JUNE 2020

Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Webinar– Competence Center Europe – Smart Buildings
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Webinar – Competence Center Europe - Smart Buildings

ABB STOTZ-KONTAKT GmbH
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ABB Busch-Jaeger
Luedenscheid / Germany
Overview and Features of the DALI Gateways Basic DG/S x.64.1.1 and Premium DG/S x.64.5.1
Introduciton and Overview of Emergency Lighting
Commissioning of Emergency Lighting Converters in the ETS
Emergency Lighting Test – ETS Group Objects per Output A/B and per Emerg. Lighting Converter
ABB i-bus® Tool
Function “Partial failure”
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Overview and the features of the DALI Gateways Basic DG/S x.64.1.1 and Premium DG/S x.64.5.1
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Overview and the features of the DALI Gateways Basic DG/S x.64.1.1 and Premium DG/S x.64.5.1

Overview – Hardware

Four devices

- KNX DALI Gateway **Basic** DG/S x.64.1.1
  - DG/S 1.64.1.1 (one channel, 64 ballasts)
  - DG/S 2.64.1.1 (two independent channels, 2 x 64 ballasts)

- KNX DALI Gateway **Premium** DG/S x.64.5.1
  - DG/S 1.64.5.1 (one channel, 64 ballasts)
  - DG/S 2.64.5.1 (two independent channels, 2 x 64 ballasts)

- Supply voltage 100 - 240V AC/DC, 50/60Hz
- Integrated DALI power supply(s)
- DALI Outputs are 230V secure
- Manual operation
- DALI-2 certified
- ...
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Overview and the features of the DALI Gateways Basic DG/S x.64.1.1 and Premium DG/S x.64.5.1

Overview – Software

- Flexible combination of DALI groups, single control or KNX groups
- Parameter templates for ballasts, groups and emergency lighting
- Special functions such as slave, staircase light, forced operation, blocking, partial failure, burn-in lamps, turn off brightness, ...
- Integrated scene function
- Reaction in the event of power failure and recovery
- Long-frames + extended memory service support (shorter download times, e.g. with USB/S 1.2, IPS/S 3.1.1 and IPR/S 3.x.1)
- ABB i-bus® Tool for diagnostics and commissioning
- DALI protocol controller can be updated via application download
- DG/S x.64.5.1: DT8 colour lighting functions (change of colour temperature T_C, Human Centric Lighting and Dim2Warm)
- ...
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Overview and the features of the DALI Gateways Basic DG/S x.64.1.1 and Premium DG/S x.64.5.1

System overview

The DALI Gateways DG/S x.64.x.1 are used to control DALI equipment (only slaves) to IEC 62386 with
- Device type 0: DALI interfaces (Part 201)
  - Ballasts, transformers, LED drivers, …
- Device type 1: DALI self-contained emergency lighting converters with individual batteries (Part 202), e.g.
  - ABB Kaufel route escape signs “Ovano”
  - ABB Kaufel LED downlights “Serenga”
- Device type 8 (only DG/S x.64.5.1): DALI Colour-controlled luminaires (Part 209)
  - LED drivers for tunable white (Colour temperature $T_C$)

Note: The DALI Gateway is a DALI single master and up to 64 DALI devices (slaves) can be connected per output. Other DALI masters, DALI power supplies or functional devices must not be connected to the DALI output.
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**DALI-2 certification**

ABB DALI Gateways DG/S x.64.x.1 have successfully completed the DALI-2 certification process and are certified [https://www.digitalilluminationinterface.org](https://www.digitalilluminationinterface.org) → Products → Product Database

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Product Name</th>
<th>DALI Parts</th>
<th>Initial registration</th>
<th>DALI 2 Certified</th>
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<tr>
<td>ABB</td>
<td>DG/S 1.64.5.1 DALI Gateway, Premium 1-fold</td>
<td>101, 103</td>
<td>Feb 20, 2020</td>
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<td>ABB</td>
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<td>101, 103</td>
<td>Feb 20, 2020</td>
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<td>ABB</td>
<td>DG/S 1.64.1.1 DALI Gateway, Basic 1-fold</td>
<td>101, 103</td>
<td>Sep 4, 2019</td>
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<tr>
<td>ABB</td>
<td>DG/S 2.64.1.1 DALI Gateway, Basic 2-fold</td>
<td>101, 103</td>
<td>Sep 4, 2019</td>
<td>Yes</td>
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</table>
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Introduction and overview of emergency lighting
Introduction

**Emergency Lighting** is defined as lighting that is active in the event of a malfunction of the general artificial lighting in a building.

**Task:**
- Minimum brightness to avoid panic
- Illumination of emergency escape route
- Orientation guide for exits
- Secured light for special working areas
- Light for security staff (e.g. fire brigade)
- In the event of power failure on ballasts, the emergency lighting is switched on automatically

**Important:** Monitoring of the system including tests (e.g. function) and logging of the result
Introduction

Emergency Lighting is defined as lighting that is active in the event of a malfunction of the general artificial lighting in a building.

Spare energy can be:

- Battery
  - Single battery (self-contained emergency lighting converters)
  - Group battery
  - Central battery (a large set of batteries with control)
- Aggregates (e.g. diesel engine with generator)
- Special secured power network

Self-contained emergency luminaire

Central power supply (CPS) system
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Introduction and overview of emergency lighting – Single battery (self-contained emerg. lighting converter)

ABB Kaufel route escape signs “Ovano”

ABB Kaufel LED downlights “Serenga”
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Introduction and overview of emergency lighting
## Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

