HCD038/BT ECO

Bluetooth to DALI Converter | Integrated 10 mA PSU | DT6 & DT8 Control



Benefits

Compact: Mini size for easy luminaire integration

Integrated: Built-in 10 mA DALI PSU simplifying system design

Simple: Allowing quick settings adjustment via app

Applications

Built-in luminaries

Bluetooth receiver node

Offices, Classrooms, Industry and Healthcare Spaces

Check Out the Complete System Solution on the Website:
https://www.hytronik.com/product/HCD038-BT-ECO

Product Description

HCD038/BT ECO is a mini-sized DALI dimming Bluetooth converter for smart lighting. It supports DT6 and DT8 for dimming and tunable white, with all settings adjustable through the Koolmesh app. Delivering a stable 10 mA DALI output, it fits easily inside luminaires or can be installed independently with the insulating cover, offering a simple and efficient way to add wireless functionality to modern lighting projects.

Functions and Features

See additional details at the end of datasheet

Built-in DALI PSU

DT6/DT8 Lighting Control

Koolmesh - See Bluetooth control below

Live Energy & Diagnostic Data Part 252 / 253

Luminaire Asset Data Part 251

Specifications

Main Capabilities	
Dimming (Output) Interface	DALI/DALI-2

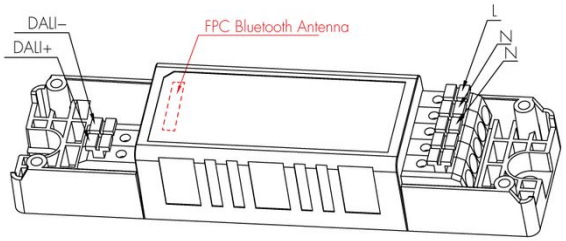
Electrical Data	
Bluetooth Platform	Nordic nRF52832
Bluetooth frequency	2.4 GHz - 2.483 GHz
Bluetooth range (Phone to Device)	10-30m
Bluetooth transmit power	4 dBm
Bluetooth system	Koolmesh
Operating voltage range	220-240 VAC 50/60 Hz
Stand-by power (Psb)	<1W
Warming-up	20 s
DALI bus maximum rated current (I max)	15 mA
DALI bus nominal DC voltage (Un)	15 V
DALI bus nominal current (I guaranteed)	10 mA

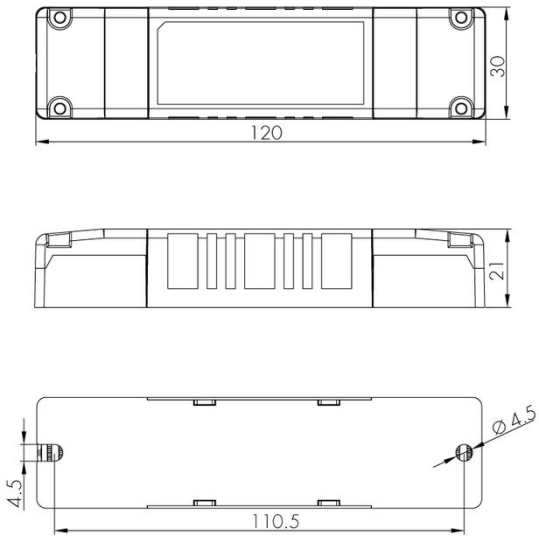
Specifications

Technical	
Product weight	46.0 g
Product height	21.0 mm
Product length	120.0 mm
Product width	30.0 mm
Insulation class	Class II
Ambient temperature	-20 ~ +55 °C
Storage temperature	-40 ~ +70 °C
Humidity max	10 ~ 90%
Case Temp.max	75.0 °C
IP Rate	IP20

Standard	
EMC	EN 55015, EN 61000, EN 61547
LVD	EN 60669-1, EN 60669-2-1
RED	EN 300328, EN 301489-1/-17

Technical Drawing





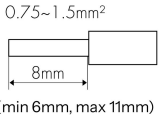
The Bluetooth antenna is located at the marked end of the device.
· Keep the antenna area clear of metal or conductive materials.
· Maintain at least 10 mm clearance around the antenna whenever possible for optimal wireless performance.
· Avoid installing the antenna section inside a metal enclosure 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.

⚠ 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. Refer to the Wire Preparation section for recommended wire diameter and strip length.
5. Push inputs are mains-voltage inputs and must only be connected to mains-rated switches.
6. Do not connect mains voltage (L/N) to the DALI terminals.
7. For polarity-marked DALI terminals (DA+/DA−), observe correct DALI polarity.
8. For non-polarity-marked DALI terminals (DA/DA), DALI wiring is polarity-free.

