

# Book 20

## Smart interface between indoor luminaire and sensing/communication modules

Aug 2021

The Zhaga Consortium



# Smart, future-proof LED luminaires with IoT connectivity

**Connected:** Capable of becoming part of the IoT

**Intelligent:** Able to collect and report a wide variety of data

**Beyond lighting:** Supporting sensing and communication applications

**Future-proof:** Easily upgradable to keep pace with rapid developments in digital networking technology

**Standardized:** Specified interoperability

**Certified:** Create trust in interoperability

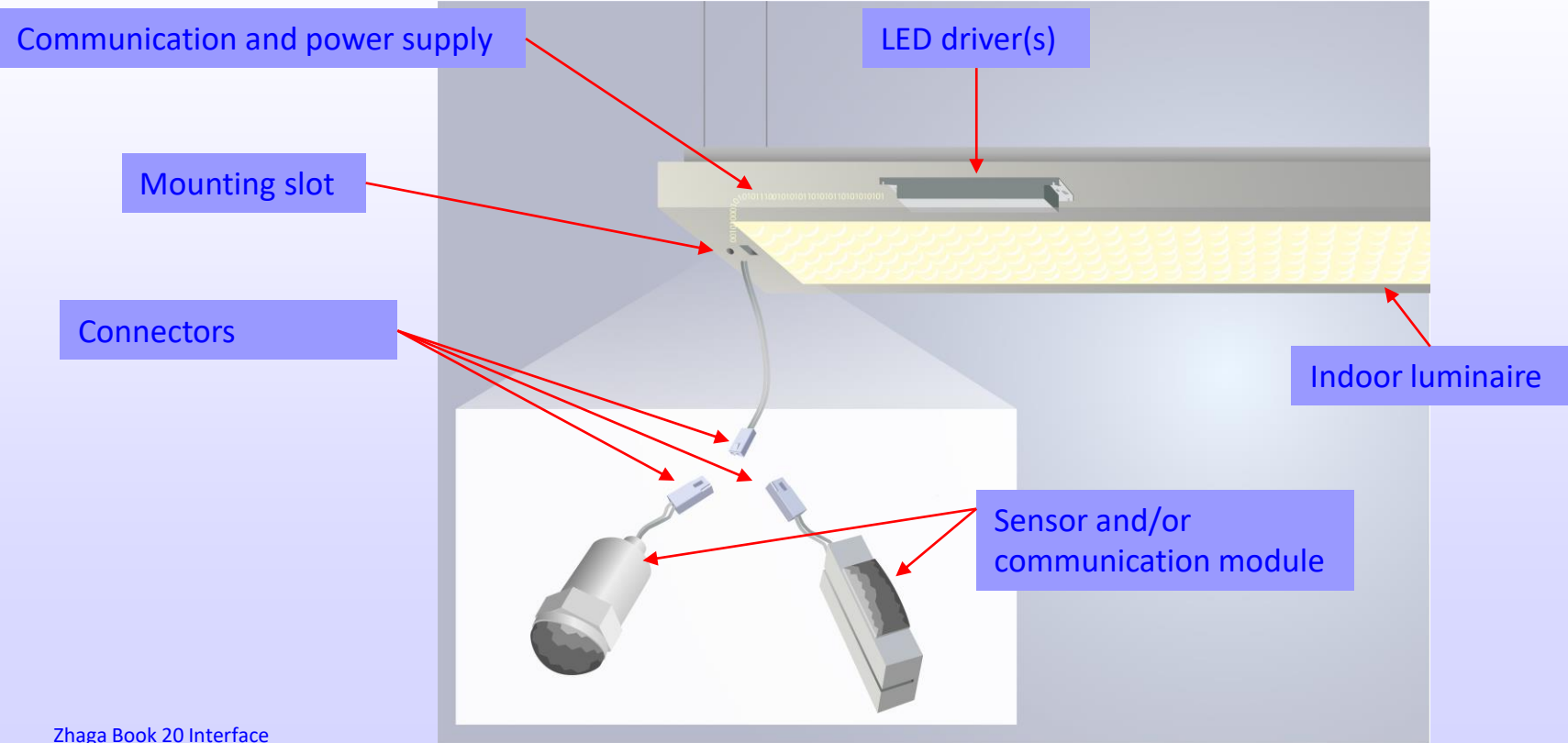
# Market drivers and solution

Market requirement: Smart, future-proof LED luminaires easily upgradeable to keep pace with rapid developments in digital networking technology as one of the key requirements.

