status* parameter is set to *Yes, single objects*.
This group object receives a Blue value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = OFF
…
255 = 100%

The group object can also be used as a status object.

No.	Function	Group object name	Data type	Flags
95, 117… 447, 469…	**Set HSV(W) brightness value (V)**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format)		

This group object is enabled if the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* in the X RGB(W) Color control template parameter window.
This group object receives a Value (brightness) value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a dimming time for reaching the value.

Telegram value: 0 = 0%
…
255 = 100%

No.	Function	Group object name	Data type	Flags
95, 117… 447, 469…	**Set HSV(W) brightness value (V)/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Use status* parameter is set to *Yes, single objects*.
This group object receives a Value (brightness) value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = 0%
…
255 = 100%

The group object can also be used as a status object.

No.	Function	Group object name	Data type	Flags
96, 118… 448, 470…	**Set RGB(W) value white**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format)		

This group object is enabled if the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* in the X RGB(W) Color control template parameter window.
This group object receives a White value for the group/ballast.
In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = OFF
…
255 = 100%

No.	Function	Group object name	Data type	Flags
96, 118… 448, 470…	**Set RGB(W) value white/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, R, W, T**
	Dependent on parameters	Control via KNX (color format) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Use status* parameter is set to *Yes, single objects*.

This group object receives a White value for the group/ballast.

In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = OFF
…
255 = 100%

The group object can also be used as a status object.

No.	Function	Group object name	Data type	Flags
96, 118… 448, 470…	**Set HSV(W) value white (W)**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, W**
	Dependent on parameters	Control via KNX (color format)		

This group object is enabled if the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* in the X RGB(W) Color control template parameter window.

This group object receives a White value for the group/ballast.

In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = 0%
…
255 = 100%

No.	Function	Group object name	Data type	Flags
96, 118… 448, 470…	**Set HSV(W) value white (W)/Status**	**Output A - Group x Output A - Ballast x**	**1 byte DPT 5.001**	**C, R, W, T**
	Dependent on parameters	Control via KNX (color format) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Use status* parameter is set to *Yes, single objects*.

This group object receives a White value for the group/ballast.

In the X RGB(W) color control template parameter window you can set a transition time for reaching the value.

Telegram value: 0 = 0%
…
255 = 100%

The group object can also be used as a status object.

No.	Function	Group object name	Data type	Flags
97, 119… 449, 471…	**Color temperature status**	**Output A - Group x** **Output A - Ballast x**	**2 bytes** **DPT 3.007**	**C, R, W**
	Dependent on parameters	Color control type		

This group object is enabled if *Enable group object "Color temperature status"* is set to *Yes* in the Group X Color temperature Tc parameter window.

The group object outputs the current status of the color temperature in kelvin. The color temperature (given in kelvin) is internally converted to mirek in order to send the value on the DALI bus. The color temperature status is then internally reconverted. This results in rounding errors, which are rounded to useful values.

Color temperature	Rounded to
< 3,000 K	10 K
< 5,000 K	20 K
< 7,000 K	50 K
< 10,000 K	100 K
< 15,000 K	250 K
> 15,000 K	500 K

No.	Function	Group object name	Data type	Flags
97, 119… 449, 471…	**RGB status combined (3 bytes)**	**Output A - Group x** **Output A - Ballast x**	**3 bytes** **DPT 232.600**	**C, R, T**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use status		

This group object is enabled if in the X RGB(W) Color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Outputs on ballast (color channels)* parameter is set to *3 (RGB)* and the *Use status* parameter is set to *Yes, 3 bytes combined*.

This group object can be used to query the status of all color values (red, green and blue).

High byte	Middle byte	Low byte
2^{23} - 2^{16}	2^{15} - 2^{8}	2^{7} - 2^{0}

Bit 0 - 7: Blue color channel color value
Bit 8 - 15: Green color channel color value
Bit 16 - 23: Red color channel color value

No.	Function	Group object name	Data type	Flags
97, 119… 449, 471…	**RGB(W) status combined (6 bytes)**	**Output A - Group x Output A - Ballast x**	**6 bytes DPT 251.600**	**C, R, T**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *RGB - only color, no brightness* or *RGB - color and brightness* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))* and the *Use status* parameter is set to *Yes, 6 bytes combined*.

This group object can be used to query the status of all color values (red, green, blue and white).

6th byte	5th byte	4th byte	3rd byte	2nd byte	1st byte
2^{47} - 2^{40}	2^{39} - 2^{32}	2^{31} - 2^{24}	2^{23} - 2^{16}	2^{15} - 2^{8}	2^{7} - 2^{0}

Bit 0	1 = White color channel color value valid 0 = White color channel color value invalid
Bit 1	1 = Blue color channel color value valid 0 = Blue color channel color value invalid
Bit 2	1 = Green color channel color value valid 0 = Green color channel color value invalid
Bit 3	1 = Red color channel color value valid 0 = Red color channel color value invalid
Bit 4 - 7	Not used
Bit 8 - 15	Not used
Bit 16 - 23	White color channel color value
Bit 24 - 31	Blue color channel color value
Bit 32 - 39	Green color channel color value
Bit 40 - 47	Red color channel color value

97, 119… 449, 471…	**HSV status combined (3 bytes)**	**Output A - Group x Output A - Ballast x**	**3 bytes Non DPT**	**C, R, T**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Outputs on ballast (color channels)* parameter is set to *3 (RGB)* and the *Use Status* parameter is set to *Yes, 3 bytes combined*.

This group object can be used to query the status of all color values (hue, saturation and value (brightness)).

High byte	Middle byte	Low byte
2^{23} - 2^{16}	2^{15} - 2^{8}	2^{7} - 2^{0}

Bit 0 - 7: Value (brightness) value
Bit 8 - 15: Saturation value
Bit 16 - 23: Hue value

No.	Function	Group object name	Data type	Flags
97, 119… 449, 471…	**HSVW status combined (6 bytes)**	**Output A - Group x Output A - Ballast x**	**6 bytes Non DPT**	**C, R, T**
	Dependent on parameters	Control via KNX (color format) Outputs on ballast (color channels) Use status		

This group object is enabled if in the X RGB(W) color control template parameter window the *Control via KNX (color format)* parameter is set to *HSV - hue, saturation and value* and the *Outputs on ballast (color channels)* parameter is set to *4 (RGB(W))* and the *Use Status* parameter is set to *Yes, 6 bytes combined*.

This group object can be used to query the status of all color values (hue, saturation, value (brightness) and whiteness).

6th byte	5th byte	4th byte	3rd byte	2nd byte	1st byte
2^{47} - 2^{40}	2^{39} - 2^{32}	2^{31} - 2^{24}	2^{23} - 2^{16}	2^{15} - 2^{8}	2^{7} - 2^{0}

Bit 0	1 = White value valid 0 = White value invalid
Bit 1	1 = Value (brightness) value valid 0 = Value (brightness) value invalid
Bit 2	1 = Saturation value valid 0 = Saturation value invalid
Bit 3	1 = Hue value valid 0 = Hue value invalid
Bit 4 - 7	Not used
Bit 8 - 15	Not used
Bit 16 - 23	White value
Bit 24 - 31	Value (brightness) value
Bit 32 - 39	Saturation value
Bit 40 - 47	Hue value

8.5 Lighting converter x group objects

As soon as an emergency lighting test is enabled in the X Emergency lighting converter parameter window, the *Trigger em. lighting test* group object for converter x is enabled. The following emergency lighting tests can be triggered for the emergency lighting converter via this group object:

- Function test
- Partial duration test
- Duration test
- Battery query

For a description of the tests, see 4.2.1, Emergency lighting tests.

No.	Function	Group object name	Data type	Flags
1836, 1840…	**Trigger em. lighting test (CTC)**	**Output A - Emergency light x**	**1 byte DPT_CTC**	**C, W**

This group object is enabled if an emergency light x is enabled in the Emergency light template parameter window. The *group object* can adopt one of 3 data formats. The data format is defined in the *A Emergency lighting converter, Emergency light x* parameter window by setting *Enable group object "Trigger em. lighting test"* to *Yes, KNX format DPT_CTC*.

This group object triggers an emergency lighting test for emergency light x. This *group object* does not send the status or the emergency lighting test result from the gateway on KNX.

The following numbering applies to the list below:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

The value of the byte contains the information on which emergency lighting test to trigger or which action to execute:

Value 0 = Reserved, no function
Value 1 = Function test requested (corresponds to DALI Cmd 227)
Value 2 = Duration test requested (corresponds to DALI Cmd 228)
Value 3 = Partial duration test requested
Value 4 = Stops the test currently running (corresponds to DALI Cmd 229)
Value 5 = Function test flag reset (corresponds to DALI Cmd 230) This means that if a function test is requested and not executed, a flag is set in the emergency lighting converter indicating that the test is pending. This flag can be canceled so that a function test is no longer pending.
Value 6 = Duration test flag reset (corresponds to DALI Cmd 231) This means that if a duration test is requested and not executed, a flag is set in the emergency lighting converter indicating that the test is pending. This flag can be canceled so that a duration test is no longer pending.
Value 7...255 = Reserved, no function

If a new test is requested on the group object before the ongoing test has ended, this is immediately interrupted and the new test is requested. This is also the case when the ongoing test is requested again. Only one test can be performed on the emergency lighting converter at any time.

Note

The result of the emergency lighting test for each converter can be sent on KNX with the addressed group object *Em. lighting test result* (no. 42) or the *Em. lighting test status* group object (no. 929ff).

No.	Function	Group object name	Data type	Flags
1836, 1840…	**Trigger em. light. test (DGN/S)**	**Output A - Emergency light x**	**1 byte Non DPT** [1)]	**C, W**

This group object is enabled if an emergency light x is enabled in the Emergency light template parameter window. The *group object* can adopt one of 3 data formats. The data format is defined in the *A Emergency lighting converter, Emergency light x* parameter window by setting *Enable group object "Trigger em. lighting test"* to *Yes, DGN/S 1.16.1 format*.

This group object triggers an emergency lighting test for emergency light x. This *group object* does not send the status or the emergency lighting test result from the gateway on KNX.

The following numbering applies to the list below:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…2 = 000, stops the test currently running
= 001, function test is requested
= 010, partial duration test is requested
= 011, duration test is requested
= 100, battery is queried
= 101, 110 and 111 without function or not taken into account in evaluation

Bit 3…7 = 0, without function or not taken into account in the request evaluation

If a new test is requested on the group object before the ongoing test has ended, this is immediately interrupted and the new test is requested. This is also the case when the ongoing test is requested again. Only one test can be performed on the emergency lighting converter at any time.

Note

The result of the emergency lighting test for each converter can be sent on KNX with the addressed group object *Em. lighting test result* (no. 42) or the *Em. lighting test status* group object (no. 929ff).

[1)] See Application Notes 166/14v03 para. 2.8.2.8 LEGACY CTT

No.	Function	Group object name	Data type	Flags
1836, 1840…	**Trigger em light. test/Status (DGN/S)**	**Output A - Emergency light x**	**1 byte Non DPT** [2)]	**C, R, W, T**

This group object is enabled if an emergency light x is enabled in the Emergency light template parameter window. The *group object* can adopt one of 3 data formats. The data format is defined in the *A Emergency lighting converter, Emergency light x* parameter window by setting *Enable group object "Trigger em. lighting test"* to *Yes, DGN/S 1.16.1 format with status*.

This group object triggers an emergency lighting test for emergency light x. At the same time, the result of the emergency lighting test can be requested via this group object and sent on KNX.
The test result is sent on KNX with the following coding.

The following numbering applies to the list below:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0

The bit number is identical to the exponent of the bit, e.g. number 2 corresponds to 2^2.

Bit 0…2 = 000, stops the test currently running
= 001, result relates to the function test
= 010, result relates to the partial duration test
= 011, result relates to the duration test
= 100, result relates to the battery query
= 101 and 110 without function or not taken into account in evaluation
= 111, there is no valid test state or the queried DALI device does not support DALI standard IEC 62386-202 for emergency lighting converters. The content of the other bits is invalid.

