THE TECHNICAL MANUALS
KNX/DALI GATEWAY
KNX-DALI-301-62-DT6/DT8-DIN

Версия:07-2025

1. DIRECTORY

Content

2. OVERVIEW

2.1. DEVICE OVERVIEW

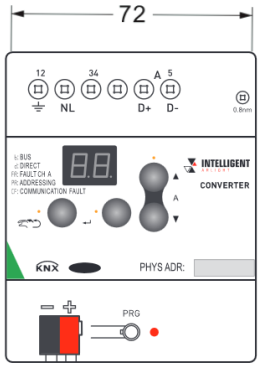
This manual is applicable to the following equipment:
KNX-DALI-301-62-DT6/DT8-DIN (230V)

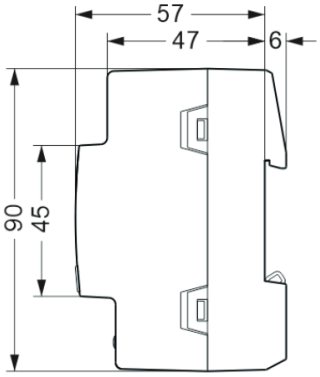
The application	Maximum number of communication objects	Maximum number of group addresses	Maximum number of union addresses
DALI-Gateway,1-fold,Colour control	1436	1536	1984

The KNX/DALI gateway can connect the DALI standard protocol to the KNX system, convert the switches and dimming commands from the KNX system to DALI messages, and convert the state information from DALI bus to KNX messages, so that the KNX bus can control the DALI driver. Widely used in intelligent lighting field. The device complies with the DALI standard protocol IEC 62386-207:2009 and IEC 62386-209:2011. It has no multi-host function, and can connect up to 64 DALI address drivers in a 1 fold. It can adjust the brightness and color of 64 DALI drivers separately (DT8). Supports dimming actions, scene functions, group functions, state feedback, and operation and maintenance. No external power supply to DALI is required. You can automatically address DALI devices, manually write addresses for DALI devices, or manually delete DALI device addresses.

NOTE. After downloading the ETS application configuration, DALI driver configuration parameters will be written automatically. During the writing process, the nixie will flash quickly and display CP mode, and when the writing is complete, display B mode. The timing varies depending on the number of DALI drives and the minimum interval between DALI commands.

2.2. WIRING DIAGRAM AND DIMENSION DRAWING

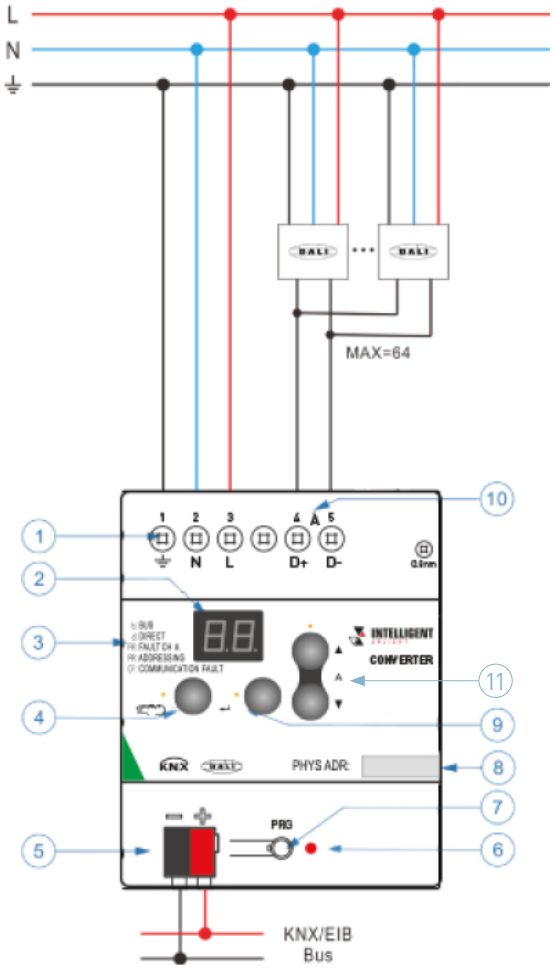




Unit:mm

1:230V AC Input
2: Code display
3: Code meaning
4: Return button and indicator
5: KNX terminal
6: Programming indicator light
7: Programming buttons
Dimension Drawing:

8: Physical address marker
9: Confirm button and indicator light
10: DALI Bus
11: Up&Down buttons



2.3. FEATURES

KNX/DALI gateway functions are divided into General Settings, Devices Channel A, Central Function A, Dynamic Function, Scenes Function, Status feedback.
The following menu can be further parameterized:

GENERAL
This option is used for the general configuration of KNX/DALI gateway. It enables the automatic running of DALI addressing, DALI or EIB bus voltage loss response, DALI or EIB bus voltage recovery response, communication error response, lamp aging time cycle, etc.

DEVICES CHANNEL A
This option configures the query command interval of channel A, the operating mode of devices 01 to 64, the behavior parameters of switches and dimmers, the time parameters, and their state parameters, and supports the color control parameters of DT8.

CENTRAL FUNCTION A
This option can configure channel A operation mode, switch, dimming behavior parameters, time parameters and their state parameters, and support DT8 color control parameter Settings.

DYNAMIC
This option allows you to configure the start and end scenarios and their hold times in dynamic mode.

SCENES
This option can be configured for 1 to 16 scenarios. For each scenario, you can configure the scenario ID, brightness adjustment time, and brightness dimming behavior. The scenario command can be the DALI broadcast scenario command or KNX independent control command.

GROUPS SCENES
This option can configure 1~16 group scenes, each scene can be configured with scene number, scene brightness adjustment time and brightness adjustment behavior.

STATUS
This option can be configured with DALI ballast fault state feedback, lamp fault state feedback, DALI communication fault state feedback, timing sending and receiving communication packets and other parameters.

2.4. FUNCTION OVERVIEW

General	Basic setting	Enable DALI addressing to run automatically
		DALI/EIB bus or 220V power supply voltage loss state response
		DALI/EIB bus or 220V power supply restores state response
		Communication failure response
		DALI Indicates the minimum interval between commands
		Lamp aging cycle time
Devices Channel A	Basic setting	DALI Query command interval interval
	Device A01~A64	Operating mode Start brightness setting Setting of switching time and dimming time Minimum and maximum brightness Settings Switch state, dimming state feedback Settings Set the running time and fault object type
	Device A01~A64 Colour control(DT8)	Device Type Selection Start color Settings Start behavior Settings
Groups Channel A	Group 01~16	Start brightness setting Setting of switching time and dimming time Enable Color Settings (DT8) Added devices 01 to 64 to group Settings
Central Function A	Basic setting	Operating mode Start brightness setting Setting of switching time and dimming time Device Type Selection Start color Settings
Dynamic	Basic setting	Startup scenario and startup scenario hold time End scene and hold time of end scene

Scenes	Scene 1~16	Setting scene Number Setting the scene dimming time Whether to download and rewrite the scene
	Scene 1-16 Channel A Light	Devices 01 to 64 Brightness scenarios, supporting the learning function
	Scene 1-16 Channel A Colour	Device 01 to 64 Color scene value, supporting learning function
Groups Scenes	Groups Scene 1~16	Setting scene Number Setting the scene dimming time Whether to download and rewrite the scene
	Groups Scene 1-16 Channel A Light	Groups 01 to 16 Brightness scenarios, supporting the learning function
	Groups Scene 1-16 Channel A Colour	Groups 01 to 16 Color scene value, supporting learning function
Status	Basic setting	Select device switch state and fault state to send Ballast failure, lamp failure and DALI communication failure status send Answer error Enabled Setting the sending and receiving of communication packets

Table 1: Feature overview

3. COMMUNICATION OBJECT

3.1. SETTING AND DESCRIPTION OF COMMUNICATION OBJECTS

The following table shows the setting and description of communication objects. Since ETS default objects are sorted by serial number, engineering debugging can choose sorting by name:

Channel A object					
No.	**The name**	**function**	**use**	**DPT**	**R & W**
1	Channel A	On / Off	Channel A switch	DPT 1.1	write
2	Channel A	Relative Dimming	Channel A relative dimming	DPT 3.7	write
3	Channel A	Set Brightness Value	Channel A absolute dimming	DPT 5.1	write
Objects 1 to 3 are used for the general control function of channel A to realize the general switch, total relative dimming, and total absolute dimming respectively					
4	Channel A	Devices Slave Operation On/Off	Switch of channel A from mode	DPT 1.3	write
Object 4 is used to switch the channel slave mode. The value 1 indicates that the slave mode is enabled, and the value 0 indicates that the slave mode is disabled. After the slave mode is enabled, it can only respond to the absolute dimming control, and does not respond to the switch and relative dimming control.					
5	Channel A	Telegr. Fault DALI	DALI Communicates with faulty packets	DPT 1.5	read
6	Channel A	Telegr. Fault Lamp(s)	Luminaire fault message	DPT 1.5	read
7	Channel A	Telegr. Fault Device	DALI Indicates a device fault packet	DPT 1.5	read
Objects 5 to 7 are used to report device faults on the channel. When one or more devices in the channel fail, corresponding fault object packets are sent back.					
8	Channel A	Select Device	Select equipment	DPT 5.10	Read/write
9	Channel A	Selected Device On / Off	Select device switch	DPT 1.1	write
10	Channel A	Selected Device Rel. Dimming	Select device relative dimming	DPT 3.7	write
11	Channel A	Selected Device Set Value	Select device absolute dimming	DPT 5.1	write
12	Channel A	Selected Device Slave Mode	Select device from mode	DPT 1.3	Read/write
13	Channel A	Selected Device Burn in Lamp	Select equipment lighting aging	DPT 1.10	Read/write
14	Channel A	Selected Device Read Position	Select device read switch status	DPT 1.1	read
15	Channel A	Selected Device Read Brightn.	Select device read dimming state	DPT 5.1	read
16	Channel A	Selected Device Lamp Failure	The selection device lamp is faulty	DPT 1.5	read
17	Channel A	Selected Device Device Failure	Select device The device is faulty	DPT 1.5	read
Objects 8 to 17 are used for devices that need to be controlled or read in the channel. You must select the device NUMBER through object 8. After the device number is selected, objects 9 to 17 can be operated effectively. Value: 01: Select device number 1. 02: Select device number 2. ... 64: Select device number 64. If the value is greater than 64 or less than 01, no device is selected. The device id is DALI address plus 1. After the device is selected, objects 9 to 17 can perform functions such as switch on or off, dimmer, read status, and aging.					

18	Channel A	Program Short Address	Programming short address	DPT 5.10	write
This object is used to enable automatic or manual addressing, When the parameter **"Enable automatic DALI Addressing"** is set to yes, the object 18 "Program Short Address" is used to Enable automatic addressing. Automatic addressing is enabled for packets received with the value "1", and no response is made for packets received with the value "0". When **"Enable automatic DALI Addressing"** is set to no: The Program Short Address object 18 is used for manual addressing. After receiving a packet whose value is 0 to 63, the Short addresses 0 to 63 are written to all DALI devices on the bus. After receiving a packet whose value is greater than 63, DALI does not respond. If Select Device is selected by object 8, only the short address of the selected Device is re-written. If object 18 receives the value 255, the selected Device address is deleted. This function facilitates the specified rewriting of devices with fixed short addresses.					
19	Channel A	Colour (RGB) Red Value	Color RGB Red value	DPT 5.1	write
19	Channel A	Colour X Value	Color X coordinate value	DPT 7.1	write
19	Channel A	Colour RGB Value	Color RGB values	DPT 232.600	write
19	Channel A	Colour RGBW Value	Color RGBW value	DPT 251.600	write
19	Channel A	Colour (HSV) Hue Value	Color HSV tone value	DPT 5.3	write
19	Channel A	Colour Temperature Value	Color Color temperature	DPT 7.600	write
19	Channel A	Colour XY Value	Color XY coordinate value	DPT 242.600	write
20	Channel A	Colour Temperature relative Value	Color color temperature relative value	DPT 5.1	write
20	Channel A	Colour (RGB) Green Value	Color RGB Green value	DPT 5.1	write
20	Channel A	Colour (HSV) Saturation Value	Color HSV saturation value	DPT 5.1	write
20	Channel A	Colour Y Value	Color Y coordinate	DPT 7.1	write
21	Channel A	Colour (RGB) Blue Value	Color RGB Blue value	DPT 5.1	write
21	Channel A	Colour Temperature Warmer/Cooler	Adjust color temperature value to warm/cool	DPT 3.7	write
22	Channel A	Colour White Value	Color RGB White value	DPT 5.1	write
23	Channel A	Broadcast On / Off	A Broadcast On / Off	DPT 1.1	write
24	Channel A	Broadcast Relative Dimming	A Broadcast Relative Dimming	DPT 3.7	write
25	Channel A	Broadcast Set Brightness Value	A Broadcast Brightness Value	DPT 5.1	write
Objects 22~25 are used for the broadcast control function of channel A equipment, respectively realizing broadcast switch, broadcast relative dimming, and broadcast absolute dimming					
26	Channel A	Broadcast Colour (RGB) Red Value	Broadcast Colour (RGB) Red Value	DPT 5.1	write
26	Channel A	Broadcast Colour X Value	Broadcast Colour X Value	DPT 7.1	write
26	Channel A	Broadcast Colour RGB Value	Broadcast Colour RGB Value	DPT 232.600	write
26	Channel A	Broadcast Colour RGBW Value	Broadcast Colour RGBW Value	DPT 251.600	write
26	Channel A	Broadcast Colour (HSV) Hue Value	Broadcast Colour (HSV) Hue Value	DPT 5.3	write
26	Channel A	Broadcast Colour Temperature Value	Broadcast Colour Temperature Value	DPT 7.600	write
26	Channel A	Broadcast Colour XY Value	Broadcast Colour XY Value	DPT 242.600	write
27	Channel A	Broadcast Colour Temperature relative Value	Broadcast Colour Temperature relative Value	DPT 5.1	write
27	Channel A	Broadcast Colour (RGB) Green Value	Broadcast Colour (RGB) Green Value	DPT 5.1	write
27	Channel A	Broadcast Colour (HSV) Saturation Value	Broadcast Colour (HSV) Saturation Value	DPT 5.1	write
27	Channel A	Broadcast Colour Y Value	Broadcast Colour Y Value	DPT 7.1	write
28	Channel A	Broadcast Colour (RGB) Blue Value	Broadcast Colour (RGB) Blue Value	DPT 5.1	write
28	Channel A	Broadcast Colour Temperature Warmer/ Cooler	Broadcast Colour Temperature Warmer/Cooler	DPT 3.7	write
29	Channel A	Broadcast Colour White Value	Broadcast Colour White Value	DPT 5.1	write
Objects 19 to 22 are used to control the overall color of channels. Object types vary according to the color control type parameter. Only one object type can be displayed at a time for an object number.					
Scene objects					
No.	**The name**	**function**	**use**	**DPT**	**R & W**
36	Groups Scenes 1..16	8-bit-Groups scene	Scenario call or save	DPT 18.1	
Object 36 is used to implement the 1byte call and save Groups scenario, where: Value 1 Byte Format: MXSSSSSS (MSB) (LSB) M: 0 — Call scenario 1 — Save (learn) the scene X: keep; S: the number 0..63 Scenario 1...64					
37	Scene 1/2	Recall scene	Call scenario 1/2	DPT 1.022	write
38	Scene 3/4	Recall scene	Call scenario 3/4	DPT 1.022	write
39	Scene 5/6	Recall scene	Call scenario 5/6	DPT 1.022	write
40	Scene 7/8	Recall scene	Call scenario 7/8	DPT 1.022	write
41	Scene 9/10	Recall scene	Call scenario 9/10	DPT 1.022	write
42	Scene 11/12	Recall scene	Call scenario 11/12	DPT 1.022	write
43	Scene 13/14	Recall scene	Call scenario 13/14	DPT 1.022	write
44	Scene 15/16	Recall scene	Call scenario 15/16	DPT 1.022	write

