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 | HBHC25/RH Reinforced High-bay

HYTRONIK®

CB CE IP20 RED emc

## 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 (up to 25 LED drivers) and 30mA (up to 15 LED drivers) 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


HBHC/W


HBHC25/H


HBHC25/RH (3-pyro)

## App Features

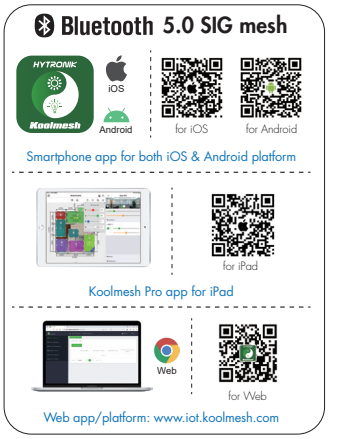
- Quick setup mode & advanced setup mode
- Tri-level control
- Daylight harvest
- Circadian rhythm (Human centric lighting)
- Floorplan feature to simplify project planning
- Web app/platform for dedicated project management
- Koolmesh Pro iPad version for on-site configuration
- Grouping luminaires 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
- 3 Push inputs for flexible manual control
- Keep real time for up to 2 weeks against power failure
- IP20/IP54 Ceiling/Surface mount box available as accessory
- Two types of blind inserts / blanking plates
- User-friendly design for installation
- High bay version available (up to 15m in height)
- 5-year warranty

EnOcean
Self-powered IoT

Fully support EnOcean self-powered switch module PTM215B (HBES01/W & HBES01/B)




## 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<br>Detection Range(Ø) :9m |
| HBHC25/R | Installation Height : 6m<br>Detection Range(Ø) :10m |
| HBHC25/W | Installation Height : 6m<br>Detection Range(Ø) :18m |
| HBHC25/H | Installation height: 15m (forklift)<br>12m (person)<br>Detection range (Ø): 24m |
| HBHC25/RH | Installation height: 20m (forklift)<br>12m (person)<br>Detection range (Ø): 40m |
| 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 | 50mA, Max. 25 devices |
| DALI Channel 2 | 30mA, Max. 15 devices |

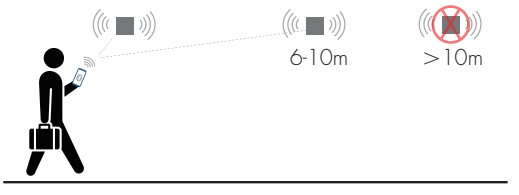
*Suitable for DALI DT8 LED drivers

| Safety & EMC | |
|---|---|
| EMC standard (EMC) | EN55015, EN61000, EN61547 |
| Safety standard (LVD) | EN60669-1/-2-1<br>AS/NZS60669-1/-2-1 |
| RED | EN300328, EN301489-1/-17 |
| Certification | CB, CE , EMC, RED, RCM |

| Environment | |
|---|---|
| Operation temperature | Ta: -20°C ~ +50°C |
| IP rating | IP20 |

## Placement Guide and Typical Range

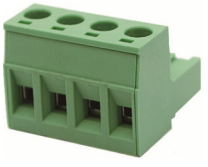
Smart Phone to Device Range

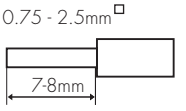



The smart device with the App installed will have a typical range of 10m, but varies from device to device. During commissioning, the installer will need to be in range of the devices when searching for devices to add to the network.

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.

