SAM15/BLE

Bluetooth HF Highbay Sensor | DALI-2/D4i | Zhaga Book 18 Standard



Benefits

Standardized: Zhaga Book 18 with IP65 for reliable highbay integration

All-in-one: Occupancy, Daylight and Circadiam Rhythm, Photocell Advance

Wireless: Bluetooth Mesh enabling flexible wireless commissioning

Applications

For highbay luminaire up to 15m height

Warehouse/ Logistic

Outdoor/Street lights

Check Out the Complete System Solution on the Website:
https://www.hytronik.com/product/SAM15-BLE

Product Description

SAM15/BLE is a Bluetooth high-bay HF motion sensor designed for industrial and outdoor lighting applications. It supports motion detection, daylight harvesting, and dimming for intelligent and energy-efficient lighting management. Featuring Photocell Advance technology with dual photocells, it can differentiate natural and artificial light for more accurate daylight sensing. With Zhaga Book 18 compliance, D4i certification, an IP65 rating, and a mounting height of up to 15m, it delivers reliable performance for high-bay environments. All configuration and commissioning can be completed easily via the Koolmesh App.

Functions and Features

See additional details at the end of datasheet

D4i Certified

DT6/DT8 Lighting Control

IP65 Protection

Koolmesh - See bluetooth control below

Photocell Advance

Robust HF Antenna Design

Zhaga Book 18 Standard

Specifications

Main Capabilities	
Dimming (Output) Interface	DALI/DALI-2
Connector Type	Zhaga book 18

Sensor Data	
Detection angle	360°
Lux range	<1000 lux
Max. Detection range (Diameter)	20.0 m
Maximum Mounting Height	15.0 m
Detection area	314 m^2
Sensitivity	10%/ 30% /50% /75%/ 100%
HF operating frequency (Ghz)	5.8Ghz+/-75MHz
Detection Methods	Microwave (MW)

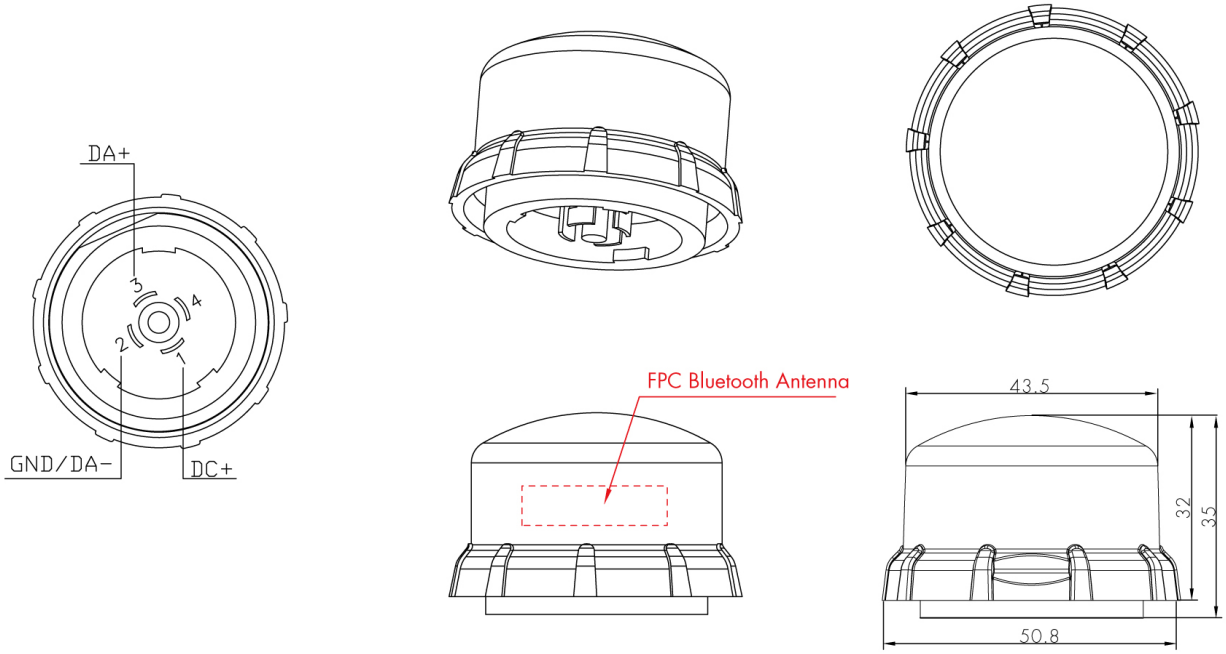
Electrical Data	
Bluetooth Platform	Nordic nRF52832
Bluetooth frequency	2.4 GHz - 2.483 GHz
Bluetooth range (Phone to Device)	10-30m
Bluetooth transmit power	4 dBm
Bluetooth system	Koolmesh
Stand-by power (Psb)	<0.5W
DALI Bus Voltage	9.5-22.5VDC
Auxiliary Supply Voltage	12-36VDC
DALI Bus Current Consumption	2.0 mA
Auxiliary Supply Current Consumption	Max. 30mA
HF Transmission power	<0.2mW (HF)

