Introducing DALI-2 and DiiA
Contents

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  – Key features of DALI-2
  – DiiA membership

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  – DALI-2 testing
  – IEC and DiiA specifications

• DALI-2 certified products
DALI-2: Smart, digital lighting control

• DALI® is an established protocol (language) for bi-directional, digital communication between lighting-control devices.
• Technically managed in the open, global standard IEC 62386
• DALI-2™ is the latest version of the DALI protocol.
• DALI-2 is driven by DiiA
• Ensures interoperability through testing and certification with trademark use
• DALI, DALI-2 and D4i trademarks owned by DiiA
**DALI trademarks and logos**

- DALI, the DALI Logo, DALI-2, the DALI-2 Logo, DiiA, the DiiA Logo, D4i and the D4i Logo are trademarks in various countries in the exclusive use of DiiA.
- Trademarks (logos and wordmarks) **may be used by DiiA members ONLY.**

<table>
<thead>
<tr>
<th>DiiA logo:</th>
<th>DALI logo:</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="DiiA Logo" /></td>
<td><img src="image" alt="DALI Logo" /></td>
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</table>
| • Used to show membership of DiiA | • Used on DALI version-1 registered products  
• Used to show membership of DiiA |

<table>
<thead>
<tr>
<th>DALI-2 logo:</th>
<th>D4i logo:</th>
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<td><img src="image" alt="D4i Logo" /></td>
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<tr>
<td>• Used on DALI-2 certified products only</td>
<td>• Used on D4i certified products only</td>
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</tbody>
</table>
The strengths of DALI ... 

• DALI is a dedicated, standardized protocol for digital lighting control.
• DALI lighting systems are robust, scalable, cost-effective, reliable and flexible.

... are extended and enhanced in DALI-2

• DALI-2 is setting the standard for smart lighting control
• Focused on interoperability, backed by DALI-2 certification
Key features of DALI-2

- DALI-2 focuses on multi-vendor interoperability, backed by DALI-2 certification.
- For the first time, DALI-2 includes input devices (e.g. sensors), application controllers, and bus power supplies. DALI-2 now extends to all devices in a lighting-control system.
- DALI-2 includes more features and clearer specifications.
- DALI-2 has much more detailed and comprehensive testing requirements.
- DALI-2 is designed for backwards-compatibility with older DALI systems.
DiiA: The global industry alliance for DALI®

- The Digital Illumination Interface Alliance (DiiA) is an open, global consortium of lighting companies that aims to grow the market for lighting-control solutions based on DALI.

- Over 230 members worldwide

- Three membership types:
  - Regular, Associate, Community registration for luminaire makers

- Membership allows certification or registration of products:
  - Over 900 DALI-2 certified products
  - Over 1,350 DALI version-1 registered products

- Membership allows DALI, DALI-2 and D4i trademark use
Introducing the Digital Illumination Interface Alliance

DiiA members

www.dali2.org/membership/member-companies.html
DiiA member benefits

- Two membership classes: **Regular** & **Associate**
- **Community** registration is open to luminaire makers

**All DiiA members** (Regular & Associate):
- Can certify DALI-2 products and register DALI version-1 products
- Receive updated DALI-2 Test Sequences
- Can use the DALI & DALI-2 Trademarks, according to DiiA rules
- Have access to the DiiA member website
- Can participate in the DiiA General Assembly

**In addition, Regular members:**
- Can participate in Work Groups
- Can participate in interoperability test events (Plugfests)
- Have access to draft DiiA deliverables e.g. new specifications
- Are eligible for Board of Directors membership

[Table]

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<table>
<thead>
<tr>
<th></th>
<th>ASSOCIATE MEMBER</th>
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[Website]: www.dali2.org/membership/benefits.html
DALI-2 certification & specifications
DALI-2 certification: Overview

- DALI-2 certification indicates **multi-vendor product interoperability**
- **Rigorous and detailed testing**, followed by **verification** of test results
- Allows **trademark use**
- Products are **traceable** in the DiiA database ([www.dali2.org/products](http://www.dali2.org/products))