**Introduction and overview of emergency lighting – Requirements in Europe**

<table>
<thead>
<tr>
<th>Type of Location</th>
<th>Belgium/Luxembourg</th>
<th>Denmark</th>
<th>Germany</th>
<th>England</th>
<th>Finland</th>
<th>France</th>
<th>Portugal</th>
<th>Spain</th>
<th>Sweden</th>
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</thead>
<tbody>
<tr>
<td>Old people’s homes</td>
<td>&gt; 10 persons</td>
<td>&gt; 1000 m²</td>
<td>No general regulations / requirements from building authorities</td>
<td>8 persons</td>
<td>All floors and cellars</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>1 person or &gt; 20 employees</td>
<td>20 persons</td>
<td>mandatory</td>
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<tr>
<td>Workplaces</td>
<td>&gt; 10 persons</td>
<td>No information</td>
<td>&gt; 2000 m²</td>
<td>&gt; 30 m²: Escape route marking / &gt; 100 m²: mandatory</td>
<td>&gt; 20 employees</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>1 person or &gt; 20 employees</td>
<td>20 persons</td>
<td>50 persons</td>
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<tr>
<td>Overnight accommodation</td>
<td>mandatory</td>
<td>&gt; 1000 m²</td>
<td>&gt; 5 persons</td>
<td>All floors and cellars</td>
<td>mandatory</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>1 person or &gt; 20 employees</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>mandatory</td>
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<tr>
<td>Administrative buildings</td>
<td>&gt; 10 persons</td>
<td>&gt; 2000 m²</td>
<td>&gt; 20 employees</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 260 m² and 20 employees</td>
<td>mandatory</td>
<td>All escape routes / all emergency exits / areas prone to panic / special buildings</td>
<td>mandatory for more than 2 floors and &gt; 50 rooms</td>
<td>50 persons</td>
</tr>
<tr>
<td>Shopping centres</td>
<td>mandatory</td>
<td>&gt; 1000 m²</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 260 m² and 20 employees</td>
<td>mandatory</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>50 persons</td>
<td>50 persons</td>
<td>mandatory</td>
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<tr>
<td>Garages</td>
<td>&gt; 10 persons</td>
<td>&gt; 150 persons</td>
<td>Enclosed &gt; 1000 m²</td>
<td>mandantory</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
<tr>
<td>Restaurants</td>
<td>&gt; 10 persons</td>
<td>&gt; 150 persons</td>
<td>&gt; 400 seats</td>
<td>mandatory</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
<tr>
<td>Cinemas</td>
<td>mandatory</td>
<td>&gt; 100 persons</td>
<td>mandantory</td>
<td>mandantory</td>
<td>mandantory</td>
<td>mandantory</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
<tr>
<td>Theatres</td>
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<td>&gt; 100 persons</td>
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<td>mandantory</td>
<td>mandantory</td>
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<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
<tr>
<td>Churches</td>
<td>No general regulations / requirements from building authorities</td>
<td>&gt; 150 persons</td>
<td>No requirement</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
<td>mandatory</td>
</tr>
<tr>
<td>Hospitals</td>
<td>mandantory</td>
<td>mandantory</td>
<td>mandantory</td>
<td>mandantory</td>
<td>mandantory</td>
<td>mandantory</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>50 persons</td>
<td>mandatory</td>
</tr>
<tr>
<td>Public buildings</td>
<td>&gt; 10 persons</td>
<td>&gt; 100 persons</td>
<td>&gt; 200 persons</td>
<td>&gt; 20 employees</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
<tr>
<td>Schools</td>
<td>&gt; 10 persons</td>
<td>&gt; 150 persons</td>
<td>Escape routes + rooms without daylight</td>
<td>mandantory</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
<tr>
<td>Tunnels / underground railways</td>
<td>No general regulations / requirements from building authorities</td>
<td>mandantory</td>
<td>No general regulations / requirements from building authorities</td>
<td>mandantory</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
<tr>
<td>Department stores and shops</td>
<td>mandantory</td>
<td>&gt; 1000 m²</td>
<td>&gt; 2000 m²</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 260 m² and 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
<td>mandatory</td>
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<tr>
<td>Manoeuves / temporary structures</td>
<td>mandantory</td>
<td>&gt; 150 persons</td>
<td>&gt; 200 persons</td>
<td>&gt; 50 persons</td>
<td>New buildings: mandatory / Old buildings: Required by fire and rescue service</td>
<td>&gt; 100 m² or &gt; 20 employees</td>
<td>All escape routes / all emergency exits / areas prone to panic</td>
<td>mandatory</td>
<td>250 m²</td>
</tr>
</tbody>
</table>

Source: Tridonic August 2005
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Introduction and overview of emergency lighting

More information about emergency lighting: “Home and Building Automation”

Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Introduction and overview of emergency lighting

KNX DALI Gateway DG/S x.64.x.1

- DALI emergency converter according to IEC 62 386 device type 1 (self-contained emergency lighting) are supported
- It controls and monitors an emergency lighting system and provides the information (test results) on standardized DALI telegrams according to IEC 62 386-202
- The DALI Gateway evaluates this information and transfers the test results on the KNX according to KNX standards (DPTs)
  - General and emergency lighting in one system with more functions and less investment
  - Great flexibility and easy commissioning from planning to completion
  - In any commercial project with KNX, DALI and emergency lighting it’s a must to discuss this solution

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Introduction and overview of emergency lighting

**KNX DALI Gateway DG/S x.64.x.1**

- Provides no functionality in terms of the emergency lighting regulations, e.g. logging functions or other associated stipulated functions
- Serves as an intelligent mediator between KNX and DALI
- The various mandatory emergency lighting tests, e.g. function or duration tests, can be triggered via KNX using group objects, and the result provided in the same way
- This information can then be used for higher-level management (IoT Dashboard Server DBS/S, BMS or visualisation) of the emergency lighting, which triggers at prescribed times and captures, saves or logs the result provided on KNX via the DALI Gateway
Introduction and overview of emergency lighting

Higher-level management systems

- IoT Dashboard Server DBS/S
- Building management system
- Visualisation software

For example:

- NETxAutomation
  - www.netxautomation.com
- EisBaer
  - https://www.busbaer.de/en
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Introduction and overview of emergency lighting

Webinar KNX Assoc. “KNX/DALI Lighting”
– A joint webinar by KNX Assoc., ABB and NETxAutomation on KNX/Dali lighting control (June 2017)

YouTube: “KNX Applications and Solutions - KNX/DALI Lighting Webinar”
Emergency lighting tests

- The various mandatory tests for emergency lighting are controlled by KNX group objects and the results are sent on KNX by further group objects
- The DALI Gateway sends a command to start a test (=request)
- This command is now pending in the emergency lighting converter and it decides when the test is carried out (running), e.g. the battery will still be charged after an emergency lighting event
- A further option for emergency lighting tests is the use of an automated test interval controlled by the DALI emergency lighting converter itself
  - The interval duration is defined by KNX parameters
  - KNX group objects send the results on KNX
- With an ETS download, the results of the emergency light tests are deleted
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Introduction and overview of emergency lighting

Emergency lighting tests: Function test

- The function test is carried out by the emergency lighting converter itself
- The test is implemented on the basis of IEC 62 386-202 and covers the
  • Functional security of the emergency lighting converter electronics
  • Correct operation of a lamp
  • Check the switch-over device for an individual battery
- The test is requested at a parametrizable interval in the emergency lighting converter or by a KNX group object
Emergency lighting tests: Duration test

- The duration test is carried out by the emergency lighting converter itself
- The duration test is implemented on the basis of IEC 62 386-202 and is used to determine whether the individual battery supplies the system within the limits of the rated operating duration in emergency lighting operation
- The test is requested at a parametrizable interval in the emergency lighting converter or by a KNX group object
Emergency lighting tests: Partial duration test

- The partial duration test is carried out by the emergency lighting converter itself
- The DALI Gateway controls the partial duration test with the aid of the DALI device duration test
- This is possible because a partial duration test is not stipulated or described by the standards
- It is just an additional option to improve the operation readiness of emergency lighting simply and quickly without fully discharging the battery
- The partial duration test is a duration test that is stopped by the DALI Gateway after a set time
- The test is requested at a parametrizable interval in the emergency lighting converter or by a KNX group object
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Introduction and overview of emergency lighting

General

– A DALI device to IEC 62 386-202 (DT1), for self-contained emergency lights, is described in this presentation in shortened form as an emergency lighting converter