Bit 3 and 4 = 00, testing has ended positively
= 01, testing pending, not yet started
= 10, test running
= 11, test interrupted

Bit 5 = 1, testing manually started

Bit 6 = 1, lamp fault (emergency lighting converter)

Bit 7 = 1, device (emergency lighting converter) fault

If a new test is requested on the group object before the ongoing test has ended, this is immediately interrupted and the new test is requested. This is also the case when the ongoing test is requested again.

Bit 6 and 7 relate only to an emergency lighting converter. If the device is a normal DALI device, bit 6 and 7 are not evaluated.

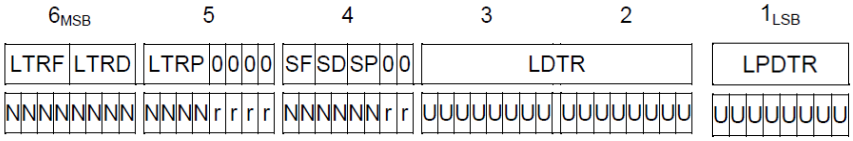
[2)] See Application Notes 166/14v03 para. 2.8.2.5 LEGACY CTTS

No.	Function	Group object name	Data type	Flags
1837, 1841…	**Em. lighting test result**	**Output A - Emergency light x**	**6 bytes DPT_CTR**	**C, R, T**

This group object is enabled if there is an Emergency light x enabled in the Emergency light template parameter window and *Enable group object "Em. lighting test result"* is set to *Yes* in the *A Emergency lighting converter, Emergency light x* parameter window.

This group object transmits the result of an emergency lighting test for emergency lighting converter x on KNX.

The information is transmitted in a 6-byte group object with the following coding:



The coding is based on numeric values generated from bit fields of various lengths:

LTRF Result of last function test (4-bit numeric value 0…15)
- 0 = Reserved, no function
- 1 = Function test passed within execution time[1)]
- 2 = Function test passed but not within execution time[1)]
- 3 = Function test failed
- 4 = Function test failed. Result determined outside execution time[1)].
- 5 = Function test stopped manually
- 6–15 = Reserved, no function

LTRD Result of last duration test (4-bit numeric value 0…15)
- 0 = Reserved, no function
- 1 = Duration test passed within execution time[1)]
- 2 = Duration test passed but not within execution time[1)]
- 3 = Duration test failed
- 4 = Duration test failed. Result determined outside execution time[1)].
- 5 = Duration test stopped manually
- 6–15 = Reserved, no function

LTRP Result of last partial duration test (4-bit numeric value 0…15)
- 0 = Reserved, no function
- 1 = Partial duration test passed within execution time[1)]
- 2 = Partial duration test passed but not within execution time[1)]
- 3 = Partial duration test failed
- 4 = Partial duration test failed. Result determined outside execution time[1)].
- 5 = Partial duration test stopped manually
- 6–15 = Reserved, no function

SF Method used to trigger last function test (2-bit numeric value 0…3)
- 0 = Reserved, no function
- 1 = Automatically triggered by emergency lighting converter
- 2 = Triggered by gateway
- 3 = Reserved, no function

SD Method used to trigger last duration test (2-bit numeric value 0…3)
- 0 = Reserved, no function
- 1 = Automatically triggered by emergency lighting converter
- 2 = Triggered by gateway
- 3 = Reserved, no function

SP Method used to trigger last partial duration test (2-bit numeric value 0…3)
- 0 = Reserved, no function
- 1 = Automatically triggered by emergency lighting converter
- 2 = Triggered by gateway
- 3 = Reserved, no function

LDTR corresponds to the discharge time after a duration test pass (DALI 243) (2-byte DPT 7.006)

Coding corresponds to KNX DPT 7.006 (2-byte). The time is given in minutes.
Maximum time is 510 min even if a longer time is available.

LPDTR corresponds to battery charge (DALI 241) (1-byte, unsigned)
- 0, corresponds to discharged battery
- 254, corresponds to fully charged battery
- 255, emergency lighting converter does not support the *Battery charge state status* function

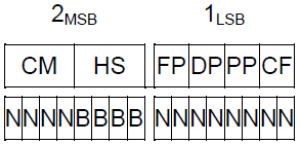
[1)] Execution Time: Time within which an emergency lighting test has to run. This time is stored in the emergency lighting converter and can be set via the *Time limit for triggering emergency lighting test* parameter in the *Emergency light x* parameter window.

No.	Function	Group object name	Data type	Flags
1838, 1842…	**Emergency light. converter status**	**Output A - Emergency light x**	**2 bytes DPT_CS**	**C, R, T**

This group object is enabled if there is an Emergency light x enabled in the Emergency light template parameter window and *Enable group object "Emergency light. converter status"* is set to *Yes* in the *A Emergency lighting converter, Emergency light x* parameter window.

This group object transmits the status of the emergency lighting converter on KNX.

The information is transmitted in a 2-byte group object with the following coding:



The coding is based on numeric values generated from bit fields of various lengths:

CM Indicates the status of various emergency lighting converter operating states
- 0 = No information available
- 1 = Normal mode is active, all OK (emergency lighting converter switches to emergency operation if there is a mains voltage failure)
- 2 = Inhibit mode active
- 3 = Inhibit mode activated by hardware
- 4 = Rest mode active
- 5 = Emergency mode active
- 6 = Extended emergency lighting mode active (Emergency lighting converter is in Prolong Time. Run-on phase when emergency mode ends.
- 7 = Function test running
- 8 = Duration test running
- 9 = Partial duration test running
- 10–15 = Reserved, no function

HS Emergency lighting converter hardware status (bit coded)
- Bit 0 = 1 Inhibit mode active via hardware
- 0 Inhibit mode not active via hardware
- Bit 1 = 1 Hardware switch is on (emergency light activated via hardware input)
- 0 Hardware switch is off
- Bit 2–3 = Reserved, no function, has value 0

FP Status indicating whether a function test is pending (2-bit numeric value 0…3)
- 0 = State unknown
- 1 = No function test pending
- 2 = Function test pending
- 3 = Reserved, no function

DP Status indicating whether a duration test is pending (2-bit numeric value 0…3)
- 0 = State unknown
- 1 = No duration test pending
- 2 = Duration test pending
- 3 = Reserved, no function

PP Status indicating whether a partial duration test is pending (2-bit numeric value 0…3)
- 0 = State unknown
- 1 = No partial duration test pending
- 2 = Partial duration test pending
- 3 = Reserved, no function

CF general fault status (2-bit numeric value 0…3)
(fault status according to DALI Command 252 – elec/battery/lamp fault / emergency lighting test failed)
- 0 = State unknown
- 1 = No faults present
- 2 = At least one fault present
- 3 = Reserved, no function

9 Operation

9.1 Manual operation

The gateways have a manual operation option to switch DALI lamps on and off at the outputs. This excludes DALI self-contained emergency lamps, which are not influenced by manual operation.

The devices have one (DG/S 1.64.5.1) or two (DG/S 2.64.5.1) pushbuttons for manual switching of the DALI outputs. For manual operation to work properly, the KNX and the gateway must be supplied with power. Manual operation is mainly used to check that the wiring of the DALI line is correct and to detect faulty DALI devices that are not responding to broadcast commands.

Switching on manual operation:

- Press pushbutton for longer than 2 seconds and less than 5 seconds. The green *ON* LED flashes. You are in manual operation. When you release the button, the brightness value of the DALI devices initially stays unchanged.

  After the first manual switching command the yellow *DALI* LED no longer indicates a DALI fault. Instead it indicates the switch status of the DALI output.

  No DALI QUERY commands (cyclical DALI device queries) are sent. This means that new DALI devices are not detected in manual mode. As triggered switching commands can be sent to the DALI only by pressing pushbutton , the actual DALI voltage can be measured.

  Since only manually triggered DALI telegrams are sent from the gateway in manual mode, a third-party DALI tool such as the Tridonic masterCONFIGURATOR can be connected in order to read the DALI devices.

Switching the DALI output during manual operation:

- Press pushbutton briefly (< 2 seconds). All DALI devices on the DALI output change their brightness state from ON to OFF or from OFF to ON. This switching command is a DALI broadcast command, which means that it applies even to DALI devices without a DALI address.

  In manual mode the yellow *DALI* LED no longer indicates a DALI fault. Instead it indicates the switch status of the DALI output.

Switching off manual operation:

- You are in manual operation. Press pushbutton for longer than 2 seconds and less than 5 seconds. The green *ON* LED lights up again and stays on. Manual operation has now ended.

  Using ETS programming it is possible to retain the DALI output brightness value set during manual operation or set an updated value.

  The yellow *DALI* LED indicates DALI fault status again.

Triggering DALI addressing via the pushbutton:

- Press pushbutton for longer than five seconds. This will not exit the current mode but will trigger DALI addressing. The yellow DALI LED flashes. DALI devices without addresses are assigned the first free address. If the system detects devices with duplicate DALI addresses, it deduplicates them.

Manual operation including triggering DALI addressing can be enabled or blocked via the *Block manual operation/Status* group object (no. 2). The status of whether manual operation is blocked can be requested via the same group object. After a KNX voltage failure, the system reinstates the state prior to the failure. The timeout for manual operation before automatic exit is parametrizable. This time is retriggered after every manual operation.

Note

i-bus® Tool functions are carried out during manual operation in order to ensure consistent commissioning.

We recommend that you do not use the i-bus® Tool and manual operation at the same time as the functions can have a mutual influence.

Note

Incoming KNX commands during manual operation are not executed, but are processed in the background. Scene implementation and interim dimming values are not taken into consideration in the background in the simulation.

Depending on the parametrization (see *General* parameter window), the system sets either the updated brightness value or the brightness value set in manual mode.

Note

The Forced operation and Block function of a group has a higher priority than manual operation, i.e. if a ballast or group with a particular brightness value is forcibly operated or blocked, it cannot be manually switched or dimmed. If the forced operation or block is reset in manual mode, the ballast or group stays at the current brightness value regardless of what it is programmed to do when forced operation ends, and follows only the next control command.

10 Maintenance and cleaning

10.1 Maintenance

The device is maintenance-free. In the event of damage, e.g. during transport and/or storage, repairs are not allowed to be made.

10.2 Cleaning

Disconnect the device from the electrical power supply before cleaning. If devices become dirty, they can be cleaned using a dry cloth or a cloth dampened with a soapy solution. Never use corrosive agents or solutions.

11 Removal and disposal

11.1 Removal

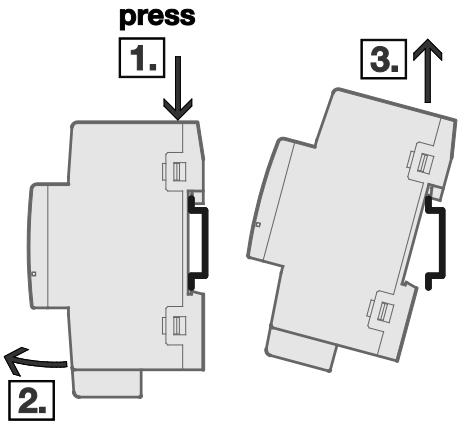


Fig. 16: Removal from the DIN rail

1. Press on the top of the device.
2. Release the bottom of the device from the DIN rail.
3. Lift the device up and off the DIN rail.

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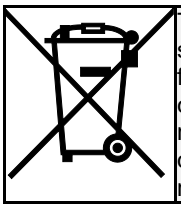
11.2 Environment

Consider environmental protection.

Used electrical and electronic devices must not be disposed of as domestic waste.



The device contains valuable resources that can be recycled. Therefore, please take the device to a suitable recycling center. All packaging materials and devices are provided with markings and test seals for proper disposal. Always dispose of packaging material and electrical devices or their components at collection points or disposal companies authorized for this purpose. The products comply with the statutory requirements, particularly the law on electrical and electronic equipment and the REACH regulation. (EU directive 2012/19/EU WEEE and 2011/65/EU RoHS) (EU REACH regulation and the law implementing the regulation (EC) no.1907/2006)

12 Planning and application

12.1 Introduction

In this section you will find some tips and application examples for practical use of the devices.