45	Scene 1/2	Store scene	Save scenario 1/2	DPT 1.022	write
46	Scene 3/4	Store scene	Save scenario 3/4	DPT 1.022	write
47	Scene 5/6	Store scene	Save scenario 5/6	DPT 1.022	write
48	Scene 7/8	Store scene	Save scenario 7/8	DPT 1.022	write
49	Scene 9/10	Store scene	Save scenario 9/10	DPT 1.022	write
50	Scene 11/12	Store scene	Save scenario 11/12	DPT 1.022	write
51	Scene 13/14	Store scene	Save scenario 13/14	DPT 1.022	write
52	Scene 15/16	Store scene	Save scenario 15/16	DPT 1.022	write
Objects 37~52 are used to implement the 1bit call and save Scene, Scene A/B where: Value: 0: call or save (learning) scenario A. 1: indicates call or save (learning) scenario B.					
53	Scenes 1..16	8-bit-scene	Scenario call or save	DPT 18.1	write
Object 53 is used to implement the 1byte call and save scenario, where: Value 1 Byte Format: MXSSSSSS (MSB) (LSB) M: 0 — Call scenario 1 — Save (learn) the scene X: keep; S: the number 0..63 Scenario 1..64					
Channel A Devices A01 to A64 objects (A total of 64 groups of the same objects. Only devices 1 and 64 are listed below)					
No.	**The name**	**function**	**use**	**DPT**	**R & W**
54	Device A01	Switch	Switch control	DPT 1.1	write
55	Device A01	Relative Dimming	Relative dimming control	DPT 3.7	write
56	Device A01	Brightness value	Absolute dimming Settings	DPT 5.1	write
...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
243	Device A64	Switch	Switch control	DPT 1.1	write
244	Device A64	Relative Dimming	Relative dimming control	DPT 3.7	write
245	Device A64	Brightness value	Absolute dimming Settings	DPT 5.1	write
Objects 54 to 56 Are used for the switch, relative dimming, and absolute dimming functions of device 01. Devices 01 to 64 have the same functions.					
246	Device A01	Colour (RGB) Red Value	Color RGB Red value	DPT 5.1	write
246	Device A01	Colour X Value	Color X coordinate value	DPT 7.1	write
246	Device A01	Colour RGB Value	Color RGB values	DPT 232.600	write
246	Device A01	Colour RGBW Value	Color RGBW value	DPT 251.600	write
246	Device A01	Colour (HSV) Hue Value	Color HSV tone value	DPT 5.3	write
246	Device A01	Colour Temperature Value	Color Color temperature	DPT 7.600	write
246	Device A01	Colour XY Value	Color XY coordinate value	DPT 242.600	write
247	Device A01	Colour Temperature relative Value	Color color temperature relative value	DPT 5.1	write
247	Device A01	Colour (RGB) Green Value	Color RGB Green value	DPT 5.1	write
247	Device A01	Colour (HSV) Saturation Value	Color HSV saturation value	DPT 5.1	write
247	Device A01	Colour Y Value	Color Y coordinate	DPT 7.1	write
248	Device A01	Colour (RGB) Blue Value	Color RGB Blue value	DPT 5.1	write
248	Device A01	Colour Temperature Warmer/Cooler	Adjust color temperature value to warm/cool	DPT 3.7	write
248	Device A01	Colour X Status	Color X state	DPT 7.1	read
249	Device A01	Colour Temperature Status	Color temperature state value	DPT 7.600	read
249	Device A01	Colour RGB Status	Color RGB status value	DPT 232.600	read
249	Device A01	Colour RGBW Status	Color RGBW status value	DPT 251.600	read
249	Device A01	Colour White Value	Color RGB White value	DPT 5.1	read
249	Device A01	Colour Y Status	Color Y state value	DPT 7.1	read
249	Device A01	Colour XY Status	Color XY coordinate state value	DPT 242.600	read
250	Device A01	Colour Red Status	Red status value	DPT 5.1	read
250	Device A01	Colour Hue Status	Tonal state value	DPT 5.3	read
251	Device A01	Colour Green Status	Green status value	DPT 5.1	read

251	Device A01	Colour Saturation Status	Saturation state value	DPT 5.1	read
252	Device A01	Colour Blue Status	Blue status value	DPT 5.1	read
253	Device A01	Colour White Status	White status value	DPT 5.1	read
...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
750	Device A64	Colour (RGB) Red Value	Color RGB Red value	DPT 5.1	write
750	Device A64	Colour X Value	Color X coordinate value	DPT 7.1	write
750	Device A64	Colour RGB Value	Color RGB values	DPT 232.600	write
750	Device A64	Colour RGBW Value	Color RGBW value	DPT 251.600	write
750	Device A64	Colour (HSV) Hue Value	Color HSV tone value	DPT 5.3	write
750	Device A64	Colour Temperature Value	Color Color temperature	DPT 7.600	write
750	Device A64	Colour XY Value	Color XY coordinate value	DPT 242.600	write
751	Device A64	Colour Temperature relative Value	Color color temperature relative value	DPT 5.1	write
751	Device A64	Colour (RGB) Green Value	Color RGB Green value	DPT 5.1	write
751	Device A64	Colour (HSV) Saturation Value	Color HSV saturation value	DPT 5.1	write
751	Device A64	Colour Y Value	Color Y coordinate	DPT 7.1	write
752	Device A64	Colour (RGB) Blue Value	Color RGB Blue value	DPT 5.1	write
752	Device A64	Colour Temperature Warmer/Cooler	Adjust color temperature value to warm/cool	DPT 3.7	write
752	Device A64	Colour X Status	Color X state	DPT 7.1	read
753	Device A64	Colour Temperature Status	Color temperature state value	DPT 7.600	read
753	Device A64	Colour RGB Status	Color RGB status value	DPT 232.600	read
753	Device A64	Colour RGBW Status	Color RGBW status value	DPT 251.600	read
753	Device A64	Colour White Value	Color RGB White value	DPT 5.1	read
753	Device A64	Colour Y Status	Color Y state value	DPT 7.1	read
753	Device A64	Colour XY Status	Color XY coordinate state value	DPT 242.600	read
754	Device A64	Colour Red Status	Red status value	DPT 5.1	read
754	Device A64	Colour Hue Status	Tonal state value	DPT 5.3	read
755	Device A64	Colour Green Status	Green status value	DPT 5.1	read
755	Device A64	Colour Saturation Status	Saturation state value	DPT 5.1	read
756	Device A64	Colour Blue Status	Blue status value	DPT 5.1	read
757	Device A64	Colour White Status	White status value	DPT 5.1	read
Object 246 to 253 are used for the color control function of device 01. Object types vary according to the color control type parameter. Only one object type can be displayed at a time for an object NUMBER. The object functions of equipment 01 to equipment 64 are the same. For details, please refer to 3.2 Color Control Object Description.					
758	Device A01	Switch Status	Switching status value	DPT 1.1	read
759	Device A01	Brightness Status	Dimming status value	DPT 5.1	read
...	...	...	...	...	...
...	...	...	...	...	...
884	Device A64	Switch Status	Switching status value	DPT 1.1	read
885	Device A64	Brightness Status	Dimming status value	DPT 5.1	read
Objects 758 and 759 are used to feedback the switch status and dimming status of device 01. Devices 01 to 64 have the same functions.					
Channel A Devices A01 to A64 Operation and maintenance objects (A total of 64 groups of the same objects. Only devices 1 and 64 are listed below)					
886	Device A01	Burn in Lamps	Lamp aging starts/stops objects	DPT 1.10	Read/write
Object 886 is used to start or stop the aging function of device 01, where: Value: 0: stops the aging mode. 1: indicates that aging mode is enabled. Set the aging time using the following parameters on the General Parameters screen: **Lamp burn-in period in hours (1..255)** 100 In the aging mode, the indicator runs in 0% brightness and 100% brightness only. The aging time is calculated only when the brightness is 100%.					

887	Device A01	Telegr. Fault status	Device fault status object	DPT 1.5	read
887	Device A01	Telegr. Fault status	Device fault status object	DPT 5.10	read

Object 887 is used to send Fault packets of Device 01. The Object can be sent using Device A01 -> Object type of telegr. Fault select 1bit or 1byte. As follows:

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
There is no	There is no	There is no	There is no	There is no	DALI communication failure	Failure of lamps and lanterns	ECG device failure

In normal cases, only one fault state is sent. If multiple faults occur at the same time, they are reported together.

If the length of the object is 1bit, the device reports a packet with the value 1 when any fault occurs.
Once the fault is rectified, a packet with the value 0 is reported.

The sending behavior of the object can be set by setting **On Change of Selected Device Send Fault Lamp and Fault Ballast in the Status parameter window.**

888	Device A01	Response operating hours	Runtime report object	DPT 12.1	read

Object 888 is used to report the running time of device 01 in the following unit: Seconds, automatically report normally 1 hours running time, if you use the reset run-time object after reset and meeting a run time, if you need to manually reset input is not 0, run time, you will need to open the objects by ETS W attributes, and then you can through the object to reset operation time;

NOTE 1: The running time of the write reset must be more than 60 seconds different from the current running time to be effective, otherwise the running time will not be updated.

NOTE 2: The running time has the power failure saving function, the real-time saving time interval is 10 minutes, if the abnormal power failure, the actual running time and the storage running time will have a few minutes of error.

889	Device A01	Reset operating hours	Reset the runtime object	DPT 1.15	write

Object 889 is used to reset the running time of device 01. After the reset, object 888 will send a packet with the running time of 0:
Value: 0: invalid.
1: reset running time is 0;

890	Device A01	Lamp life exceeded	Lamp life exceeds the limit object	DPT 1.5	read

Object 890 is used to report lamp life timeout of Device 01. When the running time exceeds the Operating hours limit(h) set by Device A01 -> Operating Hours limit(h), a packet with the value of 1 is reported.

...	...	...	...	...	...
...	...	...	...	...	...
1201	Device A64	Burn in Lamps	Lamp aging starts/stops objects	DPT 1.10	Read/write
1202	Device A64	Telegr. Fault status	Device fault status object	DPT 1.5	read
1203	Device A64	Telegr. Fault status	Device fault status object	DPT 5.10	read
1204	Device A64	Response operating hours	Runtime report object	DPT 12.1	read
1205	Device A64	Reset operating hours	Reset the runtime object	DPT 1.15	write

Channel A Group 01 to 16 objects (A total of 16 groups, each group object is the same, only group 1 and group 16 are listed below)

No.	The name	function	use	DPT	R & W
1206	Group 1	Switch	Switch control	DPT 1.1	write
1207	Group 1	Relative Dimming	Relative dimming control	DPT 3.7	write
1208	Group 1	Brightness value	Absolute dimming Settings	DPT 5.1	write
1209	Group 1	Switch Status	Switching status value	DPT 1.1	read
1210	Group 1	Brightness Status	Dimming status value	DPT 5.1	read
1211	Group 1	Colour (RGB) Red Value	Color RGB Red value	DPT 5.1	write
1211	Group 1	Colour X Value	Color X coordinate value	DPT 7.1	write
1211	Group 1	Colour RGB Value	Color RGB values	DPT 232.600	write
1211	Group 1	Colour RGBW Value	Color RGBW value	DPT 251.600	write
1211	Group 1	Colour (HSV) Hue Value	Color HSV tone value	DPT 5.3	write
1211	Group 1	Colour Temperature Value	Color Color temperature	DPT 7.600	write
1211	Group 1	Colour XY Value	Color XY coordinate value	DPT 242.600	write
1212	Group 1	Colour Temperature relative Value	Color color temperature relative value	DPT 5.1	write
1212	Group 1	Colour (RGB) Green Value	Color RGB Green value	DPT 5.1	write
1212	Group 1	Colour (HSV) Saturation Value	Color HSV saturation value	DPT 5.1	write
1212	Group 1	Colour Y Value	Color Y coordinate	DPT 7.1	write
1213	Group 1	Colour (RGB) Blue Value	Color RGB Blue value	DPT 5.1	write
1213	Group 1	Colour Temperature Warmer/Cooler	Adjust color temperature value to warm/cool	DPT 3.7	write
1213	Group 1	Colour X Status	Color X state	DPT 7.1	read
1214	Group 1	Colour Temperature Status	Color temperature state value	DPT 7.600	read
1214	Group 1	Colour RGB Status	Color RGB status value	DPT 232.600	read
1214	Group 1	Colour RGBW Status	Color RGBW status value	DPT 251.600	read
1214	Group 1	Colour White Value	Color RGB White value	DPT 5.1	read
1214	Group 1	Colour Y Status	Color Y state value	DPT 7.1	read
1214	Group 1	Colour XY Status	Color XY coordinate state value	DPT 242.600	read

1215	Group 1	Colour Red Status	Red status value	DPT 5.1	read
1215	Group 1	Colour Hue Status	Tonal state value	DPT 5.3	read
1216	Group 1	Colour Green Status	Green status value	DPT 5.1	read
1216	Group 1	Colour Saturation Status	Saturation state value	DPT 5.1	read
1217	Group 1	Colour Blue Status	Blue status value	DPT 5.1	read
1218	Group 1	Colour White Status	White status value	DPT 5.1	read
...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
1416	Group 16	Switch	Switch control	DPT 1.1	write
1417	Group 16	Relative Dimming	Relative dimming control	DPT 3.7	write
1418	Group 16	Brightness value	Absolute dimming Settings	DPT 5.1	write
1419	Group 16	Switch Status	Switching status value	DPT 1.1	read
1420	Group 16	Brightness Status	Dimming status value	DPT 5.1	read
1421	Group 16	Colour (RGB) Red Value	Color RGB Red value	DPT 5.1	write
1421	Group 16	Colour X Value	Color X coordinate value	DPT 7.1	write
1421	Group 16	Colour RGB Value	Color RGB values	DPT 232.600	write
1421	Group 16	Colour RGBW Value	Color RGBW value	DPT 251.600	write
1421	Group 16	Colour (HSV) Hue Value	Color HSV tone value	DPT 5.3	write
1421	Group 16	Colour Temperature Value	Color Color temperature	DPT 7.600	write
1421	Group 16	Colour XY Value	Color XY coordinate value	DPT 242.600	write
1422	Group 16	Colour Temperature relative Value	Color color temperature relative value	DPT 5.1	write
1422	Group 16	Colour (RGB) Green Value	Color RGB Green value	DPT 5.1	write
1422	Group 16	Colour (HSV) Saturation Value	Color HSV saturation value	DPT 5.1	write
1422	Group 16	Colour Y Value	Color Y coordinate	DPT 7.1	write
1423	Group 16	Colour (RGB) Blue Value	Color RGB Blue value	DPT 5.1	write
1423	Group 16	Colour Temperature Warmer/Cooler	Adjust color temperature value to warm/cool	DPT 3.7	write
1423	Group 16	Colour X Status	Color X state	DPT 7.1	read
1424	Group 16	Colour Temperature Status	Color temperature state value	DPT 7.600	read
1424	Group 16	Colour RGB Status	Color RGB status value	DPT 232.600	read
1424	Group 16	Colour RGBW Status	Color RGBW status value	DPT 251.600	read
1424	Group 16	Colour White Value	Color RGB White value	DPT 5.1	read
1424	Group 16	Colour Y Status	Color Y state value	DPT 7.1	read
1424	Group 16	Colour XY Status	Color XY coordinate state value	DPT 242.600	read
1425	Group 16	Colour Red Status	Red status value	DPT 5.1	read
1425	Group 16	Colour Hue Status	Tonal state value	DPT 5.3	read
1426	Group 16	Colour Green Status	Green status value	DPT 5.1	read
1426	Group 16	Colour Saturation Status	Saturation state value	DPT 5.1	read
1427	Group 16	Colour Blue Status	Blue status value	DPT 5.1	read
1428	Group 16	Colour White Status	White status value	DPT 5.1	read

Objects 1211 to 1218 are used for the color control function of group 1. Object types vary according to the color control type parameter. Only one object type can be displayed at a time for an object number.
The object functions of group 1 to group 16 are the same. For details, please refer to 3.2 Color Control Object Description.