Solution: The Zhaga-D4i interface standard

- A simple way to add sensors and/or wireless communication modules to luminaires. Zhaga and DALI Alliance collaborate to develop and maintain a standardized interface between luminaires and sensor and/or communication modules
- Combination of complementary specifications for mechanical fit, digital communication and power supply for modules
- Zhaga-D4i certification to ensure full interoperability

# Book 20: smart interface for indoor luminaires



# Features of Zhaga-D4i interface standard



- Easy to add or upgrade sensors and/or communication modules:
  - Enables future-proof luminaires that can keep pace with rapid developments in digital networking and sensing technology.
- Intra-luminaire DALI-2 bus:
  - Enables bi-directional communication between sensors and/or communication modules and LED drivers using the well-established and standardized DALI-2 protocol.
- D4i drivers are smart:
  - Able to report operational and diagnostic data to an external network, can provide inventory-related information about luminaires.
- IoT connectivity:
  - With a suitable wireless communication module, the luminaire is able to interact with an external lighting-control network and to become part of the IoT.

# Complementary specifications in Zhaga and DALI Alliance



## D4i specifications from DALI Alliance:

**DALI Part 250:** Integrated bus power supply

**DALI Part 251:** Luminaire data for asset management

**DALI Part 252:** Energy reporting for drivers

**DALI Part 253:** Diagnostics & maintenance data for drivers

**DALI Part 351:** Luminaire-mounted control devices

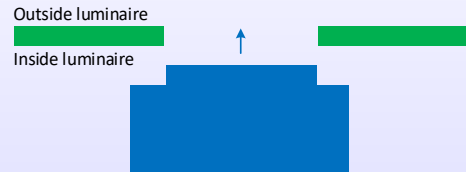


## Book 20 specification from Zhaga:

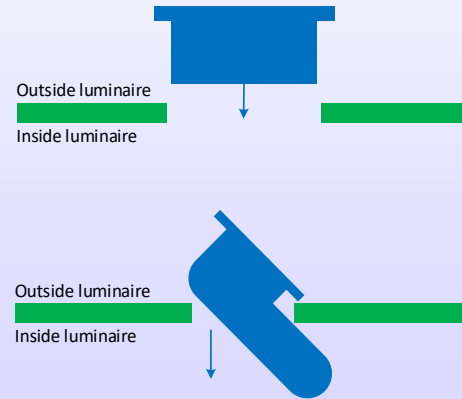
- Mechanical interface between Module and luminaire
- Specified electrical connector
- Specification of luminaire's interface

# Book 20 – fitting systems

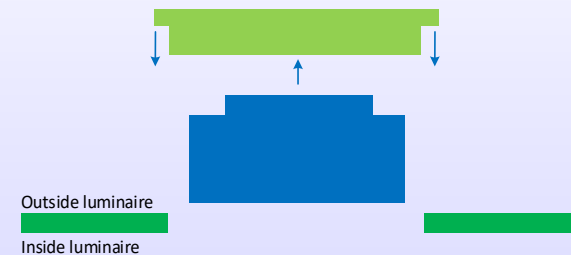
Book 20 enables a number of fitting system appropriate for the application, including plug-and-play