Specifications

Technical	
Product weight	34.0 g
Product height	35.0 mm
Product length	50.8 mm
Product width	43.5 mm
Insulation class	Class II
Ambient temperature	-20 ~ +50 °C
Storage temperature	-35 ~ +55 °C
Humidity max	20 ~ 90%
IP Rate	IP65

Standard	
EMC	EM61547, EN 55015
LVD	EN 61347-1, EN 61347-2-11
RED	EN 300328, EN 300440, EN301489-1/-3, EN 50663, EN 301489-17
DALI-2 D4i type	Typ D
DALI-2 Standard	IEC62386-101, 103, 351

Technical Drawing

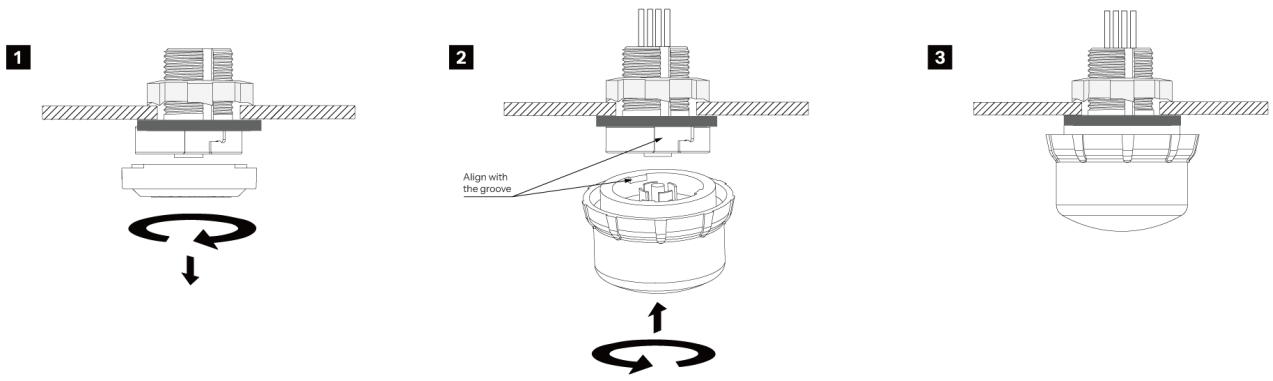


The Bluetooth antenna is located at the marked end of the device.
· Keep the antenna area clear of metal or conductive materials.
· Maintain at least 10 mm clearance around the antenna whenever possible for optimal wireless performance.
· Avoid installing the antenna section inside a metal enclosure or behind large metal structures.
· This product contains an internal FPC antenna. The antenna is attached to the inside of the housing. When opening the housing, separate the housing halves carefully to avoid pulling the antenna or damaging the antenna to PCB connection.