Global function object

No.	The name	function	use	DPT	R & W
1430	General	Central Control On/Off	Global master control switch	DPT 1.3	Read/write

This object is used to disable and enable the central control. This function has the highest priority and must be reset to 0 during normal operation. The function is disabled by default during power-on.
Value: 1: Open the central control, all lamps of the bus are in open state, do not respond to all independent control objects;
0: Close the central control, all lamps and lanterns of the bus are in the closed state, and normally respond to all independent control objects

1431	General	Burn in Lamps	Aging of the luminaire is enabled	DPT 1.10	Read/write
This object is used to enable and disable the aging function of a luminaire, where: Value: 1: The aging function is activated, and the lamp is restricted to 0% (off) and 100% brightness; 0: disables the aging function.					
1432	General	Delete Short Address	Deleting a short Address	DPT 1.10	write
This object is used to manually delete the short addresses of all DALI devices on the DALI bus. Value: 0: Delete all DALI device short addresses from DALI bus channel A. 1. Delete all DALI device short addresses from DALI bus channel B (if the gateway is dual-channel).					
1433	General	Acknowledge Faults	Answer and reset failure, value 1 is valid	DPT 1.15	write
This object is used to manually reset the fault information reported by DALI devices. Only the value «1» is effective and the value «0» does not respond.					
1434	General	Telegr. Communication send	Communication packets are sent. The value 1 is valid	DPT 1.16	read
This object is used to periodically send a packet with a value of «1» to the KNX bus to indicate the presence of DALI gateway.					
1435	General	Telegr. Communication receive	Communication packets are received. The value 1 is valid	DPT 1.16	write
This object is used by DALI gateway to receive packets with a value of «1» in a loop to indicate KNX communication capability or the presence of a device.If DALI gateway does not receive a valid packet within the specified interval, a fault occurs on the KNX communication channel or on the device.					
1436	General	Detect Ballasts	Ballast scan detection, value 1 is valid	DPT 1.10	write
This object is used to manually enable the DALI device scan detection function, record the detected new DALI devices, and update the parameters. The value of this object is valid as 1.					

Table 2. Default Settings for channel objects

3.2. DESCRIPTION OF COLOR CONTROL OBJECTS

Support different color control options:

- Tc color temperature
- RGB
- HSV
- RGBW
- XY

Only one color control type can be selected for a device. Ensure that DALI supports the color control type. Otherwise, the device will not respond to control commands. Different objects are displayed based on the color control type. Device 01 is used as an example.

TC COLOR TEMPERATURE

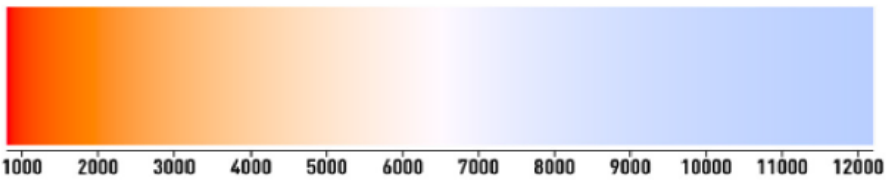


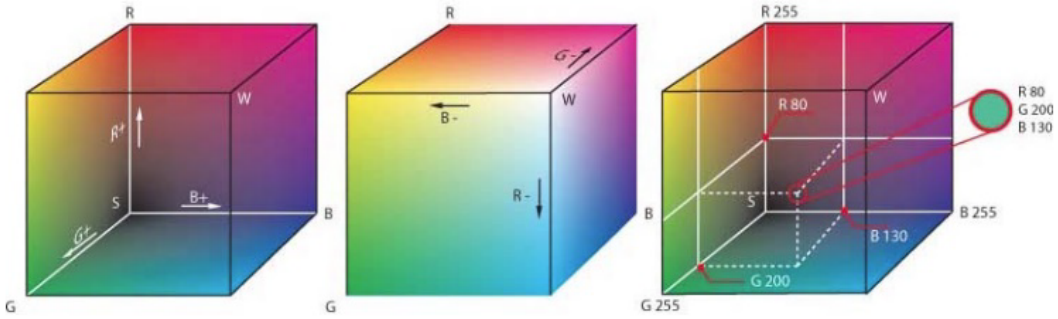
Figure: Color temperature bar

Tc color temperatures are set in K (Kelvin) units, temperatures below 3000 K are called "warm white", temperatures above 5000 K are called "cold white" and values in between are called "neutral white".The final range of tonable color temperature depends on the color temperature adjustment range of DALI equipment. Please check the relevant data before using DALI.

No.	The name	function	use	DPT	R & W
246	Device A01	Colour Temperature Value	Color Color temperature	DPT 7.600	write
Set the color temperature value of the device. This object is the absolute color temperature setting. It is 2 bytes long and ranges from 0 K to 65534 K.					
247	Device A01	Colour Temperature relative Value	Color color temperature relative value	DPT 5.1	write
Set the relative color Temperature Value of the device. The Value is between 0% and 100%. The color Temperature Value of 0% and 100% is set by parameter «Colour Temperature at Value 0%» and «Colour Temperature at Value 100%» respectively. Color temperature values between 0% and 100% are automatically converted by 0% and 100% color temperature values.					
248	Device A01	Colour Temperature Warmer/Cooler	Adjust color temperature value to warm/cool	DPT 3.7	write
To change the color temperature of the device, adjust the warm white and cold white through 4-bit step adjustment. Bits 0 to 3 can be set to 1%, 3%, 6%, 12%, 25%, 50%. Bits 4 can be set to increase or decrease, but not support start-stop adjustment (100% and stop message).					
249	Device A01	Colour Temperature Status	Color temperature state value	DPT 7.600	read
Sends the color temperature status value of the device.					

RGB

RGB colors are perceived by mixing three basic colors to form color.



Picture: RGB cube

RGB (3 BYTE COMBINED OBJECT)

No.	The name	function	use	DPT	R & W
246	Device A01	Colour RGB Value	Color RGB values	DPT 232.600	write

Set the RGB color of the device by combining objects. The value is composed of three bytes (red(R), green(G), and Blue (B)), and the value of each byte ranges from 0% to 100%, as shown in the following figure:

Format:	3 octets: $U_8U_8U_8$
octet nr.	3 MSB 2 1 LSB
field names	R G B
encoding	UUUUUUUU UUUUUUUU UUUUUUUU
Encoding:	All values binary encoded.
Range::	R, G, B: 0 to 255
Unit:	None
Resol.:	1
PDT:	PDT_GENERIC_03

249	Device A01	Colour RGB Status	Color RGB status value	DPT 232.600	read
Sends the RGB color status of the device.					

RGB (SEPARETED OBJECTS)

No.	The name	function	use	DPT	R & W
246	Device A01	Colour (RGB) Red Value	Color RGB Red value	DPT 5.1	write
Sets the red value of the device, which ranges from 0% to 100%.					
247	Device A01	Colour (RGB) Green Value	Color RGB Green value	DPT 5.1	write
Set the green value of the device, which ranges from 0% to 100%.					
248	Device A01	Colour (RGB) Blue Value	Color RGB Blue value	DPT 5.1	write
Set the blue value of the device, which ranges from 0% to 100%.					
250	Device A01	Colour Red Status	Red status value	DPT 5.1	read
Sends the red status value of the device.					
251	Device A01	Colour Green Status	Green status value	DPT 5.1	read
Sends the green status value of the device.					
252	Device A01	Colour Blue Status	Blue status value	DPT 5.1	read
Sends the blue status value of the device.					

HSV

The color is set to HSV values, including hue, color saturation, and shade values.

The shade value (V) is set through the value object 56, and objects such as hue (H) and color saturation (S) are also displayed.

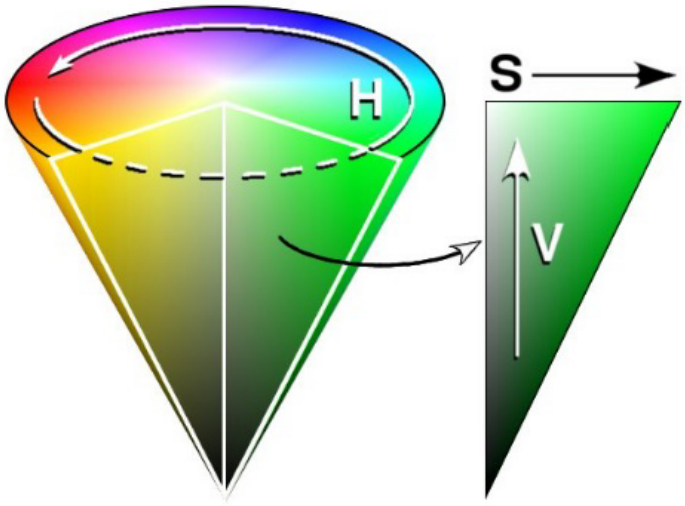


Figure: HSV chromatography

The hue is set to a value between 0° and 360°, so it rotates around the color ring, meaning that this value is needed to reach all the colors in the color ring.

Saturation and shading values range from 0 to 100%, with 100% for full saturation and full intensity.

No.	The name	function	use	DPT	R & W
56	Device A01	Brightness value	Absolute dimming Settings	DPT 5.1	write
Set the absolute brightness value of the equipment, the value range is 0% to 100%, in actual use, do not participate in the color adjustment, only adjust the brightness.					
246	Device A01	Colour (HSV) Hue Value	Color HSV tone value	DPT 5.3	write
Set the tonal value of equipment HSV, which ranges from 0° to 360° : 0 60 120 180 240 300 360					
247	Device A01	Colour (HSV) Saturation Value	Color HSV saturation value	DPT 5.1	write
Set the saturation value of the equipment HSV from 0% to 100%.					
250	Device A01	Colour Hue Status	Tonal state value	DPT 5.3	read
Sends the tonal status value of the HSV of the device.					
251	Device A01	Colour Saturation Status	Saturation state value	DPT 5.1	read
Send the color saturation status value of the device HSV.					

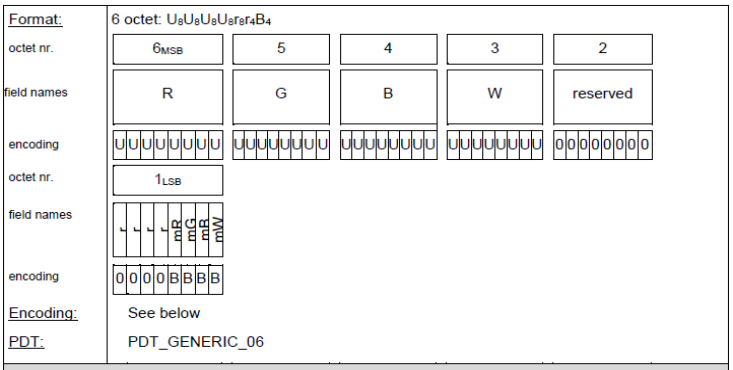
RGBW

RGBW type adds white independent setting channel on the basis of RGB type.

RGBW (6 Byte combined Object)

No.	The name	function	use	DPT	R & W
246	Device A01	Colour RGBW Value	Color RGBW value	DPT 251.600	write

Use this object to set the device color to RGBW. White, blue, green, and red color values are entered in the corresponding bytes, ranging from 0 to 100%.
The four bits in the first byte indicate whether the corresponding color value is valid, and the second byte is reserved.



Datapoint Types		
ID:	Name:	Use:
251.600	DPT_Colour_RGBW	FB

Field names	Description	Encoding	Unit	Range	Resolution :
R	Colour Level Red	value binary encoded	%	0 % to 100 %	≙ 0,4 %
G	Colour Level Green	value binary encoded	%	0 % to 100 %	≙ 0,4 %
B	Colour Level Blue	value binary encoded	%	0 % to 100 %	≙ 0,4 %
W	Colour Level White	value binary encoded	%	0 % to 100 %	≙ 0,4 %
mR	Shall specify whether the colour information red in the field R is valid or not.	0 = not valid 1 = valid	None.	{0,1}	None.
mG	Shall specify whether the colour information green in the field G is valid or not.	0 = not valid 1 = valid	None.	{0,1}	None.
mB	Shall specify whether the colour information blue in the field B is valid or not.	0 = not valid 1 = valid	None.	{0,1}	None.
mW	Shall specify whether the colour information white in the field W is valid or not.	0 = not valid 1 = valid	None.	{0,1}	None.

249	Device A01	Colour RGBW Status	Color RGBW status value	DPT 251.600	read
Send the RGBW color status of the device in the same format and significant bits.					

RGBW (separeted Objects)

No.	The name	function	use	DPT	R & W
246	Device A01	Colour (RGB) Red Value	Color RGB Red value	DPT 5.1	write
Sets the red value of the device, which ranges from 0% to 100%.					
247	Device A01	Colour (RGB) Green Value	Color RGB Green value	DPT 5.1	write
Set the green value of the device, which ranges from 0% to 100%.					
248	Device A01	Colour (RGB) Blue Value	Color RGB Blue value	DPT 5.1	write
Set the blue value of the device, which ranges from 0% to 100%.					
249	Device A01	Colour White Value	White value	DPT 5.1	write
Set the white value of the device, which ranges from 0% to 100%.					
250	Device A01	Colour Red Status	Red status value	DPT 5.1	read
Sends the red status value of the device.					
251	Device A01	Colour Green Status	Green status value	DPT 5.1	read
Sends the green status value of the device.					
252	Device A01	Colour Blue Status	Blue status value	DPT 5.1	read
Sends the blue status value of the device.					
253	Device A01	Colour White Status	White status value	DPT 5.1	read
Sends the white status value of the device.					

XY

Color is indicated by the XY coordinate value between 0 and 1.

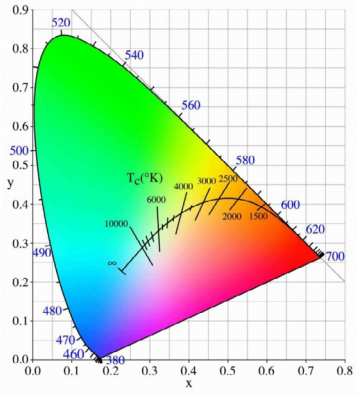


Figure: XY chromatogram

In KNX, this value range is converted to 0 to 65534 (2-byte floating-point), with the value 65534 corresponding to the value 1 in the diagram.

XY (separeted Objects)

No.	The name	function	use	DPT	R & W
246	Device A01	Colour X Value	Color X coordinate value	DPT 7.1	write
Set the X coordinate value of the device. The value ranges from 0 to 65534.					
247	Device A01	Colour Y Value	Color Y coordinate	DPT 7.1	write
Set the Y coordinate of the device. The value ranges from 0 to 65534.					
248	Device A01	Colour X Status	Color X state	DPT 7.1	read
Sends the x-coordinate status value of the device.					
249	Device A01	Colour Y Status	Color Y state value	DPT 7.1	read
Sends the y-coordinate status value of the device.					