Wire Preparation

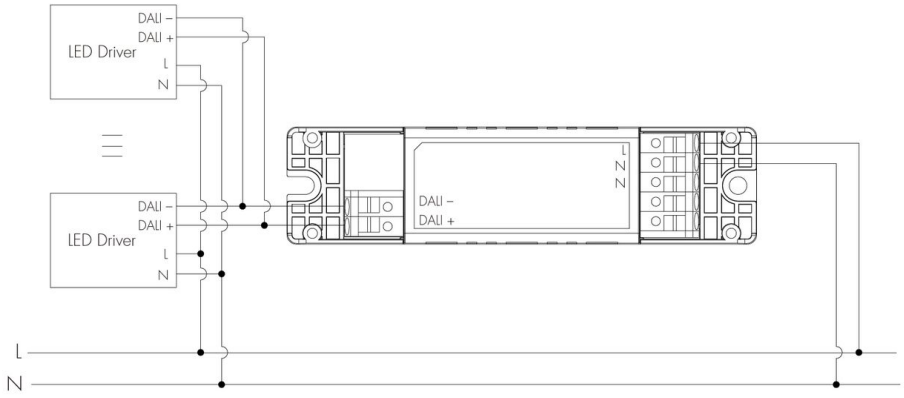




(min 6mm, max 11mm)

To make or release the wire from the terminal, use a screwdriver to push down the button. 1. 200 metres (total) max. for 1mm² CSA (Ta = 50°C) 2. 300 metres (total) max. for 1.5mm² CSA (Ta = 50°C)

Wiring Diagram



Commissioning Instructions and Precautions

A. DALI Bus Current Notes

Typical DALI bus current consumption per driver is approximately 2 mA. Before installation, calculate the total bus current consumption of all devices connected to the same DALI bus. Ensure that the total current consumption does not exceed the guaranteed supply current of the DALI bus power supply, and allow sufficient system margin.

B. Product Default Setting

1. Controller Unit Default Settings:

Dimming method: Logarithm, DALI dimming mode: standard DALI Dimming, Brightness level range: 1%-100%.

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.

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

PUSH functionality varies by model and may include physical PUSH, virtual PUSH, or both. Available functions can be configured via the Koolmesh App.

Physical PUSH: Supports momentary (non-latching) or latching wall switches connected via dedicated PUSH input terminals.

Virtual PUSH: Provides software-based PUSH control without requiring a physical wall switch or dedicated PUSH input terminals.

Normal PUSH mode: Single press, double press and press and hold can each be assigned a separate function. Each action triggers only its assigned function.

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

Accessories

	Reinforced Bluetooth Antenna | Easy installation | Black color	HA01/B	www.hytronik.com/product/HA01-B
	Reinforced Bluetooth Antenna | Easy installation | White color	HA01/W	www.hytronik.com/product/HA01-W

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

- Compatible with EnOcean kinetic switches
- Push switch configuration

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.

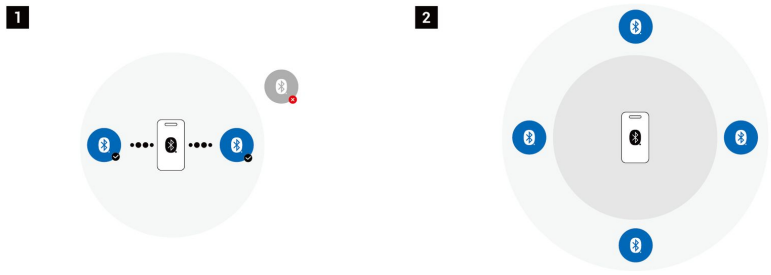
2. Device to Device Range (Mesh Network Communication)

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



HBGW04/R

Multi-protocol BMS Gateway | Dual-band Wi-Fi and Ethernet | DIN-rail Mounting
www.hytronik.com/product/HBGW04-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

Functions and Features



Built-in DALI PSU

Built-in DALI PSU means the DALI bus power supply is integrated into the product, eliminating the need for an external DALI power unit.
This reduces wiring complexity, saves installation space, and simplifies commissioning, making the system more compact and efficient.



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.



Live Energy & Diagnostic Data Part 252 / 253

Koolmesh can wirelessly read live operating data from D4i drivers, or compatible DALI drivers with Part 252 / 253 implemented.
Readable data may include real-time power (W), energy consumption (kWh), voltage (V), current (mA), power factor, operating hours (burn hours), driver temperature, start counters and LED failure flags (open/short circuit).
For standard DALI-2 DT6/DT8 drivers, Koolmesh can read the data points made available by the driver, with the actual retrievable data depending on the driver's supported functions.



Luminaire Asset Data Part 251

Koolmesh can read Part 251 luminaire asset data where available, such as GTIN, serial number, manufacturing date, luminous flux, colour temperature and manufacturer ID. The information must be pre-written into Memory Bank 1 by the luminaire OEM or driver manufacturer. If left unconfigured, related fields may be blank or unavailable.

Check out for further explanation of features

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