PIR Standalone Motion Sensor with Bluetooth® 5.0 SIG Mesh

HBHC25
Low-bay

HBHC25/R
Reinforced Low-bay

HBHC25/W
Wide range Low-bay

HBHC25/H
High-bay

HYTRONIK®

Bluetooth® CE UK CA RoHS IP20 RED

Product Description

HBHC25 is a Bluetooth PIR standalone motion sensor with 80mA DALI power supply built in, splitting into 2 DALI channels: 50mA for Channel 1 and 30mA for Channel 2. It is ideal for typical indoor applications such as office, classroom, healthcare and other commercial areas. With Bluetooth wireless mesh networking, it makes communication between luminaires much easier without time-consuming hardwiring, which eventually saves costs for projects (especially for retrofit upgrade projects). Meanwhile, simple device setup and commissioning can be done via Koolmesh® app.


HBHC25


HBHC25/R


HBHC25/W

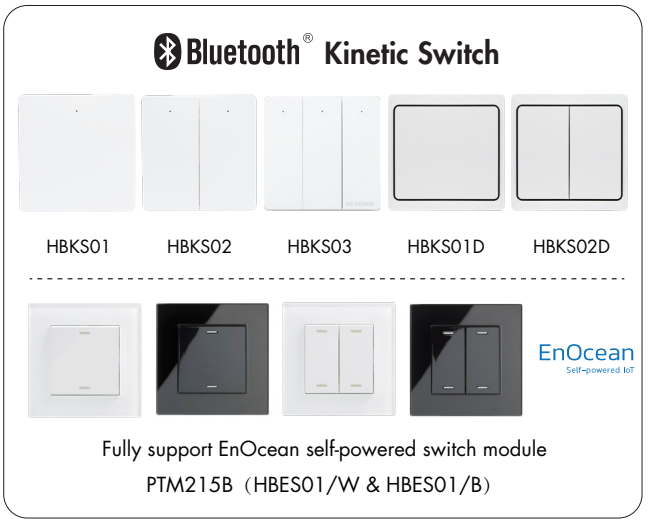

HBHC25/H

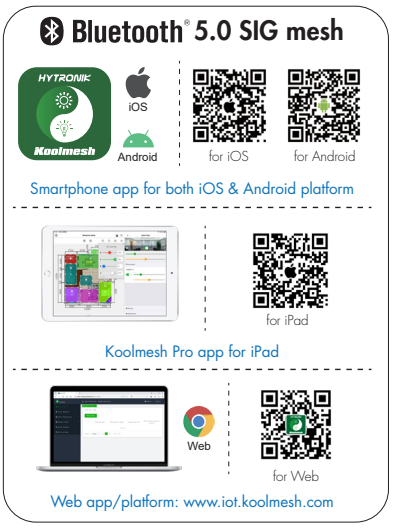
App Features

- Quick setup mode & advanced setup mode
- Tri-level control
- Daylight harvest
- Circadian rhythm (Human centric lighting)
- Floorplan feature to simplify project planning
- Web app/platform for dedicated project management
- Koolmesh Pro iPad version for on-site configuration
- Grouping luminaires via mesh network
- Scenes
- Detailed motion sensor settings
- Dusk/Dawn photocell (Twilight function)
- Push switch configuration
- Schedule to run scenes based on time and date
- Astro timer (sunrise and sunset)
- Staircase function (primary & secondary)
- Internet-of-Things (IoT) featured
- Device firmware update over-the-air (OTA)
- Device social relations check
- Bulk commissioning (copy and paste settings)
- Dynamic daylight harvest auto-adaptation
- Power-on status (memory against power loss)
- Offline commissioning
- Different permission levels via authority management
- Network sharing via QR code or keycode
- Remote control via gateway support HBGW01
- Interoperability with Hytronik Bluetooth product portfolio
- Compatible with EnOcean BLE switches
- Continuous development in progress…

Hardware Features

- 80mA DALI broadcast output in 2 channels:
  - 50mA (Channel 1)
  - 30mA (Channel 2)
- Support to control DT8 LED drivers
- Support D4i driver and collect energy, fault & diagnostics data
- 3 Push inputs for flexible manual control
- RTC retains timekeeping for about 10 days during power loss (For optimal performance, install the device facing down and at around 25°C. Prolonged exposure to direct outdoor sunlight may reduce RTC time to 2 days.)
- Black & White & Gray metal surface mount box options
- Two types of blind inserts / blanking plates
- User-friendly design for installation
- High bay version available (up to 20m in height)
- 5-year warranty





