

HBTD8200D/RGBW

Bluetooth DALI Converter | RGBW Control | Integrated 80 mA PSU

HYTRONIK[®]
SENSORS & LIGHTING CONTROL



Benefits

Compact: Enabling direct Bluetooth-to-DALI conversion

Versatile: Supporting DALI RGBW for precise tuning

Efficient: Enabling quick setup via Koolmesh app

Applications

DALI Application

Bluetooth receiver node

Lounge, Entertainment Venues

Check Out the Complete System Solution on the Website:

<https://www.hytronik.com/product/HBTD8200D-RGBW>



LVD RED

Product Description

HBTD8200D/RGBW is a Bluetooth and DALI broadcast converter designed to enable wireless Bluetooth commissioning and control of DALI RGBW drivers, making it an ideal core module for smart RGBW lighting solutions. It supports DT6 and DT8 dimming as well as tunable-white functions, and features two freely configurable push-button inputs for on/off, dimming, and scene recall. With an integrated 80 mA DALI power supply, it provides stable power for the DALI bus, simplifying system design and installation. The device can be easily installed in junction boxes for fast deployment, and all parameters can be conveniently configured via the Koolmesh app.

Functions and Features

See additional details at the end of datasheet



D4i Driver
Compatibility



DT6/DT8 Lighting
Control



Designed for
Junction Box
Installation



Human Centric
Lighting (HCL)



Koolmesh - See
bluetooth control
below



Live Energy &
Diagnostic Data
Part 252 / 253



Luminaire Asset
Data Part 251



Over load
Protection



Push-Button
Input



RGBW, xyY and
DUV Color light
Settings



Short-circuit
Protection



nRF52840

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Specifications

Main Capabilities

Dimming (Output) Interface	DALI
Push Button Input	2

Electrical Data

Bluetooth Platform	Nordic nRF52840
Bluetooth frequency	2.4 GHz - 2.483 GHz
Bluetooth range (Phone to Device)	15-40m
Bluetooth range (Device to Device)	15-40m
Bluetooth transmit power	8 dBm
Bluetooth system	Koolmesh
Operating voltage range	220-240 VAC 50/60 Hz
Stand-by power (Psb)	<0.5W
DALI bus maximum rated current (I _n max)	110 mA
DALI bus nominal DC voltage range (Un)	15 V
DALI bus nominal current (I guaranteed)	80 mA

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Specifications

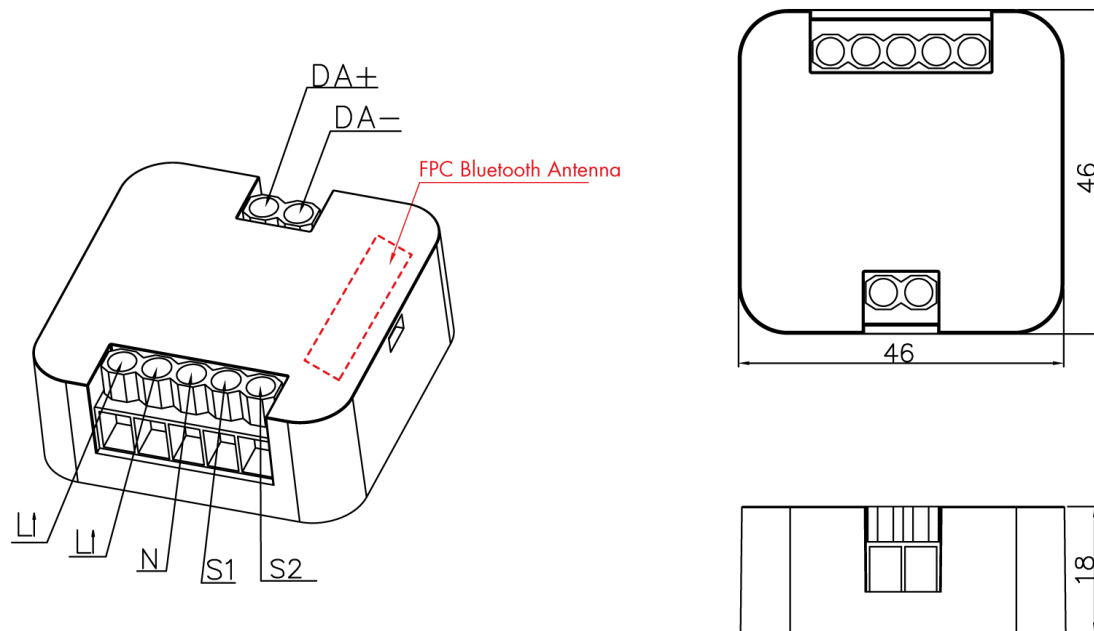
Technical	
Product weight	35.0 g
Product height	18.0 mm
Product length	46.0 mm
Product width	46.0 mm
Ambient temperature	-20 ~ +50 °C
Storage temperature	-40 ~ +70 °C
Humidity max	10 ~ 90%
Case Temp.max	75.0 °C
IP Rate	IP20