Module is mounted from the inside of the luminaire into the opening



Module is mounted from the outside of the luminaire into the opening



The module is mounted from the outside of the Luminaire by using a bracket

# Categorized mechanical interfaces enable standardized and cost-effective, but flexible solutions

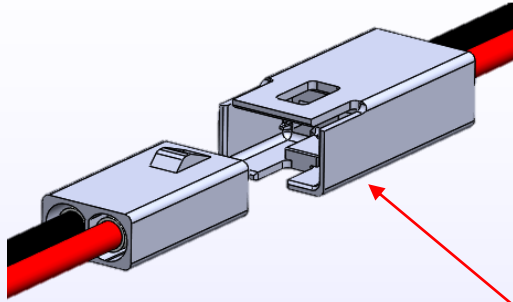
Five different categories for the mechanical interface facilitate dedicated luminaire- and module-designs:

- R44x17 (44 x 17 mm)  
→ Rectangular modules with small volumes and indifferent orientation
- R60x22 (60 x 22 mm)  
→ Rectangular modules requiring more volume and surface, e.g. gas detectors or complex presence detectors
- C22-T1A (Ø 22 mm):  
→ Cylindrical modules as already widely used in the field, adjustable orientation, minimum surface
- C22-T1B (Ø 22 mm):  
→ Cylindrical modules as already widely used in the field, adjustable orientation, larger lenses
- C22-T2 (Ø 22 mm):  
→ L-shaped modules enable ultraflat luminaire designs

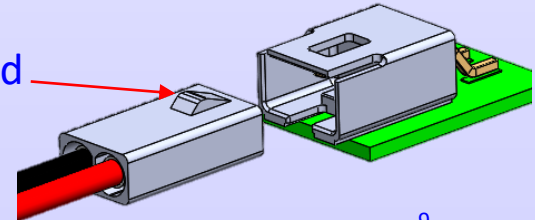
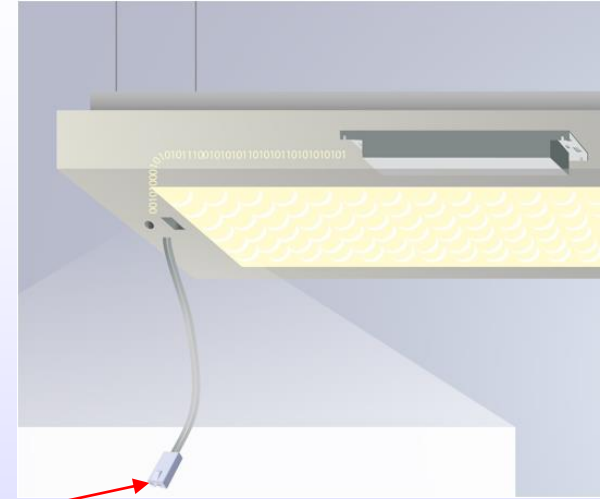




# Features of the Connector



- Two position plug and receptacle interface:
  - Easy to use separable connection provides reliable DALI connectivity
- Poka Yoke features prevent incorrect mating.
  - Enables connection with polarity ensured
- Connector provides finger proof protection
  - Housing provides touch proof protection for separable contacts
- Plug & play functionality can be installed by a generalist
  - Does not require a specialist to upgrade luminaire functionality
- Integrated latch feature provides 5N minimum retention when mated
  - Slim profile latch ensures that connectors remain intact over its lifetime



# Zhaga-D4i certification



- **Zhaga-D4i certification:** A joint program from Zhaga and DALI Alliance
  - Certification of interoperable luminaires and sensing and/or communication modules
- Based on **complementary specifications** from Zhaga and DALI Alliance
  - Zhaga **Book 20** plus **D4i** specifications
- Product certification will allow for use of Zhaga and D4i logos
  - For **indoor luminaires, sensing** and **communication modules**
  - Logos indicate multi-vendor **product interoperability**
- LED drivers are eligible for D4i certification from DALI Alliance