– The DALI address range is from 0 to 63 and is shifted by "1" compared to KNX (1 to 64)
  • A ballast has the DALI address “5”, e.g. DALI configuration software tool; trigger, status and result KNX group objects
  • and in KNX the device no. “6” e.g. ETS parameter, ABB i-busTool

– DALI emergency lighting converter are not be integrated in “Standby switch-off” function
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Function “Standby switch-off”

“Standby switch-off” (only DG/S x.64.5.1)

DALI emergency lighting converter are not be integrated in “Standby switch-off” function

All lights are turned off and all ballasts are in standby at a DALI output

- After an adjustable delay time (1…65,535sec.) the standby switch-off function is activated
- A switch “OFF” telegram is sent on KNX
- All Switch Actuator SA/S channels linked with this group address switches off the ballasts supply voltage
  → All connected ballasts are deenergized
- The DG/S message “Ballast fault” is suppressed
- The “Standby switch-off” function saves energy
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Commissioning of emergency lighting converter in the ETS
Commissioning

- Set ETS parameter: DALI Output X → X DALI configuration
  - Enable DALI emergency lighting converter
- Set ETS parameter: DALI Output X → X Em. lighting converter
  - Allow automatic emergency lighting test
  - Enable Inhibit/rest mode function
  - Enable addressed group objects
  - Enable used emergency lighting converter
- Set ETS parameter: DALI Output X → X Em. lighting converter → Emergency light X (template or individual)
  - Brightness value in emergency mode
  - Reaction to Inhibit/rest mode
  - Enable group objects
Enable DALI emergency lighting converter

This parameter enables the emergency lighting

- **No**
  - Emergency lighting converter control is not supported

- **Yes**
  - The DALI output supports control of DALI emergency lighting converters (type 1 DALI devices, self-contained emergency lights to IEC 62 386-202)
  - Corresponding parameter windows and group objects are enabled
  - Up to 64 DALI emergency lighting converters can be connected to each output
  - DALI emergency lighting converters can also be assigned to a DALI group for a clearer overview (no group function)
Enable group object "Number of statistics fault"

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

- No
  - The group object is not enabled
- Yes
  - The group object is enabled
  - This coded 4-byte group object indicates the number of ballast, lamp and emergency lighting converter faults as well as the error state:
    - Bit 8 to 13: Number of emergency lighting converters on the output (without ballasts) which are communicating
    - Bit 15: All emergency lighting converters are OK/at least a fault
    - Bit 22: None of the converters has a lamp fault
    - Bit 30: None of the converters have a ballast fault

For example: “00” “00” “03” “0C” hex:
“03” hex “00000011”: bit 8…13 “000011” → 3 converter
“03” hex “00000011”: bit 15 “0” → all EL converters are OK
Enable group object "Number of statistics fault"

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

- **No**
  - The group object is not enabled
- **Yes**
  - The group object is enabled
  - This coded 4-byte group object indicates the number of ballast, lamp and emergency lighting converter faults as well as the error state:
    - Bit 8 to 13: Number of emergency lighting converters on the output (without ballasts) which are communicating
    - Bit 15: All emergency lighting converters are OK/at least a fault
    - Bit 22: None of the converters has a lamp fault
    - Bit 30: None of the converters have a ballast fault

For example: “00” “41” “03” “0C” hex: “03” hex “00000011”: bit 8…13 “000011” → 3 converter “03” hex “00000011”: bit 15 “0” → all EL converters are OK “41” hex “01000001”: bit 22 “1” → At least one converter has a lamp fault
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Commissioning of emergency lighting converter

Allow automatic emergency lighting tests

This parameter allows the automatic emergency lighting tests

Note: The emergency lighting converters must support this!

- No
  - The automatic emergency lighting test function is not enabled for the output (recommended)
  - All tests are triggered only via the KNX DALI Gateway DG/S

- Yes
  - The automatic emergency lighting test function is enabled
  - The automatic emergency lighting test is an optional function of the DALI standard for emergency lighting converters
  - Therefore, check in advance whether the emergency lighting converter has the capability to run an automatic test
  - The test result is provided by the converter, read by the DALI Gateway and sent on KNX
Automatic emergency lighting tests: Offset time

Yes – the automatic emergency lighting test function is enabled
This parameter defines an offset at 15 minute intervals between automatic test starts for two neighboring emergency lighting converters
This offset can be used to avoid a situation where all the emergency lighting converters at once are being tested or in the post-test recharging cycle

- Offset time between testing two consecutive emergency lighting converters
  - 0…1…255 x15 min
Automatic emergency lighting tests: Enable synchr. fct.

Yes – the automatic emergency lighting test function is enabled
This parameter enables automatic emergency lighting test function

- No
  • The synchronization of the automatic emergency lighting test function is not enabled

- Yes
  • The group object “Synch. auto emergency lighting tests” is enabled and the DALI Gateway sends the start request for the automatic emergency lighting test
  • The request is sent only to those converters to be included
  • Settings for this are made in the “Emergency light x” parameter window using the parameters “Include in automatic function test” or “Include in automatic duration/partial duration test”
Enable function Inhibit/rest mode

- **Rest mode** is a state in which the emergency lighting is switched off during its emergency lighting operation.
- **Inhibit mode** is a timed state in which the emergency lighting does not switch to emergency operation in the event of a mains voltage failure.

**DANGER!**
- In both cases, the emergency lighting no longer fulfills its safety function and remains off.
- For this reason, use this function with great care.
- It can be helpful to use Inhibit/rest mode during the construction phase when the power supply is often switched off, to prevent the emergency lighting battery from constantly charging/discharging and thus conserve the emergency lighting.
Enable function Inhibit/rest mode

This parameter enables the “Inhibit” and “rest mode”

- No
  - The Inhibit/rest mode function is not enabled for the output
- Yes
  - The Inhibit/rest mode function and the “Activate Inhibit/rest mode” group object on the output are enabled
  - Whether or not an emergency lighting converter evaluates the group object and executes the Inhibit/rest mode function is defined in the “Emergency light x” parameter window
  - This means it is possible to deactivate the emergency lighting function so as to conserve the battery charge, for example, during a construction/commissioning phase.
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Commissioning of emergency lighting converter

Automatically exit Inhibit/rest mode

Yes – function Inhibit/rest mode is enabled
This parameter defines how long the emergency lighting converter stays in Inhibit/rest mode
There will be no emergency lighting function during this time!
The emergency lighting converter does not switch on the emergency lighting in the event of a mains voltage failure
– Automatically exit Inhibit/rest mode after
  • 1…8…48 h

Note:
The time interval is 15 minutes. The DALI Gateway repeats the DALI Inhibit and Rest command for the emergency lighting converter approximately every 5 minutes.
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Commissioning of emergency lighting converter

Send status message Inhibit/rest mode

Yes – function Inhibit/rest mode is enabled
This parameter defines
– No
  • No Inhibit/rest mode activation status is sent on KNX
– Yes
  • The “Activate emergency lighting Inhibit/rest mode/Status” group object not only activates the mode but also displays the status, i.e. whether at least one emergency lighting converter on the output is in Inhibit/rest mode
  • Information on individual emergency lighting converters is determined by the “Emergency lighting converter status” group object
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Commissioning of emergency lighting converter

Addr. group object: “Trigger em. lighting test (addr.)”

