HED6045/BT

Bluetooth LED Driver 45W (CC) Dimmable | Plug&Play | Built-in/Stand-alone



Benefits

Innovative: Push Switch and Bluetooth control interfaces for flexible operation

Versatile: Suitable for various sensor head options via Plug'n'Play

Simple: Wireless setup and commissioning via Koolmesh App

Applications

Retrofit projects with no extra wiring for control

Offices

Classrooms

Check Out the Complete System Solution on the Website:
https://www.hytronik.com/product/HED6045-BT

Product Description

HED6045/BT is a Bluetooth dimmable LED driver designed for flexible smart lighting integration, supporting both Push Switch and Bluetooth control interfaces for convenient dimming control. Its RJ12 terminal allows easy connection to a wide range of motion sensor heads, including HF and PIR sensors, enabling flexible sensing solutions for different lighting applications. Suitable for luminaire development and lighting upgrade projects, Bluetooth Mesh networking enables wireless communication between luminaires without additional control wiring, reducing installation complexity and project costs. With a maximum output power of 45W, all configuration and commissioning can be completed easily via the Koolmesh App.

Functions and Features

See additional details at the end of datasheet

Active PFC design

Flicker-Free1-100%

Insulated Terminal Cover

Koolmesh - See bluetooth contol below

Linear Dimming

Logarithmic Multi-Dimming

Loop-in/Loop-out

Multiple Current

Open-Circuit Protection

Over load Protection

Push-Button Input

Short-circuit Protection

Specifications

Main Capabilities	
Dimming (Output) Interface	Bluetooth dimming, Switch-Dim
Operating Mode	Constant Current
Push Button Input	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
Input Voltage	220-240 VAC 50/60 Hz
Input current range	0.24~0.22A
Output Voltage	10-54V
Output Power	45W
Output Current	350mA~1050mA
Output Uout Max.	75VDC
Stand-by power (Psb)	<0.5W
Power Factor (Max.)	0.95
Efficiency	88.0 %
In-rush current	17.8 A
In-rush current time	72.0 µs

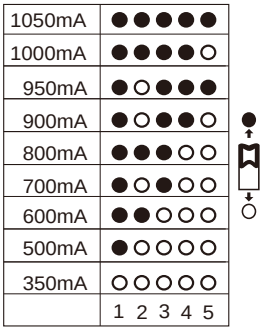
Specifications

Technical	
Product weight	171.0 g
Product height	23.0 mm
Product length	140.6 mm
Product width	79.2 mm
Ambient temperature	-20 ~ +50 °C
Storage temperature	-20 ~ +50 °C
Humidity max	10 ~ 90%
Case Temp.max	80.0 °C
IP Rate	IP20

Standard	
EMC	EM61547, EN 55015, EN 61000-3-2, EN61000-3-3
LVD	EN 61347-1, EN 61347-2-13, EN 62493
RED	EN 300328, EN 301489-1/-17, EN 50663

Output configuration

LED Current Selection



LED Current Selection									
Output Power	3.5-19W	5-27W	6-32W	7-38W	8-42W	9-45W	9.5-45W	10-45W	10.5-44W
Output Current	350mA	500mA	600mA	700mA	800mA	900mA	950mA	1000mA	1050mA
Output Voltage	10-54V	10-54V	10-54V	10-54V	10-52V	10-50V	10-47V	10-45V	10-42V