# Benefits of Zhaga-D4i certification

- Certification gives confidence for interoperability
  - Certification carried out by independent authority
  - Certified products are traceable in public databases
  - Certification logos are trademarked to prevent misuse
- Certification gives business advantages
  - Certified luminaires and components are available from multiple suppliers
  - Certification logos provide an established brand for product marketing
- Certification ensures that luminaires are future-proof and will be able to host next-generation Zhaga-D4i nodes



# Scope of Zhaga-D4i certification



Zhaga-D4i Module



Zhaga and D4i logo

Certification by Zhaga, after D4i certification by DALI Alliance

Zhaga-D4i Luminaire



Zhaga and D4i logo

Certification issued by Zhaga

D4i Driver



D4i logo

Certification issued by DALI Alliance (includes DALI-2 certification)

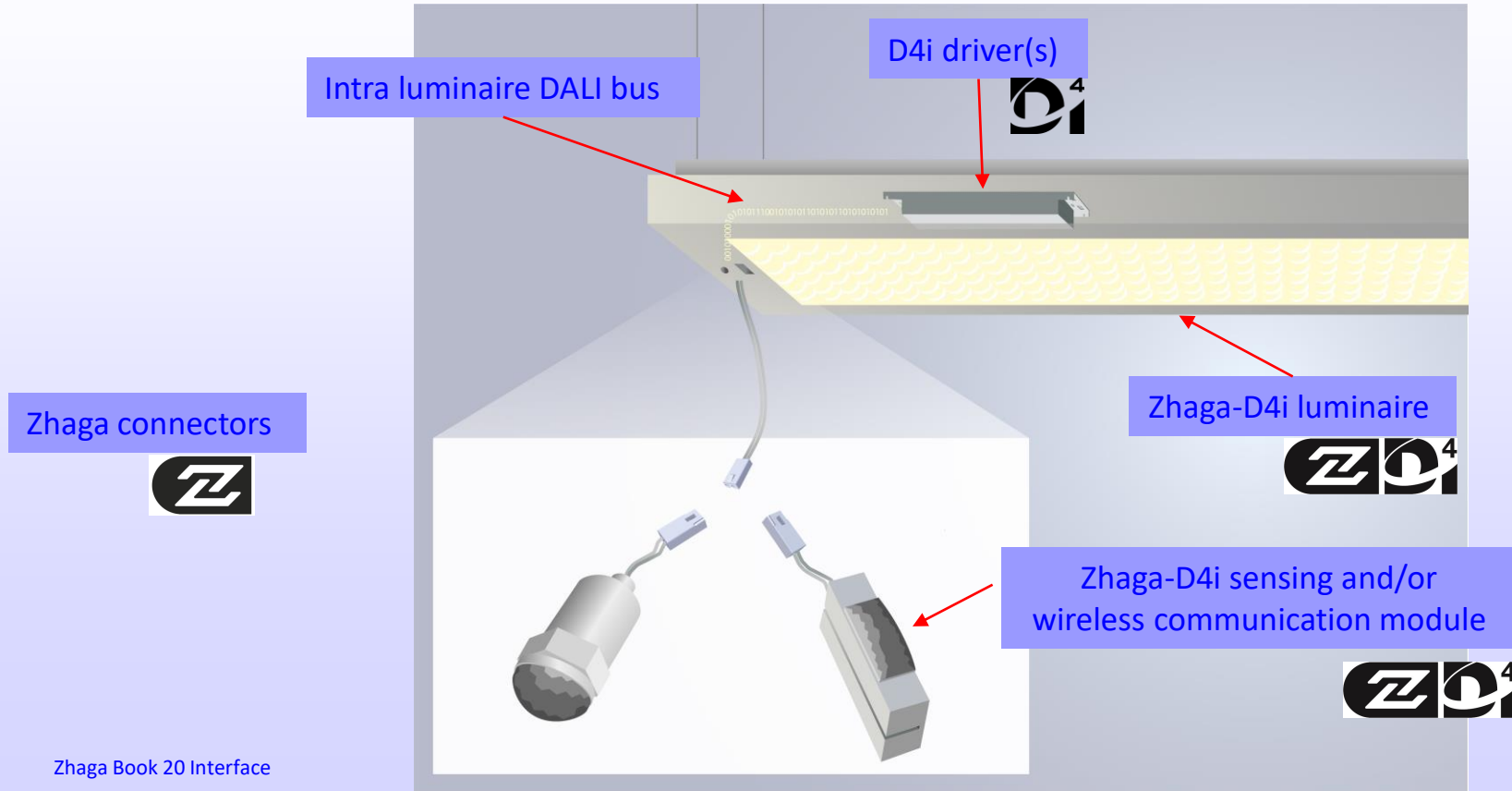
Zhaga Book 20 Connector



Zhaga logo

Certification issued by Zhaga

# Zhaga-D4i certification for indoor luminaires



# Zhaga-D4i Certification – Summary



Zhaga and DALI Alliance have developed a joint certification program for indoor luminaires, which is based on a standardised interface between drivers, luminaires and sensing/communication modules.

Zhaga-D4i certified luminaires will be the backbone of intelligent building management and more.

- It creates a simple way of adding control/ sensing modules into the building system architecture.
- A large ecosystem of modules will be available for Zhaga certified luminaires.
- It allows selection of luminaires today for the technology advances that control and sensing modules will bring tomorrow.
- Adding the requirement of Zhaga-D4i certification simplifies tender processes
  - The certification provides an assurance of interoperability and gives confidence that the different parts of the system will operate together.