This parameter enables the addressed group object “Trigger em. lighting test (addr.)” per channel (trigger test and address)

- No
  - No addressed group object for the output is enabled
  - Regardless of this, a test can be started via the group object for the individual emergency lighting converters

- Yes, KNX DPT_CTC format
  - This enables an addressed group object which triggers and stops an emergency lighting test
  - The coding of the group object corresponds to the KNX DPT specification for interworking between KNX devices

- Yes, DGN/S1.16.1 format
  - The coding for the group object corresponds to the predecessor device DALI Gateway DGN/S 1.16.1
  - Backwards compatible if the DGN/S 1.16.1 needs to be replaced

Group object is not required according to the KNX standards
Often used in visualizations, because only one group object has to be triggered
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Commissioning of emergency lighting converter

Addr. group object: “Em. lighting test status (addr.)”

This parameter enables the addressed group object “Em. lighting test status (addr.)” per channel (status test and address)

- No
  - The status of the emergency lighting test is not sent on KNX in an addressed group object for the output

- Yes
  - The “Em lighting test status (addr)” addressed group object for the output is enabled
  - This group object sends the status of the emergency lighting test (pending, running, finished) on KNX
  - The status is sent after every change, so no status is lost provided there is a connection between the emergency lighting converter and the DALI Gateway
  - The last status of the currently selected emergency lighting converter is sent on request

Group object is not required according to the KNX standards
Often used in visualizations, because only one group object has to be read out
Address group object: “Em. lighting test result (addr.)”

This parameter enables the addressed group object “Em. lighting test result (addr.)” per channel (test result and address)

- No
  - The result of the emergency lighting test is not sent on KNX
- Yes
  - The “Em. lighting test result (addr.)” group object is enabled
  - This group object sends the result of the emergency lighting test on KNX
  - The result is sent after every change, so no result is lost provided there is a connection between the emergency lighting converter and the DALI Gateway
  - On KNX recovery the latest results are sent if they are different from the previous ones sent
  - The last result of the currently selected emergency lighting converter is sent on request

Group object is not required according to the KNX standards
Often used in visualizations, because only one group object has to be read out
Stop all em. lighting tests

This parameter enables the group object “Stop all em. lighting tests”

- No
  - The “Stop all em lighting tests” group object is not enabled
- Yes
  - The “Stop all em. lighting tests” group object is enabled
  - This group object is used to stop all emergency lighting tests
  - Running tests are interrupted
  - Pending tests are canceled
Use emergency lighting converter X

This parameter specifies which emergency lighting converters the DALI Gateway output controls.

Individual DALI emergency lighting converters can be hidden to provide a clear, compact parameter structure.

- **No**
  - “Emergency lighting converter X” is not enabled for the output
  - The corresponding parameter windows and group objects are hidden → clear and concise ETS view

- **Yes**
  - “Emergency lighting converter X” is enabled for the output
  - Further parameter windows and group objects for emergency light X are visible
Emergency light template parameter window

The template window has a major advantage in that the settings made here relate to all emergency lighting converters, so each converter on the DALI output reacts in the same way. The template parameter window is the same as the individual parameter window except for the fact that it relates to all emergency lighting converters while the individual window relates only to a single converter.

In the “Emergency light X” parameter window you can choose whether the emergency converter applies the settings from the template or is set individually.
Brightness value in emergency mode

This parameter defines the brightness value adopted in emergency mode.

The value set by this parameter is stored in the emergency lighting converter and therefore remains available even if there is no connection to the DALI Gateway.

The emergency lighting converters must support brightness value parametrization.

Most converters have a fixed emergency brightness in order to ensure an emergency mode compatible with the battery and the lamp power.

- Brightness value in emergency mode
  - 100 % (255), 99 % (252), … 0.4 % (1)
Prolong time at end of emergency lighting operation

This parameter defines in minutes how long the emergency lighting remains on at this brightness value when emergency mode ends, before it is re-enabled for KNX telegrams.

- Options
  - 0…127 min
Time limit for triggering emergency lighting test

A converter may not always be able to implement a requested emergency lighting test immediately – for example, because the battery charge is low.

This parameter defines a time span (TEST EXECUTION TIME TIMEOUT) in days, within which the test must be run.

This time is stored in the emergency lighting converter and evaluated.

A setting of 0 means that the emergency lighting test must be run within 15 minutes.

The status of an emergency lighting test is sent via group objects (e.g. “Emergency light converter status” or “Em. lighting test status (addr.)”), or can be queried if necessary.

- Options
  - $0...7...255$ d
Auto. calcul. period of partial duration test with rated time

The period for the partial duration test is independent of whether the test is triggered automatically, or manually via a group object

- No
  - The partial duration test period must be set manually
  - Period for partial duration test: 1…600
    The value set here is multiplied by 2 to obtain a time in minutes

- Yes
  - The DALI Gateway reads the rated duration of the battery from the emergency lighting converter and uses this to calculate how long the partial duration test should run for (test time = 10% of rated duration)
Em. Light. conv. reacts to group object “Inhibit/rest mode”

- No
  - The “Activate emergency lighting Inhibit/rest mode” group object is not evaluated for the converter

- Yes
  - The “Activate emergency lighting Inhibit/rest mode” group object is evaluated so that the emergency lighting converter receives the inhibit/rest command via the DALI Gateway
  - This means it is possible to deactivate the emergency lighting function so as to conserve the battery charge, for example, during a construction/commissioning phase

Rest mode is a state in which the emergency lighting is switched off during its emergency lighting operation
Inhibit mode is a timed state in which the emergency lighting does not switch to emergency operation in the event of a mains voltage failure
Automatic emergency lighting test

The automatic emergency lighting test (test sequence) is an optional function of the DALI standard for emergency lighting converters to IEC 62386-202

Therefore, check in advance whether the emergency lighting converter has the capability to run an automatic test. Otherwise the test can be triggered only via the DALI Gateway.

The automatic emergency lighting test is controlled by the emergency lighting converter itself.

It is possible to specify which tests run (duration or function) at what intervals and whether there is a time offset between tests for individual converters.

There is no longer any need to trigger emergency lighting tests via the DALI Gateway.

The test result is provided by the converter itself, and on request it can be sent via DALI and forwarded by the DALI Gateway on KNX.
Automatic emergency lighting test

It is preferable to trigger emergency lighting tests via a central emergency lighting controller managed by a building management system (e.g. BMS, visualization)

The advantage of this is precise triggering, logging, monitoring and saved results

The same emergency lighting controller handles the control and logging

In the case of automatic emergency lighting tests, the test is triggered by the emergency lighting converters, and only the logging is handled by the emergency lighting controller

Another reason for using a emergency lighting controller is the sometimes very large tolerances on converter timers, which make time-based logging imprecise
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Commissioning of emergency lighting converter

Include in automatic functional test

This parameter defines the time interval, in days, that the emergency lighting converter uses to automatically and cyclically run the function test.