Technical Specifications

Bluetooth Transceiver	
Operation frequency	2.4 GHz - 2.483 GHz
Transmission power	4 dBm
Range (Typical indoor)	10~30m
Protocol	Bluetooth® 5.0 SIG Mesh

Sensor Data	
Sensor Model	PIR max* detection range
HBHC25	Installation Height : 6m Detection Range(Ø) :9m
HBHC25/R	Installation Height : 6m Detection Range(Ø) :10m
HBHC25/W	Installation Height : 6m Detection Range(Ø) :18m
HBHC25/H	Installation height: 15m (forklift) 12m (person) Detection range (Ø): 24m
Detection angle	360°

* For more details of detection range, please refer to "detection pattern" section.

Input & Output Characteristics	
Operating voltage	220~240VAC 50/60Hz
Stand-by power	<1W
DALI Channel 1	Max.50mA
DALI Channel 2	Max.30mA

* Suitable for DALI DT8 LED drivers

Safety & EMC	
EMC standard (EMC)	EN55015, EN61000-3-2/-3-3 EN61547
Safety standard (LVD)	EN60669-1/-2-1 AS/NZS60669-1/-2-1
RED	EN300328, EN301489-1/-17
Certification	UKCA, CE , RED, RCM

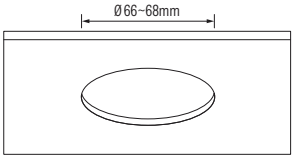
Environment	
Operation temperature	Ta: -20°C ~ +50°C
IP rating	IP20
IP rating (facial part)	IP54

*IP54 (facial part) only for lens of standard, /R, /H

Mechanical Structure & Dimensions

1. Ceiling (drill hole Ø 66~68mm).
2. Carefully prise off the Back Caps.
3. Make connections to the pluggable terminal blocks.
4. Secure the cables with screws for better stability (provide high back caps HA08 option) .
5. Fit detection blind (if required) and desired lens.
6. clip fascia to body.
7. Bend back springs and Insert into ceiling.

1



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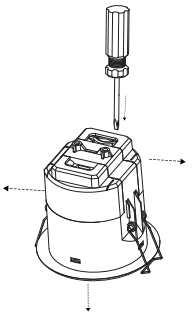

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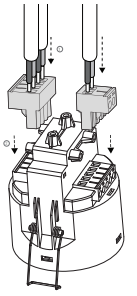

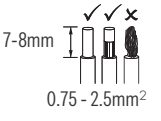

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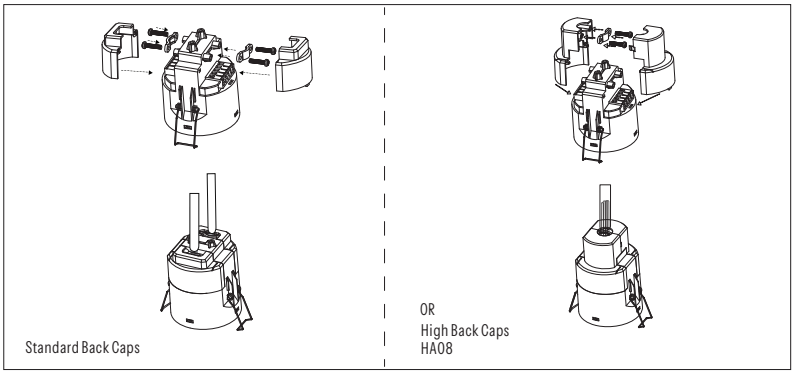

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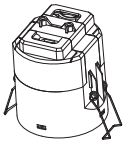

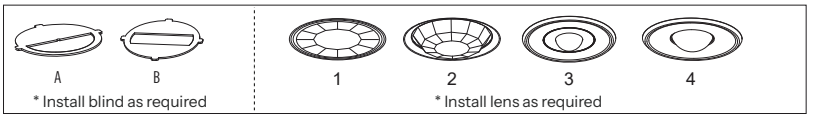

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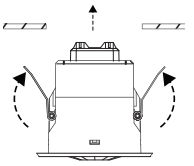