Application Example



Installation Process



Detailed Installation Instructions

1. Remove the receptacle cap

Unscrew and remove the protective cap from the receptacle before installation.

2. Install the sensor

Align the large groove on the receptacle with the corresponding large protrusion on the sensor. Push the sensor upward firmly until fully seated, then rotate counterclockwise until a clear click is heard. Ensure the sensor cannot be pulled out to confirm it is securely locked.

3. Installation complete

Note:

• Any luminaire that complies with the Zhaga Book 18 standard allows plug-and-play connection by simply mating the pins with the base.

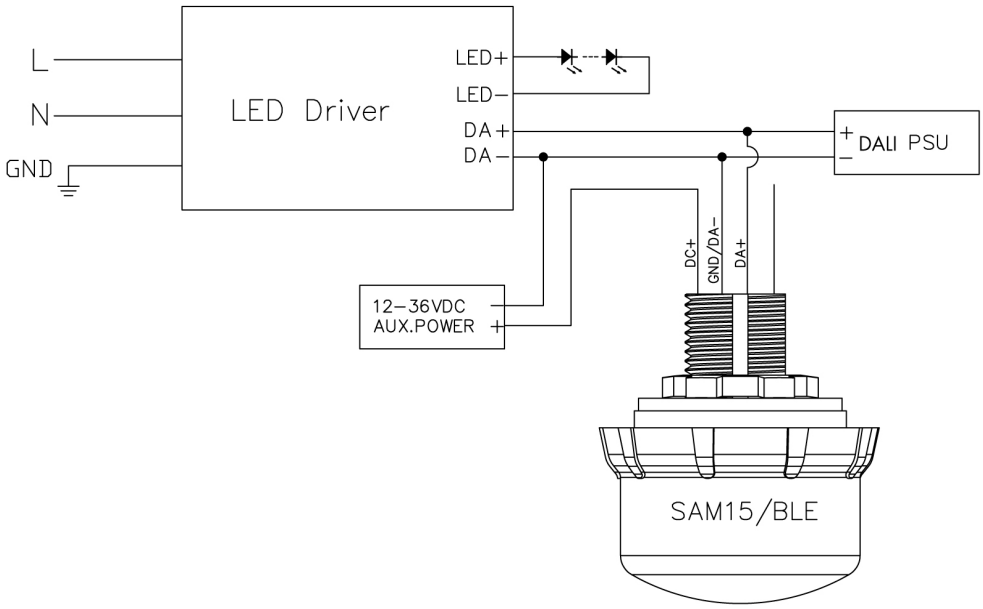
• Socket not included, it must be supplied by the customer or purchased separately.