The standard value of 7 days corresponds to the default factory setting on the converter.

- No
  - The emergency lighting converter does not run an automatic function test
  - The test can be explicitly triggered via a group object
- Yes
  - The emergency lighting converter runs the automatic function test
  - The cycle time for repeating the test can be set in the next parameter
  - Test cycle: 1...7...255 days

![Diagram showing configuration options for emergency lighting converter]
Include in automatic duration/partial duration test

This parameter defines the time interval, in weeks, that the emergency lighting converter uses to automatically and cyclically run the duration/partial duration test

- No
  - The emergency lighting converter does not run any automatic duration/partial duration tests
  - The test can be explicitly triggered via a group object

- Yes
  - The emergency lighting converter runs the automatic duration/partial duration test
  - The cycle time and type of test can be set in the next parameter
  - Test cycle: 1…52…97 weeks
  - Type: Duration, partial duration or duration&partial duration test
Enable group object “Trigger em. lighting test”

This parameter enables the group object “Trigger em. lighting test”

- No
  - No group object is enabled
  - Regardless of this, a test can be started for the converters via the addressed group object

- Yes, KNX DPT_CTC format
  - This enables a group object which triggers and stops an emergency lighting test
  - The coding of the group object corresponds to the KNX DPT specification for interworking between KNX devices

- Yes, DGN/S1.16.1 format/format with status
  - The coding for the group object corresponds to the predecessor device DALI Gateway DGN/S 1.16.1
  - Backwards compatible if the DGN/S 1.16.1 needs to be replaced
Enable group object “Em. lighting test result”

This parameter enables the group object “Em. lighting test result”

- No
  - The status of the emergency lighting test is not sent on KNX

- Yes
  - The “Em lighting test result” group object is enabled
  - This group object sends the result of the emergency lighting test on KNX
  - Options: After a change, on request or after a change or on request
Enable group object “Emergency light. converter status”

This parameter enables the group object “Emergency light. converter status”

- No
  - The status of the emergency lighting converter is not sent on KNX
- Yes
  - The “Emergency lighting converter status” group object is enabled
  - This group object sends the status of the emergency lighting converter on KNX
  - Options: After a change, on request or after a change or on request
**Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”**

Commissioning of emergency lighting converter

**Em. light. con. disconnects a ballast from supply voltage in tests**

This parameter is designed for emergency lighting where the converter and ballast use the same lighting equipment/lamp. In such cases, the converter cuts off the ballast's supply voltage during an emergency lighting test. This triggers a ballast fault that is sent via the DALI and displayed in the DALI-Gateway.

This parameter determines whether the fault is ignored or displayed:

- **No**
  - The DALI Gateway displays the resulting ballast fault
  - The fault is not inhibited

- **Yes**
  - The resulting ballast fault is ignored
  - No fault is displayed on the DALI Gateway
  - Ballast address: 1 ... 64
Parameter setting

This parameter defines whether the emergency lighting converter applies the settings from the template or is set individually:

- **Apply from template:**
  - The emergency lighting converter takes its parameters from the template

- **Individual:** The emergency lighting converter is individually parametrized
  - Corresponding parameters are shown
  - The content of the individual parameters is the same as that in the template parameters
  - The advantages of using the template for parametrization are:
    - A clearly organized, compact ETS parameter interface
    - All groups and ballasts react in the same way
    - Fast parameter changes (changes only in the template)
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Emergency Lighting Test – ETS Group objects per output A/B and per emergency lighting converter
Overview group objects per Output A/B

- **2 Byte**
  - Trigger emergency lighting test addressed

- **1 Bit**
  - Stop all emergency lighting Test
  - Synchronize autom. em. Lighting Test

- **1 Bit**
  - Activate/Status Inhibit/Rest Mode

---

<table>
<thead>
<tr>
<th>Nur Group Address</th>
<th>Name</th>
<th>Object Function</th>
<th>Length</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>57</td>
<td>1/4/57</td>
<td>Output A</td>
<td>1 bit</td>
<td>start/stop</td>
</tr>
<tr>
<td>58</td>
<td>1/4/58</td>
<td>Output A</td>
<td>2 bytes</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>1/4/59</td>
<td>Output A</td>
<td>2 bytes</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>1/4/60</td>
<td>Output A</td>
<td>4 bytes</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>1/4/61</td>
<td>Output A</td>
<td>1 bit</td>
<td>start/stop</td>
</tr>
<tr>
<td>62</td>
<td>1/4/62</td>
<td>Output A</td>
<td>1 bit</td>
<td>start/stop</td>
</tr>
</tbody>
</table>

---

Emergency lighting test

- **4 Byte**
  - Status addressed

Stop all emergency lighting Test

- **1 Bit**
  - Trigger emergency lighting test addressed

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Emergency Lighting Test – Addressed group objects per output A/B

“Trigger emergency lighting test addressed”

- This 2-byte group object triggers an emergency lighting test
- Data format can be either KNX format DPT_CTC (DPT converter test control) or DGN/S 1.16.1 (format to be compatible with former device DGN/S)
- High Byte
  Contains a number which determines the type of emergency lighting test to be started
- Low Byte:
  Contains a number between 0…63 (→ KNX 1…64) which represents DALI device to be tested

<table>
<thead>
<tr>
<th>Name</th>
<th>Object Function</th>
<th>Length</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output A</td>
<td>Trigger emergency lighting test addr. (CTC)</td>
<td>2 bytes</td>
<td></td>
</tr>
</tbody>
</table>
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Emergency Lighting Test – Addressed group objects per output A/B

“Emergency lighting test status addressed”

- High Byte
  - Contains in coded form the test state of the emergency lighting converter
  - Status information of the converter
  - Which test is running
  - Test is running, pending, stopped or finished
  - Lamp or converter fault detected
  - ...

- Low Byte:
  Contains a number between 0…63 (→ KNX 1…64) which represents DALI device to be tested

<table>
<thead>
<tr>
<th>Group Address</th>
<th>Name</th>
<th>Object Function</th>
<th>Length</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4/59</td>
<td>Output A</td>
<td>Em. lighting test addr.</td>
<td>2 bytes</td>
<td></td>
</tr>
</tbody>
</table>
“Emergency lighting test result addressed”

- This group object consists of four bytes
- The three individual bytes contain information about a DALI emergency lighting converter
  - Kind of last test (bit 8…10)
  - Test successful or failed (bit 20…23)
  - Battery fault
  - Battery capacity
  - Discharge time
  - Lamp or converter failure
  - ...
- Low Byte: Contains a number (0…63) which represents the tested DALI device

<table>
<thead>
<tr>
<th>Number</th>
<th>Group Address</th>
<th>Name</th>
<th>Object Function</th>
<th>Length</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>160</td>
<td>1/4/60</td>
<td>Output A</td>
<td>Em. lighting test result addr</td>
<td>4 bytes</td>
<td></td>
</tr>
</tbody>
</table>
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Emergency Lighting Test – Addressed group objects per output A/B