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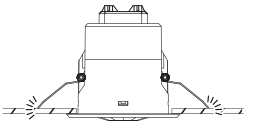
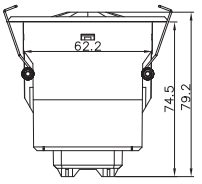
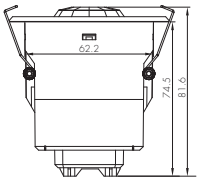
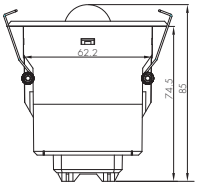




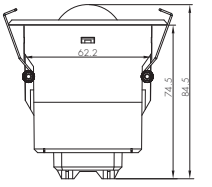
HBHC25



HBHC25/R

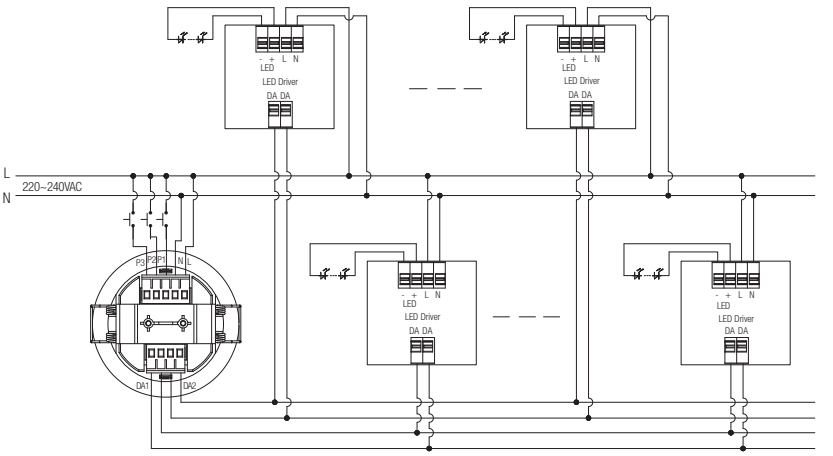


HBHC25/W



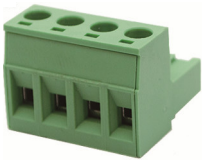
HBHC25/H

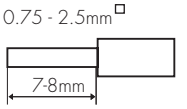
Wiring Diagram



———*This product should be installed by a qualified electrician.*

Wire Preparation





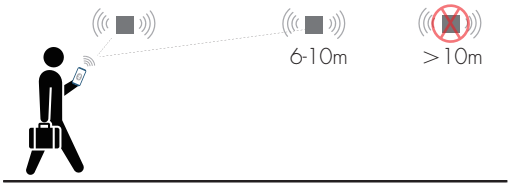
Pluggable screw terminal. It is recommended to make connections to the terminal before fitting to the sensor.

1. 200 metres (total) max. for 1mm² CSA (Ta = 50℃)
2. 300 metres (total) max. for 1.5mm² CSA (Ta = 50℃)

Detection Pattern & Optional Accessories

Placement Guide and Typical Range

Smart Phone to Device Range

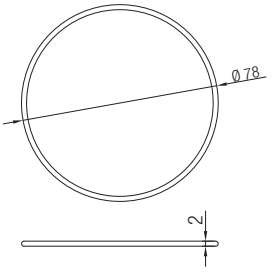


The smart device with the App installed will have a typical range of 10m, but varies from device to device. During commissioning, the installer will need to be in range of the devices when searching for devices to add to the network.

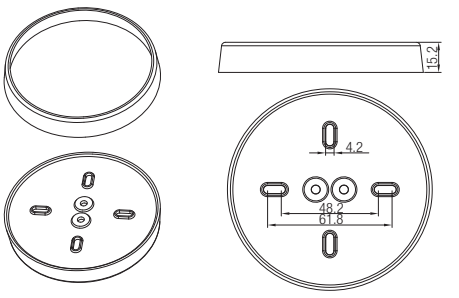
Once the devices have been added to the network via the App, the devices will start communicating within the wireless mesh. This means that once the network is complete, all devices are accessible from the smart device when in a 20m range of a single point.