XY (6 Byte combined Object)

No.	The name	function	use	DPT	R & W
246	Device A01	Colour XY Value	Color XY coordinate value	DPT 242.600	write

This object is used to set the color in the group by XY coordinates, the brightness level is entered in the second byte from 0 to 100%, followed by Y and X coordinates, ranging from 0 to 65534. The 2 bits of the first byte show whether the XY value and brightness level are valid or not, in the format shown below:

Format:	6 octet: $U_{16}U_{16}U_{8r6}B_2$				
octet nr.	6_{MSB}	5	4	3	2
field names	x-axis		y-axis		brightness
encoding	UUUUUUUU	UUUUUUUU	UUUUUUUU	UUUUUUUU	UUUUUUUU
octet nr.	1_{LSB}				
field names	r r r r r C B				
encoding	0 0 0 0 0 0 B B				
Encoding:	See below				
PDT:	PDT_GENERIC_06				

Datapoint Types		
ID:	Name:	Use:
242.600	DPT_Colour_xyY	FB

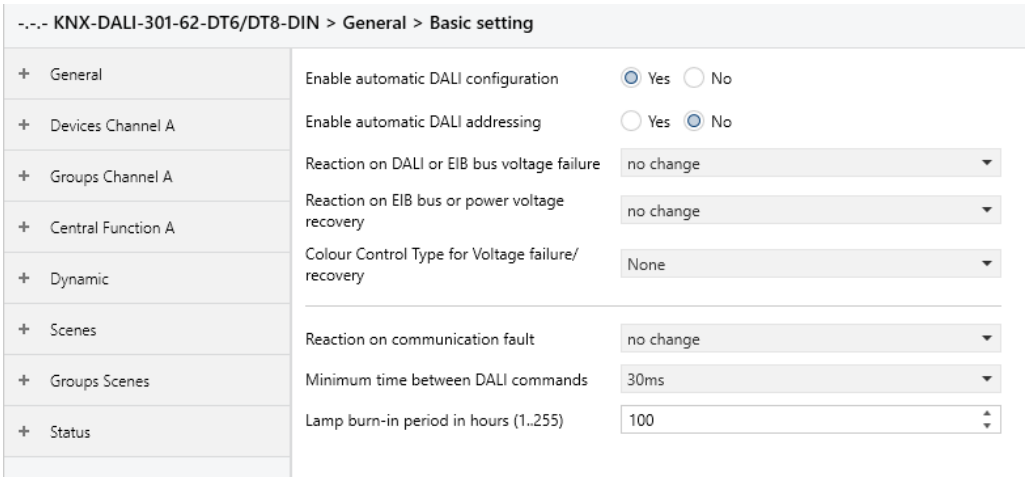
Data fields	Description	Range	Unit	Resol.
x-axis	x-coordinate of the colour information	0 to 65 535	None.	None.
y-axis	y-coordinate of the colour information	0 to 65 535	None.	None.
Additional encoding information				
The x – and y – ordinate of the xyY colour scheme have a value between 0 and 1. This value shall be linearly mapped onto the range from 0 to 65 535, by multiplying the unencoded coordinate value by 65 535 and and rounding to the earest integer value. For decoding, the inverse operation shall be done.				
Brightness	Brightness of the colour	0 % to 100 %	%	None.
Additional encoding information				
The brightness shall be encoded as in DPT_Scaling (5.001).				
C	This field shall indicate whether the colour information in the fields x-axis and y-axis is valid or not.	0: invalid 1: valid	None.	None.
B	This field shall indicate whether the Brightness information in the field Brightness is valid or not.	0: invalid 1: valid	None.	None.

249	Device A01	Colour XY Status	Color XY coordinate state value	DPT 242.600	read
Send the XY coordinate color state of the device in the same format and significant bits.					

4. ETS PARAMETER

4.1. GENERAL SETTINGS

The following parameters are general parameters:
Icon: General parameter Settings



The following table is the parameter description:

The parameter name	The scope of [Default value]	note
Enable automatic DALI configuration	No **[Yes]**	This parameter indicates whether to enable the DALI automatic configuration mode after the ETS configuration is downloaded. If DALI parameters are modified, select Yes.
Enable automatic DALI addressing	No Yes **[No]**	This parameter is set to Yes to enable the automatic addressing operation. After the device is powered on, the system automatically checks whether the internal address exists. If Yes, the system does not run the addressing operation. When the parameter is set to yes: Object 18 Program Short Address is used to enable automatic addressing. Automatic addressing is enabled for the received packet with the value 1, and no response is made for the received packet with the value 0. When the parameter is set to no: Object 18 Program Short Address is used for manual addressing. After receiving a packet whose value is 0 to 63, Short addresses 0 to 63 are written to all DALI devices on the bus. If the packet whose value is greater than 63 is received, DALI does not respond.
Reaction on DALI or EIB bus voltage failure	**No change** Max. brightness value Min. brightness value Off 10%... 100%	This parameter can be used to set the brightness of the DALI device after the 220V power supply of the DALI/EIB bus or gateway fails: 1: does not change the current state. 2: Adjust to the maximum brightness value. 3: Adjust to the minimum brightness value. 4: Close. 5: brightness value 10% to 100%.
Reaction on EIB bus or power voltage recovery	**No change** Max. brightness value Min. brightness value Off 10%... 100%	This parameter can be used to set the brightness value of DALI device after the EIB bus, gateway power supply, or its own 220V voltage is restored. 1: the current state is not changed. 2: Adjust to the maximum brightness value. 3: Adjust to the minimum brightness value. 4: Close.5: brightness value 10% to 100%.
Colour Control Type for Voltage failure/recovery	**None** Colour Temperature RGB Colour RGBW Colour XY Colour	This parameter can be used to set the color value of DALI device after DALI/EIB bus, 220V power supply failure or voltage recovery. 1: color temperature. 2: RGB color. 3: RGBW color. 4: XY color.
Reaction on communication fault	**No change** Turn on value Max. brightness value Min. brightness value Off	This parameter is used when the object 1221 telegr. Communication Receive does not receive a value of 1 within the specified time interval (set on the Status parameter interface). If DALI gateway enters the secure state, the preset response action will be executed: 1: do not change the current state. 2: Set to start brightness value. 3: Adjust to the maximum brightness value. 4: Adjust to the minimum brightness value. 5: shut down.
Minimum time between DALI commands	10 ms...100ms **[30ms]**	This parameter indicates the minimum interval between consecutively sending DALI commands. This parameter can be set to accommodate DALI drivers that process DALI commands at different rates.
Lamp burn-in period in hours (1..255).	1...255(in hours) **[100]**	In order to ensure maximum service life and normal use of luminaries in the dimmed state, certain lamps (gas-filled lamps) must be operated at 100% brightness for a certain hour during initial operation before they can be permanently dimmed. Use object 1217 «Burn in Lamps» to enable (value 1) and disable (value 0) lamp burn-in mode. Under Burn-in mode, the device is restricted to running at 0% (off) and 100% brightness. Burn-in mode takes priority over all other Settings. 0% (off) time is not counted as the aging time.If the gateway is turned off due to power supply, the aging mode is cancelled.

Chart: General parameter Settings

4.2. DEVICE CHANNEL A PARAMETERS

Device channel A has Device A01 to Device A64 64 Device parameter blocks. The parameters that can be configured for each Device are the same. Device A01 is used as an example.

4.2.1. BASIC PARAMETERS

The following figure shows the basic parameters of channel A:

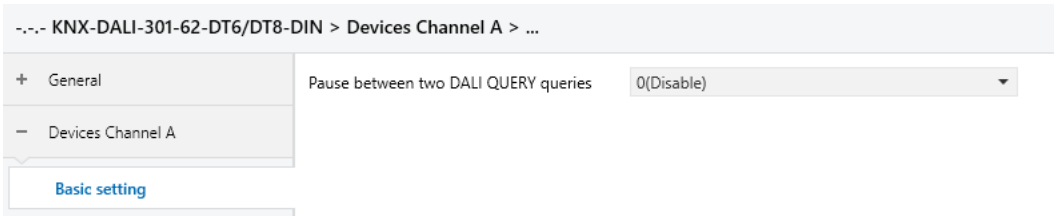


Illustration: Basic parameters

Function Description:

The parameter name	Range [default]	note
Pause between two DALI QUERY queries	0(Disable) ... 1s ... 32s **[0(Disable)]**	This parameter is used to set the interval between two DALI query commands. If this parameter is set to 0, DALI device status query is disabled. This function is used to detect DALI device status in real time and report DALI device fault information when a fault is detected.The longer the time interval is set, the slower the fault response, and the less DALI bus traffic is occupied, and vice versa. The fault information that can be detected is as follows: 1: DALI ballast failure; 2: lamp failure; 3: DALI communication failure;

Diagram: Parameter description

4.2.2. DEVICE & GROUP DIMMING PARAMETERS

The following figure shows the dimming parameters of the equipment:

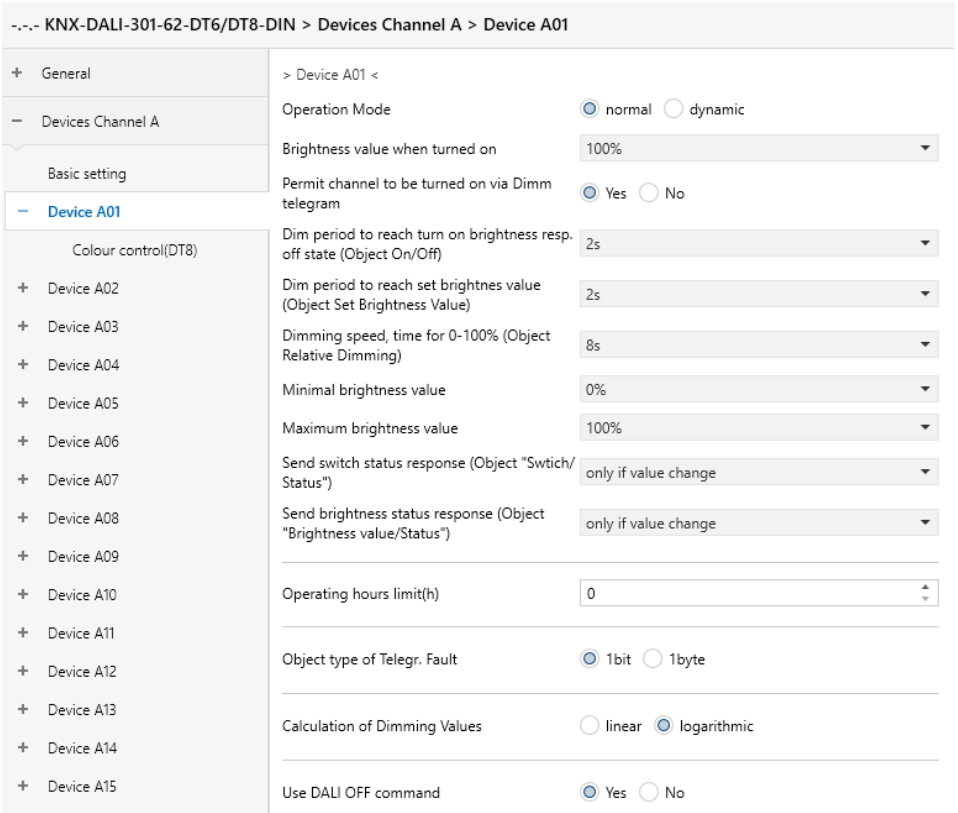


Figure: Device dimming parameters

Function Description:

The parameter name	Range [default]	note
Operation Mode	normal dynamic **[normal]**	This parameter is used to select the operating mode of the device. In the «normal» operating mode, the connected DALI device will operate as normal load and can be turned on, off, and brightness adjusted separately. The brightness value can be set in the DALI device. In contrast, «dynamic» operation mode can set parameters in chronological order, for example: stair lighting function.
Brightness value when turned on	100% 90% . 10% 0% **[100%]**	This parameter defines the brightness of DALI immediately after an ON message is received.If the values to be set during the operation exceed the minimum and maximum dimming value limits, the brightness will be limited to the maximum or minimum dimming value.For example, if the brightness of the device is different from that of the switch ON and an ON message is received, the device adjusts to the preset brightness of the switch ON.
Permit channel to be turned on via dim telegram	yes no **[yes]**	Set yes can adjust the light object to open the corresponding channel of DALI equipment, otherwise only through a dimmer switch on the object, it is worth noting that the DALI implementation does not support the dimming commands in the fully closed (set 0% brightness DALI when the equipment will be transferred to the minimum brightness value), so the dimming value is 0% think need fully closed shutdown command will be used, Using this command, the shutdown is instantaneous and there is no dimming delay
Dim period to reach turn on brightness resp. off state (Object On / Off)	Immediate 0.7 s 2 s ... 90 s **[2 s]**	This parameter is used to set the brightness dimming time for the ON value of the switch object. The time for gradient from brightness 0% to brightness 100% is turned OFF. OFF (0%) Because there is no gradient time if you need to turn it OFF completely.
Dim period to reach Set Brightness Value (Object Set Brightness Value)	Immediate 0.7 s 2 s ... 90 s **[2 s]**	This parameter is used to set the brightness dimming time of absolute dimming objects (including DT8 toner objects). The gradient time is from 0% to 100%. If the brightness value is set to 0%, there is no gradient time because it needs to be turned off completely.
Dimming speed, time for 0-100% (Object Relative Dimming)	Immediate 0.7 s 2 s ... 90 s **[8 s]**	This parameter is used to set the dimming time of the relative dimming object. The dimming time ranges from 0% to 100%.
Minimal brightness value	0% 5% ... 70% **[0%]**	This parameter defines the minimum luminance value that the DALI device should use when dimming or setting the luminance value. If the minimum brightness value set exceeds the maximum brightness value, set the minimum brightness value to equal the maximum brightness value. If lamp aging is enabled, lamps will only operate at 0% (off) or 100% brightness regardless of this setting. If the Brightness value received by the «Brightness Value» communication object is less than the minimum Brightness value defined, it is set to the minimum Brightness value. The minimum brightness value set in the device is still valid for the master control command.
Maximum brightness value	100% 95% ... 30% **[100%]**	This parameter defines the maximum luminance value that the DALI device should use when dimming or setting luminance values. If the maximum brightness value is less than the minimum brightness value, set the maximum brightness value to equal the minimum brightness value. If lamp aging is enabled, lamps will only operate at 0% (off) or 100% brightness regardless of this setting. If the Brightness value received by the «Brightness Value» communication object is greater than the maximum Brightness value defined, it is set to the maximum Brightness value. The maximum brightness value set in the device is still valid for the master control command.
Send switch status response (Object «Switch/Status»)	no only if value change always **[only if value change]**	Whether and under what circumstances the definition should be adopted The «Switch/Status» object indicates the Status of the sending device. Setting «No» does not set the Status. The «only if value change» option has the following effects: The switch status is sent only when the state changes from ON to OFF or from OFF to ON. Since switching state can be changed through different functions, such as central control, slave mode, scene invocation, etc., and only 64 devices can be scanned periodically, the status message is delayed.The always option generates a large number of unnecessary packets occupying the bus. The effect of this option is the same as that of only if value change.
Send brightness status response (Object «Brightness value/Status»)	no only if value change always **[only if value change]**	Whether and under what circumstances the definition should be adopted The Brightness value of the device to be sent with the «Brightness Status» object. If you are Set to «No», it is not displayed. The option «Only if value change» has the following effects: The brightness value is sent only when the brightness value changes, and the status feedback occurs only when the brightness value changes in the circular scan. Because the brightness value can be changed through different functions, such as central control, slave mode, scene call, etc., and only 64 devices can be scanned periodically, the status message is delayed.The always option generates a large number of unnecessary packets occupying the bus. The effect of this option is the same as that of only if value change.