  - All Zhaga-D4i certified products can be traced through an easy accessible database on the Zhaga website.

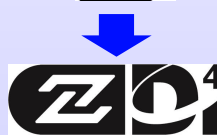
# Certification Process: Book 20 Zhaga-D4i Luminaires

## Organization



Associate or regular membership of Zhaga is required

## Process



## Comment

Compile required documentation and submit to Zhaga Test Centre

Tested for compliance against Zhaga specifications

Product awarded Zhaga-D4i certification and use of Zhaga and D4i logos

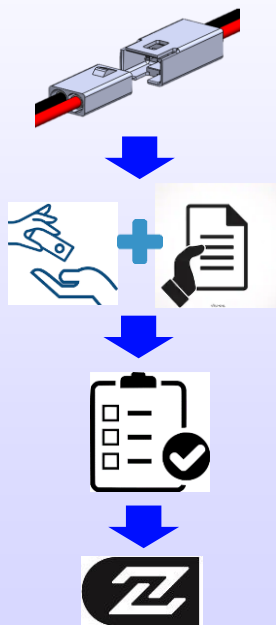
# Certification Process: Book 20 Zhaga Components

## Organization



Associate or regular membership of Zhaga is required

## Process



## Comment

Compile required documentation and sample and submit to Zhaga Test Centre

Tested for compliance against Zhaga specifications

Product awarded Zhaga certification and use of the Zhaga logo



# Certification Process: Book 20 Zhaga-D4i Module

## Organization

## Process

## Comment

Associate or regular membership of DALI Alliance is required



Associate or regular membership of Zhaga is required



Product self tested or tested by DALI Alliance test house

Submit results to the DALI Alliance for verification and D4i certification.

Compile required documentation and submit to Zhaga Test Centre

Tested for compliance against Zhaga specifications

Product awarded Zhaga-D4i certification and use of Zhaga and D4i logos

# Zhaga Book 20 Video

- The Zhaga Consortium has recently produced a video which provides a summary of the features and benefits of the Zhaga Book 20 interface.
- The video can be viewed by following the below link:
- <https://youtu.be/qAF4FymbUJw>

# Thank you

For further information, please contact

Dee Denteneer, Secretary General, [secgen@zhagastandard.org](mailto:secgen@zhagastandard.org)

Axel Baschnagel, Marketing Communications, [marcom@zhagastandard.org](mailto:marcom@zhagastandard.org)