Big and small silicon gasket used to make IP54 degree protection (mounted into HA09 housing for ceiling mount)

Small silicon water-proof gasket dimension(size:mm)



Big silicon water-proof gasket dimension(size:mm)



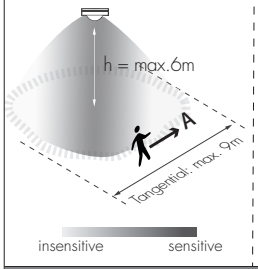
Note: The small silicon water-proof gasket is not suitable for HBHC25/W and HBHC25/UH
The Big silicon water-proof gasket is not suitable for HBHC25/W

1. HBHC25 (Low-bay)

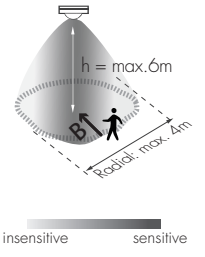
HBHC25: Low-bay flat lens detection pattern for **single person** @ Ta = 20°C

(Recommended ceiling mount installation height **2.5m-6m**)

A: Tangential movement

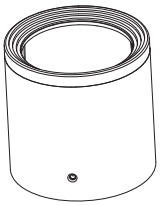


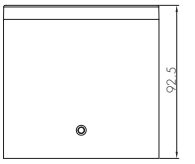
B: Radial movement

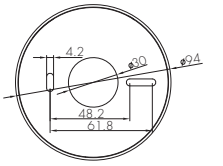


Mount height	Tangential (A)	Radial (B)
2.5m	max 50m² (Ø = 8m)	max 13m² (Ø = 4m)
3m	max 64m² (Ø = 9m)	max 13m² (Ø = 4m)
4m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)
5m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)
6m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)

Optional Accessory --- Ceiling/Surface Metal Mount Box: HA09/W, HA09/B, HA09/G







Optional Accessory --- Blind Insert for Blocking Certain Detection Angles

Blind Option 1 --- Aisle Detection

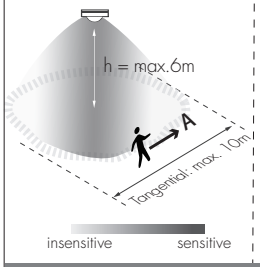
Blind Option 2 --- 180° Detection

2. HBHC25/R (Reinforced Low-bay)

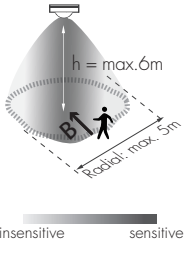
HBHC25/R: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

(Recommended ceiling mount installation height **2.5m-6m**)

A: Tangential movement

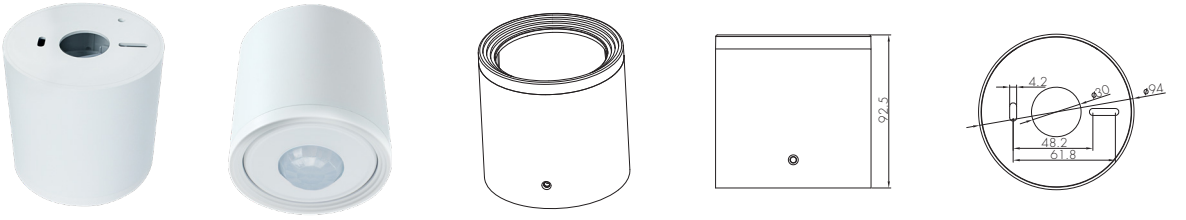


B: Radial movement

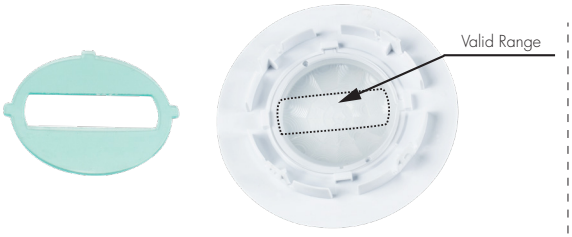


Mount height	Tangential (A)	Radial (B)
2.5m	max 79m² (Ø = 10m)	max 20m² (Ø = 5m)
3m	max 79m² (Ø = 10m)	max 20m² (Ø = 5m)
4m	max 64m² (Ø = 9m)	max 20m² (Ø = 5m)
5m	max 50m² (Ø = 8m)	max 20m² (Ø = 5m)
6m	max 50m² (Ø = 8m)	max 20m² (Ø = 5m)