Operating hours limit(h)	0... 65534 **[0]**	This parameter defines the maximum lamp running time, Unit: hour (h); When the value is set to 0, the running time statistics report is prohibited, and the running time and lamp life timeout alarm function is not reported. When set to 0, the statistical report is up and running time, automatically report the running time, and report the lamp life when running time more than the limit overtime message, runtime only calculate the lamp brightness is more than 0% of the time, maximum 65534 hours, so the parameters calculated on open lamp time 16 hours a day, about 11 years, It can meet the lamp maintenance time.
Object type of Telegr. Fault	**[1bit]** 1byte	This parameter defines the length of the lamp fault message object. If 1bit is selected, the device reports a packet with the value 1 whenever a fault occurs. If 1byte is selected, the device sends a packet with a fault type value. Currently, the packet can be reported in the following 0x01: the ECG device is faulty. 0x02: Lamp failure; 0x04: DALI communication fails.
Calculation of Dimming Values	linear **[logarithmic]**	This parameter indicates which method is used to calculate the DALI dimming curve: You don't have a Linear calculation curve. Dsmmic: Logarithmic calculation curve;
Use DALI OFF command	**[Yes]** No	This parameter indicates whether DALI sends the DALI OFF command after the gradient time is over. This parameter can be set to No if DALI driver supports 0% brightness full off lighting.

Diagram: Parameter description

4.2.3. DEVICE & GROUP COLOR MATCHING PARAMETERS (DT8)

The following figure shows the color parameters of the equipment:

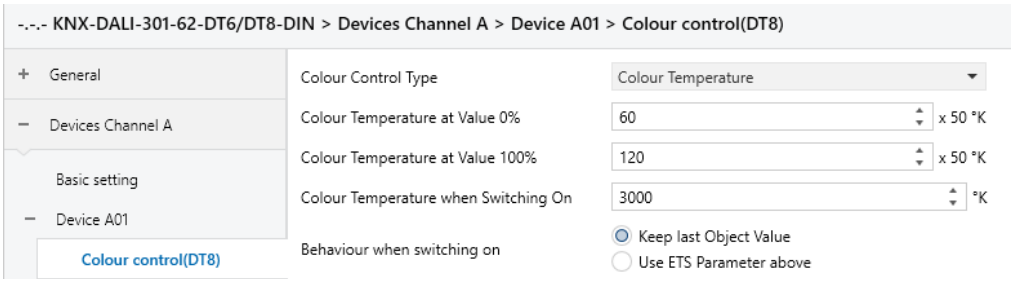
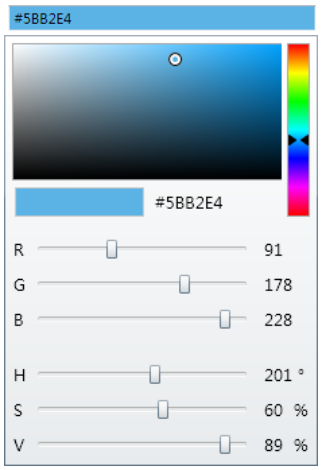
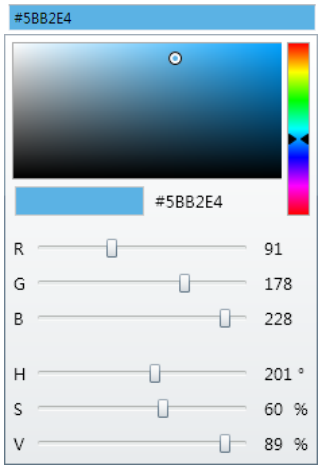


Illustration: Color parameters

The parameter name	The scope of [Default value]	note
Colour Control Type	None Colour Temperature RGB Colour RGBW Colour XY Colour **[none]**	This parameter defines the device type for DALI DT8 color control. Before selecting this parameter, ensure that the DALI driver supports this type of control. Otherwise, the DALI driver fails to work properly.
If the color Temperature type «Colour Temperature» is selected:		
Colour Temperature at Value 0%	(0... 255) x 50 K **[60]**	This parameter sets the color temperature when the color temperature percentage is 0%. The default value is 60 x 50 K = 3000 K.At the same time, set the warmest color temperature and physical warmest color temperature limit;
Colour Temperature at Value 100%	(0... 255) x 50 K **[120]**	This parameter sets the color temperature when the color temperature percentage is 100%. The default value is 120 x 50 K = 6000 K.At the same time, set the coldest color temperature value and physical coldest color temperature value limit;
Colour Temperature when Switching On	1000 K... 10000 K **[3000 K]**	Sets the color temperature when the toggle switch is ON
Behaviour when Switching On	Keep last object value Use ETS Parameter above **[Keep last object value]**	Whether you are sure to use the set ON color temperature value, If «Keep last Object Value» is selected (default value), the ETS setting is invalid. After receiving the ON message, only the brightness is adjusted, and the color temperature remains the value before last closing. If Use ETS Parameter Above is selected, the ETS setting is valid. After receiving the ON message, the system adjusts the brightness and the color temperature.
If RGB type «RGB Colour» is selected:		
Selection of Object Type	RGB(3 Byte combined Object) RGB(separeted Objects) HSV(separeted Objects) **[RGB(3 Byte combined Object)]**	This parameter selects the type of Object. «3 Byte Combined Object» uses a combined Object, a single Object controls RGB three colors, «Separeted Objects» uses a separate Object, and RGB uses its own color Object.

Colour Value when Switching On	 **Colour selection**	Set the RGB value when the toggle switch is ON. The RGB value can be set by entering the RGB value or by using the ETS palette
Behaviour when Switching On	Keep last object value Use ETS Parameter above **[Keep last object value]**	To determine whether the set ON RGB value will be used, If «Keep last Object Value» is selected (default value), the ETS setting is invalid. After receiving the ON message, only the brightness is adjusted, and the RGB value remains the value before last closing. If Use ETS Parameter Above is selected, the ETS setting is valid. After receiving an ON message, the ETS adjusts the BRIGHTNESS and RGB value.
If the RGBW type «RGBW Colour» is selected:		
Selection of Object Type	RGBW(6 Byte Combined Object 251.600) RGBW(separeted Objects) HSVW(separeted Objects) **[RGBW(6 Byte Combined Object 251.600)]**	This parameter selects the type of Object. «3 Byte Combined Object» uses a combined Object, a single Object controls RGB three colors, «Separeted Objects» uses a separate Object, and RGB uses its own color Object.
Colour Value when Switching On	 **Colour selection**	Set the RGBW value when the toggle switch is ON. RGB value can be set by entering THE RGB value or by using the ETS palette.
Additional White	 **0...100%(Slider)**	The white Settings are separate sliders.
Behaviour when Switching On	Keep last object value Use ETS Parameter above **[Keep last object value]**	Whether you are sure to use the set ON RGBW value, If Keep Last Object Value is selected (default value), the ETS setting is invalid. After receiving the ON message, only the brightness is adjusted, and the RGBW value remains the same as before the last switch off. If Use ETS Parameter Above is selected, the ETS setting is valid. After receiving an ON message, the SYSTEM adjusts the BRIGHTNESS and the RGBW value.
If type XY 'XY Colour' is selected:		
Selection of Object Type	XY(separeted Objects) Y (combined Object242.600) **[XY(separeted Objects)]**	This parameter selects the type of Object: Combined Object uses a combined Object, a single Object controls the XY coordinate for color adjustment, Separeted Objects uses a separate Object, and X and Y coordinates use separate Objects.
Colour X-Value when Switching On (0..1)	0...1 **[0.33]**	This parameter selects the X coordinate value, which is the X coordinate of the color at startup

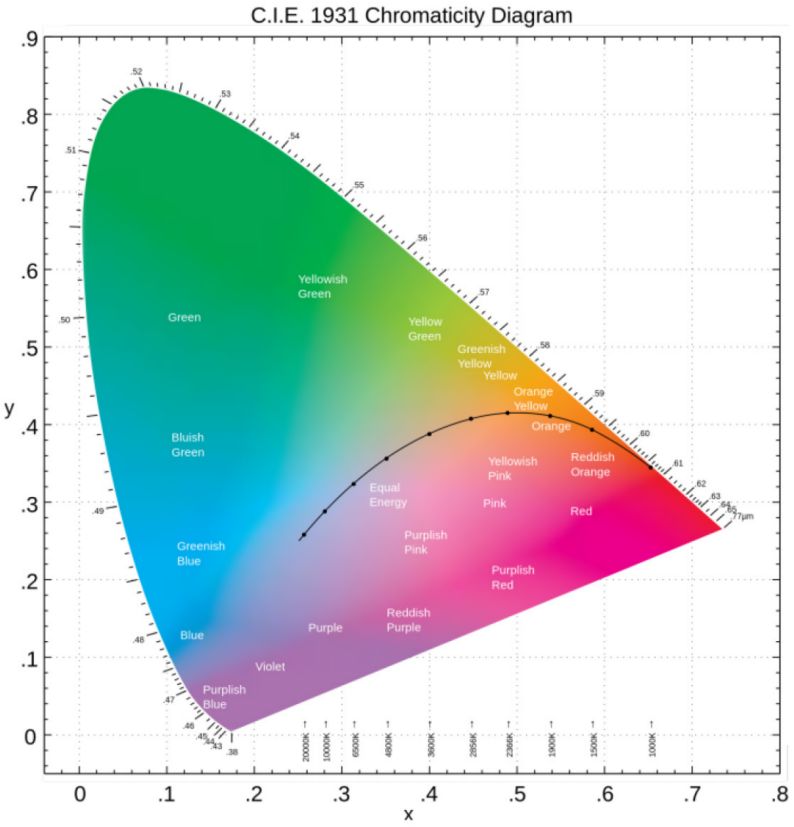
Colour Y-Value when Switching On (0..1)	0...1 **[0.33]**	This parameter selects the y-coordinate value, which is the y-coordinate of the color at startup
The startup color is determined by the X and Y coordinates of the XY chromaticity graph (as shown on the right), and the value ranges from 0 to 1.Where X = 0.33 and Y= 0.33 correspond to the coordinates of the white point.		
Behaviour when Switching On	Keep last object value Use ETS Parameter above **[Keep last object value]**	Whether you are sure to use the set ON XY coordinate value, If Keep Last Object Value is selected (the default value), the ETS setting is invalid. After receiving the ON message, only the brightness is adjusted, and the XY coordinate remains the value before the last closing. If Use ETS Parameter Above is selected, the ETS setting is valid. After receiving an ON message, the SYSTEM adjusts the brightness and the XY coordinate set by ETS.

Diagram: Parameter description

4.2.4. ADDING DEVICE PARAMETERS TO A GROUP

The following figure shows the parameters for adding devices to a group:

Add Device 1 to Group	○ Yes	◉ No
Add Device 2 to Group	○ Yes	◉ No
Add Device 3 to Group	○ Yes	◉ No
Add Device 4 to Group	○ Yes	◉ No
Add Device 5 to Group	○ Yes	◉ No
Add Device 6 to Group	○ Yes	◉ No
Add Device 7 to Group	○ Yes	◉ No
Add Device 8 to Group	○ Yes	◉ No
Add Device 9 to Group	○ Yes	◉ No
Add Device 10 to Group	○ Yes	◉ No

There are 16 groups, and each group contains 64 devices. The figure shows devices 1 to 10.

The parameter name	The scope of [Default value]	note
Add Device X to Group	Yes **[No]**	This parameter defines whether the current device is added to the current group. The device added to the group can be controlled by the control object of the group or an individual control object of the device.

4.3. MASTER CONTROL&BROADCAST FUNCTION PARAMETERS

The parameters of the master control function are used to realize the global control of the device. Different from the broadcast control function, the master control function only controls the DALI driver with the address.
The following figure shows the main control function parameters:

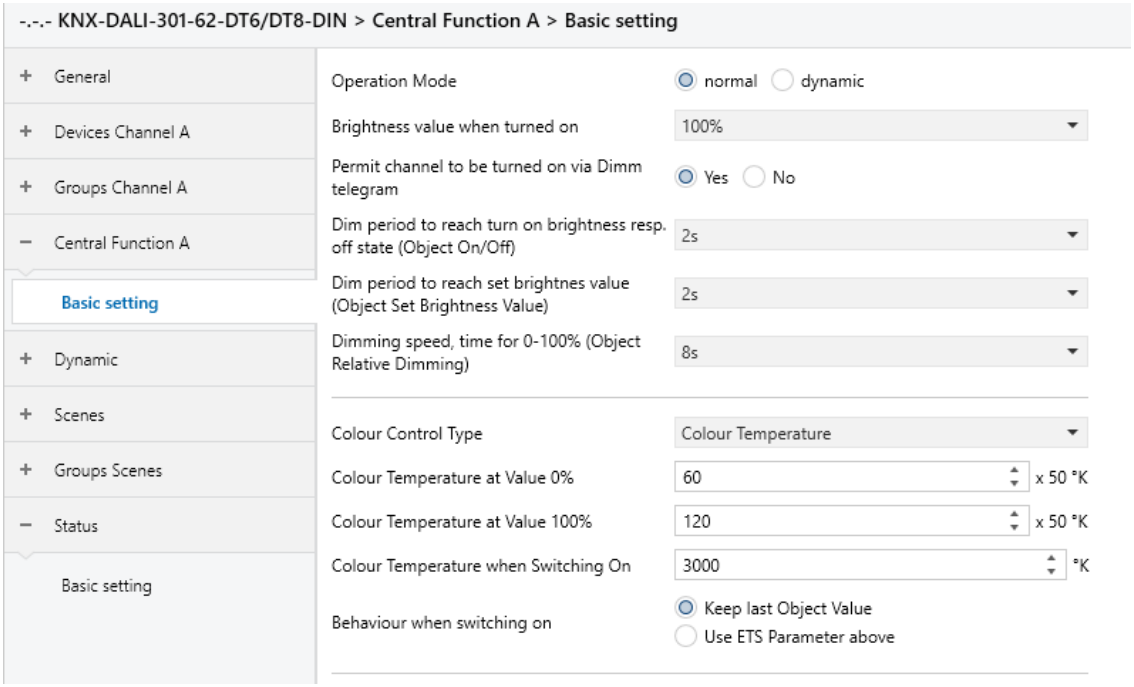


Figure: General control function parameters

The parameter name	Range [default]	note
Operation Mode	normal dynamic **[normal]**	This parameter is used to select the operating mode of the device. In the «normal» operating mode, the connected DALI device will operate as normal load and can be turned on, off, and brightness adjusted separately. The brightness value can be set in the DALI device. In contrast, «dynamic» operation mode can set parameters in chronological order, for example: stair lighting function.
Brightness value when turned on	100% 90% . 10% 0% **[100%]**	This parameter defines the brightness of DALI immediately after an ON message is received. If the values to be set during the operation exceed the minimum and maximum dimming value limits, the brightness will be limited to the maximum or minimum dimming value.For example, if the brightness of the device is different from that of the switch ON and an ON message is received, the device adjusts to the preset brightness of the switch ON.
Permit channel to be turned on via dim telegram	yes no **[yes]**	Set yes can adjust the light object to open the corresponding channel of DALI equipment, otherwise only through a dimmer switch on the object, it is worth noting that the DALI implementation does not support the dimming commands in the fully closed (set 0% brightness DALI when the equipment will be transferred to the minimum brightness value), so the dimming value is 0% think need fully closed shutdown command will be used, Using this command, the shutdown is instantaneous and there is no dimming delay
Dim period to reach turn on brightness resp. off state (Object On / Off)	Immediate 0.7 s 2 s ... 90 s **[2 s]**	This parameter is used to set the brightness dimming time for the ON value of the switch object. The time for gradient from brightness 0% to brightness 100% is turned OFF. OFF (0%) Because there is no gradient time if you need to turn it OFF completely.