- DiiA drives the DALI-2 certification program
  - First DALI-2 products (LED drivers) certified in September 2017
  - Ongoing addition of new features and new products types

- DiiA creates DALI-2 Test Procedure specifications
  - Test Sequence software is provided to members
  - Members can perform testing, or use accredited test houses
Introducing the Digital Illumination Interface Alliance

DALI-2 certification

Overview and comparison with DALI version-1

**DALI version-1 registration**
- Successful test for compliance
  - Using latest DALI version-1 test sequences
- Register product with DiiA
  - Only possible for control gear
- No verification step for DALI version-1 registration
- Successful test for compliance
  - Using latest DALI-2 test sequences
- Submit results to DiiA
- Results verified by DiiA
- DALI-2 certification granted
  - Success
- Product listed in DiiA online database
  - Product can display DALI version-1 logo
  - Product can display DALI-2 logo

**DALI-2 certification**
- Successful test for compliance
  - Using latest DALI-2 test sequences
- Submit results to DiiA
- Results verified by DiiA
  - Success
  - Failure
    - Inform member
- No verification step for DALI version-1 registration
- Successful test for compliance
  - Using latest DALI version-1 test sequences
- Register product with DiiA
  - Only possible for control gear
- No verification step for DALI version-1 registration
Testing procedures for DALI-2 are much more detailed and comprehensive than for DALI version-1, and are reviewed and updated as required.
DiiA organizes interoperability test events (Plugfests) for members, which enable validation and further improvement of DALI-2 Test Procedures.
DiiA creates DALI-2 Test Procedures

- DiiA creates DALI-2 Test Procedures for individual Parts of IEC 62386, and also for DiiA Specifications
- Test Procedures are maintained and updated by DiiA, with input from Plugfest events
Introducing the Digital Illumination Interface Alliance

IEC 62386 standard

Part 101: General requirements – System components

Part 102: General requirements – Control gear

Part 103: General requirements – Control devices

Part 104: General requirements – Wireless and alternative wired systems

Part 105: General requirements – Firmware update (In progress)

Part 3xx: Particular requirements for control / input devices

Published:
Part 201: Fluorescent lamps
Part 202: Self-contained emergency lighting
Part 203: Discharge lamps (excluding fluorescent lamps)
Part 204: Low voltage halogen lamps
Part 205: Supply voltage controller for incandescent lamps
Part 206: Conversion from digital signal into DC voltage
Part 207: LED modules
Part 208: Switching function
Part 209: Colour control

Published:
Part 216: Load referencing
Part 217: Thermal gear protection
Part 218: Dimming curve selection
Part 220: Centrally-supplied DC emergency operation
Part 221: Load shedding
Part 222: Thermal lamp protection
Part 224: Integrated light source

Published:
Part 301: Push buttons
Part 302: Absolute input devices
Part 303: Occupancy sensors
Part 304: Light sensors
Part 332: Input control devices - Feedback
Part 333: Manual configuration
In progress:
Part 305: Colour sensor

DiiA creates DALI-2 Test Procedure specifications based on these individual Parts of IEC 62386, enabling DALI-2 certification.

Red text = Parts aligned with DALI-2

Purchase standards via the IEC website
More details on IEC 62386: DiiA website
DiiA specifications

- DiiA specifications add new features and new product types to DALI-2

<table>
<thead>
<tr>
<th>Specification</th>
<th>Name</th>
<th>Status</th>
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<tr>
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<td>AUX Power Supply</td>
<td>v1.1, Oct 2019</td>
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<tr>
<td>DiiA Part 250</td>
<td>Integrated Bus Power Supply</td>
<td>v1.1, Oct 2019</td>
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<tr>
<td>DiiA Part 251</td>
<td>DALI-2 Luminaire Data</td>
<td>v1.1, Oct 2019</td>
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<tr>
<td>DiiA Part 252</td>
<td>DALI-2 Energy Data</td>
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<td>DiiA Part 253</td>
<td>DALI-2 Diagnostics Data</td>
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<td>DiiA Part 351</td>
<td>Luminaire-mounted Control Devices</td>
<td>v1.0, Oct 2019</td>
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<tr>
<td>DiiA Part 306</td>
<td>General-purpose Sensors</td>
<td>In development</td>
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</table>