Test: Emergency lighting converter addressed

- Trigger an addressed emergency lighting test of a converter
- Status emergency lighting test addressed
- Result emergency lighting test addressed

Note: The trigger, status and result of the emergency lighting test for each converter can be sent also on KNX with the individual group objects per converter
Test: Emergency lighting converter addressed

- Trigger an function test of converter 22: “01” “95” hex – “00000001” “10010101”
  - High byte – bit 8-10: 001 function test
  - Low byte – bit 0-5: 010101 converter 21 (→ KNX no. 22) and bit 7: 1 trigger
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Emergency Lighting Test – Addressed group objects per output A/B

**Test: Emergency lighting converter addressed**

- Trigger an function test of converter 22
- Status test addressed

  - “29” “15” hex – “00101001” “00101011”: 01 pending, 001 function test, 010101 converter 21 (→ KNX no. 22)
  - “31” “15” hex – “00110001” “00010101”: 10 running, 001 function test, 010101 converter 21 (→ KNX no. 22)
  - “01” “15” hex – “00100001” “00010101”: 00 finished, 001 function test, 010101 converter 21 (→ KNX no. 22)
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Emergency Lighting Test – Addressed group objects per output A/B

Test: Emergency lighting converter addressed

- Trigger an function test of converter 22
- Status test addressed
- Result test addressed

- “00” “00” “01” “15” hex – “00000000” “00000001” “00 010101”: 0 no function test fault, 0 function test started in predefined time, 1 last test was a function test, 010101 converter 21 (→ KNX no. 22)
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Emergency Lighting Test – Addressed group objects per output A/B

**Status: Emergency lighting converter addressed**

- Read the status of converter 22 addressed
  - The bit 0-5 contains the converter address ("010101" DALI 21 → KNX no. 22)
  - The value of bit 7 must be “1” (status value request)
    - If a telegram with a set bit 7 is received, it is interpreted as a test state status request and corresponding feedback is sent
  - High byte: bit 8-10 kind of last test (001 function test, 011 duration test, 010 partial duration test,...)
  - Send value “01” “95” hex – “00000001” “10010101”: **001 function test, 1 status value request, 010101 converter 21 (→ KNX no. 22)**
  - Answer “01” “15” hex – “00000001” “00010101”: **1 function test, 010101 converter 21 (→ KNX no. 22)**

<table>
<thead>
<tr>
<th>Group Address</th>
<th>1/5/2</th>
<th>Data point type</th>
<th>7. 2-byte unsigned value</th>
<th>Delay time[sec]</th>
<th>Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last received value</td>
<td>01 15</td>
<td>Value</td>
<td>$01$ $95$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Emergency Lighting Test – Group objects per emergency lighting converter X

Overview group objects per emergency lighting converter

<table>
<thead>
<tr>
<th>Num/ Group Address</th>
<th>Name</th>
<th>Object Function</th>
<th>Length</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1282, 1/5/11</td>
<td>Output A - emergency light 3</td>
<td>Trigger emergency lighting test (CTC)</td>
<td>1 byte</td>
<td>converter test control</td>
</tr>
<tr>
<td>1283, 1/5/12</td>
<td>Output A - emergency light 3</td>
<td>Em. lighting test result</td>
<td>6 bytes</td>
<td>DALI converter test result</td>
</tr>
<tr>
<td>1284, 1/5/13</td>
<td>Output A - emergency light 3</td>
<td>Emergency lighting converter status</td>
<td>2 bytes</td>
<td>DALI converter status</td>
</tr>
</tbody>
</table>

Trigger emergency lighting test

1 Byte

Emergency lighting test Results

2 Byte

6 Byte
“Trigger emergency lighting test (CTC)”

- This 1-byte group object triggers an emergency lighting test for emergency lighting converter X
- Depending on Value (0-6) different tests (duration, partial duration or function) for the assigned emergency converter will be triggered or which action to execute
- Data format can be either KNX format DPT_CTC (DPT 20.611 converter test control) or DGN/S 1.16.1 (format to be compatible with former device DGN/S)
- Option: Trigger Emergency Lighting Test Status for DGN/S format only
  - Additional status information in group object available (bit 3…7)
"Emergency lighting converter status"

- 2-byte status information (DPT 244.600 DALI converter status) of the converter X, e.g.
  - Normal or Emergency mode active
  - Inhibit or Rest mode active
  - Any test running
  - Which test is running
  - Any fault status detected
  - …

<table>
<thead>
<tr>
<th>Numb</th>
<th>Group</th>
<th>Address</th>
<th>Name</th>
<th>Object Function</th>
<th>Length</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>001284</td>
<td>1/5/13</td>
<td>Output A - emergency light 3</td>
<td>Emergency lighting converter status</td>
<td>2 bytes</td>
<td>DALI converter status</td>
<td></td>
</tr>
</tbody>
</table>

CM: Status indicating whether the converter X is in emergency operation or not.

- 0: No information available
- 1: Normal mode active, all OK (emergency lighting converter switch to emergency operation if there is no mains voltage failure)
- 2: Inhibit mode active
- 3: Inhibit mode activated by hardware
- 4: Rest mode active
- 5: Emergency mode active
- 6: Extended emergency lighting mode active
- 7: Emergency lighting converter in forced off phase

HS: Emergency lighting converter hardware status (bit-coded)

Bit 0: 1 = Inhibit mode active via hardware
Bit 1: 1 = Inhibit mode active via hardware
Bit 2: 1 = Hardware switch is on (emergency light activated via hardware input)
Bit 3: 1 = Hardware switch is off

FP: Status indicating whether a function test is pending (2-bit numeric value 0…3)

- 0 = Status unknown
- 1 = No function test pending
- 2 = Function test pending
- 3 = Resolved, no function

DP: Status indicating whether a duration test is pending (2-bit numeric value 0…3)

- 0 = Status unknown
- 1 = No duration test pending
- 2 = Duration test pending
- 3 = Resolved, no function

PP: Status indicating whether a partial duration test is pending (3-bit numeric value 0…3)

- 0 = Status unknown
- 1 = No partial duration test pending
- 2 = Partial duration test pending
- 3 = Resolved, no function

CF: General fault status (2-bit numeric value 0…3)

- 0 = Status unknown
- 1 = No fault present
- 2 = At least one fault present
- 3 = Resolved, no function
“Emergency lighting test result”

- 6-byte result (DPT 245.600 DALI converter test result) of an emergency lighting test for emergency lighting converter X
- Result depending on type of emergency lighting test triggered, e.g.
  - Test successful or failed
  - Way of triggering
  - Battery capacity
  - Battery discharging time
- …

<table>
<thead>
<tr>
<th>Num:</th>
<th>Group Address</th>
<th>Name</th>
<th>Object Function</th>
<th>Length</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1283</td>
<td>1/5/12</td>
<td>Output A - emergency light 3</td>
<td>Em. lighting test result</td>
<td>6 bytes</td>
<td>DALI converter test result</td>
</tr>
</tbody>
</table>