Standard	
EMC	EN 55015, EN61000-3-2/-3-3, EN 61547
LVD	EN IEC61347-1, EN IEC61347-2-11
RED	EN 300328, EN 301489-1/-17, EN 50663

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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



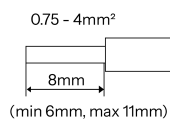
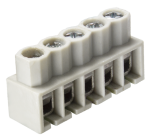
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⚠ Wiring Guidelines

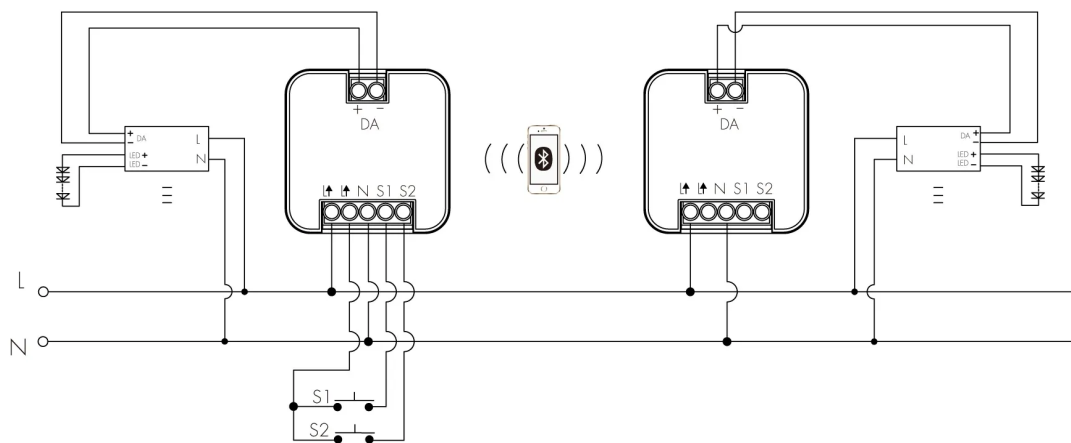
1. Installation by a qualified electrician only and in accordance with local electrical regulations.
2. Disconnect mains power before installation, wiring, maintenance or replacement.
3. Failure to follow the wiring diagram may result in product damage and malfunction.
4. Refer to the Wire Preparation 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



Use a Phillips screwdriver to loosen or secure the cable at the contact screw connections. 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



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Commissioning Instructions and Precautions

A. Bluetooth Range Preparations

1. Device-to-device communication can extend up to 40m under indoor test conditions. In open outdoor environments, the transmission distance may be reduced due to fewer surrounding structures and signal reflections. Actual performance may vary depending on the installation environment.

B. App Feature Preparations

1. Features marked with green icons in the "Device-specific Koolmesh App Features" section are available only for the nRF52840 version.

C. 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.

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

<https://hytronik.com/service/downloads>

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Switch Input Function Configuration

The provided Switch-Dim interface allows for a simple dimming method using commercially available non-latching (momentary) wall switches. Detailed Push switch configurations can be set on Koolmesh app.

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. Multiple functions cannot be activated by a single press action.

Switch function	Action	Descriptions
Fire Alarm Function	Refer to https://support.koolmesh.com/	• Able to connect the Fire Alarm system. • Once the fire alarm system is triggered, all the luminaries controlled by the Push Switch will enter the preset scene (normally it's full on), after the fire alarm system gives the ending signal, all the luminaries controlled by this Push Switch will revert back to normal status.
ON OFF Switch (Latching Switch)	/	• Upgrade a standard on/off control to Bluetooth control, enabling one latching switch to control multiple luminaires or zones, reducing wiring and switch count.
Normal PUSH (Retractive Switch)	Single press (> 0.1s) Double press Press and hold (>= 1s)	• ON/OFF • OFF only • Recall this scene • Sensor take over • Not in use
Sensor-Link	/	• Hold time/scene • Stand-by time/scene • Upgrade a normal on/off motion sensor to a Bluetooth-controlled motion sensor

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

Device-specific Koolmesh App features

- | | |
|--|--|
|  3 DALI channels with independent control (under development) |  Partition control with HBTD8200P |
|  4 push inputs supported |  Push scene cycling |
|  Compatible with EnOcean kinetic switches |  Push switch configuration |
|  DALI & D4i failure email reporting |  RGBW functionality |
|  Mesh OTA & remote commissioning (under development) |  Tri-level luminaire control |

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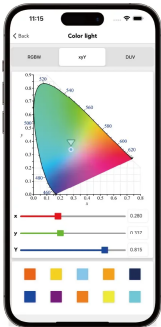
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RGBW Color light Settings via Koolmesh app