- Published DiiA specifications are available from the DiiA website:

www.dali2.org/specifications/download.html
Introducing the Digital Illumination Interface Alliance

DALI-2 certification

IEC 62386 Standard (multiple Parts)

DiiA Specifications (e.g. Parts 25x)

Third-party software provider (Lichtvision)

DALI-2 Test Procedure specifications

Created & maintained by DiiA

DALI-2 Test Sequences (software)

Test hardware (ProbitLab or ProbitLab2)

DALI-2 testing (by DiiA member or Accredited Test House)

Verification (by DiiA)

DALI-2 Certification
Introducing the Digital Illumination Interface Alliance

Part 101: General requirements – System components

Part 102: General requirements – Control gear
- Part 207: LED drivers
- Part 209: Colour type Tc (tunable white)
- Part 250: Integrated bus power supply
- Part 251: Luminaire data
- Part 252: Energy data
- Part 253: Diagnostics data

Part 103: General requirements – Control devices
- Part 301: Push buttons
- Part 302: Absolute input devices
- Part 303: Occupancy sensors
- Part 304: Light sensors

DALI-2 Parts available for certification

In progress:
- Part 209: Colour control (other colour types)
- Part 202: Self-contained emergency lighting
- Part 206: Conversion from digital signal to DC voltage
- Part 208: Switching function

In progress:
- Part 351: Luminaire-mounted control devices

Current status: www.dali2.org/dali2

Bus power supplies
Application controllers
Input devices
DiiA works closely with IEC

- DiiA participates in the **IEC work group WG 11** of TC 34.
- WG 11 develops and maintains **IEC 62386**, the international DALI standard.
- DiiA provides **Clarifications and Recommendations** to WG 11, which are used by IEC in future updates of IEC 62386.
- Separately, DiiA also writes new **DiiA Specifications**, which are then provided to IEC to be incorporated into IEC 62386.
DALI-2 certified products
An example of a DALI lighting-control system. The DALI bus carries DALI power and data on the same pair of wires. Each DALI subnet can have 64 control gear and 64 control devices. Control gear provide power to LEDs and other light sources. Control devices include application controllers (which make decisions and send commands), and input devices such as sensors, switches and push-button devices. A bus power supply is required, providing up to 250 mA and typically 16V to the DALI bus. More: [www.dali2.org/systems](http://www.dali2.org/systems).
Introducing the Digital Illumination Interface Alliance

DALI product types

Application controller with bus power supply

Emergency lighting control gear

Emergency lighting & signage

Occupancy & light sensor (input device)

DALI bus

Each DALI subnet can have 64 control gear AND 64 control devices

LED driver

LED lamp

Gateway

External network or building management system

Push-button input device

DALI-2 certification is available for these device types, and others.
DALI-2 LED drivers are available from a large number of suppliers.

LED driver with DALI-2 tunable white colour control.

D4i-certified LED driver.

www.dali2.org/products
Introducing the Digital Illumination Interface Alliance

DALI-2 control devices & bus power supplies

DALI-2 single-master application controllers, with integrated bus power supplies

DALI-2 standalone bus power supply

DALI-2 multi-master application controller

www.dali2.org/products
DALI-2 sensors and other input devices

DALI-2 input device (push-button switch)

DALI-2 push-button coupler

DALI-2 occupancy and light sensor

www.dali2.org/products
Community members and DALI-2 luminaires

• Luminaire makers are eligible for Community registration

• **No fee** for Community registration, and **no fee** to use the DiiA Trademarks (including DALI logos) according to DiiA’s rules.
  – See [DALI for luminaire makers](#)

• DALI-2 luminaires contain DALI-2 certified components
  – Listing of DALI-2 luminaires is open to Community members, as well as registered brands of Regular and Associate members
DiiA contact information

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www.digitalilluminationinterface.org

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GM@digitalilluminationinterface.org
Introducing the Digital Illumination Interface Alliance