Optional Accessory --- Ceiling/Surface Metal Mount Box: HA09/W, HA09/B, HA09/G



Optional Accessory --- Blind Insert for Blocking Certain Detection Angles



Blind Option 1 --- Aisle Detection

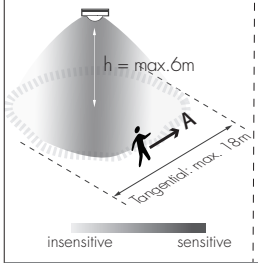
Blind Option 2 --- 180° Detection

3. HBHC25/W (Wide range Low-bay)

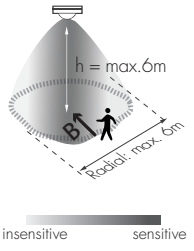
HBHC25/W: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

(Recommended ceiling mount installation height **2.5m-6m**)

A: Tangential movement

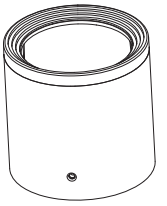


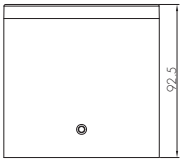
B: Radial movement

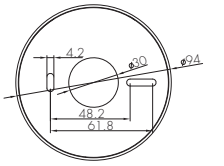


Mount height	Tangential (A)	Radial (B)
2.5m	max 254m² (Ø = 18m)	max 28m² (Ø = 6m)
3m	max 254m² (Ø = 18m)	max 28m² (Ø = 6m)
4m	max 154m² (Ø = 14m)	max 28m² (Ø = 6m)
5m	max 113m² (Ø = 12m)	max 28m² (Ø = 6m)
6m	max 79m² (Ø = 10m)	max 13m² (Ø = 4m)

Optional Accessory --- Ceiling/Surface Metal Mount Box: HA09/W, HA09/B, HA09/G





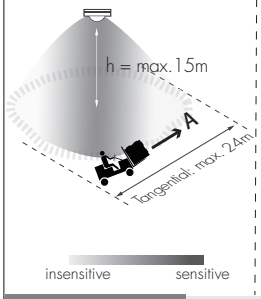


4. HBHC25/H (High-bay)

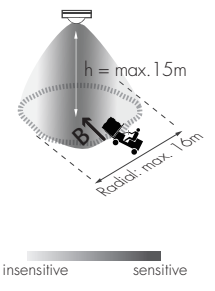
HBHC25/H: High-bay lens detection pattern for **forklift** @ Ta = 20°C

(Recommended ceiling mount installation height **10m-15m**)

A: Tangential movement



B: Radial movement

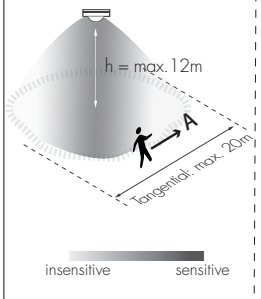


Mount height	Tangential (A)	Radial (B)
10m	max 380m² (Ø = 22m)	max 201m² (Ø = 16m)
11m	max 452m² (Ø = 24m)	max 201m² (Ø = 16m)
12m	max 452m² (Ø = 24m)	max 201m² (Ø = 16m)
13m	max 452m² (Ø = 24m)	max 177m² (Ø = 15m)
14m	max 452m² (Ø = 24m)	max 133m² (Ø = 13m)
15m	max 452m² (Ø = 24m)	max 113m² (Ø = 12m)

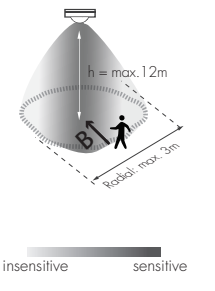
HBHC25/H: High-bay lens detection pattern for **single person** @ Ta = 20°C

(Recommended ceiling mount installation height **2.5m-12m**)