⚠ Wiring Guidelines

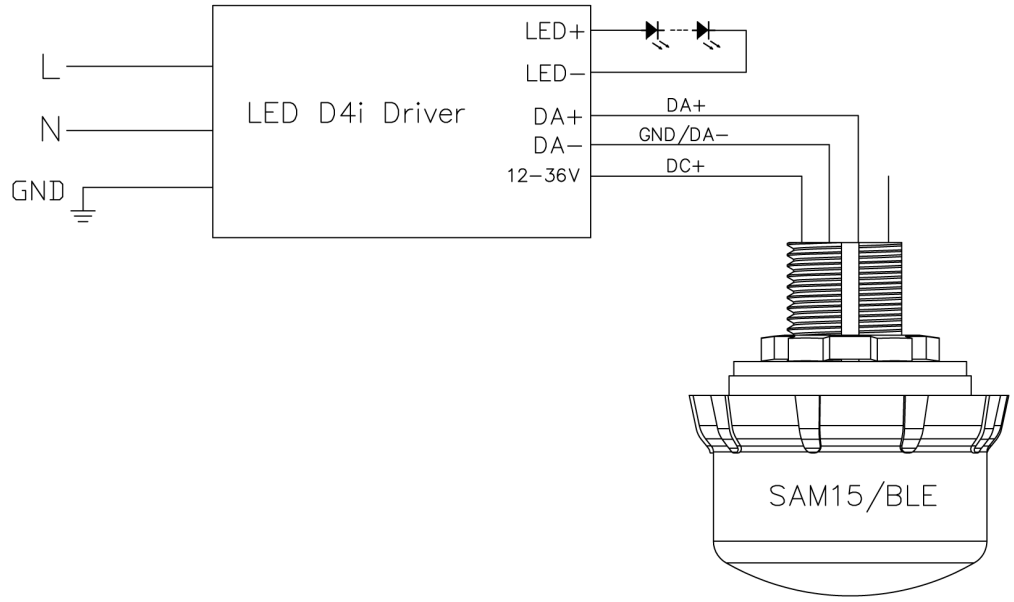
1. Installation by a qualified electrician only and in accordance with local electrical regulations.
2. Disconnect mains power before installation, wiring, maintenance or replacement.
3. Failure to follow the wiring diagram may result in product damage and malfunction.
4. Do not connect mains voltage (L/N) to the DALI terminals.
5. For polarity-marked DALI terminals (DA+/DA−), observe correct DALI polarity.
6. For non-polarity-marked DALI terminals (DA/DA), DALI wiring is polarity-free.
7. Terminal block 4 is left unpopulated by default. No wiring required.
8. The DALI bus must be powered by an external DALI PSU or a D4i driver with integrated bus power.
9. For reliable operation, ensure at least one DALI PSU is present on the bus. If multiple PSUs are connected in parallel, the total output must not exceed 250 mA. (For better compatibility, a single PSU is recommended.)

Wiring Diagram

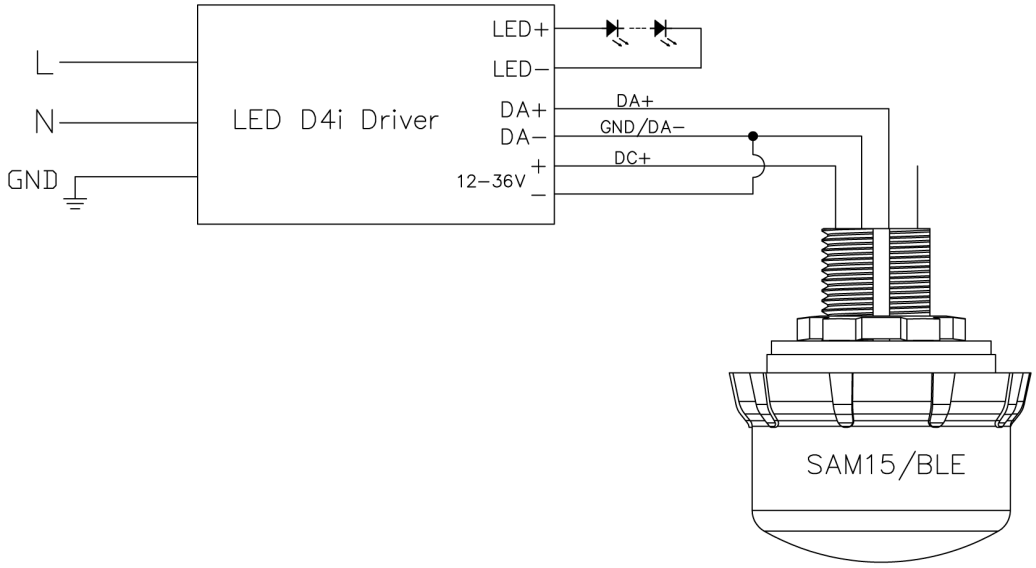
Standard Driver with External AUX & PSU



D4i Driver with Common Negative



D4i Driver with Isolated Negative



Detection Range

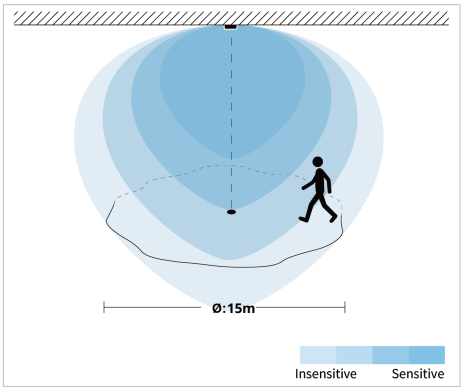
Single Person Walk (Ceiling mount)