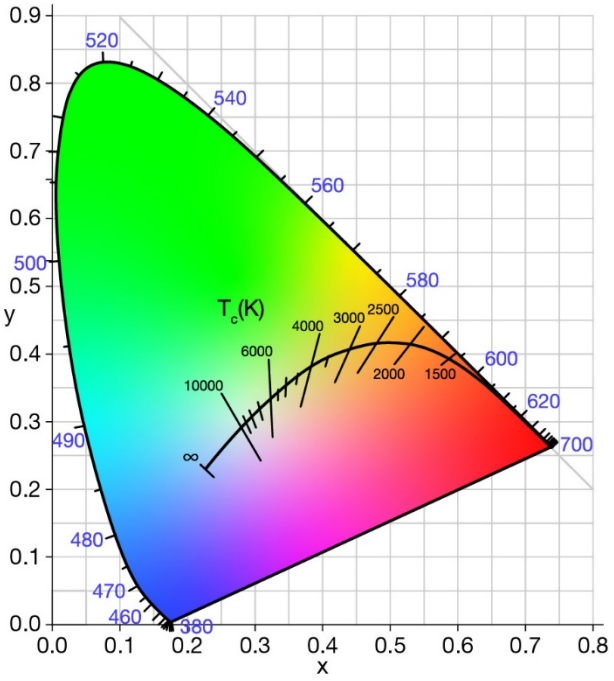
12.2 Basic knowledge

12.2.1 Color types

The DALI Gateway Premium supports color control switching devices (Device Type 8 to EN 62386-209). These devices have multichannel color control (RGB) capability, which allows you to mix a lamp color or a color temperature via DALI.

Tc (Tunable White)

The CIE color space is a color system created by the International Commission on Illumination to link human color perception with the physiological principles of color stimulus. It encompasses the whole perceivable color spectrum.



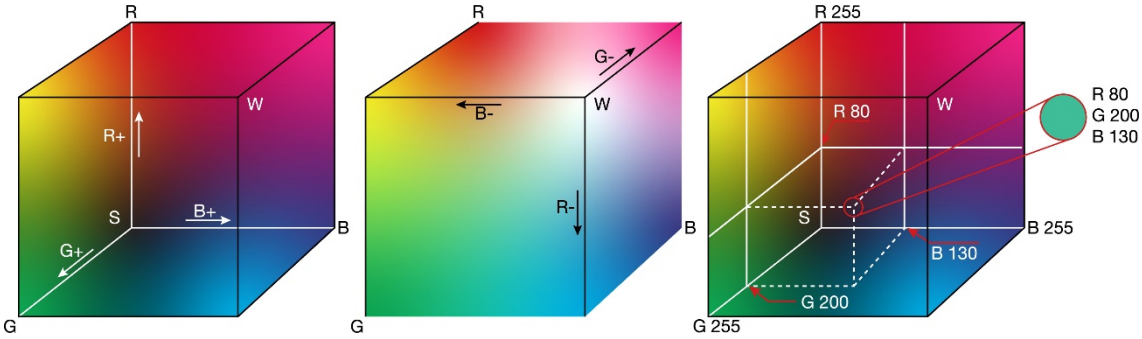
The color temperature is a section of this spectrum limited to the various shades of white. These white tones are on what is known as the black-body line. Color temperatures are points along this curve and are usually expressed in kelvin. This allows a specific white tone to be assigned a value.

There is a distinction between warm and cool color temperature ranges, as follows:

- Warm light (up to 3,300 kelvin) is homely and comfortable. This color of this light is rather like a sunset.
- Neutral light (3,300–5,300 kelvin) is stimulating and inviting, making it suitable primarily for working.
- Cool light (5,300 kelvin or more) is similar to daylight and promotes concentration.

RGB(W)

Colors are made of the primary colors red, green and blue. The RGB color space is based on exactly this model.



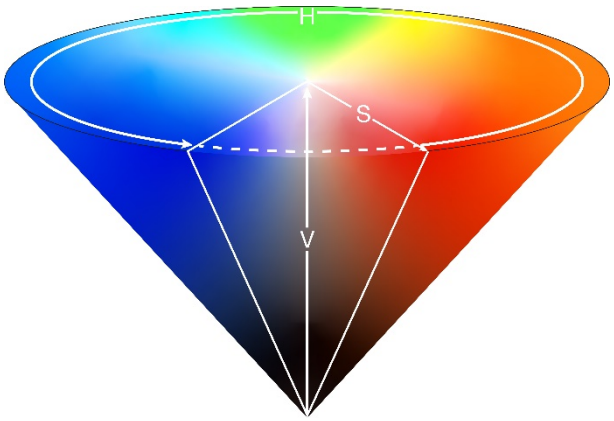
So a color is always defined in terms of the primary colors, expressed as the ratio between the color channels, e.g. 100% red, 100% green and 0% blue produces yellow.

Nowadays there is also the option to add a white component by mixing in an additional channel. This white component helps produce a lighter light, which brightens the color.

HSV(W)

The HSV color space defines color perception in terms of 3 coordinates:

- Hue: This value determines the color shade and is shown on a 0°...360° wheel.
- Saturation: This value sets the saturation of the color shade.
- Value: This value sets the brightness of the color shade.



In color matching, the HSV color space is preferred over the RGB color space because it mimics human color perception. When mixing colors you can simply select the required shade and then decide how saturated and how light (or dark) you want it to be, or whether a different shade would be more suitable.

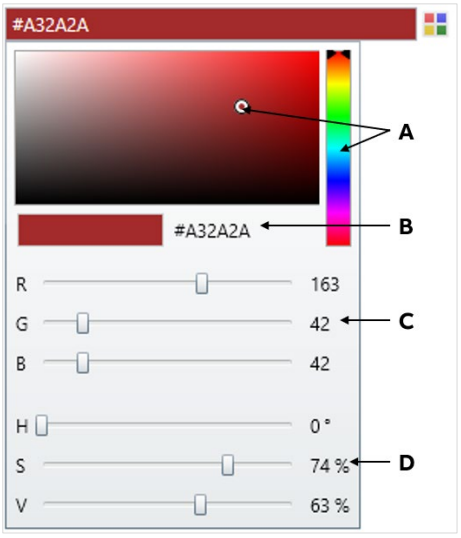
The RGB and HSV color spaces can be transformed into each other by means of calculations.

12.2.2 Entering color settings

In the ETS application there are 4 ways to set a color value:

To start, click the icon.

You can now customize the color value in the color selection window.



- Color picker (A): Choose a color from a color surface
- Color code (B): Enter a numerical value
- RGB sliders (C): Select a color using the 3 color channels (R,G,B)
- HSV sliders (D): Select a color using the 3 color channels (H,S,V)

12.2.3 DALI addressing

This section covers gateway addressing so as to provide a better appreciation of the gateway's functionality.

To control DALI devices individually or in groups, DALI commissioning (configuration) is required. This involves assigning DALI addresses and/or groups to DALI devices.

The gateway executes automatic DALI addressing if the *Enable automatic DALI addressing* parameter is set to *Yes* in the *X DALI configuration* parameter window. The gateway automatically detects the connected DALI equipment and assigns an address in ascending order if the device does not have one.

If automatic DALI addressing is not allowed, there are three alternative options for implementing addressing with the DALI gateway:

- i-bus® Tool for ABB i-bus® KNX device diagnostics and commissioning
- Press and hold (> 5 seconds) the  pushbutton on the DALI gateway
- *Trigger DALI addressing* group object

In order to implement DALI addressing, the gateway autonomously and automatically checks the DALI devices connected to the DALI output. If it detects equipment with a DALI interface that has not been assigned a defined DALI address (default delivery state, DALI short address 255), it automatically assigns one. The detected DALI device will be assigned the first free DALI address (0 to 63) on the output. If no DALI devices have yet been detected, it is assigned the first DALI address, 0. The second device is assigned DALI address 1, and so on. The sequence in which the DALI master, e.g. the gateway, finds a device with a DALI interface cannot be influenced. If the connected DALI device already has a DALI address, e.g. an exchange device from another system, it will not be changed.

If the new DALI device has a DALI address that is already in use on the output, one of the two DALI devices with the same address will be assigned a new and unused DALI address. This means that the old DALI device that is already connected to the output may receive a new address.

To control groups, the connected DALI devices must be assigned to a group. The external i-bus® Tool, which is independent of ETS, is used for this.

12.2.4 Lamp and ballast monitoring

The gateway can broadcast the fault status of the output's DALI lighting on KNX. A control panel or control center can evaluate and display this information. Required repair measures or corresponding maintenance cycles can be initiated. This makes it possible to integrate the lighting into a higher-level Facility Management system.

The prerequisite for this is that the lighting equipment is connected to the output of the DALI gateway and features a DALI interface compliant with IEC 62386 or EN 60929. There are various options for fault messages:

- For lamp and ballast faults, a fault on the DALI output is transmitted on KNX. Two separate group objects (*Lamp fault/Ballast fault*) are available for this purpose. This information indicates that at least one DALI device on the output has a fault.
- Each ballast or group has one group object available for a fault message. This group object can contain information about a lamp or ballast fault, or a logical OR combination of lamp and ballast fault.
- The fault status of an individual DALI device can be polled via a coded group object (*Fault addressed*) on the output. This 2-byte group object contains the device or group number (this is parametrizable) and the fault information (lamp or ballast fault).
- The number of a DALI device or group with a fault can be sent on KNX as a numeric value via the group object *Ballast number fault* or *Group number fault*. If there are several faults, the number of the next/previous device or group with a fault can be displayed using the *Switch up next ballast fault* or *Switch up next group fault* group object. The number (count) of devices or groups with a fault can be sent on KNX using the *Number of ballasts fault* or *Number of groups fault* group object.

In order to guarantee correct operation the gateway has to know how many ballasts are to be monitored. This is done by one-time activation of the *Monitor DALI addresses* group object. The gateway uses this function to independently establish how many DALI devices are connected to each output. The gateway saves this number as a reference value for the output. If devices are added to or removed from the system, the *Monitor DALI addresses* function has to be reactivated. This process is necessary only if the

number of ballasts per output has changed and not when replacing a ballast. Monitoring can also be implemented in the i-bus® Tool.

Note

In order to detect a lamp fault, the DALI device must make the fault available on the DALI.
This is generally supported by all DALI ballasts. DALI dimmers and DALI switch actuators often do not have this characteristic. To check for this function, refer to the technical data for the DALI device or consult the lamp manufacturer.

12.2.5 Exchange of DALI devices

If a DALI device fails in an existing DALI installation where DALI addresses are assigned without any gaps, a DALI device as provided in the default state from the factory (without a DALI address assignment) can be used as a replacement and will avoid the requirement for re-commissioning. The gateway automatically assigns the new DALI device the first free DALI output address, group assignments and scene parameters of the faulty ballast, and the new device can assume the functions of the failed device as long as it has the same technical characteristics.

Note

The *Enable automatic DALI addressing* parameter must be enabled in the *A DALI configuration* parameter window.

If multiple DALI devices on a DALI output fail or there are gaps in the DALI addressing, it is not possible for the gateway to guarantee a unique assignment for the replacement device.
The gateway assigns the new DALI device the first free DALI address on the output. If the new DALI device has a DALI address that is already in use on the output, one of the two DALI devices with the same address will be assigned a new and unused DALI address. This means that the existing fault-free DALI device on the DGN/S may be assigned a new address.

DALI addresses and group assignments can easily be corrected or exchanged without ETS by using the i-bus® Tool drag and drop feature.

If automatic DALI addressing is not enabled, there is no need to enable it via ETS programming. The i-bus® Tool allows you to trigger one-time DALI addressing.