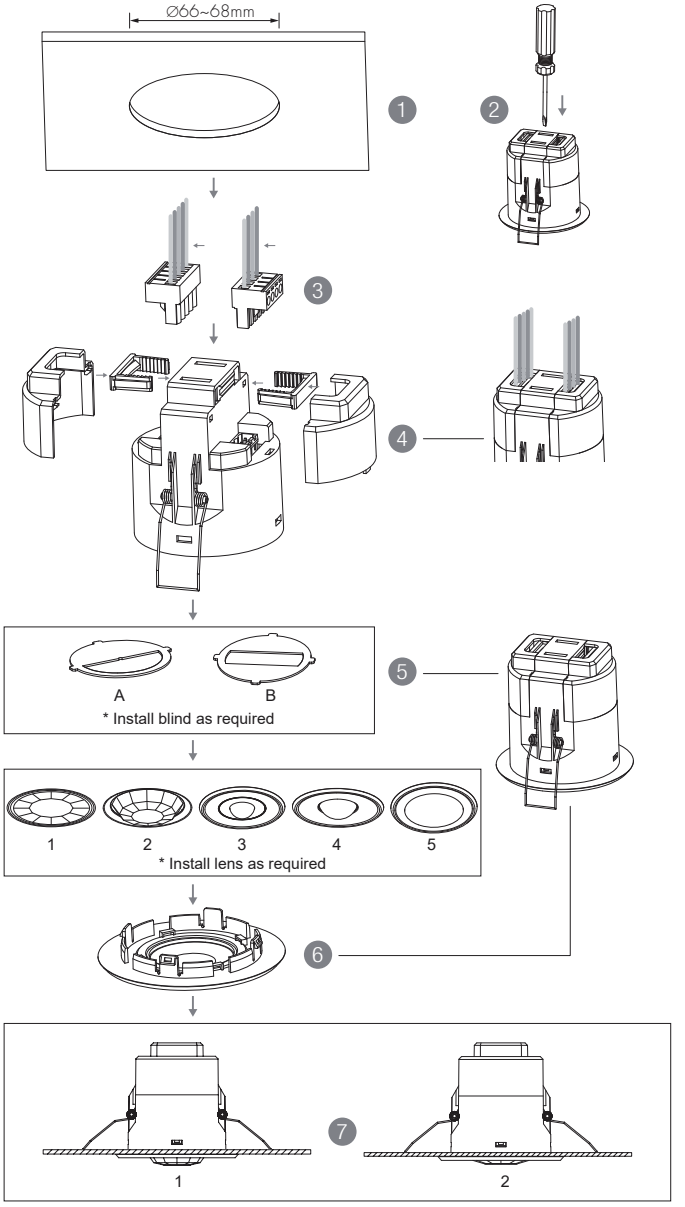
## Wire Preparation

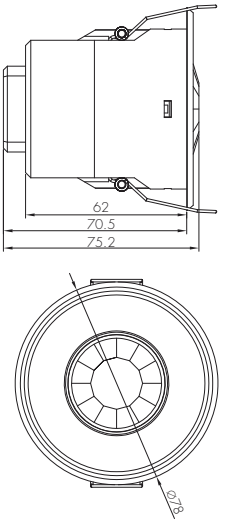




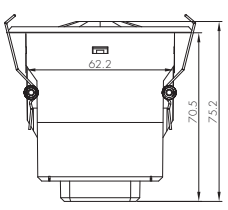

Pluggable screw terminal. It is recommended to make connections to the terminal before fitting to the sensor.

## Mechanical Structure & Dimensions

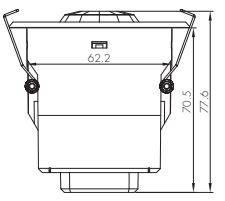


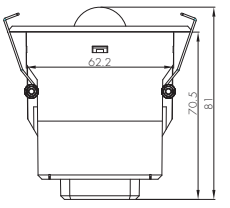

1. Ceiling (drill hole Ø 66~68mm)
2. Carefully prise off the cable clamps.
3. Make connections to the pluggable terminal blocks.
4. Insert plug connectors and secure using the provided cable clamps, then clip terminal covers to the base.
5. Fit detection blind (if required) and desired lens.
6. Clip fascia to body.
7. Bend back springs and insert into ceiling.