- LTRF Result of last function test (4-bit numeric value 0...15)
  - 0 = Reserved, no function
  - 1 = Function test passed within execution time
  - 2 = Function test failed but not within execution time
  - 3 = Function test failed
  - 4 = Function test failed. Result determined outside execution time
  - 5 = Function test stopped manually

- LTRD Result of last duration test (4-bit numeric value 0...15)
  - 0 = Reserved, no function
  - 1 = Duration passed within execution time
  - 2 = Duration passed but not within execution time
  - 3 = Duration failed
  - 4 = Duration failed. Result determined outside execution time
  - 5 = Duration halted manually

- LTRP Result of last partial duration test (4-bit numeric value 0...15)
  - 0 = Reserved, no function
  - 1 = Partial duration passed within execution time
  - 2 = Partial duration passed but not within execution time
  - 3 = Partial duration failed
  - 4 = Partial duration failed. Result determined outside execution time
  - 5 = Partial duration halted manually

- …

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Emergency Lighting Test – Group objects per emergency lighting converter X

**Test: Emergency lighting converter X**

- Trigger emergency lighting test of converter X
- Status emergency lighting test of converter X
- Result emergency lighting test of converter X
- Status emergency lighting test of converter X

![Start Function Test dialog]

**Note:** The trigger, status and result of the emergency lighting test for each converter can be sent also on KNX with the addressed group objects per output.
Test: Emergency lighting converter X

- Trigger function test of converter 22
  - Select value “Start Function Test (FT)"
  - “01” hex – “00000001": 1 Function test requested
Test: Emergency lighting converter X

- Trigger function test of converter 22
- Status of converter 22

  - “70” “55” hex – “01110000” “01010101”:
    - **0111** status of various operating states: Function test running,
    - **01** no function test pending,
    - **01** general fault status: No faults present
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Emergency Lighting Test – Group objects per emergency lighting converter X

Test: Emergency lighting converter X

- Trigger function test of converter 22
- Status of converter 22
- Result of converter 22
  • “10” “00” “80” “00” “00” “00” Hex – “00010000” “00000000” “10000000” “00000000” “00000000” “00000000”
  0001 result of last function test: Function test passed within execution time
  10 method used to trigger last function test: Triggered by gateway
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Emergency Lighting Test – Group objects per emergency lighting converter X

Test: Emergency lighting converter X

- Trigger function test of converter 22
- Status of converter 22
- Result of converter 22
- Status of converter 22

• “10” “55” hex – “00010000” “01010101”:
  01 status of various operating states: Normal mode is active, all OK, 01 no function test pending,
  01 general fault status: No faults present
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Emergency Lighting Test – Group objects per emergency lighting converter X

**Status: Emergency lighting converter X – Emergency mode active**

- Status converter 22
  - “50” “55” hex – “01010000” “01010101”: 0101 status of various operating states: Emergency mode active
  - “10” “55” hex – “00010000” “01010101”: 0001 status of various operating states: Normal mode is active, all OK

<table>
<thead>
<tr>
<th>Group Address</th>
<th>Data point type</th>
<th>Last received value</th>
<th>Delay time[sec]</th>
<th>Info</th>
</tr>
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<tr>
<td></td>
<td></td>
<td>12 55</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>Time</td>
<td>Src Flk Plk Source Ad</td>
<td>Source Name</td>
<td>Dest Flk Plk Destination Name</td>
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<td>3.6.10</td>
<td>DG/S2.64.5.1... 1/5/16</td>
</tr>
</tbody>
</table>
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

ABB i-bus® Tool
Overview

- The ABB i-bus® Tool can be used to read out data, permits commissioning (DALI) and diagnostics without ETS
- DALI device readdressing and assignment to DALI groups are performed in the ETS independent ABB i-bus® Tool so that, for example, a facility manager without ETS knowledge is capable of exchanging and reassigning DALI devices if maintenance is required.
- In addition, the error states of the individual DALI devices (ballasts, emergency lighting converters and color-controllable lamps) are represented graphically with the ABB i-bus® Tool
- The ABB i-bus® Tool can also be used for function checks during commissioning, e.g. emergency lighting tests
- You can download the i-bus® Tool free of charge from our homepage (www.abb.com/knx)
Page “DALI”: Information from device and ETS configuration

**Information read from the ballast (device)**
1. Device monitored
2. DALI communication fault (framing error)
3. Emergency device detected (DT1)
4. Group control (G) or single control (S) detected
5. DALI device address
8. Colour device detected (DT8)

**Information from ETS configuration (downloaded)**
6. Emergency device enabled (DT1)
7. Group control (G) or single control (S) enabled
9. Colour device enabled (DT8)
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Emergency Lighting Test – ABB i-bus® Tool

Page “DALI”: Information from device and ETS configuration

**Information read from the ballast (device)**
1. Device monitored
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5. DALI device address
6. Colour device detected (DT8)

**Information from ETS configuration (downloaded)**
6. Emergency device enabled (DT1)
7. Group control (G) or single control (S) enabled
8. Colour device enabled (DT8)
Page “Overview”

- Only the DALI ballasts connected to the DALI output and groups are displayed on the overview page.
- The system function state is shown very rapidly with the displayed functions.
- The reaction of DALI devices can often be explained using this information.
- Information on emergency lighting converter is shown in the detailed view.
Only the emergency lighting converters (DALI type 1 according to EN 62386-202) that are detected by the DALI Gateway are displayed.

Page “Emergency”
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Emergency Lighting Test – ABB i-bus® Tool

Page “Emergency”

Only the emergency lighting converters (DALI type 1 according to EN 62386-202) that are detected by the DALI Gateway are displayed

- Device Number
  - Address [1...64] of the emergency lighting converter

- Emergency level
  - Brightness with which the emergency lighting is operated in an emergency event
  - This level is stored in the converter
  - Not all converters offer adjustable emergency lighting brightness (see data sheet)

- Auto test possible
  - Option of automatically performing emergency lighting tests
  - This column indicates whether the emergency lighting converter offers this function
Page “Emergency”

- Battery capacity (optional function of converter)
  - The battery charge state is displayed after the start of the “Battery test” (battery charge state)

- Last test
  - The most recently started test is displayed

- Test status
  - The test status is indicated (pending, running, interrupted or passed)

- Test result
  - It is displayed whether the last test was passed or not
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Emergency Lighting Test – ABB i-bus® Tool

Page “Emergency”

- Start test
  - Various tests can be sent to the converter
    - Function test
    - Duration test
    - Partial duration test
    - Battery test
  - The converter decides whether and when the test is actually carried out
  - When a test is started, any ongoing test is stopped or a pending test is cancelled
  - Stop: The ongoing or pending test is stopped
**Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”**

Emergency Lighting Test – ABB i-bus® Tool

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**Page “Emergency”**

Additional information (read from emergency lighting converter)

- **Time out:**
  - Test result was determined by no or after a timeout
- **Converter failure**
  - Information whether there is a converter failure
- **Lamp fault**
  - Information whether there is a lamp fault
- **REST mode**
  - REST mode is activated or not activated
- **INHIBIT mode**
  - INHIBIT mode is not activated or activated

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![Emergency Lighting Test](image)
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Function “Partial failure”
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Function “Partial failure”

What is a “Partial failure”?