There is also the option of using the  pushbutton (press and hold > 5 seconds) on the gateway to trigger one-time DALI addressing, which means that you can exchange a device without using any software at all. The prerequisite for this is that the current DALI addressing has no gaps.

Note

Triggering DALI addressing via the i-bus® Tool or  pushbutton does not change any ETS settings. It simply triggers one-time DALI addressing, which runs until all the DALI devices have a DALI address and/or there are no duplicate DALI addresses detected. Duplicate addressing is also triggered if applicable. If the one-time DALI addressing process has finished, automatic DALI addressing remains latent if it is parametrized to do so.

12.2.6 Operating duration

The operating duration determines how long the DALI device (group/ballast) remains switched on.

It enables you to identify and plan timely maintenance for a lamp change.

A DALI device is considered switched on when its current brightness is higher than 0 and there are no ballast or lamp faults.

The operating duration of a DALI group is the maximum operating duration of all its group devices.

The operating duration counter in the gateway has an internal logging rate of 5 minutes.

Depending on the DPT format selected, the operating duration is sent on the bus in seconds or hours.

The hourly format gives full hours only:

- 25 minutes are shown as 0 hours
- 1 hour 55 minutes are shown as 1 hour

The seconds format converts the internal value into seconds. As the internal logging rate is 5 minutes, it produces intervals of 300 seconds.

12.2.7 Sequences

A sequence can be started and stopped with the *Sequence x start-stop/Status* group object. The sequence itself has no higher priority than other commands received on the bus. The reaction is therefore as follows:

- If a device in the sequence receives a switch command while a sequence is running, the switch command is executed but the running sequence is not interrupted. At the next step in the sequence, the switched device rejoins the sequence.
- If a device receives a block or forced operation command while a sequence is running, the command takes priority. The sequence itself continues to run. When blocked or forced device is released, it rejoins the sequence at the next sequence step.

For more information, see 12.3, Function circuit diagrams and priorities

12.3 Function circuit diagrams and priorities

The function tables show the effect of various KNX commands when a function is parametrized. The following should be noted here.

Note

Priorities in the gateway from highest to lowest:

- Manual operation
- *Block* or *Forced operation* function
- *Partial failure* function
- *Load shedding* function
- *Slave* or *Staircase lighting* function, scenes, sequences or KNX commands

Note

Manual operation has the highest priority and overrides all running functions. Running functions such as Staircase lighting or Slave are ended. The brightness value on exiting manual operation is parametrizable (see Brightness value on exiting manual operation parameter).

Note

A sequence is a series of brightness and scene KNX commands that define the effect of the individual sequence steps in the function diagram, using the "Set brightness" and "Recall scene" lines.

Note

The *Burn-in* function sets the minimum dimming value on the ballast to 100%. This sets all brightness values other than 0 to 100%. The same applies for the *Forced operation* and *Scenes* functions.

For instance, this means that if a ballast or the group is in burn-in mode, a forced operation is mapped from 50% to 100%.

Note

During active load shedding the maximum brightness of the load shedding stage overwrites the maximum dimming value of the ballast (see Maximum dimming value parameter).
When a load shedding stage is active the maximum brightness is set as quickly as possible. Transition times do not affect this.
After a download or a bus voltage recovery, no load shedding stage is available at first. The ballast retains its parametrized maximum dimming value. Once a load shedding stage is received, the maximum brightness of the load shedding stage replaces the maximum dimming value. This reaction is the same regardless of whether a load shedding stage was active before the download or bus voltage failure.
An active load shedding stage has an immediate impact on other running functions (e.g. staircase lighting). The maximum brightness will be set as quickly as possible. This also applies when the load shedding stage is canceled.
We recommend that only the master is implemented in load shedding. The slave is controlled by the master.

Note

If the i-bus® Tool is linked to the gateway for commissioning or diagnostics work, the system reacts as follows:

- Provided the i-bus® Tool is in View mode (), it has no effect via KNX functions.

If configuration mode () is activated and the *DALI* window has been opened, all KNX functions (e.g. forced operation or staircase lighting) are deactivated or set to standby. This is the only way to carry out consistent commissioning. On exiting the i-bus® Tool the functions must be reactivated.

Note

If either the *Forced operation/Block* or *Partial failure* function is activated, the gateway updates incoming KNX commands in the background. The system reacts as follows in this case:

Switch, Brightness value and Scenes commands are invisibly executed in the background, memorizing the end brightness values immediately without transition times. Dimming commands are ignored.

Operating states, e.g. inactive or standby, for the *Slave* and *Staircase lighting* functions are also

memorized in the background depending on the incoming KNX commands. If the *Staircase lighting* is active when the higher-level function ends, it is in standby. If slave mode is active, it responds to its master again as soon as the higher-level function ends.

Once the higher-level function ends, the ballast or group adopts the brightness value that would have occurred if the higher-level function had not been executed.

The following table shows the reaction when the *Staircase lighting* function is parametrized.

<table>
<tr><td colspan="3" rowspan="3">Operating situation
or
Group objects</td><td colspan="5">Staircase lighting function</td></tr>
<tr><td rowspan="2">Inactive</td><td colspan="4">Active</td></tr>
<tr><td>Standby
(turn off brightness)</td><td>Dimming-up time</td><td>Staircase lighting time</td><td>Dimming-down time
Run time
Basic brightness</td></tr>
<tr><td colspan="3">Download (start)</td><td colspan="5">Such as KNX bus voltage failure</td></tr>
<tr><td colspan="3">Download (end)</td><td colspan="5">Such as KNX bus voltage recovery</td></tr>
<tr><td rowspan="2">KNX bus</td><td>voltage failure</td><td colspan="5">Parametrized brightness value - ballast: fault is set.
Staircase lighting function is discontinued.</td></tr>
<tr><td>voltage recovery</td><td colspan="5">Parametrizable:
- Mode: Group/ballast x Staircase lighting – Inactive/Standby/Active and on/Last value before failure
- Group/ballast x Fault – Min/Max/OFF/No change/Last value before failure</td></tr>
<tr><td rowspan="2">DALI or Gateway supply</td><td>voltage failure</td><td colspan="5">Parametrizable:
Group/ballast x Fault – Min/Max/OFF/No change
Staircase lighting function is discontinued</td></tr>
<tr><td>ballast recovery</td><td colspan="5">Parametrizable:
- Group/ballast x Fault – Min/Max/OFF/No change/Momentary KNX target state</td></tr>
<tr><td rowspan="2" colspan="2">Switch</td><td>ON</td><td>Switch-on value</td><td>→ Active and starts staircase lighting</td><td>No reaction</td><td>Staircase lighting time will be restarted</td><td>Staircase lighting is restarted</td></tr>
<tr><td>OFF</td><td>OFF
(turn off brightness)</td><td>OFF
(turn off brightness)</td><td colspan="2">Dimming-down time starts</td><td>No reaction if basic brightness runtime unlimited, otherwise OFF
(Turn off brightness)</td></tr>
<tr><td colspan="2">Relative dimming</td><td>Dimming</td><td>Dimming,
remains in standby</td><td colspan="3">Parametrizable:
Group/ballast x Staircase lighting – No reaction/Dimming standby</td></tr>
<tr><td colspan="2">Set Brightness Value</td><td>Brightness value</td><td>Brightness value,
remains in standby</td><td colspan="3">Parametrizable:
Group/ballast x Staircase lighting – No reaction/Brightness value standby</td></tr>
<tr><td colspan="2">Recall scene</td><td>Scene</td><td>Scene</td><td colspan="3">Parametrizable:
Group/ballast x Staircase lighting – No reaction/Scene and standby</td></tr>
<tr><td rowspan="2">Activate Staircase lighting function</td><td>0</td><td>No reaction</td><td>→ goes to inactive</td><td colspan="3">→ goes to inactive, brightness value is retained</td></tr>
<tr><td>1</td><td colspan="5">Parametrizable:
Group/ballast x Staircase lighting - Activated and ON/Activated in standby</td></tr>
<tr><td rowspan="2">Forced operation/Block</td><td>ON</td><td colspan="5">Forced brightness set. Forced operation has the highest priority.</td></tr>
<tr><td>OFF</td><td>Momentary KNX target state set</td><td colspan="4">Staircase lighting active at basic brightness</td></tr>
<tr><td rowspan="2">Partial failure</td><td>ON</td><td colspan="5">Partial failure value set. Partial failure takes priority over additional function.</td></tr>
<tr><td>OFF</td><td>Momentary KNX target state set</td><td colspan="4">Staircase lighting active at basic brightness</td></tr>
</table>

The following table shows the reaction to incoming telegrams when the *Slave* function is parametrized.

Operating situation or **Group objects**		**Additional function *Slave***		
		Inactive (Fct. Activate slave = 0)	**Active in standby (Activate slave mode = 1)**	**Active and ON (running) (Function = 1)**
Download (start)		Such as KNX bus voltage failure		
Download (end)		Such as KNX bus voltage recovery		
KNX bus	**voltage failure**	Parametrizable: Group/ballast x Fault – Min/Max/OFF/No change Slave function discontinued		
	voltage recovery	Parametrizable: - Mode: Group/ballast x Slave – Inactive/Standby/Active and on/Last value before failure - Group/ballast x Fault – Min/Max/OFF/No change/Last value before failure		
DALI or Gateway supply	**voltage failure**	Parametrizable: Group/ballast x Fault – Min/Max/OFF/No change Slave function discontinued		
	ballast recovery	Parametrizable: - Group/ballast x Fault – Min/Max/OFF/No change/Momentary KNX target state		
Switch	**ON**	Switch-on value	→ Active, current *Slave brightness value* is set	Parametrizable: Group/ballast x Slave - No reaction/standby turn on brightness
	OFF	OFF/Turn off value	OFF/Turn off value, remains in standby	OFF and goes to standby
Relative dimming		Dimming	Dimming, remains in standby	Parametrizable: Group/ballast x Slave - No reaction/dimming standby
Brightness value		Brightness value	Brightness value, remains in standby	Parametrizable: Group/ballast x Slave - No reaction/brightness value standby
Recall scene		Scene	Scene	Parametrizable: Group/ballast x Slave - No reaction/scene and standby
Slave brightness value		No reaction	No reaction	Slave brightness value is set
***Slave* function Activate**	**0**	No reaction	→ Inactive	→ Inactive
	1	Parametrizable: Group/ballast x Slave - Activated and ON/in standby	Parametrizable: Group/ballast x Slave - Activated and ON/in standby	Parametrizable: Group/ballast x Slave - Activated and ON/in standby
Forced operation/Block	**ON**	Forced brightness set. Forced operation has the highest priority.		
	OFF	Momentary KNX target state set	Active, momentary KNX target state set (standby or ON)	
Partial failure	**ON**	Partial failure value set. Partial failure takes priority over additional function.		
	OFF	Momentary KNX target state set	Active, momentary KNX target state set (standby or ON)	

12.4 DALI dimming curve

12.4.1 DALI (logarithmic) curve

The DALI dimming curve does not apply for emergency lighting converters, so the curve transformation function is not used on them.

The DALI dimming curve is adjusted to the sensitivity of the human eye. This results in a logarithmic characteristic curve for the luminous flux that is perceived by the human eye as a linear brightness sequence.