Dim period to reach Set Brightness Value (Object Set Brightness Value)	Immediate 0.7 s 2 s ... 90 s **[2 s]**	This parameter is used to set the brightness dimming time of absolute dimming objects (including DT8 toner objects). The gradient time is from 0% to 100%. If the brightness value is set to 0%, there is no gradient time because it needs to be turned off completely.
Dimming speed, time for 0-100% (Object Relative Dimming)	Immediate 0.7 s 2 s ... 90 s **[8 s]**	This parameter is used to set the dimming time of the relative dimming object. The dimming time ranges from 0% to 100%.

Colour Control Type	None Colour Temperature RGB Colour RGBW Colour XY Colour Individual device param. **[none]**	This parameter defines the device type for DALI DT8 color control. Before selecting this parameter, ensure that the DALI driver supports this type of control. Otherwise, the DALI driver fails to work properly. The Individual device Param. parameter indicates that the tuning parameters of the general control function are independently configured on each device. Other parameters are the same as those described in 4.2.3 Device Tuning Parameters (DT8) and are not repeated here.

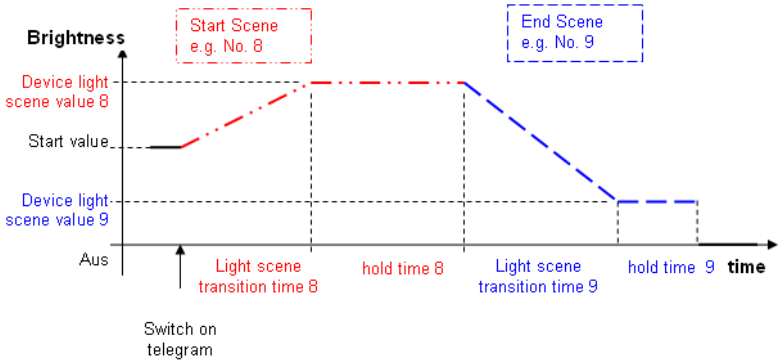
Diagram: Parameter description

4.4. DYNAMIC FUNCTION PARAMETERS

This parameter window is valid only when at least one of the 64 devices in the Device Channel A parameter window is set to Dynamic mode or the General Control Function window is set to Dynamic mode. If the "dynamic" operation mode is set, the DALI equipment or the entire corridor can be used for stair lighting or special lighting sequence.

Only one dynamic operation can be defined for each DALI gateway. Each device can dynamically operate any parameters independent of other devices by "On/Off" or "Switch".Dynamic action consists of two of the 16 scenarios, and the scenario used and the runtime of the scenario are selected in the parameters window described here (" Dynamic ").

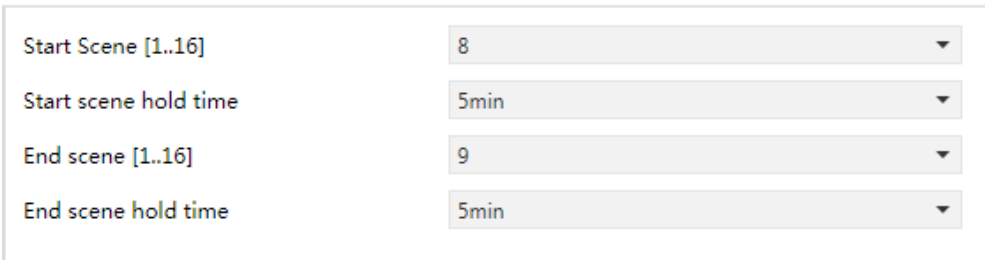
The following figure shows the effect of dynamic operations and parameter Settings. Exit warnings can be executed in the end scene:



Graph: Graphical representation of dynamic operations

The dynamic process of the device is started through the packet whose value is 1. The packet whose value is 0 is invalid.

The following figure shows parameters related to dynamic functions



The parameter name	The scope of [Default value]	note
The Start Scene [16] 1...	1 ... **[8]** ... 16	Use this parameter to define the start scene of the dynamic operation. The selected scene is parameterized in the «Scenes» parameter window.
Start scene hold time	1 s ... **[5min]** ... 24h	Use this parameter to define the run time of the start scene, after which the end scene begins at its own time. If dynamic action is triggered again at run time, the run time is retimed.
End Scene [16] 1...	1 ... **[9]** ... 16	Use this parameter to define the end scene of dynamic operation. The parameterization of the selected scene is realized in the «Scenes» parameter window.
End scene hold time	1 s ... **[5min]** ... 24h indefinitely	End The running time of the scene is defined by this parameter. After the running time, the device lighting is completely turned off. Indefinitely if you select the 'indefinitely' setting, the lights end the scene indefinitely, stay on forever and never switch to off. If the dynamic operation is triggered again, the entire sequence (stair lighting) will run again. A very convenient warning time can be set at the end of the stair lighting time.

In practical engineering applications, the "Switch" message with the value of "1" can be sent through the human body sensor or the Switch button to trigger the stair lighting function.
The trigger stair illumination function, the lighting in the hold time again receive the value of "1" message said to keep time to time (trigger), if the warning stage, the end of the scene to keep time received value is "1" message, would be to trigger the start scene lighting and keep time, equivalent to trigger the stairs lighting again, in this case, The hold time will be reset.In the case that the end scene hold time is not permanently set, after the warning time, the lighting will be completely turned off (off), and the whole sequence of the stair lighting function has been completed.

4.5. SCENARIO FUNCTION PARAMETERS

In the parameter window, you can set up a maximum of 16 lighting scenes. KNX color scenes support scenes 1 to 8, DALI broadcast color scenes support scenes 1 to 16. You can use any two scenes for dynamic function operation scenes.Both scenarios are assigned dynamic mode in the Dynamic parameters window.
DALI devices included in the scene are separate parameters with luminance values (lighting scene values). Each DALI device in the DALI channel can be included in the same scene.Use the No Change setting in the Device Light Scene Value parameter to ignore devices that are not included in the scene.

Each of the 16 light scenes can be invoked and stored using 1-bit and/or 1-byte messages, and the two communication objects are always visible and can be used independently of each other.Scenario A/B of 1-bit control has the following functions: Value 0 = invoke scenario A, value 1 = invoke scenario B;

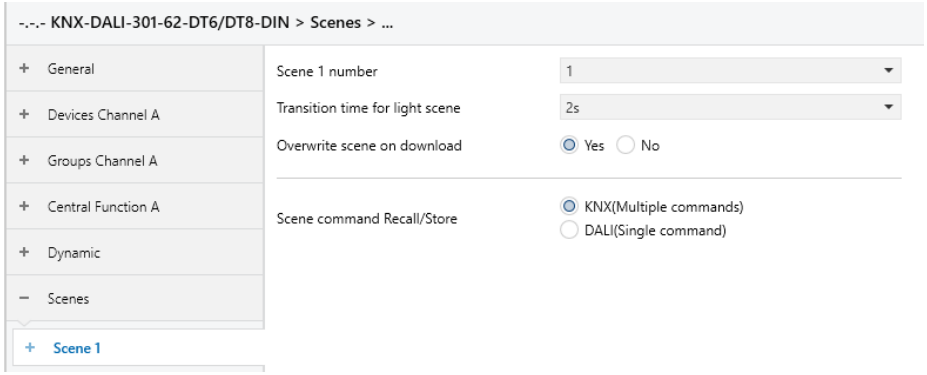
The following applies to 1-byte packet values:
Scenario numbers for scenarios 1 to 16 can be set independently in the Scenario number parameter window:

EIB/KNX 1-byte Packet value	role
or 64 or 65 or 66 ... 63 or 127	Call scenario 1 Call scenario 2 Call scenario 3 ... Call scenario 64
128 or 192 129 or 193 130 or 194 ... 191 or 255	Storage scenario 1 Storage scenario 2 Storage scenario 3 ... Storage scenario ID 64

If the scene values are set on ETS, the scene values are automatically set to the drive without manual learning of the scene.
To learn a scene using DALI broadcast scene parameters (Single Commands), after adjusting all DALI drives in the current scene to the required brightness and color values, the gateway will call the scene object learning function and send DALI storage commands. All the current drivers in the scene are written one by one and the scene brightness and color values are stored to overwrite the previous scene values. After each driver is completed, the brightness of the driver will be turned off. Finally, after all the drivers are completed, DALI broadcast scene command will be invoked to activate the scene.Drives that do not belong to this scenario are automatically removed.

4.5.1. BASIC SCENARIO PARAMETERS OF DEVICES

Scenes support independent color Settings. If DALI is used, scenes 1 to 16 support independent color Settings. The following describes the parameters in Scenario 1:

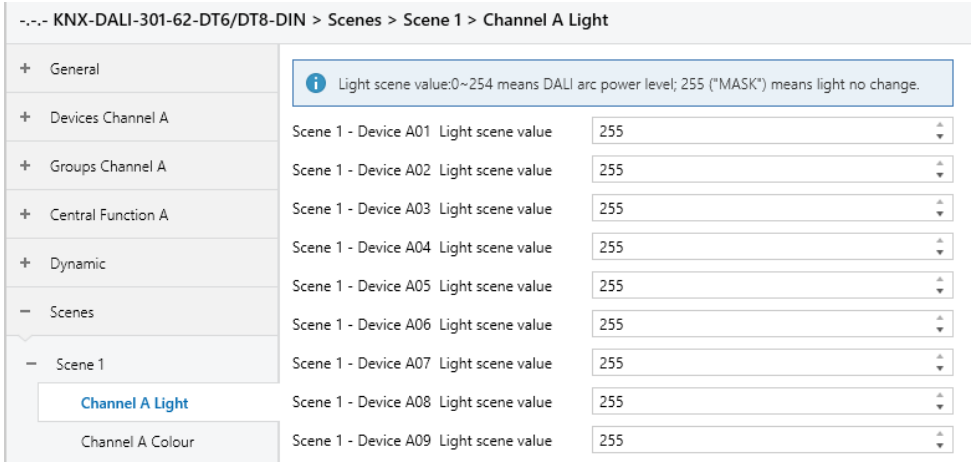


The parameter name	The scope of [Default value]	note
Scene 1 number	1... 64 **[1]**	Select a scenario NUMBER for scenario 1. The scenario number of each scenario can be the same or different.
Transition time for light scene	Immediate 0.7 s... 90 s **[2 s]**	This parameter defines the gradient time of the scene value. The gradient time of the lighting scene applies to all devices in the scene and cannot be adjusted individually for each device.
Overwrite scene on download	**[Yes]** No	If set to «no», during the period of ETS download or EIB voltage recovery, DALI equipment of brightness values and scene gradient time will not be covered, the stored scene brightness value will be retained, which is useful in some applications, such as: through a variety of complex lighting button to set the scene, so that it is not be changed in the process of downloading. Note: This means that after ETS downloads, the brightness values displayed in the scene X Parameter window do not correspond to the actual scene brightness values stored in the gateway and DALI devices.
Scene command Recall/Store	**[KNX(Multiple commands)]** DALI(Single commands)	This parameter selects the scenario to invoke or store commands: **KNX: if this parameter is selected, the scene function will invoke multiple DALI basic commands to set the brightness and color of the DALI drive separately. The synchronization is poor without learning the scene first.** **DALI: If this parameter is selected, the DALI broadcast scene command is used to adjust the brightness and color at the same time. DALI parameters must be learned or written to the DALI broadcast scene command first.**

4.5.2. DEVICES SCENE BRIGHTNESS VALUE AND COLOR VALUE PARAMETERS

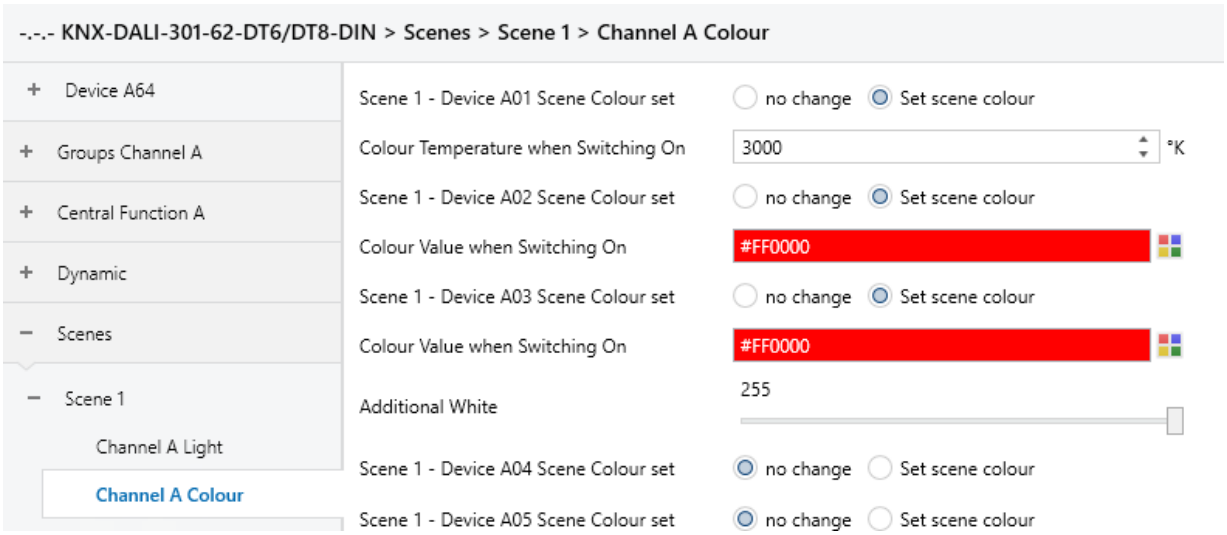
Parameter "Overwrite scene on Download" Select yes to set the luminance and color values of the scene. The luminance, color and scene gradient time in the DALI device will be overwritten after ETS downloads or re-stores the scene (learning). If the "DALI(Single Commands)" parameter is selected as the scene command parameter (recommended), the scene brightness and color values are stored in the DALI drive, independent of the ETS configuration parameters. It is worth noting that by setting the Channel A Light --> Device Axx Light scene value in the respective scene to non-255"MASK", the brightness and color learning and recall function of the current device in this scene can be activated.