The data is tested under following conditions:

- Single person walking
- Sensor not connected to any driver that may have soft-on period
- Testing temperature Ta = 20°C

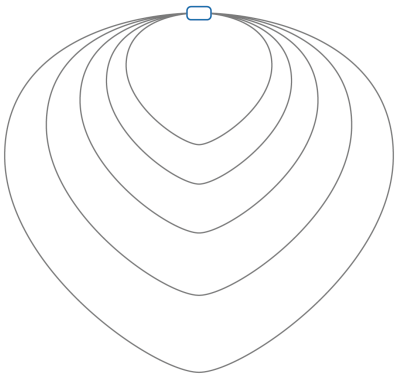
- The sensor detection area shown in this table is based on an open space. In environments with hard surfaces such as metal racking or glass corridors, the detection range may be extended by up to 30% due to reflections or signal penetration.

Detection example 3m mounting height:



	Sensitivity				
H[m]	100%	75%	50%	30%	10%
	{diameter}				
3	15	12	8	6	5
5	14	11	7	5	2
8	13	10	6	2	none
12	12	9	6	none	none

Detection schematic diagram



Detection Range

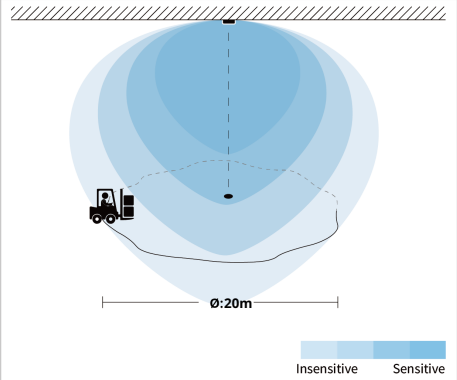
Forklift (Ceiling mount)

The data is tested under following conditions:

- Forklift driving at a speed of 5km/h
- Sensor not connected to any driver that may have soft-on period
- Testing temperature Ta = 20°C

- The sensor detection area shown in this table is based on an open space. In environments with hard surfaces such as metal racking or glass corridors, the detection range may be extended by up to 30% due to reflections or signal penetration.

Detection example 15m mounting height:



HF	Sensitivity
H[m]	100%
	Ø[m]
15	20

Commissioning Instructions and Precautions

A. Detection Range Notes

1. The detection range is heavily influenced by sensor placement (angle) and different walking paces. It may be reduced under certain conditions.

B. Factory settings Notes

1. Sensor setting: Control object: Zone, Sensor status: Sensor ON, Detection range: 100%, Hold time: 20min, Hold time scene: ALL ON, Stand-by time: 5s, Stand-by time scene1: 10%, Sensor mode: Auto, Mode in priority: Manual prior to sensor.

2. Push switch setting: Push switch function: Normal PUSH (Retractive switch), Control object: Zone, Single press: ON/OFF, Double press: disable, Press and hold: Brightness dimming.

C. D4i data Notes

1. This device currently does not Supports reading luminaire, energy, and diagnostics data provided by the connected D4i drivers.

D. DALI-2 Compliance

1.This product has been tested in accordance with IEC 62386 and complies with the relevant DALI-2 application parts. DALI-2 testing was performed using the official DALI test sequence software (version 2.4.0.0), covering the applicable IEC 62386 parts (e.g. Part 101, Part 103, Part 351). DALI-2 certification verifies compliance within the defined test scope.