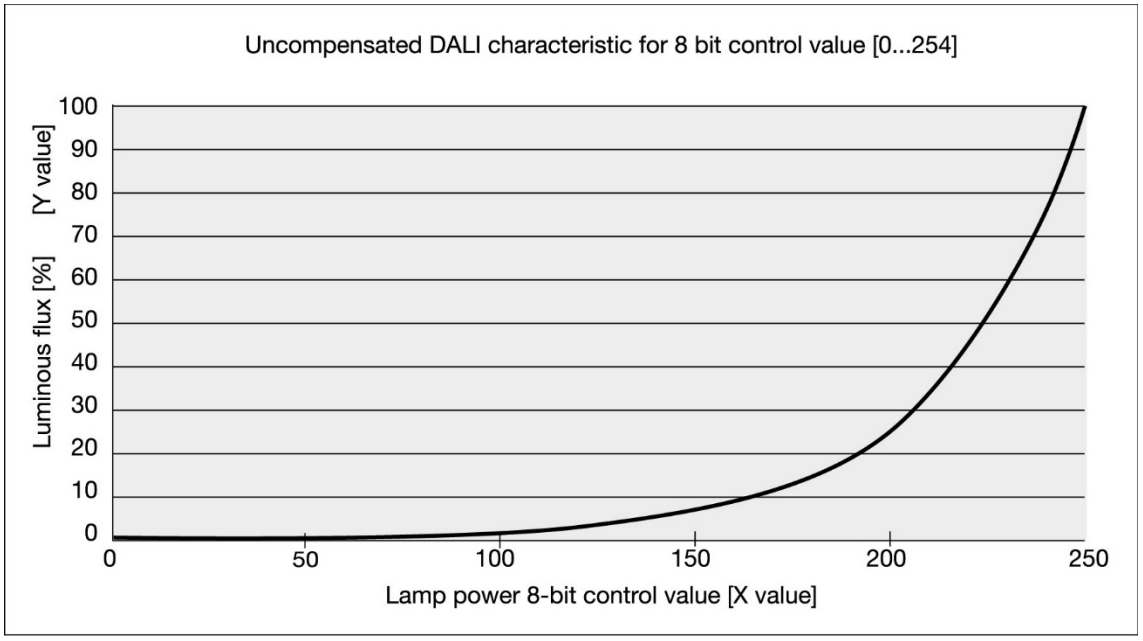
Note

Luminous flux describes the lighting power emitted from a light source in all directions. The unit is stated in lumens (lm).

Luminous flux under DALI has been defined in compliance with the DALI standard (EN 60929 or IEC 62386-102) as shown in the characteristic illustrated below:

$$X(n) = 10^{\frac{n-1}{253/3}-1} \qquad \left|\frac{X(n) - X(n+1)}{X(n)}\right| = \text{const.} = 2{,}8\ \%$$

n = 1...254 (DALI digital control value)



If a *DALI (logarithmic)* dimming curve is selected in the gateway, the KNX value relates to the 8-bit lamp power control value, the X value.

If a *KNX (linear)* dimming curve is selected in the gateway, the KNX value relates directly to the luminous flux, the Y value.

Both are described in detail below.

This produces the following DALI characteristic:

A	**KNX value**	0	1	60	85	126	144	170	195	210	220	229	235	241	246	250	255
A´	**KNX value [%]**	0	0.4	24	33	49	57	67	77	82	86	90	92	95	97	98	100
B	**DALI value (lamp power)**	0	1	60	85	126	144	170	195	210	220	229	235	241	246	250	254
C	**Luminous flux [%]**	0	0.1	0.5	1	3	5	10	20	30	40	50	60	70	80	90	100
D	**KNX status brightne value**	0	1	60	85	126	144	170	195	210	220	229	235	241	246	250	255

KNX value (A) = DALI value, lamp power (B) – log. calculation -> luminous flux (C)

The table assumes ideal DALI equipment (DALI dimming range 0.1…100%) and in the DG/S a KNX dimming range of 0.4…100%.

Rows A and A´ are the brightness value that the gateway receives via KNX as a digital numeric value (0…255) or in % (0…100). The gateway converts this value to the DALI value, lamp power (row B). Finally, the luminous flux (row C) emitted by the lamp is the result of the logarithmic DALI characteristic. The gateway then returns the brightness value status (row D) on KNX.

The dimmable range printed on the ballast relates to the luminous flux. Typical specifications are 3% or 0.2%, which equate to KNX values of 49% (126) or 10% (26) due to the logarithmic nature of the DALI curve.

The maximum possible dimming range can be set only with DALI equipment, which has a dimming range up to 0.1% (KNX value 1 or 100/255% = 0.4%). Other DALI equipment has a limited dimming range. This value is a physical property of the ballast and cannot be changed. This dimming limit has nothing to do with the minimum dimming value parametrized in the application.

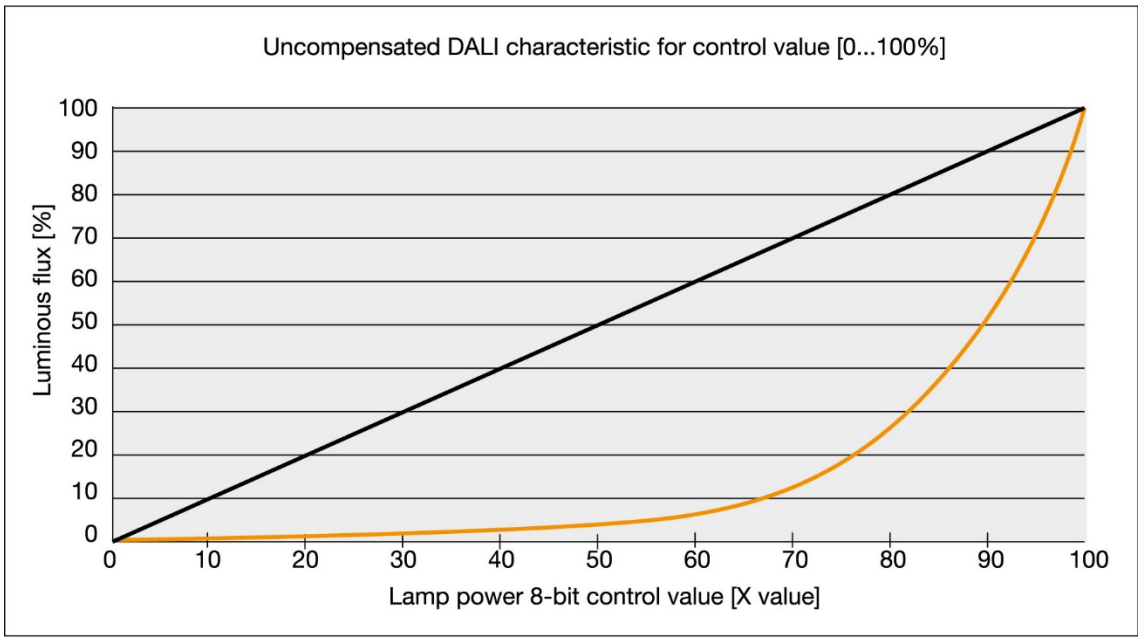
For example, take a ballast with a minimum physical luminous flux of 3% as shown below. This means that a dimming range of 126…254 is available in the KNX. This in turn means that the lowest brightness value that can be set and fed back on KNX is 126 or 50%. The ballast sets KNX values of less than 126 or 50% to this threshold value and the gateway feeds them back on KNX.

A	**KNX value**	0	1	8	26	60	85	126	144	229	235	241	246	250	255
A´	**KNX value [%]**	0	0.4	3	10	24	33	49	57	90	92	95	97	98	100
B	**DALI value (lamp power)**	0	1	8	26	60	85	126	144	229	235	241	246	250	254
C	**Luminous flux [%]**	0	0.1	3	3	3	3	**3**	5	50	60	70	80	90	100
D	**KNX status brightne value**	0	1	126	126	126	126	126	144	229	235	241	246	250	255

The characteristic curve and linearization described in the following section allow the brightness values on KNX to be mapped to the usable range of the ballast. This makes it possible to increase the resolution of the brightness values on KNX. However, nothing changes in the physical threshold values of the ballast and the light yield.

12.4.2 KNX (linear) curve

Selecting the KNX (linear) curve in the gateway maps the brightness value received by the KNX directly to the lamp power (Y value). There is no linear transformation.



The KNX brightness value received by the gateway is mapped directly to the lamp power. The logarithmic dimming curve calculates the DALI value, so that for KNX there is linear mapping between the KNX value and the lamp power.

KNX value (A) = Luminous flux (B) – log. Calculation -> DALI value (C)

This produces the black curve and the following DALI characteristic:

A	KNX value	0	1	2	8	10	20	50	70	100	120	150	170	180	220	230	255
A`	KNX value [%]	0	0.4	1	3.0	3.9	7.8	19	27	40	48	59	67	71	87	90	100
B	Luminous flux [%]	0	0.4	1.2	3.0	3.9	7.8	19	27	40	48	59	67	71	87	90	100
C	DALI value (lamp power)	0	51	91	126	136	161	194	207	220	227	235	239	241	249	250	254
D	KNX status brightne… value	0	1	2	8	10	20	50	70	100	120	150	170	180	220	230	255

The table assumes ideal DALI equipment (DALI dimming range 0.1…100%) and a KNX dimming range of 0.4…100% in the gateway.

DALI equipment with a minimum physical luminous flux of 3% therefore produces the following curve:

A	KNX value	0	1	2	8	10	20	50	70	100	120	150	170	180	220	230	255
A`	KNX value [%]	0	0.4	1	3.0	3.9	7.8	19	27	40	48	59	67	71	87	90	100
B	Luminous flux [%]	0	3.0	3.0	3.0	3.9	7.8	19	27	40	48	59	67	71	87	90	100
C	DALI value (lamp power)	0	126	126	126	136	161	194	207	220	227	235	239	241	249	250	254
D	KNX status brightne… value	0	8	8	8	10	20	50	70	100	120	150	170	180	220	230	255

With the linear setting, the numeric value (brightness value) produces a wide dimming range. However, visually speaking, visible light perception is considerably shorter, which makes the dimming range seem smaller.

12.5 Time sequences in the gateway

12.5.1 DALI fade times

The dimming time (fade time) has 15 settings (0 to 14). Dimming time is specified as the time required to change the lamp power from the current brightness value to the required target brightness. If a lamp is switched off, the preheat and ignition time are excluded from the dimming time. This time is used in scenes or brightness value transitions.

The fade rate determines the speed at which the lamp power changes in steps per second. This value is used in relative dimming.

Both values are stored in the ballast.

Fade time and fade rate are defined as follows in DALI standard IEC 62386-102:

Setting	Fade Time (s)	Fade Rate (steps/s)
0	< 0.7	Not allowed
1	0.7	357.8
2	1.0	253.0
3	1.4	178.9
4	2.0	126.5
5	2.8	89.5
6	4.0	63.3
7	5.7	44.7
8	8.0	31.6
9	11.3	22.4
10	16.0	15.8
11	22.6	11.2
12	32.0	7.9
13	45.3	5.6
14	64.0	3.9

12.5.2 Timed progression of the staircase lighting function

The DALI gateways feature the additional function *Staircase lighting*. The additional function *Staircase lighting* can be independently parametrized for each ballast and group. As the function is identical for groups and ballasts, only the group function is described below. Group can be substituted with ballast.

The additional function *Staircase lighting* is parametrized in the *Group x/Staircase lighting* parameter window, which is visible if the *Enable additional function* parameter in the *Group x* parameter window is set to *Staircase lighting*. The time sequence can involve two-stage switch-off.

If the *Staircase lighting* function is e.g. deactivated via the *Fct. Activate Staircase lighting* group object (value 0 telegram), the group reacts like a "normal" group that can be switched on and off via the *Switch* group object. The group behaves like a normal DALI device without a time sequence.