A: Tangential movement

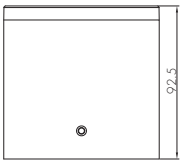


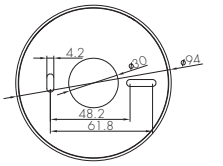
B: Radial movement



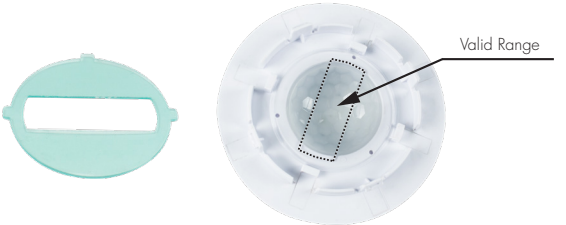
Mount height	Tangential (A)	Radial (B)
2.5m	max 50m² (Ø = 8m)	max 7m² (Ø = 3m)
6m	max 104m² (Ø = 11.5m)	max 7m² (Ø = 3m)
8m	max 154m² (Ø = 14m)	max 7m² (Ø = 3m)
10m	max 227m² (Ø = 17m)	max 7m² (Ø = 3m)
11m	max 269m² (Ø = 18.5m)	max 7m² (Ø = 3m)
12m	max 314m² (Ø = 20m)	max 7m² (Ø = 3m)