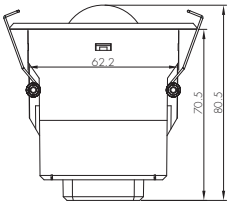

HBHC25



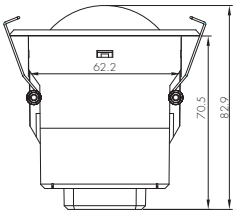

HBHC25/R




HBHC25/W




HBHC25/H



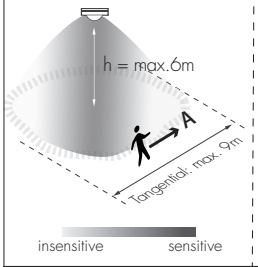

HBHC25/RH

## 1. HBHC25 (Low-bay)

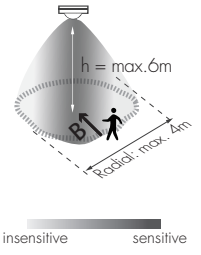
HBHC25: Low-bay flat lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

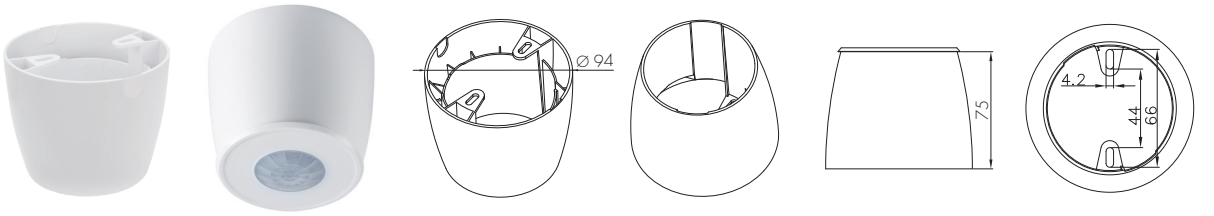



B: Radial movement

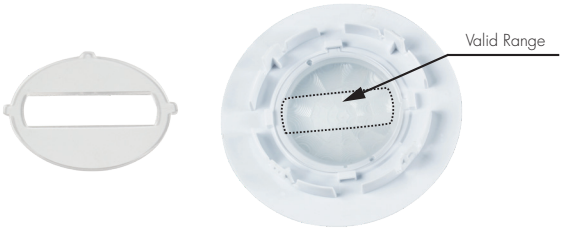



| Mount height | Tangential (A) | Radial (B) |
|---|---|---|
| 2.5m | max 50m² (Ø = 8m) | max 13m² (Ø = 4m) |
| 3m | max 64m² (Ø = 9m) | max 13m² (Ø = 4m) |
| 4m | max 38m² (Ø = 7m) | max 13m² (Ø = 4m) |
| 5m | max 38m² (Ø = 7m) | max 13m² (Ø = 4m) |
| 6m | max 38m² (Ø = 7m) | max 13m² (Ø = 4m) |

### Optional Accessory --- Ceiling/Surface Mount Box: HA03




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




Blind Option 1 --- Aisle Detection

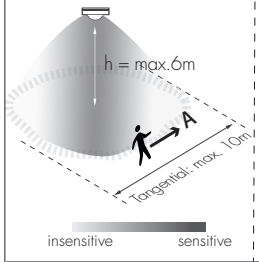

Blind Option 2 --- 180° Detection

## 2. HBHC25/R (Reinforced Low-bay)

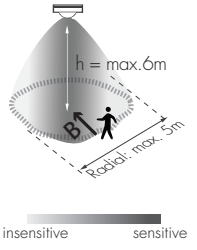
**HBHC25/R**: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