However, certification does not eliminate the possibility of system-level compatibility issues arising from differences in device implementation or system design among manufacturers. Therefore, functional verification and on-site testing are required as part of the final system commissioning to ensure proper operation and compliance with project requirements.

Warning: For additional important documents, including installation precautions, product guidelines, and guarantee conditions, please refer to the official downloads.

https://hytronik.com/service/downloads

Switch Input Function Configuration

The Virtual Push interface provides a software-based dimming control method without the need for a physical wall switch. Push functions are simulated via the Koolmesh app, where detailed push behaviors and parameters can be flexibly configured.

Note: Single press, double press, and press-and-hold actions can each be independently assigned to one function via the app. Once configured, each action triggers only its assigned function. A single action cannot activate multiple functions.

Switch function	Action	Description
Virtual-Normal PUSH (Retractive Switch)	Single press (>0.1s) Double press Press and hold (>=1s)	• ON/OFF • ON only • OFF only • Recall this scene • Sensor take over • Not in use * Application Notes: 1. ON/OFF:The PUSH ON/OFF function follows an alternating command sequence (ON - OFF - ON - OFF) based on the previous PUSH command, rather than the current luminaire state. Changes made by other controls, such as sensors or the App, do not reset this PUSH command sequence. Therefore, if the luminaire state has been changed by another control, two presses may sometimes be required to achieve the desired ON/OFF state. Where supported, separate ON only and OFF only commands can be used to avoid this behaviour. 2. Brightness dimming: With Cumulative Adjustment, luminaires that are already OFF within the group remain off during Dim- operation. This function is supported on nRF52832 V55 or later and all nRF52840 versions.

Options

Compatible products (for full functionality)



HA18SKT

Receptacle | Zhaga Book 18 Standard | Black Color
www.hytronik.com/product/HA18SKT

Koolmesh - Operating guide

Bluetooth

Smartphone(ios) Smartphone (Android) iPad Web

For additional information, including project and network, device, and scenes, please refer to: http://faq.koolmesh.com/

Shared Koolmesh App Features

- Alert for excess lux / temperature / humidity via multi-meter HBLM01
- Astro timer (sunrise and sunset)
- Bulk commissioning (copy and paste settings)
- Compatible with Shelly energy metering
- Continuous development in progress...
- Device firmware update over-the-air (OTA)
- Device social relations check
- Different permission levels via authority management
- Floorplan feature to simplify project planning
- Grouping luminaires via mesh network
- Internet-of-Things (IoT) featured
- Koolmesh Pro iPad for on-site configuration
- Network sharing via QR code or keycode
- Offline commissioning
- One-key device replacement
- Quick setup mode & advanced setup mode
- Remote control via Hytronik gateway & touch screen HPAD-TSJASE1
- Scenes
- Schedule
- Staircase function for quick setup
- Test mesh network connection quality
- Web platform for project deployment & data analysis

Device-specific Koolmesh App features

- Adjustable motion & static sensitivity & adjustable sensing distance
- Compatible with EnOcean kinetic switches
- Detailed motion sensor settings
- Displays luminaire status & energy consumption Data
- Dusk/Dawn photocell (twilight function)
- Dynamic daylight harvest auto-configuration
- Motion sensor range test
- Motion sensor trigger diagnosis

Bluetooth Mesh Network Installation & Device Access Range

1. Phone/Pad to Device Range (Bluetooth Connection)

During commissioning, the installer must remain within Bluetooth range of the target device when adding it via the App.

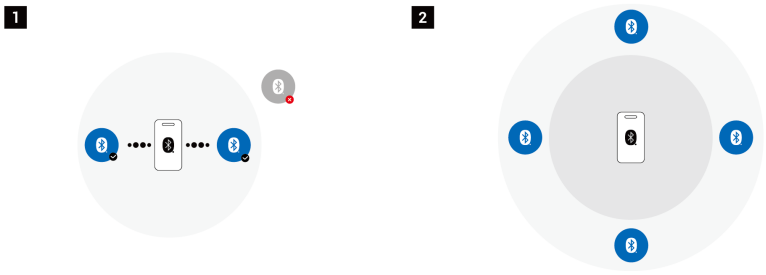
2. Device to Device Range (Mesh Network Communication)

Once commissioned, devices communicate through the wireless mesh network. Users can access and control all devices within the network when connected to any active mesh node.