Optional Accessory --- Ceiling/Surface Metal Mount Box: HA09/W, HA09/B, HA09/G





Optional Accessory --- Blind Insert for Blocking Certain Detection Angles



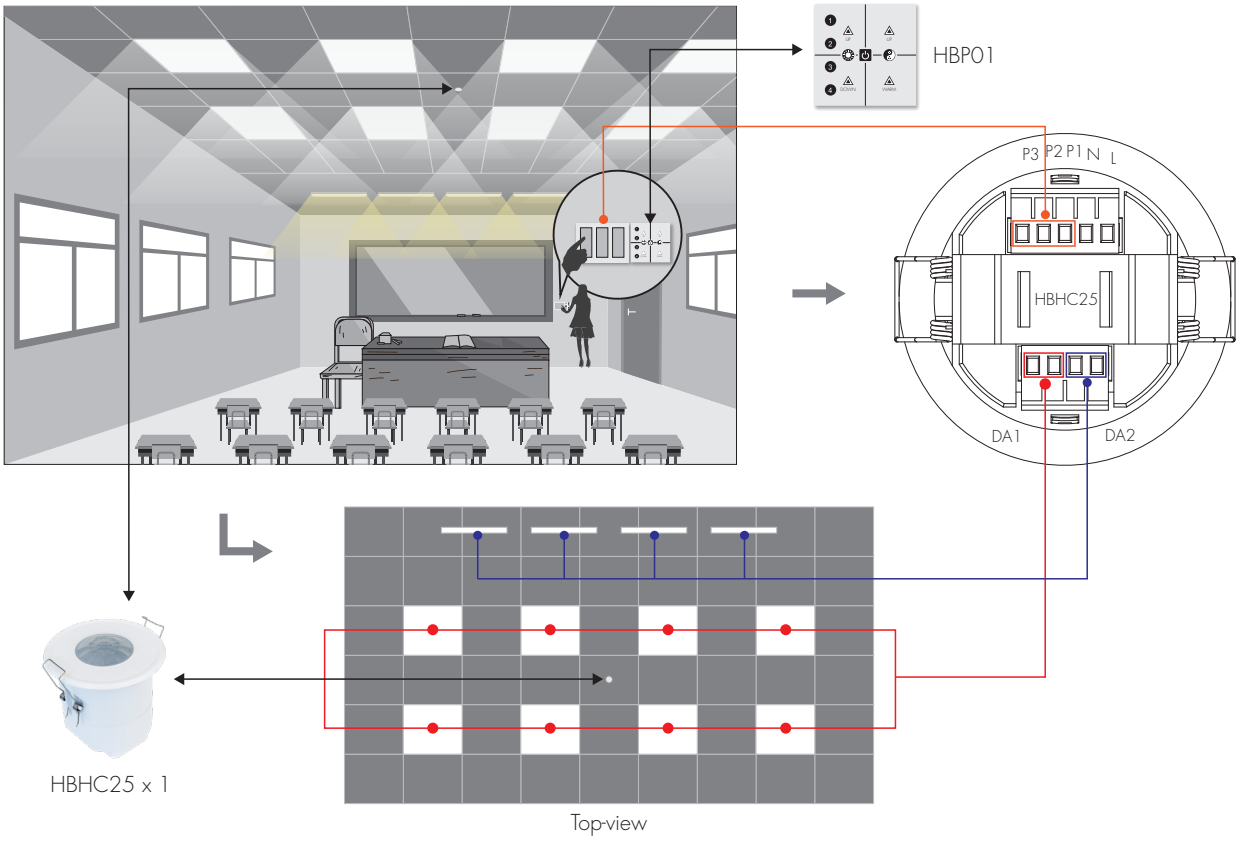
Blind Option 1 --- Aisle Detection

Blind Option 2 --- 180° Detection

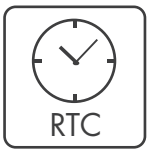
Typical Application for Classroom (Human Centric Lighting)

Different from other complex system, Hytronik offer a simple yet decentralized one-stop solution to achieve Human Centric lighting. It cuts at least 50% to 60% in costs as compared to traditional complex wiring system. This solution is based on Bluetooth together with an intuitive and portable app; it does not require complicated PC tools to set up and configure. What's more, our Bluetooth solution is futureproof with OTA upgrade capability. With services of tailor making Bluetooth solution including app, products, server and cloud, this solution brings flexibility and versatility to adapt to each customer's requirements at affordable prices.

	What you need	What you get
	HBHC25 x 1	• Bluetooth enabled and controllable via app • 2 DALI channels for whiteboard/electronic display area and student area independently • Human Centric Function • PIR motion sensing • Daylight Harvest
	Push switches x 3	• Manual control: brightness adjustment, colour tuning, recall scenes etc.
	HHC2045 x 8 for LED panels HHC2050L x 4 for linear LED lights	• Tunable white LED driver (Can also be any other DALI DT8 drivers)
	HBP02 x 1 (Optional)	• Bluetooth touch panel • Can recall up to 6 scenes • Switchable between each scene • Brightness adjustment,colour tuning
	QCB01 x 2 with cables and plugs (Optional)	• Labour cost saved significantly • Hassle-free maintenance after installation • Simplify wiring on site via plug 'n' play
	HBGW01 gateway x 1 (Optional)	• Remote control access • Data collection and analysis
	Free app	• Futureproof via OTA • Off-line commissioning
	Cloud & server	• Settings data backup • Accounts security



Functions and Features



The Real-Time Clock (RTC) is an essential component in Hytronik BLE devices, particularly those used in circadian-rhythm lighting systems. It preserves accurate time and date information during power interruptions, ensuring schedules, astro timer, circadian rhythm profiles, time-triggered scenes and other time-based functions continue to operate correctly and automatically recover when power is restored. This helps maintain uninterrupted operation andoverall system reliability. RTC retention duration varies by product and installation conditions; prolonged exposure tohigh ambient temperatures or direct sunlight may reduce the available backup time.

Dimming Interface Operation Notes

Switch-Dim

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.

Switch Function	Action	Descriptions
Push switch	Short press (<1 second) * Short press has to be longer than 0.1s, or it will be invalid.	- Turn on/off - Turn on only - Turn off only - Recall a scene - Quit manual mode - Do nothing
	Double push	- Turn on only - Turn off only - Recall a scene - Quit manual mode - Do nothing
	Long press (≥1 second)	- Dimming - Colour tuning - Do nothing
Sensor-link	/	- Upgrade a normal on/off motion sensor to a Bluetooth controlled motion sensor
Fire Alarm (VFC signal only)	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.

Additional Information / Documents

1. To learn more about detailed product features/functions, please kindly refer to
   https://hytronik.com/product/hbhc25
2. Regarding precautions for Bluetooth product installation and operation, please kindly refer to
   https://hytronik.com/service/downloads (Bluetooth Products Precautions for Product Iinstallation and Operation)
3. Regarding precautions for PIR Sensors installation and operation, please kindly refer to
   https://hytronik.com/service/downloads (PIR Sensors Precautions for Product Installation and Operation)
4. Data sheet is subject to change without notice. Please always refer to the most recent release on
   https://hytronik.com/products/motion-daylight-sensors
5. Regarding Hytronik standard guarantee policy, please kindly refer to
   https://hytronik.com/service/downloads (Guarantee Conditions document)