If the *Staircase lighting* function is activated there are two possible operating states:

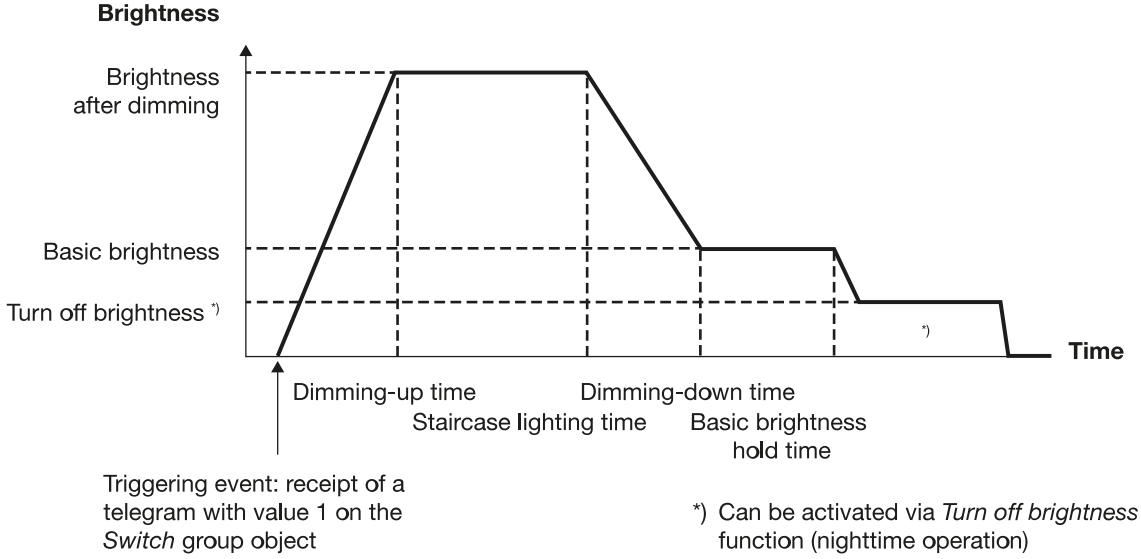
Additional function is in standby mode: The additional function is active but has been interrupted, e.g. by an OFF telegram or the time sequence has elapsed and in the off state (turn off value or OFF). The group is in standby mode. The additional function is retriggered by an ON telegram (a telegram on the *Switch* group object).

Additional function is running: The additional function *Staircase lighting* has been triggered and is counting down the parametrized time sequence. The basic brightness, which can also have an indefinite runtime, is part of the ongoing operation.

The staircase lighting timing for the individual groups is controlled by the gateway. Unlike the previous gateways, no scenes are used. So the time sequence can run correctly only if the gateway and group can communicate with each other via DALI. The reaction on DALI failure (communication fault) can be defined in the *Group x Fault* parameter window. In the event of a fault, the group adopts a fixed parametrizable brightness value. After DALI recovery the group is in standby and can be retriggered if communication has been re-established between the ballast and the gateway.

During the staircase lighting sequence, the maximum brightness/minimum dimming values (dimming thresholds) defined in the *Group x* parameter window apply.

The staircase lighting sequence is graphically represented in the following illustration:



Reaction to Switch telegram when staircase lighting is running

If the dimming time is yet to start and the gateway receives an OFF telegram for the group, dimming down starts immediately. If the group is currently dimming down, dimming down continues if an OFF telegram is received. An OFF telegram during basic brightness either switches off the lighting or sets it to the turn off brightness. If the time period for the basic brightness is indefinite, the staircase lighting remains switched on at that brightness.

As long as the *Staircase lighting* function is active, an ON telegram initiates a restart of the staircase lighting. If the staircase lighting is already at the switch-on value, the switch-on phase is restarted (retriggered). During dimming down or on reaching basic brightness, the staircase lighting is retriggered (restarted from the beginning). However, the dimming-up phase does not rerun.

Pumping up is parametrizable – see *Group x/Staircase lighting* parameter window. Pumping up extends the staircase lighting time by switching it ON several times. Pumping up can be set for up to 5 x the staircase lighting time.

Reaction to Dim, Brightness value and Scene telegram when staircase lighting is running

Reaction to incoming Dim, Brightness value and Scene telegrams can be parametrized in the *Group x/Staircase lighting* parameter window. The options are to ignore the telegram or to put the staircase lighting in standby and execute the command. If the staircase lighting is in standby it can be retriggered at any time.

Reaction on block and forced operation

If during the staircase lighting sequence the group is blocked by the *Block* group object or forcibly operated via the *Forced operation* group object, the current brightness value is frozen or the forced brightness is set and the group is blocked. When the block or forced operation ends, the *Staircase lighting* function switches to standby mode and can be retriggered. If the function *Staircase lighting* was inactive, it stays inactive.

13 Appendix

13.1 Scope of delivery

The ABB i-bus® KNX devices are supplied with the following components. Please check your delivery against the list below:

- 1 pcs. DG/S 1.64.5.1 or DG/S 2.64.5.1 MDRC
- 1 pcs. Installation and operating instructions
- 1 pcs. KNX bus connection terminal (red/black)
- 1 pcs. KNX connection cover cap

13.2 8-bit scene code table (group object 35)

This code table indicates the telegram code for an 8-bit scene in hexadecimal and binary code for the first 16 scenes.

Note

There are 16 scenes available in the DALI. However, the gateway makes it possible to assign a DALI scene to any KNX scene, which can then be used to recall it via KNX. For example, DALI scene 2 could be assigned to KNX scene 53. When KNX scene 53 is recalled, this assignment automatically recalls DALI scene 2.

When recalling or storing a scene, the following 8-bit values are sent for scene numbers 1...16. These 16 scenes are generated if DALI scene x (x = 1…16) is also assigned to KNX scene x (x = 1…64).

Bit no.		7	6	5	4	3	2	1	0		
Decimal group object value	Hexadecimal group object value	Recall/store	Not defined	Scene binary code						Scene no.	Recall scene
0	00									1	Recall
1	01								■	2	
2	02							■		3	
3	03							■	■	4	
4	04						■			5	
5	05						■		■	6	
6	06						■	■		7	
7	07						■	■	■	8	
8	08					■				9	
9	09					■			■	10	
10	0A					■		■		11	
11	0B					■		■	■	12	
12	0C					■	■			13	
13	0D					■	■		■	14	
14	0E					■	■	■		15	
15	0F					■	■	■	■	16	
64	40		■							1	Recall
65	41		■						■	2	
66	42		■					■		3	
67	43		■					■	■	4	
68	44		■				■			5	
69	45		■				■		■	6	
70	46		■				■	■		7	
71	47		■				■	■	■	8	
72	48		■			■				9	
73	49		■			■			■	10	
74	4 A		■			■		■		11	
75	4B		■			■		■	■	12	
76	4C		■			■	■			13	
77	4D		■			■	■		■	14	
78	4E		■			■	■	■		15	
79	4F		■			■	■	■	■	16	

Bit no.		7	6	5	4	3	2	1	0		
Decimal group object value	Hexadecimal group object value	Recall/store	Not defined	Scene binary code						Scene no.	Store scene
128	80	■								1	Save
129	81	■							■	2	
130	82	■						■		3	
131	83	■						■	■	4	
132	84	■					■			5	
133	85	■					■		■	6	
134	86	■					■	■		7	
135	87	■					■	■	■	8	
136	88	■				■				9	
137	89	■				■			■	10	
138	8A	■				■		■		11	
139	8B	■				■		■	■	12	
140	8C	■				■	■			13	
141	8D	■				■	■		■	14	
142	8E	■				■	■	■		15	
143	8F	■				■	■	■	■	16	
192	C0	■	■							1	Save
193	C1	■	■						■	2	
194	C2	■	■					■		3	
195	C3	■	■					■	■	4	
196	C4	■	■				■			5	
197	C5	■	■				■		■	6	
198	C6	■	■				■	■		7	
199	C7	■	■				■	■	■	8	
200	C8	■	■			■				9	
201	C9	■	■			■			■	10	
202	CA	■	■			■		■		11	
203	CB	■	■			■		■	■	12	
204	CC	■	■			■	■			13	
205	CD	■	■			■	■		■	14	
206	CE	■	■			■	■	■		15	
207	CF	■	■			■	■	■	■	16	

■ = Value 1, applicable
Empty = Value 0, not applicable

The following extended table indicates the telegram code for an 8-bit scene in hexadecimal and binary code for all 64 scenes. Normally when recalling or storing a scene, an 8-bit value must be sent.