Note:

a. Bluetooth range varies by product. Refer to the Specification section for details.

b. Actual communication range may vary depending on product type, obstacles, environmental conditions, and luminaire construction.



Bluetooth Network Components



HBGW02

Bluetooth Mesh Gateway | Ethernet or Wi-Fi 2.4GHz | wall/flat surface mounting
www.hytronik.com/product/HBGW02



HBGW02/D

Bluetooth Mesh Gateway | Dual-band Wi-Fi | wall/flat surface mounting
www.hytronik.com/product/HBGW02-D



HBGW03/R

BACnet Gateway | Dual-band Wi-Fi or Ethernet | DIN rail/wall/flat surface mounting
www.hytronik.com/product/HBGW03-R

HBKS01/W

Bluetooth Kinetic Switch | One-gang | Wireless Control
www.hytronik.com/product/HBKS01-W



HBKS01D/W

Bluetooth Kinetic Switch | Single Rocker | White Color
www.hytronik.com/product/HBKS01D-W

HBKS02/W

Bluetooth Kinetic Switch | Two-gang | White Color
www.hytronik.com/product/HBKS02-W



HBKS02D/W

Bluetooth Kinetic Switch | Double Rocker | White Color
www.hytronik.com/product/HBKS02D-W

HBKS03/W

Bluetooth Kinetic Switch| Three-gang | White Color
www.hytronik.com/product/HBKS03-W



HBLM01

Multi-meter | Bluetooth & NFC | Lux Measurements
www.hytronik.com/product/HBLM01



HPAD-TSJASE1

Bluetooth Touch Tablet | Gateway Integrated | Switch Boxes
www.hytronik.com/product/HPAD-TSJASE1

Functions and Features

D4i Certified

This product is certified under the D4i specification by the DALI Alliance, ensuring compliance with the relevant DALI-2 and D4i requirements for interoperability, safety and performance. Certification guarantees that the device meets the standardized electrical, digital interface and device-type requirements defined for D4i ecosystems.

DT6 / DT8 Lighting Control

Supports DT6 (single-channel dimming) and/or DT8 (tunable white / colour) lighting control via DALI, enabling brightness and colour temperature adjustment based on control logic such as occupancy or daylight.

IP65 Protection

This product features an IP65-rated enclosure, providing complete protection against dust ingress and low-pressure water jets to ensure reliable operation in demanding indoor and outdoor environments. The robust environmental sealing supports long-term stability and consistent performance in applications such as warehouses, parking areas and industrial facilities.

Photocell Advance

This advanced daylight-sensing function accurately measures ambient light while minimising interference from the luminaire itself and distinguishing natural light from artificial light. It automatically switches lighting on or off and adjusts brightness according to the available daylight, providing reliable dusk-to-dawn control, improved visual comfort and greater energy efficiency.

Robust HF Antenna Design

The touch panel supports both manual and automatic adjustment of the display brightness. In automatic mode, the screen adapts its brightness according to the surrounding ambient light to maintain optimal visibility and energy efficiency. In manual mode, users can set the preferred screen brightness level directly on the device, ensuring clear viewing under various installation conditions.

Zhaga Book 18 Standard

This product complies with the Zhaga Book 18 standard, providing a standardised mechanical, electrical and digital interface for indoor and outdoor luminaires, including high-bay and exterior applications. It enables plug-and-play interchangeability of sensor and connectivity modules, ensuring interoperability, future-ready upgrades and reliable operation in demanding installation environments.

Check out for further explanation of features

https://hytronik.com/solutions/lighting-control-features