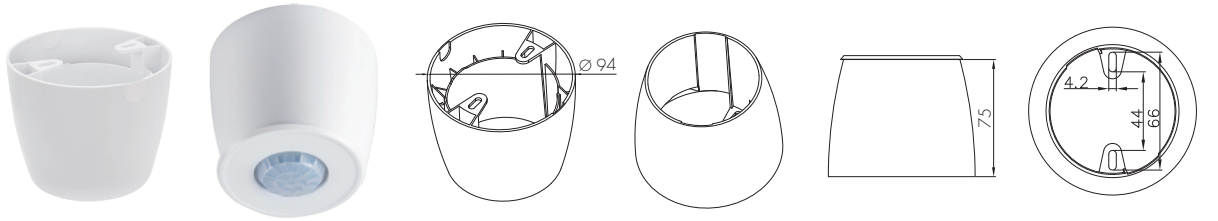



B: Radial movement

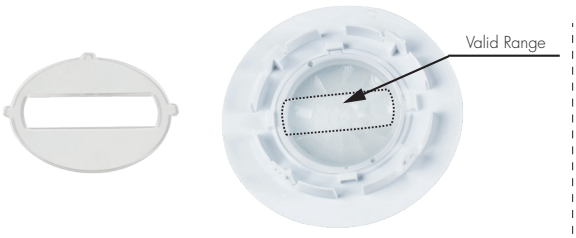



| Mount height | Tangential (A) | Radial (B) |
|---|---|---|
| 2.5m | max 79m² (Ø = 10m) | max 20m² (Ø = 5m) |
| 3m | max 79m² (Ø = 10m) | max 20m² (Ø = 5m) |
| 4m | max 64m² (Ø = 9m) | max 20m² (Ø = 5m) |
| 5m | max 50m² (Ø = 8m) | max 20m² (Ø = 5m) |
| 6m | max 50m² (Ø = 8m) | max 20m² (Ø = 5m) |

Optional Accessory --- Ceiling/Surface Mount Box: HA03




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




Blind Option 1 --- Aisle Detection

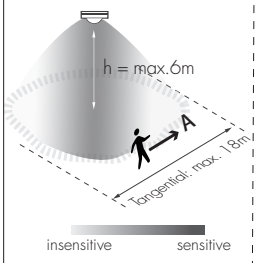

Blind Option 2 --- 180° Detection

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

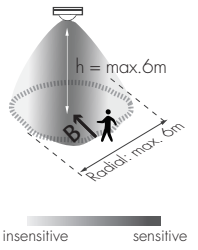
**HBHC25/W**: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

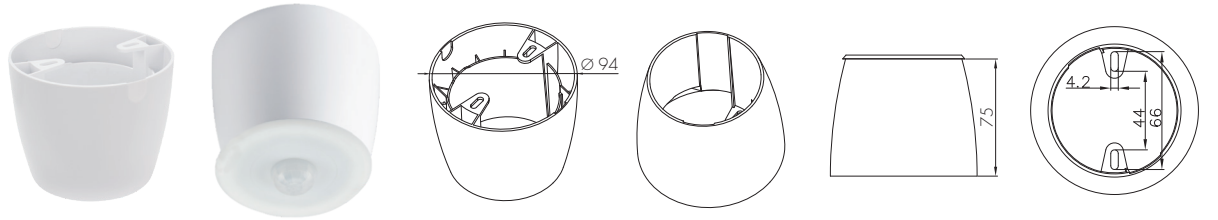



B: Radial movement




| 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 Mount Box: HA03

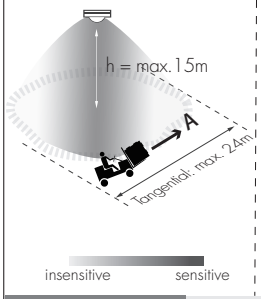


## 4. HBHC25/H (High-bay)

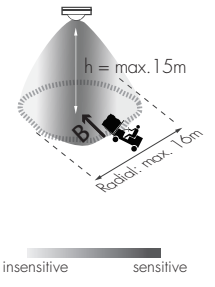
**HBHC25/H**: High-bay lens detection pattern for **forklift** @ Ta = 20°C