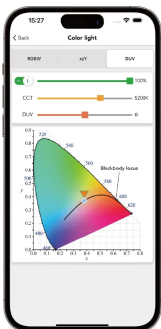
RGBW

You can adjust the color of the luminaire by dragging the RGBW slider or moving the position on the color wheel. In addition to adjusting the color, you can also fine-tune the saturation of the luminaire as needed. This can usually be done by dragging the saturation bar.



xyY

x-coordinate and y-coordinate: These two values define the position of the luminaire on the CIE 1931 chromaticity diagram, thus determining the color of the luminaire. You can adjust the color by dragging the color slider or by sliding directly on the coordinate axis. Y value: This value represents the brightness of the luminaire. You can adjust it by dragging the brightness



DUV

You can adjust the brightness and color temperature of the luminaire by dragging the brightness and color temperature sliders. You can adjust the color by dragging the sliders or adjusting the DUV curve. Positive values usually mean the luminaire hue tends to be warmer, while negative values tend to be cooler.

Application Reference

1. Art Galleries: Adjusting DUV ensures accurate color reproduction of exhibits, avoiding distortions caused by light color deviation.
2. Photo Studios: Adjusting DUV helps ensure the true color rendering of exhibits or photographed objects.
3. Office Spaces: Adjusting DUV provides a comfortable lighting environment, enhancing employee productivity.

Note:

Non-Bridgelux luminaires only support RGBW and xyY standard color tuning and do not provide a DUV interface. Due to differences in color mixing methods and color parameter definitions among LED manufacturers, deviations in RGBW color tuning may occur. For further technical information or application-specific tuning support, please contact us.

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Bluetooth Mesh Network Installation & Device Access Range

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

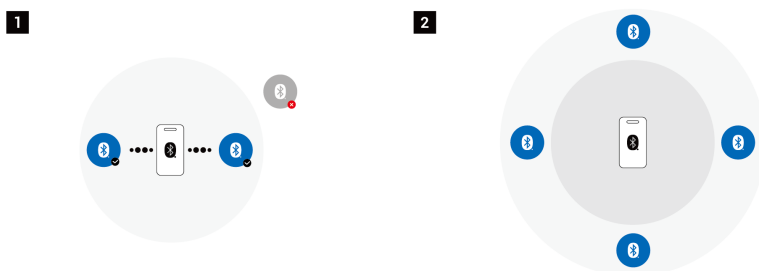
During commissioning, the installer must remain within Bluetooth range of the target device when adding it via the App.

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:

- Bluetooth range varies by product. Refer to the Specification section for details.
- 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-TS/APP

Bluetooth Touch Tablet | Switch Boxes | Smart Lighting Management
www.hytronik.com/product/HPAD-TS-APP

Functions and Features



D4i Driver Compatibility

Designed to operate with D4i-certified drivers within D4i luminaires, supporting standard DT6 / DT8 control behaviour in D4i systems.



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.



Designed for Junction Box Installation

This product is designed for installation inside a standard junction box, offering a clean and integrated mounting solution for lighting control applications. The compact design allows secure fitting and straightforward wiring within the junction box, simplifying on-site installation while ensuring reliable electrical connections for both new installations and retrofit projects.



Human Centric Lighting (HCL)

Human Centric Lighting (HCL) helps reduce energy consumption while supporting human wellbeing and productivity in artificially lit environments. Through Hytronik's decentralised tunable white control with integrated time-based operation, HCL enables cost-effective circadian rhythm lighting without the complexity of centralised lighting systems. Designed as a simple and flexible solution, it is ideal for offices, schools, and healthcare applications requiring dynamic white light adjustment throughout the day.



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.



Over load Protection

This product incorporates overload protection that limits or disables the output when the connected load exceeds the rated capacity.

This protection helps prevent overheating, excessive component stress and unstable operation, ensuring safe and reliable system performance.



Push Button Input

This product integrates push-button (momentary switch) inputs, allowing external potential-free switches to trigger basic lighting control functions. Each input can be configured for actions such as on/off switching, dimming or scene recall, providing flexible manual control and user interaction within the lighting system. The push-button inputs operate independently of the sensor's automatic functions, enabling seamless coexistence of manual and sensor-based lighting control.

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Functions and Features



RGBW, xyY and DUV Color light Settings

The product supports RGBW color control together with xyY color coordinates and DUV adjustment, enabling flexible color mixing, precise chromaticity control, and fine tuning of white light appearance. This allows accurate and consistent color performance to meet various professional lighting application requirements.



Short-Circuit Protection

This product incorporates short-circuit protection that automatically disables the output in the event of a short circuit. Normal operation is restored automatically once the fault condition is removed, protecting the device and connected components from damage.



nRF52840

Powered by Nordic nRF52840 Bluetooth® 5.0 SoC, the product delivers enhanced memory capacity and processing performance for advanced Bluetooth Mesh lighting applications. The larger Flash and RAM resources support OTA updates, complex commissioning, diagnostics, and future firmware expansion. External EEPROM provides reliable storage for configuration data, network parameters, and device settings, ensuring stable operation and easy maintenance.

Check out for further explanation of features

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