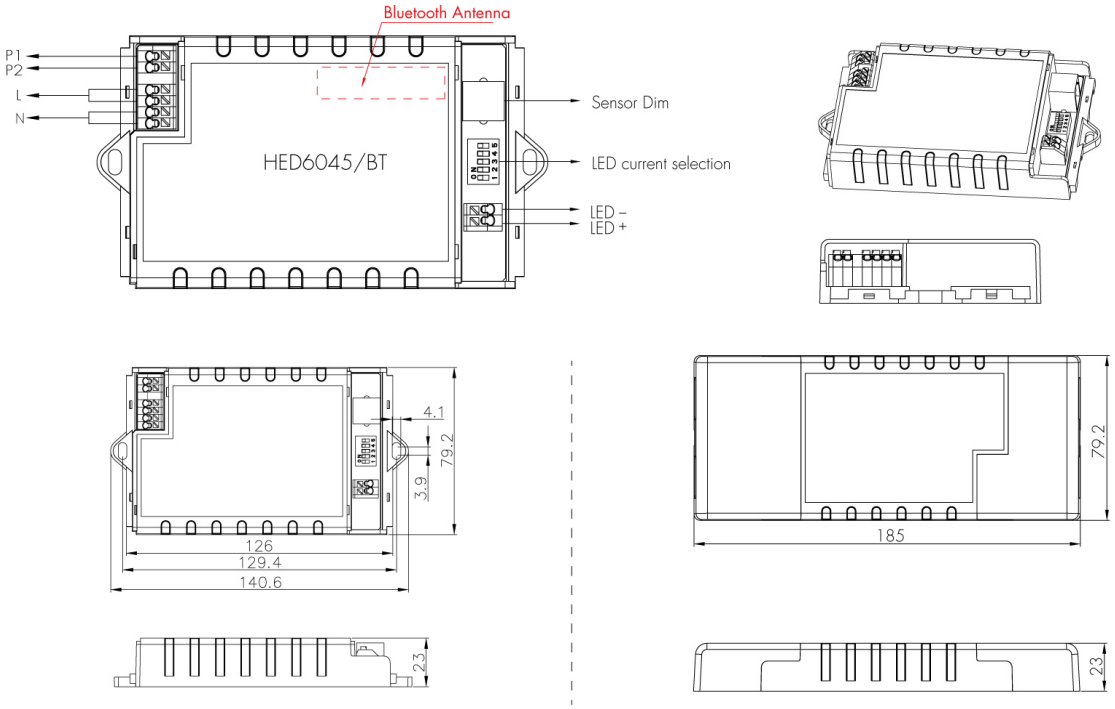
Warning: Please make sure the correct current is selected before starting the Emergency driver!

Circuit breaker information

Automatic circuit breaker type	B10A	B13A	B16A	B20A	B25A
HED6045/BT	27	35	43	54	67

The data above is calculated according to the formula: Maximum Amount = 16/(Pn/230). In order to provide a more reliable reference in real application, the data have been revised to take 60% of the number calculated, i.e. 16/(Pn/230) x 60%.
Please kindly take note that the calculation is based on ABB circuit breaker series S200. Actual values may differ due to different types of circuit breaker used and installation environment.

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.

Application Example

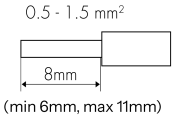


⚠ Wiring Guidelines

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. There is no need for any hardwirings on "push" terminal between one driver to another. The installer only needs to connect the push switches to the nearest driver to save labor and cost. The push switches can be assigned to control any Bluetooth driver through the app commissioning.

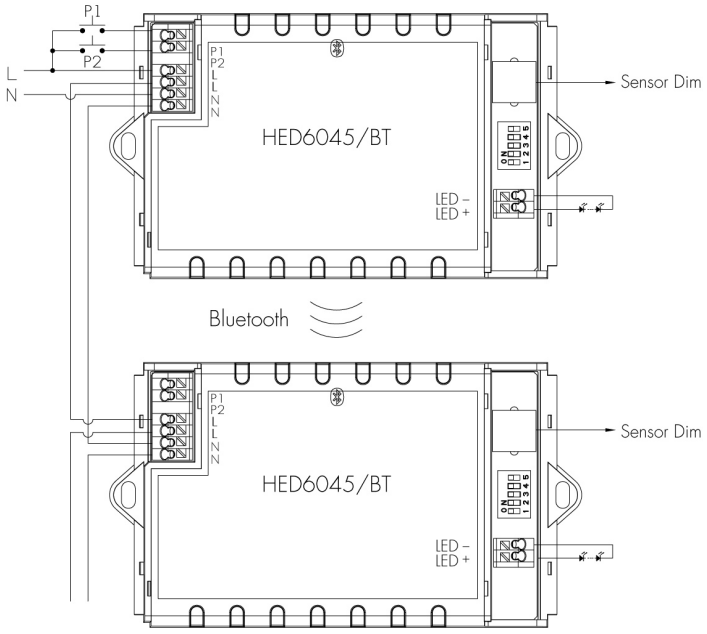
Wire Preparation





To make or release the wire from the terminal, use a screwdriver to push down the button