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

A: Tangential movement




B: Radial movement

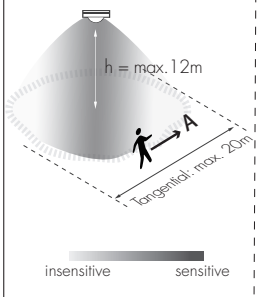



| Mount height | Tangential (A) | Radial (B) |
|---|---|---|
| 10m | max 380m² (Ø = 22m) | max 201m² (Ø = 16m) |
| 11m | max 452m² (Ø = 24m) | max 201m² (Ø = 16m) |
| 12m | max 452m² (Ø = 24m) | max 201m² (Ø = 16m) |
| 13m | max 452m² (Ø = 24m) | max 177m² (Ø = 15m) |
| 14m | max 452m² (Ø = 24m) | max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

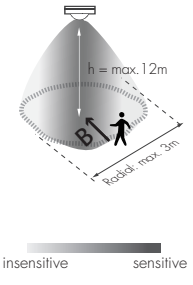
**HBHC25/H**: High-bay lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

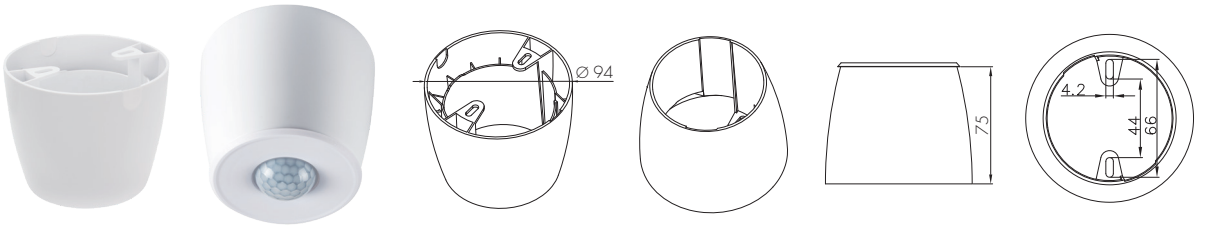



B: Radial movement

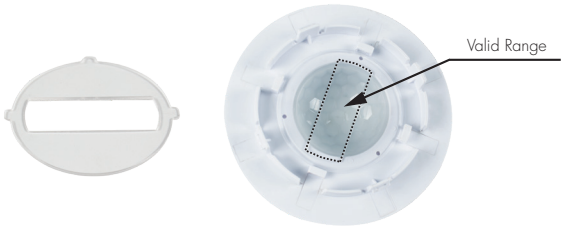



| Mount height | Tangential (A) | Radial (B) |
|---|---|---|
| 2.5m | max 50m² (Ø = 8m) | max 7m² (Ø = 3m) |
| 6m | max 104m² (Ø = 11.5m) | max 7m² (Ø = 3m) |
| 8m | max 154m² (Ø = 14m) | max 7m² (Ø = 3m) |
| 10m | max 227m² (Ø = 17m) | max 7m² (Ø = 3m) |
| 11m | max 269m² (Ø = 18.5m) | max 7m² (Ø =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

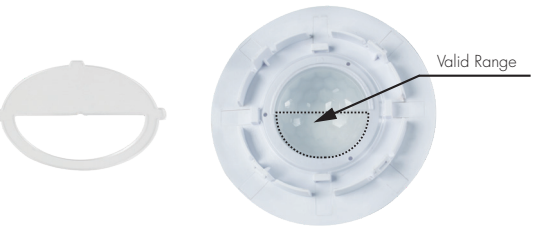
Optional Accessory --- Ceiling/Surface Mount Box: HA03




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




Blind Option 1 --- Aisle Detection



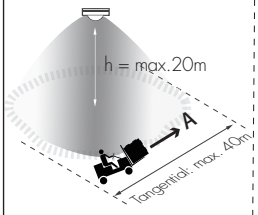

Blind Option 2 --- 180° Detection

## 5. HBHC25/RH (Reinforced High-bay with 3-Pyro)

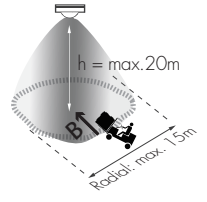
**HBHC25/RH**: Reinforced high-bay lens detection pattern for **forklift** @ Ta = 20°C