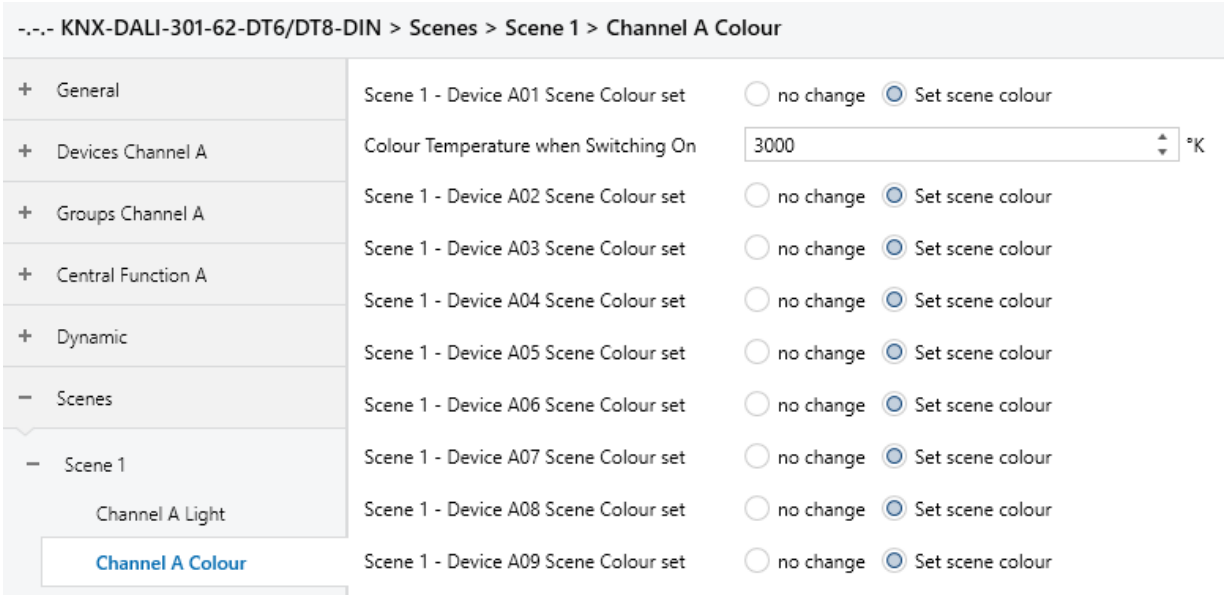
The following figure shows the brightness parameters of the scene:



The parameter name	The scope of [Default value]	note
Scene 1~16 - Device A01~A64 Light scene value	0~255 **[255]**	With the «255» setting, i.e. the device is not part of the scene, the current brightness of this DALI device is not affected and does not participate in the scene. 0~254: Indicates the arc power level, which directly corresponds to the dimming power level of the output channel of the DALI driver. Please note: If a scene is stored on EIB/KNX, all DALI devices connected on the channel (up to 64 devices) are suitable for the scene. If the set scene brightness is higher or lower than the corresponding device's set maximum or minimum value (see Devices parameter window), this value will be stored in the scene, but the corresponding DALI device's minimum or maximum brightness value will be stored .

The following is the Scene color value parameter (only valid if "Scene Command Recall/Store" is set to "KNX (Multiple Commands)") :



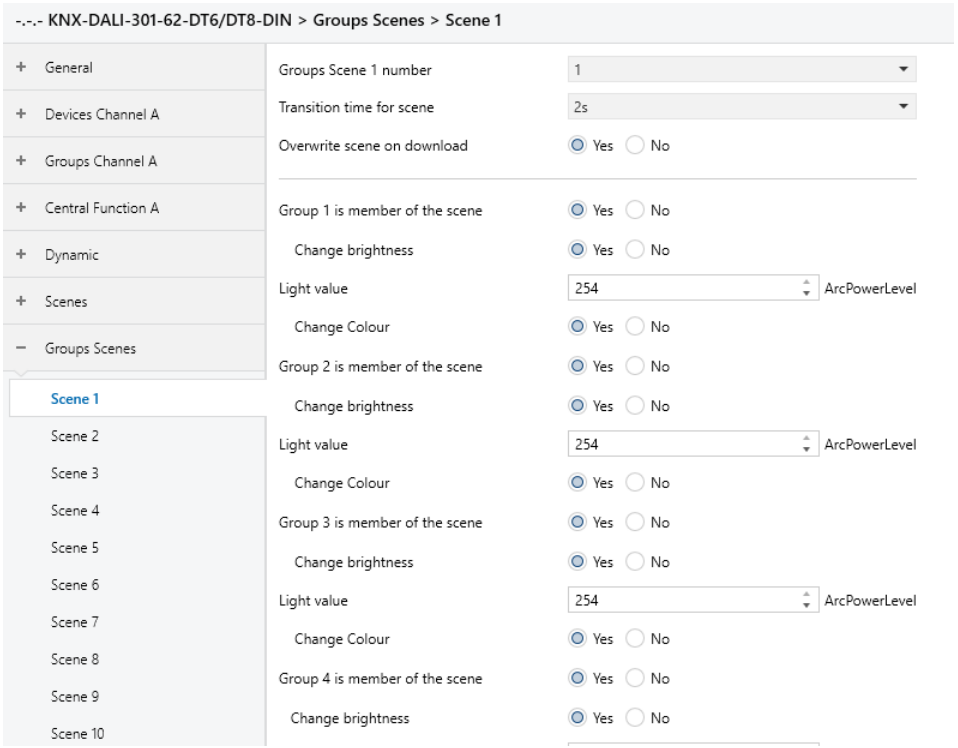


The parameter name	The scope of [Default value]	note
Scene 1~8 - Device A01~A64 Scene Colour set	**[no change]** Set scene colour	Use the «No change» setting, that is, the device is not part of the scenario. Using the «Set Scene colour» setting, where the device is part of the scene and its scene colour value is automatically matched according to the colour control type (see «Colour Control (DT8)» for the Device window parameter), The figure above shows device 1,2,3 and 4 respectively selecting color control type Colour Temperature. RGB Colour,RGBW Colour and XY Colour and their display scene Colour values. When using color control scenes, ensure that DALI devices support this function and DALI DT8 devices. Otherwise, the color control cannot be effective. When setting the Colour Temperature value, ensure that the Colour Temperature range of the DALI device contains the Colour Temperature value.

4.5.3. GROUPS SCENE BRIGHTNESS VALUE AND COLOR VALUE PARAMETERS

After the parameter "Overwrite scene on download" is set to yes, the group scene brightness value, color value and scene gradient time in the ETS download or re-storage (learning) DALI device will be overwritten. It is worth noting that by setting Group x is member of the scene in the respective scene to "Yes", the brightness and color learning and recall function of the current group in this group scene can be activated.

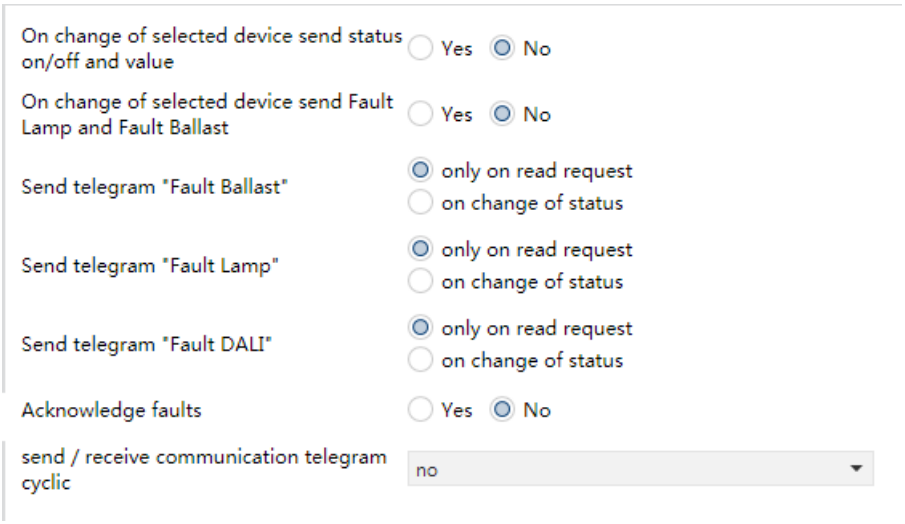
The following figure shows the brightness value and color value parameters of the group scene:



The parameter name	The scope of [Default value]	note
Groups Scene 1 number	1 ... 64 **[1]**	The scene number selection of group scene 1, the scene number of each scene can be the same or different.
Transition time for light scene	Immediate 0.7 s ... 90 s **[2 s]**	This parameter defines the brightness fade time of the group scene. The fade time of the lighting scene applies to all devices in the scene and cannot be adjusted individually for each device.
Overwrite scene on download	**[Yes]** No	If set to «no», during ETS download or EIB voltage recovery, the scene brightness value and scene fade time in the DALI device will not be overwritten, and the stored scene brightness value will be retained, which in some applications is Useful, for example: complex lighting scenes set by various buttons so that they are not changed during download. Note: This means that after the ETS download, the luminance values displayed in the «Group Scene X Parameters» window do not correspond to the scene luminance values actually stored in the gateway and DALI device.
Group x is member of the scene	Yes **[No]**	This parameter indicates whether the group of lights is added to the scene. If Yes is selected, the scene includes the group of lights, and the brightness value and color value of the group scene can be set.
Change brightness	**[Yes]** No	This parameter turns on the output luminance value parameter of the group in the scene.
Light value	0~254 **[254]**	0~254: Indicates the arc power level, which directly corresponds to the dimming power level of the output channel of the DALI driver. If the set scene brightness (dimming power output level) is higher or lower than the set maximum or minimum value of the corresponding group device (see «Group» parameter window), this value will store the minimum or maximum value of the corresponding DALI group Brightness value.
Change Colour	**[Yes]** No	This parameter turns on the output color value parameter of the group in the scene
Colour Value when Switching On	Take the color temperature Tc parameter as an example: 1000... 10000 °K **[3000] °K**	The scene color value will be automatically matched according to the group color control type (please refer to the «Group» window parameters), the above picture shows the color control type Color Temperature and RGBW Colour selected for group 1 and group 2 and their respective displayed scene color values. When using the color control scene, please make sure that the DALI device supports this function and is a DALI DT8 device, otherwise the control cannot achieve the effect. When setting the Color Temperature value, please confirm whether the color temperature range of the DALI device includes the color temperature value.

4.6. STATUS FUNCTION PARAMETERS

In the state parameters window, define the behavior of the state and communication object.
The following figure shows the status parameters:



The parameter name	The scope of [Default value]	note
On change of selected device send status on/off and value	Yes **[No]**	Defines whether to send status packets when the switch status and brightness values change. If you select No, you can only obtain the status through read operations
On change of selected device send Fault Lamp and Fault Ballast	Yes **[No]**	Define whether to select a device or an independent device to send status packets when a device fault changes. If you select No, you can only read the fault status
The Send telegram «Fault Ballast»	**[Only on read request]** On change of status	Defines the behavior of sending ballast fault packets in a channel. The packets can be obtained only through read operations or automatically sent after changes
The Send telegram «Fault Lamp»	**[Only on read request]** On change of status	Defines the behavior of sending fault packets of lamps in a channel. The packets can be obtained only through read operations or automatically sent after changes
The Send telegram «Fault DALI»	**[Only on read request]** On change of status	This section describes how to send DALI fault packets in a channel. DALI fault packets can only be read or sent automatically after being changed
Acknowledge faults	Yes **[No]**	If No is selected, when a fault occurs (ballast, lamp, or DALI communication), a message of «1» will be sent. After the fault is rectified, a delay in sending a message of «0» will occur based on the number of devices and the DALI QUERY interval. If Yes is selected, a «1» message will be sent when faults occur (ballasts, lamps, and DALI communications). After faults are rectified, a «0» message will be immediately sent through Acknowledge faults to channel object 1219. This can be very useful for detecting sporadic failures or events that occur while someone is watching.
Send / receive communication telegram cyclic	**[no]** send telegram receive telegram send/receive telegram	If this parameter is set to No, functions and communication objects are unavailable. DALI gateway does not send monitoring messages or monitor KNX bus traffic. When Send Telegram is configured, KNX periodically sends packets to notify DALI of the existence of the gateway. With the «Receive Telegram» setup, DALI gateway wants to receive telegrams on a loop to indicate KNX's communication capability or the presence of a device.If DALI gateway does not receive a valid telegram within the defined time interval, a failure on the KNX communication channel or device is considered to have occurred and the response defined in the Reaction on Communication Fault parameter is executed.The parameterized state continues until a packet with the value «1» is received.You can adjust the time of the receive interval by setting Transmission Control Timeout in the status parameters window. With the Send/Receive Telegram Settings, DALI gateway periodically sends and receives presence packets through the KNX bus.
Transmission control timeout	5s ... **1 min.** ... 12h	This parameter is available only when Send/Receive Communication Telegram Cyclic is not set to No. The set time applies to both the interval between dali-gateway sending packets and the interval for receiving packets used to monitor the bus. It is important to ensure that the transmission time of the KNX device that sends KNX packets is less than the receive time selected in DALI gateway.To keep the bus load as low as possible, you must choose as long a send/receive interval as possible, depending on your application.

5. ENGINEERING APPLICATION DESCRIPTION

5.1. ADDRESSING PROCEDURE:

DALI gateway supports the operations of automatic addressing, detection of assigned addresses, manual addressing and deletion of addresses. The following lists several addressing operations and specific operation steps that may be encountered in engineering applications. Before operating, all DALI drive devices must be connected to the power supply and DALI bus. It is worth noting that the connection method of the DALI driver device bus must be connected together at the same end to prevent cross-connection between the left and right ends, especially in the case of multiple devices, to avoid hidden dangers such as unstable DALI communication.

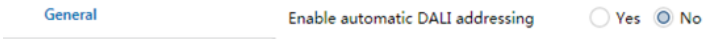
APPLICATION 1:
The DALI drive device is in the factory state, there is no addressing record, and automatic addressing can be used.

1: DALI gateway is powered on, KNX bus and DALI communication bus;
2: Download the physical address of the DALI gateway and the database application configuration (the same configuration has been downloaded and there is no need to download it again);
3: After the download is completed, test whether the wiring is normal. Press and hold the manual button for more than 3 seconds to enter the manual mode **d**.
Operate the up and down buttons of A channel to switch and dim;
4: First turn off all lights in manual mode, then press and hold the confirm button for more than 5 seconds, will enter the addressing mode **PA**, and for A channel, press and hold the upper button of A channel for more than 3 seconds, and the LED will flash automatically to A. The channel's DALI drive device is addressed;
Note: Only one channel can be addressed at a time.
5: The more devices there are, the longer the automatic addressing time will be. After the addressing is successful, **PS** will appear, and then the DALI driver configuration parameters will be written into the DALI driver. After the addressing fails, **PF** will appear;
Automatic addressing will not delete the existing address of the device, and if no device is detected or there is no device with no address, **PS** will also be displayed;
6: After addressing is completed, short press the return key to return to manual mode **d**, and then long press the return key for 3 seconds to return to bus mode **b**.

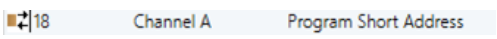
APPLICATION 2:
The DALI drive device has been programmed with a short address, and the DALI gateway does not want to be reconfigured. Use the detection of the assigned address.
1: The DALI gateway is connected to the power supply and KNX bus, and the DALI communication bus is not connected first;
2: Download the physical address of the DALI gateway and the database application configuration (the same configuration has been downloaded and there is no need to download it again);
3: After the download is completed, press and hold the confirmation button for more than 5 seconds to display **bd**, enter the detection and record the configured address and number of devices of the DALI drive device, because the DALI bus is not connected, so the purpose of this operation is to clear the internal DALI gateway. have records;
4: The DALI gateway is powered off, connected to the DALI communication bus, and then powered on to test whether the wiring is normal. Press and hold the manual button for more than 3 seconds to enter the manual mode **d**, then turn on the light first, then turn off the light, and exit the manual mode by the same operation;
5: In bus mode **b**, press and hold the confirmation button for more than 5 seconds, and **bd** will appear, it will automatically detect and record the configured address and number of devices of the DALI drive device, and automatically update the configuration data to the drive when one is detected, and automatically exit after completion. .

APPLICATION 3:
Write the specified short address to the DALI drive device through the DALI gateway, and use manual addressing.