Bit no.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Recall 0 Store 1	Not defined	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Recall R Store S No reaction –
0	00	0								1	A
1	01	0							■	2	A
2	02	0						■		3	A
3	03	0						■	■	4	A
4	04	0					■			5	A
5	05	0					■		■	6	A
6	06	0					■	■		7	A
7	07	0					■	■	■	8	A
8	08	0				■				9	A
9	09	0				■			■	10	A
10	0A	0				■		■		11	A
11	0B	0				■		■	■	12	A
12	0C	0				■	■			13	A
13	0D	0				■	■		■	14	A
14	0E	0				■	■	■		15	A
15	0F	0				■	■	■	■	16	A
16	10	0			■					17	A
17	11	0			■				■	18	A
18	12	0			■			■		19	A
19	13	0			■			■	■	20	A
20	14	0			■		■			21	A
21	15	0			■		■		■	22	A
22	16	0			■		■	■		23	A
23	17	0			■		■	■	■	24	A
24	18	0			■	■				25	A
25	19	0			■	■			■	26	A
26	1 A	0			■	■		■		27	A
27	1B	0			■	■		■	■	28	A
28	1C	0			■	■	■			29	A
29	1D	0			■	■	■		■	30	A
30	1E	0			■	■	■	■		31	A
31	1F	0			■	■	■	■	■	32	A
32	20	0		■						33	A
33	21	0		■					■	34	A
34	22	0		■				■		35	A
35	23	0		■				■	■	36	A
36	24	0		■			■			37	A
37	25	0		■			■		■	38	A
38	26	0		■			■	■		39	A
39	27	0		■			■	■	■	40	A
40	28	0		■		■				41	A
41	29	0		■		■			■	42	A
42	2 A	0		■		■		■		43	A
43	2B	0		■		■		■	■	44	A
44	2C	0		■		■	■			45	A
45	2D	0		■		■	■		■	46	A
46	2E	0		■		■	■	■		47	A
47	2F	0		■		■	■	■	■	48	A
48	30	0		■	■					49	A
49	31	0		■	■				■	50	A
50	32	0		■	■			■		51	A
51	33	0		■	■			■	■	52	A
52	34	0		■	■		■			53	A
53	35	0		■	■		■		■	54	A
54	36	0		■	■		■	■		55	A
55	37	0		■	■		■	■	■	56	A
56	38	0		■	■	■				57	A
57	39	0		■	■	■			■	58	A
58	3 A	0		■	■	■		■		59	A
59	3B	0		■	■	■		■	■	60	A
60	3C	0		■	■	■	■			61	A
61	3D	0		■	■	■	■		■	62	A
62	3E	0		■	■	■	■	■		63	A
63	3F	0		■	■	■	■	■	■	64	A
64	40	–	■							–	–
65	41	–	■						■	–	–
66	42	–	■					■		–	–
67	43	–	■					■	■	–	–
68	44	–	■				■			–	–
69	45	–	■				■		■	–	–
70	46	–	■				■	■		–	–
71	47	–	■				■	■	■	–	–
72	48	–	■			■				–	–
73	49	–	■			■			■	–	–
74	4 A	–	■			■		■		–	–
75	4B	–	■			■		■	■	–	–
76	4C	–	■			■	■			–	–
77	4D	–	■			■	■		■	–	–
78	4E	–	■			■	■	■		–	–
79	4F	–	■			■	■	■	■	–	–
80	50	–	■		■					–	–
81	51	–	■		■				■	–	–
82	52	–	■		■			■		–	–
83	53	–	■		■			■	■	–	–
84	54	–	■		■		■			–	–
85	55	–			■		■		■	–	–
86	56	–	■		■		■	■		–	–
87	57	–	■		■		■	■	■	–	–
88	58	–	■		■	■				–	–
89	59	–	■		■	■			■	–	–
90	5 A	–	■		■	■		■		–	–
91	5B	–	■		■	■		■	■	–	–
92	5C	–	■		■	■	■			–	–
93	5D	–	■		■	■	■		■	–	–
94	5E	–	■		■	■	■	■		–	–
95	5F	–	■		■	■	■	■	■	–	–
96	60	–	■	■						–	–
97	61	–	■	■					■	–	–
98	62	–	■	■				■		–	–
99	63	–	■	■				■	■	–	–
100	64	–	■	■			■			–	–
101	65	–	■	■			■		■	–	–
102	66	–	■	■			■	■		–	–
103	67	–	■	■			■	■	■	–	–
104	68	–	■	■		■				–	–
105	69	–	■	■		■			■	–	–
106	6 A	–	■	■		■		■		–	–
107	6B	–	■	■		■		■	■	–	–
108	6C	–	■	■		■	■			–	–
109	6D	–	■	■		■	■		■	–	–
110	6E	–	■	■		■	■	■		–	–
111	6F	–	■	■		■	■	■	■	–	–
112	70	–	■	■	■					–	–
113	71	–	■	■	■				■	–	–
114	72	–	■	■	■			■		–	–
115	73	–	■	■	■			■	■	–	–
116	74	–	■	■	■		■			–	–
117	75	–	■	■	■		■		■	–	–
118	76	–	■	■	■		■	■		–	–
119	77	–	■	■	■		■	■	■	–	–
120	78	–	■	■	■	■				–	–
121	79	–	■	■	■	■			■	–	–
122	7 A	–	■	■	■	■		■		–	–
123	7B	–	■	■	■	■		■	■	–	–
124	7C	–	■	■	■	■	■			–	–
125	7D	–	■	■	■	■	■		■	–	–
126	7E	–	■	■	■	■	■	■		–	–
127	7F	–	■	■	■	■	■	■	■	–	–
128	80	1								1	S
129	81	1							■	2	S
130	82	1						■		3	S
131	83	1						■	■	4	S
132	84	1					■			5	S
133	85	1					■		■	6	S
134	86	1					■	■		7	S
135	87	1					■	■	■	8	S
136	88	1				■				9	S
137	89	1				■			■	10	S
138	8A	1				■		■		11	S
139	8B	1				■		■	■	12	S
140	8C	1				■	■			13	S
141	8D	1				■	■		■	14	S
142	8E	1				■	■	■		15	S
143	8F	1				■	■	■	■	16	S
144	90	1			■					17	S
145	91	1			■				■	18	S
146	92	1			■			■		19	S
147	93	1			■			■	■	20	S
148	94	1			■		■			21	S
149	95	1			■		■		■	22	S
150	96	1			■		■	■		23	S
151	97	1			■		■	■	■	24	S
152	98	1			■	■				25	S
153	99	1			■	■			■	26	S
154	9 A	1			■	■		■		27	S
155	9B	1			■	■		■	■	28	S
156	9C	1			■	■	■			29	S
157	9D	1			■	■	■		■	30	S
158	9E	1			■	■	■	■		31	S
159	9F	1			■	■	■	■	■	32	S
160	A0	1		■						33	S
161	A1	1		■					■	34	S
162	A2	1		■				■		35	S
163	A3	1		■				■	■	36	S
164	A4	1		■			■			37	S
165	A5	1		■			■		■	38	S
166	A6	1		■			■	■		39	S
167	A7	1		■			■	■	■	40	S
168	A8	1		■		■				41	S
169	A9	1		■		■			■	42	S
170	AA	1		■		■		■		43	S
171	AB	1		■		■		■	■	44	S
172	AC	1		■		■	■			45	S
173	AD	1		■		■	■		■	46	S
174	AE	1		■		■	■	■		47	S
175	AF	1		■		■	■	■	■	48	S
176	B0	1		■	■					49	S
177	B1	1		■	■				■	50	S
178	B2	1		■	■			■		51	S
179	B3	1		■	■			■	■	52	S
180	B4	1		■	■		■			53	S
181	B5	1		■	■		■		■	54	S
182	B6	1		■	■		■	■		55	S
183	B7	1		■	■		■	■	■	56	S
184	B8	1		■	■	■				57	S
185	B9	1		■	■	■			■	58	S
186	BA	1		■	■	■		■		59	S
187	BB	1		■	■	■		■	■	60	S
188	BC	1		■	■	■	■			61	S
189	BD	1		■	■	■	■		■	62	S
190	BE	1		■	■	■	■	■		63	S
191	BF	1		■	■	■	■	■	■	64	S
192	C0	–	■							–	–
193	C1	–	■						■	–	–
194	C2	–	■					■		–	–
195	C3	–	■					■	■	–	–
196	C4	–	■				■			–	–
197	C5	–	■				■		■	–	–
198	C6	–	■				■	■		–	–
199	C7	–	■				■	■	■	–	–
200	C8	–	■			■				–	–
201	C9	–	■			■			■	–	–
202	CA	–	■			■		■		–	–
203	CB	–	■			■		■	■	–	–
204	CC	–	■			■	■			–	–
205	CD	–	■			■	■		■	–	–
206	CE	–	■			■	■	■		–	–
207	CF	–	■			■	■	■	■	–	–
208	D0	–	■		■					–	–
209	D1	–	■		■				■	–	–
210	D2	–	■		■			■		–	–
211	D3	–	■		■			■	■	–	–
212	D4	–	■		■		■			–	–
213	D5	–	■		■		■		■	–	–
214	D6	–	■		■		■	■		–	–
215	D7	–	■		■		■	■	■	–	–
216	D8	–	■		■	■				–	–
217	D9	–	■		■	■			■	–	–
218	DA	–	■		■	■		■		–	–
219	DB	–	■		■	■		■	■	–	–
220	DC	–	■		■	■	■			–	–
221	DD	–	■		■	■	■		■	–	–
222	EN	–	■		■	■	■	■		–	–
223	DF	–	■		■	■	■	■	■	–	–
224	E0	–	■	■						–	–
225	E1	–	■	■					■	–	–
226	E2	–	■	■				■		–	–
227	E3	–	■	■				■	■	–	–
228	E4	–	■	■			■			–	–
229	E5	–	■	■			■		■	–	–
230	E6	–	■	■			■	■		–	–
231	E7	–	■	■			■	■	■	–	–
232	E8	–	■	■		■				–	–
233	E9	–	■	■		■			■	–	–
234	EA	–	■	■		■		■		–	–
235	EB	–	■	■		■		■	■	–	–
236	EC	–	■	■		■	■			–	–
237	ED	–	■	■		■	■		■	–	–
238	EE	–	■	■		■	■	■		–	–
239	EF	–	■	■		■	■	■	■	–	–
240	F0	–	■	■	■					–	–
241	F1	–	■	■	■				■	–	–
242	F2	–	■	■	■			■		–	–
243	F3	–	■	■	■			■	■	–	–
244	F4	–	■	■	■		■			–	–
245	F5	–	■	■	■		■		■	–	–
246	F6	–	■	■	■		■	■		–	–
247	F7	–	■	■	■		■	■	■	–	–
248	F8	–	■	■	■	■				–	–
249	F9	–	■	■	■	■			■	–	–
250	FA	–	■	■	■	■		■		–	–
251	FB	–	■	■	■	■		■	■	–	–
252	FC	–	■	■	■	■	■			–	–
253	FD	–	■	■	■	■	■		■	–	–
254	FE	–	■	■	■	■	■	■		–	–
255	FF	–	■	■	■	■	■	■	■	–	–

■ = Value 1, applicable

Empty = Value 0, not applicable

13.3 Fault addressed "Request" code table (no. 23)

The 2-byte group object *Fault addressed* makes all the information about a ballast or group available on KNX. The information is requested when a 2-byte telegram with a set bit 7 in the Low byte is received on the *Fault addressed* group object. The bit 6 in the Low byte indicates whether the request is for a ballast or a group.

The High byte is not relevant to the information request and is therefore simply set to 0 for the request. This produces the following telegram values for requesting the corresponding information about the ballast or group.

To request the information, the decimal value can be sent to the gateway as DPT 7.001 via the 2-byte group object *Fault addressed*.

Bit no.		7	6	5	4	3	2	1	0		
Decimal group object value	Hexadecimal group object value	For request = 1	Ballast/group	Binary code Device/group no.						DALI device no.	Group no.
128	80	■								1	
129	81	■							■	2	
130	82	■						■		3	
131	83	■						■	■	4	
132	84	■					■			5	
133	85	■					■		■	6	
134	86	■					■	■		7	
135	87	■					■	■	■	8	
136	88	■				■				9	
137	89	■				■			■	10	
138	8A	■				■		■		11	
139	8B	■				■		■	■	12	
140	8C	■				■	■			13	
141	8D	■				■	■		■	14	
142	8E	■				■	■	■		15	
143	8F	■				■	■	■	■	16	
144	90	■			■					17	
145	91	■			■				■	18	
146	92	■			■			■		19	
147	93	■			■			■	■	20	
148	94	■			■		■			21	
149	95	■			■		■		■	22	
150	96	■			■		■	■		23	
151	97	■			■		■	■	■	24	
152	98	■			■	■				25	
153	99	■			■	■			■	26	
154	9 A	■			■	■		■		27	
155	9B	■			■	■		■	■	28	
156	9C	■			■	■	■			29	
157	9D	■			■	■	■		■	30	
158	9E	■			■	■	■	■		31	
159	9F	■			■	■	■	■	■	32	
160	A0	■		■						33	
161	A1	■		■					■	34	
162	A2	■		■				■		35	
163	A3	■		■				■	■	36	
164	A4	■		■			■			37	
165	A5	■		■			■		■	38	
166	A6	■		■			■	■		39	
167	A7	■		■			■	■	■	40	

Bit no.		7	6	5	4	3	2	1	0		
Decimal group object value	Hexadecimal group object value	For request = 1	Ballast/group	Binary code Device/group no.						DALI device no.	Group no.
168	A8	■		■		■				41	
169	A9	■		■		■			■	42	
170	AA	■		■		■		■		43	
171	AB	■		■		■		■	■	44	
172	AC	■		■		■	■			45	
173	AD	■		■		■	■		■	46	
174	AE	■		■		■	■	■		47	
175	AF	■		■		■	■	■	■	48	
176	B0	■		■	■					49	
177	B1	■		■	■				■	50	
178	B2	■		■	■			■		51	
179	B3	■		■	■			■	■	52	
180	B4	■		■	■		■			53	
181	B5	■		■	■		■		■	54	
182	B6	■		■	■		■	■		55	
183	B7	■		■	■		■	■	■	56	
184	B8	■		■	■	■				57	
185	B9	■		■	■	■			■	58	
186	BA	■		■	■	■		■		59	
187	BB	■		■	■	■		■	■	60	
188	BC	■		■	■	■	■			61	
189	BD	■		■	■	■	■		■	62	
190	BE	■		■	■	■	■	■		63	
191	BF	■		■	■	■	■	■	■	64	
192	C0	■	■								1
193	C1	■	■						■		2
194	C2	■	■					■			3
195	C3	■	■					■	■		4
196	C4	■	■				■				5
197	C5	■	■				■		■		6
198	C6	■	■				■	■			7
199	C7	■	■				■	■	■		8
200	C8	■	■			■					9
201	C9	■	■			■			■		10
202	CA	■	■			■		■			11
203	CB	■	■			■		■	■		12
204	CC	■	■			■	■				13
205	CD	■	■			■	■		■		14
206	CE	■	■			■	■	■			15
207	CF	■	■			■	■	■	■		16

■ = Value 1, applicable
Empty = Value 0, not applicable

13.4 Fault addressed "Feedback" code table (no. 23)

The 2-byte group object *Fault addressed* makes all the information about a ballast or group available on KNX. The same *Fault addressed* group object is used to request the information, see 13.3, Fault addressed "Request" code table (no. 23).

For more information, see Group object no. 23.

The 2-byte *Fault addressed* group object sent by the gateway can be subdivided into two 1-byte values: the Low byte (bit 0…7) and the High byte (bit 8…15).

Initially, the information (device or group number) is repeated in the Low byte. The request bit (7) is set to zero, which makes the telegram recognizable as a sent telegram.

The High byte contains the information about the selected DALI device or group.

The following code table shows the relationship between the value of the High byte group object and the status of the DALI system and its ballast or group.