With the partial failure function, the lighting can be controlled depending on a failure case (higher priority than switch object)
Based on a DALI voltage fault, defined number of failed lamps/ballasts or active emergency lighting events other ballasts or groups can still be controlled
- Directly in the DALI output
- An external group object “Activate Partial failure/Status”

How the lamp reacts on partial failure is defined in the functions parameter window “Group X/ballast X – Functions”

Example: In the event of a failure of at least five ballasts or an active emergency lighting event, the entire corridor and staircase lighting in an office building is switched on with maximum brightness. Additionally the information should be sent to the technical building service.
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Function “Partial failure”

What is a “Partial failure”?  
A partial failure of the lighting is defined as:
- DALI voltage fault
- Active emergency lighting event
- Lamp/ballast fault

and can be chosen in the parameters.

The partial failure function can also be triggered via the object “Activate partial failure/Status” and is forwarded internally to the ballasts on the DALI output.

The criteria are OR-linked → The reaction to a partial failure is triggered as soon as one criterion on a DALI output is met.

A telegram with the value “1” is sent via the group object “Activate partial failure/Status”.
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Function “Partial failure”

Output – Functions: “Partial failure”

This parameter enables function “Partial failure” for the DALI output

- No
  - The Partial failure function is not enabled
- Yes
  - The Partial failure function is enabled for the DALI output
  - Further parameters are shown
Output – Functions: DALI voltage fault

A DALI voltage fault can be a criteria for a partial failure

- No
  - A DALI voltage fault is not a criteria for a partial failure
- Yes
  - A DALI voltage fault will trigger the reaction to partial failure
  - A DALI voltage fault is, for example, a DALI Gateway supply voltage failure or a DALI short circuit
  - Note that in this case it is not possible to communicate with ballasts, groups or emergency lighting converters on the DALI output that is down
Output – Functions: Active emergency lighting event

An active emergency lighting event(s) can be a criteria for a partial failure

- No
  - An emergency lighting event is not a criteria for a partial failure
- Yes
  - An emergency lighting event(s) will trigger the reaction to partial failure
  - The number of detected emergency lighting events must be greater than or equal to 1...64
Output – Functions: Lamp/ballast fault

A lamp/ballast fault(s) can be a criteria for a partial failure

- No
  - A lamp or ballast fault is not a criteria for a partial failure
- Yes
  - A lamp or ballast fault will trigger the reaction to partial failure
  - Note: The DALI output must be monitored in order to detect a ballast fault
  - The number of detected lamp/ballast faults must be greater than or equal to 1...64
Output – Functions: Forward externally via group obj.

The Partial failure function allows lighting to be controlled depending on a failure case.

The information can be forwarded via an external group object:

- **No**
  - The information from the partial failure function is not forwarded on KNX.

- **Yes**
  - The group object “Activate partial failure/Status” is enabled.
  - This group object sends information on KNX indicating that a partial lighting failure has been detected.
  - The status of the partial failure is also indicated.
  - The partial failure function can be triggered via this object and is forwarded internally to the ballasts on the DALI output.
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”
Function “Partial failure”

Output – Functions: Forward internally to DALI output

The Partial failure function allows lighting to be controlled depending on a failure case.
The information can be forwarded internally or via an external group object.

- No
  - The information from the partial failure function is not forwarded internally to the ballasts on the DALI output

- Yes
  - The information from the partial failure function is forwarded internally to the ballasts on the DALI output
Group X/ballast X: Brightness during partial failure

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

- No
  - The Reaction on partial failure function is not taken into account for the ballast or group
- Yes
  - The Reaction on partial failure function is taken into account for the ballast(s) or group(s)
  - Brightness during partial failure: 100 % (255) … 0 % (OFF)
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Function “Partial failure”

Partial failure

– Converter 22: Emergency lighting event is active
  • “50” “55” hex – **01010000** “01010101”: **0101** status of various operating states: Emergency mode active
  • “01” hex – “1”: Partial failure has been detected and value “1” is sent on KNX → other KNX devices switch light on, …
  • Group 1 is linked internally to partial failure and switches the light on

<table>
<thead>
<tr>
<th>Group Address</th>
<th>Data point type</th>
<th>Delay time[sec]</th>
<th>Write</th>
<th>Read</th>
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<th>Pri</th>
<th>Source Ad</th>
<th>Source Name</th>
<th>Destir</th>
<th>Destination Name</th>
<th>Ro Type</th>
<th>DPT</th>
<th>Info</th>
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<td>fr...</td>
<td>L...</td>
<td>3.6.10</td>
<td>DG/S2.64.5.1...</td>
<td>1/5/16</td>
<td>Output A - emergency light 22 Emergency lighting converter status</td>
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<td>1/4/33</td>
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<td>6</td>
<td>GroupValueWrite</td>
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<td>1/4/91</td>
<td>Output A - group 1 Status Brightness value</td>
<td>6</td>
<td>GroupValueWrite</td>
<td>5,010 counter pulses (0.255)</td>
</tr>
</tbody>
</table>
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Summary

Optimum Interface

ABB DALI Lighting & emergency lighting solutions

Ease of Installation

Safety & Protection
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Questions
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

More information about emergency lighting: “Home and Building Automation”

Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Homepage

www.abb.com/KNX

→ Products and Downloads
→ Lighting Control
→ Search Options DG/S

– Product Manual
– CAD Drawing
– Installation and Operating Instructions
– Specification Text
– ETS Application
– Selection Table
– CE & RoHS Declaration of Conformity
– • • •
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Product Range Overview

Smarter Solutions for Home and Building Automation
ABB i-bus KNX

Product Range Overview 2019/2020

- Including KNX DALI Gateway Premium DG/S x.64.5.1

LINK
Webinar “KNX DALI Gateway DG/S x.64.x.1 - Emergency Lighting”

Training Material

Training & Qualification Database

- The database contains extensive training content
  - Presentations
  - Video tutorials
  - Webinar slides and videos
  - and more …
  - https://go.abb/ba-training
  - www.abb.com/knx (→ Services & Tools → Training and Qualification → Training Database)

YouTube

- Channel “ABB Home and Building Automation”
  - https://www.youtube.com/user/ABBibusKNX
Training & Qualification Calendar

In addition to the online modules and the traditional training programs offered by your local ABB sales team, we offer a variety of on-site trainings conducted by our specialists at different ABB training facilities.

In this Training & Qualification Calendar you can find the educational events that are taking place during 2020.

If you are interested in a training please click the training and you will be forwarded to register in “ABB MyLearning”

- www.abb.com/knx or https://go.abb/ba-training

→ Services & Tools
→ Training and Qualification
→ Training Calendar
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