Wiring Diagram



Commissioning Instructions and Precautions

A. Factory settings Notes

1. Luminaire setting temple: Load type: Logarithm, Brightness level range: 1%-100%.

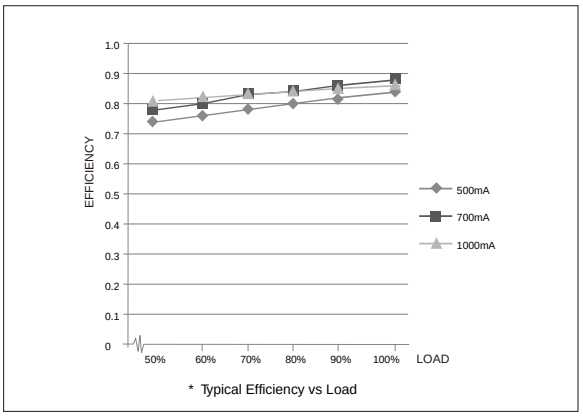
B. RJ12 Sensor Head Extension Notes

1. For applications requiring additional motion detection or sensing functions, this product can be used together with compatible Hytronik Bluetooth sensor heads via the RJ12 terminal. Different sensor heads can be selected according to the installation height, detection range and project requirements.

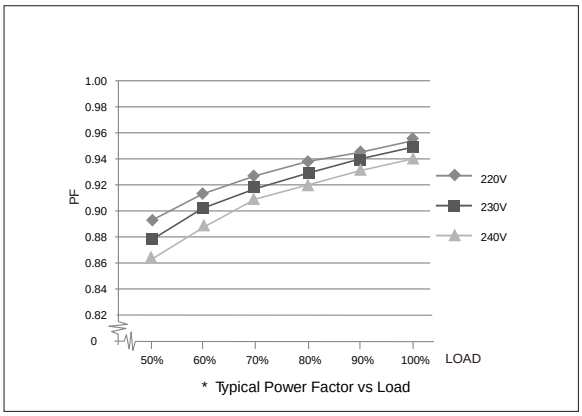
Warning: For additional important documents, including installation precautions, product guidelines, and guarantee conditions, please refer to the official downloads.

https://hytronik.com/service/downloads

Performance characteristics

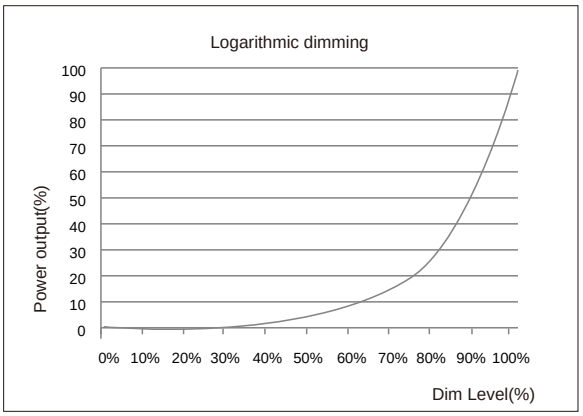


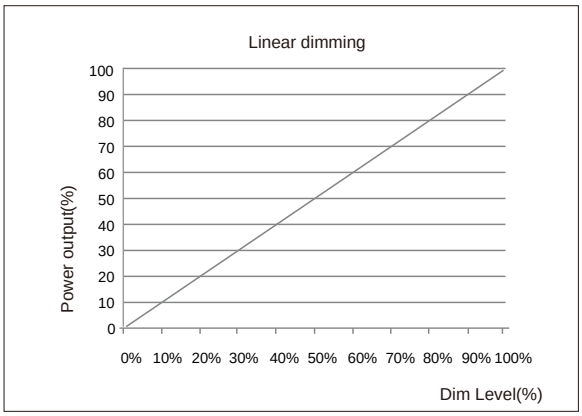
* Typical Efficiency vs Load



* Typical Power Factor vs Load

Dimming characteristics





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

Options

Compatible products (for full functionality)



HIR05

PIR Lowbay | Circadian Rhythm | RJ12 connector to control body
www.hytronik.com/product/HIR05



HIR05/FM

PIR Lowbay | Circadian Rhythm | RJ12 connector to control body
www.hytronik.com/product/HIR05-FM



HIR07

PIR Lowbay | Photocell Advance | RJ12 connector to control unit
www.hytronik.com/product/HIR07



HIR11/C

PIR Highbay | Ciradian Rhyhm | RJ12 connector to control body
www.hytronik.com/product/HIR11-C