Bit no.		7	6	5	4	3	2	1	0		
Decimal group object value	Hexadecimal group object value	Feedback = 0	Ballast/group	Binary code						DALI device no.	Group no.
0	00									1	
1	01								■	2	
2	02							■		3	
3	03							■	■	4	
4	04						■			5	
5	05						■		■	6	
6	06						■	■		7	
7	07						■	■	■	8	
8	08					■				9	
9	09					■			■	10	
10	0A					■		■		11	
11	0B					■		■	■	12	
12	0C					■	■			13	
13	0D					■	■		■	14	
14	0E					■	■	■		15	
15	0F					■	■	■	■	16	
16	10				■					17	
17	11				■				■	18	
18	12				■			■		19	
19	13				■			■	■	20	
20	14				■		■			21	
21	15				■		■		■	22	
22	16				■		■	■		23	
23	17				■		■	■	■	24	
24	18				■	■				25	
25	19				■	■			■	26	
26	1 A				■	■		■		27	
27	1B				■	■		■	■	28	
28	1C				■	■	■			29	
29	1D				■	■	■		■	30	
30	1E				■	■	■	■		31	
31	1F				■	■	■	■	■	32	
32	20			■						33	
33	21			■					■	34	
34	22			■				■		35	
35	23			■				■	■	36	
36	24			■			■			37	
37	25			■			■		■	38	
38	26			■			■	■		39	
39	27			■			■	■	■	40	

Bit no.		7	6	5	4	3	2	1	0		
Decimal group object value	Hexadecimal group object value	For request = 1	Ballast/group	Binary code						DALI device no.	Group no.
40	28			■		■				41	
41	29			■		■			■	42	
42	2 A			■		■		■		43	
43	2B			■		■		■	■	44	
44	2C			■		■	■			45	
45	2D			■		■	■		■	46	
46	2E			■		■	■	■		47	
47	2F			■		■	■	■	■	48	
48	30			■	■					49	
49	31			■	■				■	50	
50	32			■	■			■		51	
51	33			■	■			■	■	52	
52	34			■	■		■			53	
53	35			■	■		■		■	54	
54	36			■	■		■	■		55	
55	37			■	■		■	■	■	56	
56	38			■	■	■				57	
57	39			■	■	■			■	58	
58	3 A			■	■	■		■		59	
59	3B			■	■	■		■	■	60	
60	3C			■	■	■	■			61	
61	3D			■	■	■	■		■	62	
62	3E			■	■	■	■	■		63	
63	3F			■	■	■	■	■	■	64	
64	40		■								1
65	41		■						■		2
66	42		■					■			3
67	43		■					■	■		4
68	44		■				■				5
69	45		■				■		■		6
70	46		■				■	■			7
71	47		■				■	■	■		8
72	48		■			■					9
73	49		■			■			■		10
74	4 A		■			■		■			11
75	4B		■			■		■	■		12
76	4C		■			■	■				13
77	4D		■			■	■		■		14
78	4E		■			■	■	■			15
79	4F		■			■	■	■	■		16

■ = Value 1, applicable
Empty = Value 0, not applicable

Bit no.		15	14	13	12	11	10	9	8
Decimal group object value	Hexadecimal group object value	Not assigned, without function	Not assigned, without function	Not assigned, without function	Not assigned, without function	Not assigned, without function	Converter fault	Ballast fault	Lamp fault
0	00								
1	01								■
2	02							■	
3	03							■	■
4	04						■		
5	05						■		■
6	06						■	■	
7	07						■	■	■
8	08					■			
9	09					■			■
10	0A					■		■	
11	0B					■		■	■
12	0C					■	■		
13	0D					■	■		■
14	0E					■	■	■	
15	0F					■	■	■	■
16	10				■				
17	11				■				■
18	12				■			■	
19	13				■			■	■
20	14				■		■		
21	15				■		■		■
22	16				■		■	■	
23	17				■		■	■	■
24	18				■	■			
25	19				■	■			■
26	1 A				■	■		■	
27	1B				■	■		■	■
28	1C				■	■	■		
29	1D				■	■	■		■
30	1E				■	■	■	■	
31	1F				■	■	■	■	■
32	20			■					
33	21			■					■
34	22			■				■	
35	23			■				■	■
36	24			■			■		
37	25			■			■		■
38	26			■			■	■	
39	27			■			■	■	■
40	28			■		■			
41	29			■		■			■
42	2 A			■		■		■	
43	2B			■		■		■	■
44	2C			■		■	■		
45	2D			■		■	■		■
46	2E			■		■	■	■	
47	2F			■		■	■	■	■
48	30			■	■				
49	31			■	■				■
50	32			■	■			■	
51	33			■	■			■	■
52	34			■	■		■		
53	35			■	■		■		■
54	36			■	■		■	■	
55	37			■	■		■	■	■
56	38			■	■	■			
57	39			■	■	■			■
58	3 A			■	■	■		■	
59	3B			■	■	■		■	■
60	3C			■	■	■	■		
61	3D			■	■	■	■		■
62	3E			■	■	■	■	■	
63	3F			■	■	■	■	■	■
64	40		■						
65	41		■						■
66	42		■					■	
67	43		■					■	■
68	44		■				■		
69	45		■				■		■
70	46		■				■	■	
71	47		■				■	■	■
72	48		■			■			
73	49		■			■			■
74	4 A		■			■		■	
75	4B		■			■		■	■
76	4C		■			■	■		
77	4D		■			■	■		■
78	4E		■			■	■	■	
79	4F		■			■	■	■	■
80	50		■		■				
81	51		■		■				■
82	52		■		■			■	
83	53		■		■			■	■
84	54		■		■		■		
85	55		■		■		■		■

Bit no.		15	14	13	12	11	10	9	8
Decimal group object value	Hexadecimal group object value	Not assigned, without function	Not assigned, without function	Not assigned, without function	Not assigned, without function	Not assigned, without function	Converter fault	Ballast fault	Lamp fault
86	56		■		■		■	■	
87	57		■		■		■	■	■
88	58		■		■	■			
89	59		■		■	■			■
90	5 A		■		■	■		■	
91	5B		■		■	■		■	■
92	5C		■		■	■	■		
93	5D		■		■	■	■		■
94	5E		■		■	■	■	■	
95	5F		■		■	■	■	■	■
96	60		■	■					
97	61		■	■					■
98	62		■	■				■	
99	63		■	■				■	■
100	64		■	■			■		
101	65		■	■			■		■
102	66		■	■			■	■	
103	67		■	■			■	■	■
104	68		■	■		■			
105	69		■	■		■			■
106	6 A		■	■		■		■	
107	6B		■	■		■		■	■
108	6C		■	■		■	■		
109	6D		■	■		■	■		■
110	6E		■	■		■	■	■	
111	6F		■	■		■	■	■	■
112	70		■	■	■				
113	71		■	■	■				■
114	72		■	■	■			■	
115	73		■	■	■			■	■
116	74		■	■	■		■		
117	75		■	■	■		■		■
118	76		■	■	■		■	■	
119	77		■	■	■		■	■	■
120	78		■	■	■	■			
121	79		■	■	■	■			■
122	7 A		■	■	■	■		■	
123	7B		■	■	■	■		■	■
124	7C		■	■	■	■	■		
125	7D		■	■	■	■	■		■
126	7E		■	■	■	■	■	■	
127	7F		■	■	■	■	■	■	■
128	80	■							
129	81	■							■
130	82	■						■	
131	83	■						■	■
132	84	■					■		
133	85	■					■		■
134	86	■					■	■	
135	87	■					■	■	■
136	88	■				■			
137	89	■				■			■
138	8A	■				■		■	
139	8B	■				■		■	■
140	8C	■				■	■		
141	8D	■				■	■		■
142	8E	■				■	■	■	
143	8F	■				■	■	■	■
144	90	■			■				
145	91	■			■				■
146	92	■			■			■	
147	93	■			■			■	■
148	94	■			■		■		
149	95	■			■		■		■
150	96	■			■		■	■	
151	97	■			■		■	■	■
152	98	■			■	■			
153	99	■			■	■			■
154	9 A	■			■	■		■	
155	9B	■			■	■		■	■
156	9C	■			■	■	■		
157	9D	■			■	■	■		■
158	9E	■			■	■	■	■	
159	9F	■			■	■	■	■	■
160	A0	■		■					
161	A1	■		■					■
162	A2	■		■				■	
163	A3	■		■				■	■
164	A4	■		■			■		
165	A5	■		■			■		■
166	A6	■		■			■	■	
167	A7	■		■			■	■	■
168	A8	■		■		■			
169	A9	■		■		■			■
170	AA	■		■		■		■	
171	AB	■		■		■		■	■

Bit no.		15	14	13	12	11	10	9	8
Decimal group object value	Hexadecimal group object value	Not assigned, without function	Not assigned, without function	Not assigned, without function	Not assigned, without function	Not assigned, without function	Converter fault	Ballast fault	Lamp fault
172	AC	■		■		■	■		
173	AD	■		■		■	■		■
174	AE	■		■		■	■	■	
175	AF	■		■		■	■	■	■
176	B0	■		■	■				
177	B1	■		■	■				■
178	B2	■		■	■			■	
179	B3	■		■	■			■	■
180	B4	■		■	■		■		
181	B5	■		■	■		■		■
182	B6	■		■	■		■	■	
183	B7	■		■	■		■	■	■
184	B8	■		■	■	■			
185	B9	■		■	■	■			■
186	BA	■		■	■	■		■	
187	BB	■		■	■	■		■	■
188	BC	■		■	■	■	■		
189	BD	■		■	■	■	■		■
190	BE	■		■	■	■	■	■	
191	BF	■		■	■	■	■	■	■
192	C0	■	■						
193	C1	■	■						■
194	C2	■	■					■	
195	C3	■	■					■	■
196	C4	■	■				■		
197	C5	■	■				■		■
198	C6	■	■				■	■	
199	C7	■	■				■	■	■
200	C8	■	■			■			
201	C9	■	■			■			■
202	CA	■	■			■		■	
203	CB	■	■			■		■	■
204	CC	■	■			■	■		
205	CD	■	■			■	■		■
206	CE	■	■			■	■	■	
207	CF	■	■			■	■	■	■
208	D0	■	■		■				
209	D1	■	■		■				■
210	D2	■	■		■			■	
211	D3	■	■		■			■	■
212	D4	■	■		■		■		
213	D5	■	■		■		■		■
214	D6	■	■		■		■	■	
215	D7	■	■		■		■	■	■
216	D8	■	■		■	■			
217	D9	■	■		■	■			■
218	DA	■	■		■	■		■	
219	DB	■	■		■	■		■	■
220	DC	■	■		■	■	■		
221	DD	■	■		■	■	■		■
222	EN	■	■		■	■	■	■	
223	DF	■	■		■	■	■	■	■
224	E0	■	■	■					
225	E1	■	■	■					■
226	E2	■	■	■				■	
227	E3	■	■	■				■	■
228	E4	■	■	■			■		
229	E5	■	■	■			■		■
230	E6	■	■	■			■	■	
231	E7	■	■	■			■	■	■
232	E8	■	■	■		■			
233	E9	■	■	■		■			■
234	EA	■	■	■		■		■	
235	EB	■	■	■		■		■	■
236	EC	■	■	■		■	■		
237	ED	■	■	■		■	■		■
238	EE	■	■	■		■	■	■	
239	EF	■	■	■		■	■	■	■
240	F0	■	■	■	■				
241	F1	■	■	■	■				■
242	F2	■	■	■	■			■	
243	F3	■	■	■	■			■	■
244	F4	■	■	■	■		■		
245	F5	■	■	■	■		■		■
246	F6	■	■	■	■		■	■	
247	F7	■	■	■	■		■	■	■
248	F8	■	■	■	■	■			
249	F9	■	■	■	■	■			■
250	FA	■	■	■	■	■		■	
251	FB	■	■	■	■	■		■	■
252	FC	■	■	■	■	■	■		
253	FD	■	■	■	■	■	■		■
254	FE	■	■	■	■	■	■	■	
255	FF	■	■	■	■	■	■	■	■

■ = Value 1, applicable
Empty = Value 0, not applicable

13.5 Notes

ABB i-bus® KNX
Appendix

ABB i-bus® KNX
Appendix

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