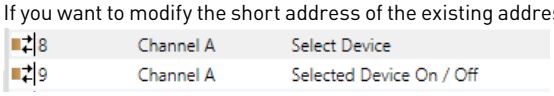
1: DALI gateway is powered on, KNX bus and DALI communication bus;
2: Take channel A as an example, configure the parameter as No as shown in the figure below, and disable the automatic addressing function;



Link A channel object 18 sets of addresses



If you want to modify the short address of the existing address driver, you need to configure the addresses of objects 8 and 9;



Object 8 is used to select the device number whose address needs to be modified, and object 9 is used to test whether the selected device is correct;
Then download the physical address of the DALI gateway and the database application configuration (the same configuration has been downloaded and there is no need to download it repeatedly);

3: After the download is completed, connect the DALI drive device that needs to be addressed in the A channel, test whether the wiring is normal, press and hold the manual button for more than 3 seconds, and **d** will enter the manual mode, and operate the up and down buttons of the A channel to switch and dim the light;
4: Turn off the lights and then exit the manual mode, first select the device number whose address needs to be modified through object 8, test the selected device switch through object 9, and then write the specified short address to the device number selected by channel A by sending the value of object 18 , decimal values 0~63 correspond to DALI short addresses 0~63 respectively, other values are invalid. After the address is written successfully, the relevant DALI drive parameters will be updated, and the configuration parameters will be written into the DALI device at the same time. After all manual addressing is completed , enter the **bd** mode to scan and update the existing driver address of the gateway.

NOTE: Short address = device number -1. If the device is not selected with object 8, the same short address will be written for all devices on the bus.

APPLICATION 4:
The DALI drive device is already equipped with an address, and you want to use the automatic addressing to reassign the address, because the automatic addressing will not delete the address that has been assigned to the DALI drive device, you can delete the address first and then perform automatic addressing.
1: DALI gateway is powered on, KNX bus and DALI communication bus;
2: Test whether the wiring is normal, press and hold the manual button for more than 3 seconds to enter the manual mode **d**, and operate the up and down buttons of the A channel to switch and dim;
3: First turn off all lights in manual mode, then press and hold the confirm button for more than 5 seconds, **PA** will enter the addressing mode, and for A channel, press and hold the A channel down button for more than 5 seconds to automatically change all the A channels. DALI drives the device to delete the address, the LED will automatically turn on and off once, and automatically return to the manual mode **d**, then the address is deleted successfully.

APPLICATION 5:
Replacing a faulty DALI drive device, replacing one or more devices
1: To replace a device, first replace the faulty DALI drive device with a new DALI drive device without an address; if multiple devices are replaced, first replace the device with the lower address and successfully address it, and then replace the next lower address. device, until all the replacement addresses are completed, because the automatic addressing will start from the low address first, if there are multiple unaddressed drives at the same time, the address of each drive location is random, and it will not match the original project configuration;
2: Refer to the steps of application 1 to start automatic addressing, and activate the «DALI QUERY» function for real-time monitoring of the alarm and search of faulty equipment.

NOTE: The DALI driver device to be replaced must be an unaddressed device!

5.2. INSTRUCTIONS FOR USING TEST MODE:

The test mode is usually used in the early stage of engineering debugging. After the DALI device address is automatically assigned, it is used to find the specific location of the target address device. The operation steps are as follows:

1: In bus mode **b**, short press the manual button  to enter the test mode**--**, short press the manual button again to exit the test mode;
2: In the test mode, operating the up and down buttons of channel A can switch the test device number, and the test device number displays **00**~**64**, of which **00** means no device is in the test state, and **01**~**64** means the current device is in the test state;
3: The device in the test state is turned on and off in a cycle of 2.6 seconds. Find the cyclically on and off lamps and record the corresponding device number displayed by the digital tube, until all the devices are searched and short press to return to the bus mode.
4: If it is found during the test that there are drivers with duplicate addresses, such as multiple lights flashing at the same time, you can press and hold  the confirm button for more than 5 seconds to delete the selected duplicate address. After deletion, the lamp will not continue to flash, and other drive addresses will not be affected. You can perform the automatic addressing and lamp finding steps again later.

5.3. DALI DIMMING CURVE

5.3.1. DALI LOGARITHMIC CURVE
The DALI dimming curve is adjusted according to the sensitivity of the human eye, which results in a logarithmic characteristic curve of luminous flux that is perceived by the human eye as a linear sequence of brightness.

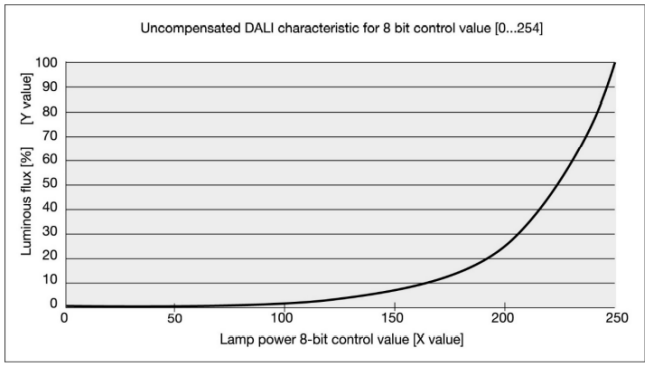
NOTE: Luminous flux represents the lighting power emitted in all directions from a light source, expressed in lumens (lm).

The luminous flux of DALI is defined according to the DALI standard (EN 60929 or IEC 62386-102) as shown
in the following figure:

If the logarithmic dimming curve is selected in the gateway dimming value calculation parameter, the KNX value is related to the X value of the 8-bit lamp power control value, and the gateway will convert the corresponding luminous flux (Y value, %) according to the KNX dimming value (%) into The lamp

$$X(n) = 10^{\frac{n-1}{253/3}-1} \qquad \left|\frac{X(n) - X(n+1)}{X(n)}\right| = \text{const.} = 2{,}8\ \%$$

n = 1...254 (DALI digital control value)



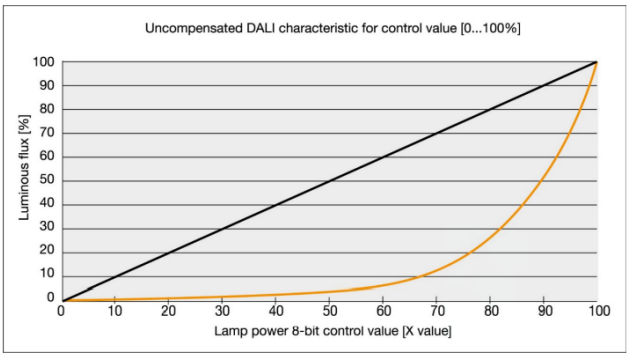
power control value (X value) is sent to the DALI driver.
If a linear dimming curve is selected for the parameter, the KNX value is directly related to the luminous flux (Y value).
In the gateway scene parameter, the brightness scene value 0~254 (255 is MASK) directly corresponds to the 8-bit lamp power control value X value in DALI.
The relationship between the brightness power **Level value** (0~254) and the corresponding **Light output** percentage (0~100%) is shown in the following table:

5.3.2. DALI LINEAR CURVE

Table 3 – Dimming curve

Level	Light output	Level	Light output	Level	Light output	Level	Light output	Level	Light output
1	0,100	52	0,402	103	1,620	154	6,520	205	26,241
2	0,103	53	0,414	104	1,665	155	6,700	206	26,967
3	0,106	54	0,425	105	1,711	156	6,886	207	27,713
4	0,109	55	0,437	106	1,758	157	7,076	208	28,480
5	0,112	56	0,449	107	1,807	158	7,272	209	29,269
6	0,115	57	0,461	108	1,857	159	7,473	210	30,079
7	0,118	58	0,474	109	1,908	160	7,680	211	30,911
8	0,121	59	0,487	110	1,961	161	7,893	212	31,767
9	0,124	60	0,501	111	2,015	162	8,111	213	32,646
10	0,128	61	0,515	112	2,071	163	8,336	214	33,550
11	0,131	62	0,529	113	2,128	164	8,567	215	34,479
12	0,135	63	0,543	114	2,187	165	8,804	216	35,433
13	0,139	64	0,559	115	2,248	166	9,047	217	36,414
14	0,143	65	0,574	116	2,310	167	9,298	218	37,422
15	0,147	66	0,590	117	2,374	168	9,555	219	38,457
16	0,151	67	0,606	118	2,440	169	9,820	220	39,522
17	0,155	68	0,623	119	2,507	170	10,091	221	40,616
18	0,159	69	0,640	120	2,577	171	10,371	222	41,740
19	0,163	70	0,658	121	2,648	172	10,658	223	42,895
20	0,168	71	0,676	122	2,721	173	10,953	224	44,083
21	0,173	72	0,695	123	2,797	174	11,256	225	45,303
22	0,177	73	0,714	124	2,874	175	11,568	226	46,557
23	0,182	74	0,734	125	2,954	176	11,888	227	47,846
24	0,187	75	0,754	126	3,035	177	12,217	228	49,170
25	0,193	76	0,775	127	3,119	178	12,555	229	50,531
26	0,198	77	0,796	128	3,206	179	12,902	230	51,930
27	0,203	78	0,819	129	3,294	180	13,260	231	53,367
28	0,209	79	0,841	130	3,386	181	13,627	232	54,844
29	0,215	80	0,864	131	3,479	182	14,004	233	56,362
30	0,221	81	0,888	132	3,576	183	14,391	234	57,922
31	0,227	82	0,913	133	3,675	184	14,790	235	59,526
32	0,233	83	0,938	134	3,776	185	15,199	236	61,173
33	0,240	84	0,964	135	3,881	186	15,620	237	62,866
34	0,246	85	0,991	136	3,988	187	16,052	238	64,607
35	0,253	86	1,018	137	4,099	188	16,496	239	66,395
36	0,260	87	1,047	138	4,212	189	16,953	240	68,233
37	0,267	88	1,076	139	4,329	190	17,422	241	70,121
38	0,275	89	1,105	140	4,449	191	17,905	242	72,062
39	0,282	90	1,136	141	4,572	192	18,400	243	74,057
40	0,290	91	1,167	142	4,698	193	18,909	244	76,107
41	0,298	92	1,200	143	4,828	194	19,433	245	78,213
42	0,306	93	1,233	144	4,962	195	19,971	246	80,378
43	0,315	94	1,267	145	5,099	196	20,524	247	82,603
44	0,324	95	1,302	146	5,240	197	21,092	248	84,889
45	0,332	96	1,338	147	5,385	198	21,675	249	87,239
46	0,342	97	1,375	148	5,535	199	22,275	250	89,654
47	0,351	98	1,413	149	5,688	200	22,892	251	92,135
48	0,361	99	1,452	150	5,845	201	23,526	252	94,686
49	0,371	100	1,492	151	6,007	202	24,177	253	97,307
50	0,381	101	1,534	152	6,173	203	24,846	254	100,000
51	0,392	102	1,576	153	6,344	204	25,534		

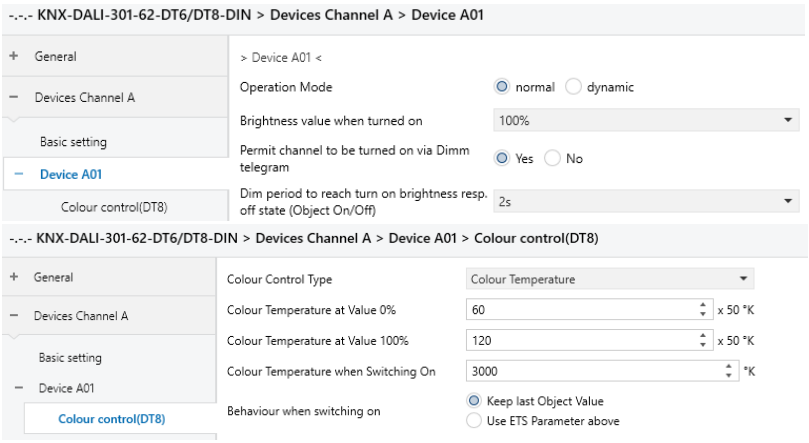
If the linear curve is selected in the gateway dimming value calculation parameter, the dimming value received by KNX will be directly mapped to the lamp power (X value), and the lamp power control value (X value) sent by the gateway to the DALI driver is directly equal to the KNX adjustment value. Light value and luminous flux (Y value) without conversion.
In the gateway scene parameters, the brightness scene value 0~254 (255 is MASK) directly corresponds to the 8-bit lamp power control value X value



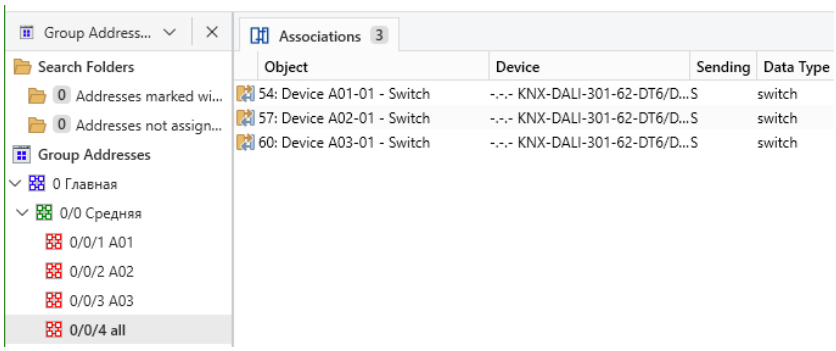
in DALI, which is 0%~100%, and is equal to the KNX dimming value 0%~100% and the luminous flux (Y value)0%~100%.

5.4. APPLICATION CASES:

In the case that 16 scenes are not enough, smart switch configuration to achieve brightness and color change at the same time, to achieve the scene effect, without affecting the device alone Control, the following configuration takes devices A01,A02,A03 as a group of scenarios for example, to achieve the simultaneous change of brightness and color temperature:
1: Set the on-brightness value, on-gradient time and on-color temperature of devices A01, A02 and A03 respectively, and set the parameters of each device separately, as shown in the figure below:
2: Switch object group address of linked devices A01, A02 and A03 is the same group address, as shown in the figure below:



3: By writing ON (value 1) to the switch address of the 6/6/1 scene group, the switch brightness, switch gradient time and color temperature of devices



A01,A02 and A03 will change at the same time. This configuration only takes up the switch object ON function of devices, and has no impact ON switch object OFF, absolute dimming, relative dimming and color single control function.

NOTE: Since this configuration is implemented by each DALI driver using control commands independently, it is significantly different from the DALI broadcast scenario. This method will cause inconsistent delays of multiple lights on and off. Please consider using it.

APPENDIX 1

NIXIE TUBE DISPLAY CODE TABLE

STATUS AND MODE DISPLAY CODE:

b	Bus control mode
d	Manual control mode, long press the manual button for 3 seconds to enter or exit
CF	Communication and telegraph failure status
FA	DALI A device is faulty
PA	DALI equipment addressing mode, advanced start mode, long press the confirm key 5 seconds to enter, long press the key for 3 seconds to automatically address, long press the key for 5 seconds to delete the address (caution)
bd	Detect and search DALI device mode, and hold down the CONFIRM key for 5 seconds to enter the search mode
--	Test mode: In bus mode, press the manual button to enter or exit test mode
CP	DALI parameter automatic configuration mode, automatically run after the configuration parameters are changed

CODE TO DISPLAY IN ADDRESSING MODE:

PS	Addressing success status code, displayed after addressing is complete or there is no device response
PF	Address failure status code, displayed when the device responds to a fault

DISPLAY CODE UNDER FAULT STATUS QUERY:

F1	DALI indicates the DALI device failure status
F2	Lamp failure condition
F3	DALI communication failure status
01-64.	Device ids 01 to 64 correspond to DALI drives whose short addresses are 00 to 63. For example, device ids 01 display DALI drives whose short addresses are 00

DISPLAY CODE IN TEST MODE:

00	None Device is in the test state
01-64	Device id 01 to 64 corresponds to DALI drives whose short addresses are 00 to 63. For example, device ID 01 indicates DALI drives whose short addresses are 00