HIR11/F

PIR Highbay | Ciradian Rhyhm | RJ12 connector to control body
www.hytronik.com/product/HIR11-F



HIR11/S

PIR Highbay | Ciradian Rhyhm | RJ12 connector to control body
www.hytronik.com/product/HIR11-S



HIR12

PIR Highbay | Ciradian Rhyhm | RJ12 connector to control body
www.hytronik.com/product/HIR12



HIR63

PIR Lowbay Sensor Head | RJ12 connector | Conduit Screws
www.hytronik.com/product/HIR63



HIR63/R

PIR Midbay Sensor Head | RJ12 connector | Conduit Screws
www.hytronik.com/product/HIR63-R



SAM20

HF Lowbay | Daylight Harvest | RJ12 connector to control body
www.hytronik.com/product/SAM20



SAM21

HF Lowbay | Ciradian Rhyhm | RJ12 connector to control body | IP65
www.hytronik.com/product/SAM21



SAM22

HF Lowbay | Ciradian Rhyhm | RJ12 connector to control body
www.hytronik.com/product/SAM22



SAM22/AA

HF Lowbay | Ciradian Rhyhm | RJ12 connector to control body
www.hytronik.com/product/SAM22-AA



SAM23

HF Highbay | Photocell Advance | RJ12 connector to control body
www.hytronik.com/product/SAM23

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
- Troubleshooting & 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.

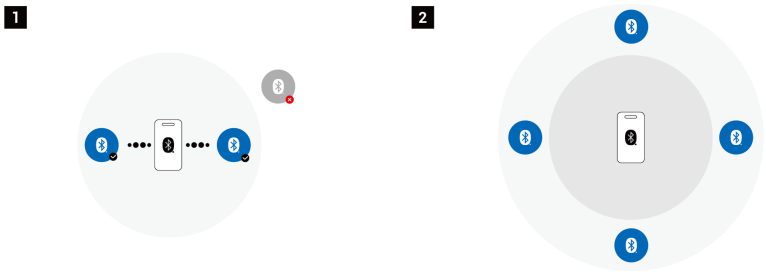
2. Device to Device Range (Mesh Network Communication)

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-TS/APP

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

Functions and Features



Active PFC design

This product features an active PFC (Power Factor Correction) design, improving power factor and reducing harmonic distortion. It helps increase energy efficiency, optimize power utilization, and comply with relevant power quality requirements.



Flicker Free 1–100%

This product maintains flicker-free light output across the entire dimming range from one percent to full brightness. Stable current regulation ensures minimal visible or stroboscopic flicker at all light levels, providing comfortable and consistent illumination in applications that require wide-range dimming performance.



Insulated Terminal Cover

The product includes an insulated terminal cover that provides electrical protection for wiring connections and ensures compliance with safety requirements. When the cover is installed, the device can be used as an independently mounted unit rather than a built-in component, offering greater installation flflexibility while maintaining safe and secure terminal insulation.



Linear Dimming

The product supports a linear dimming curve, where the light output changes in direct proportion to the control signal. This provides smooth and predictable dimming behaviour, making it suitable for applications that require consistent visual response across the full dimming range.



Logarithmic Multi-Dimming

The product supports logarithmic multi-stage dimming, providing finer brightness control across several dimming segments. By applying a perceptual logarithmic response in each stage, the system delivers smoother and more consistent visual transitions, especially at low light levels. This enhances dimming precision and visual comfort in professional lighting applications that require detailed light-level adjustment.



Loop-in / Loop-out

The product provides loop-in/loop-out terminals that allow mains wiring to pass through the device for quick and convenient daisy-chain installation. This simplifies on-site wiring, reduces junction box requirements, and enables efficient connection of multiple luminaires or drivers in a single circuit.



Multiple Current

The product supports multiple selectable output current levels, which can be adjusted via DIP switch or the Koolmesh app to match different luminaire requirements. This flexibility simplifies system design and ensures optimal performance and reliability across various load conditions.



Open-Circuit Protection

This product incorporates open-circuit protection to safeguard the device and connected system in the event of a disconnected load or open wiring condition. When an open circuit is detected, the output is automatically limited or disabled to prevent abnormal operation or component damage, ensuring safe and reliable system behaviour.



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.

Functions and Features



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.

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.

Check out for further explanation of features

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