(Recommended ceiling mount installation height **10m-20m**)

A: Tangential movement




B: Radial movement

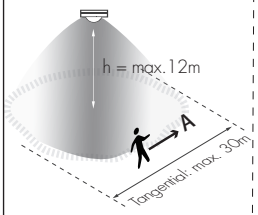



| Mount height | Tangential (A) | Radial (B) |
|---|---|---|
| 10m | max 346m² (Ø = 21m) | max 177m² (Ø = 15m) |
| 11m | max 660m² (Ø = 29m) | max 177m² (Ø = 15m) |
| 12m | max 907m² (Ø = 34m) | max 154m² (Ø = 14m) |
| 13m | max 962m² (Ø = 35m) | max 154m² (Ø = 14m) |
| 14m | max 1075m² (Ø = 37m) | max 113m² (Ø = 12m) |
| 15m | max 1256m² (Ø = 40m) | max 113m² (Ø = 12m) |
| 20m | max 707m² (Ø = 30m) | max 113m² (Ø = 12m) |

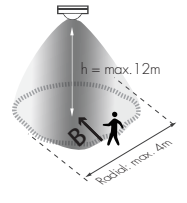
**HBHC25/RH**: Reinforced high-bay lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

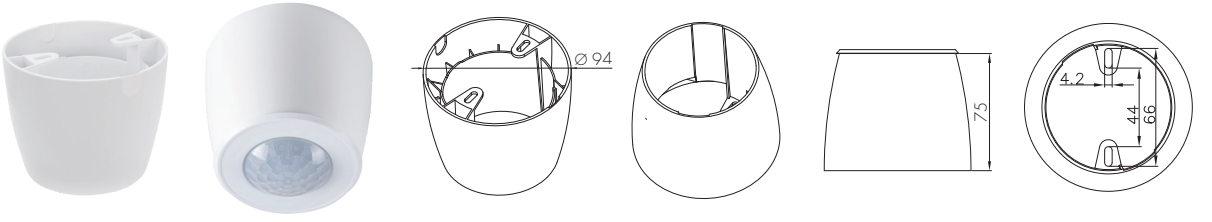



B: Radial movement



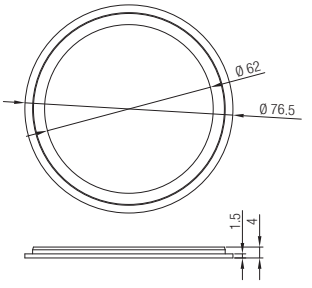

| Mount height | Tangential (A) | Radial (B) |
|---|---|---|
| 2.5m | max 38m² (Ø = 7m) | max 7m² (Ø = 3m) |
| 6m | max 154m² (Ø = 14m) | max 7m² (Ø = 3m) |
| 8m | max 314m² (Ø = 20m) | max 7m² (Ø = 3m) |
| 10m | max 531m² (Ø = 26m) | max 13m² (Ø = 4m) |
| 11m | max 615m² (Ø = 28m) | max 13m² (Ø = 4m) |
| 12m | max 707m² (Ø = 30m) | max 13m² (Ø = 4m) |

Optional Accessory --- Ceiling/Surface Mount Box: HA03

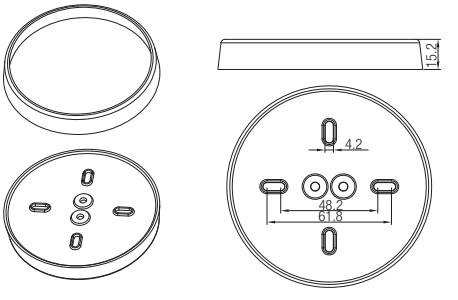



Big and small silicon gasket used to make IP54 degree protection when HBHC25 series device mounted into HA03 housing for ceiling mount

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



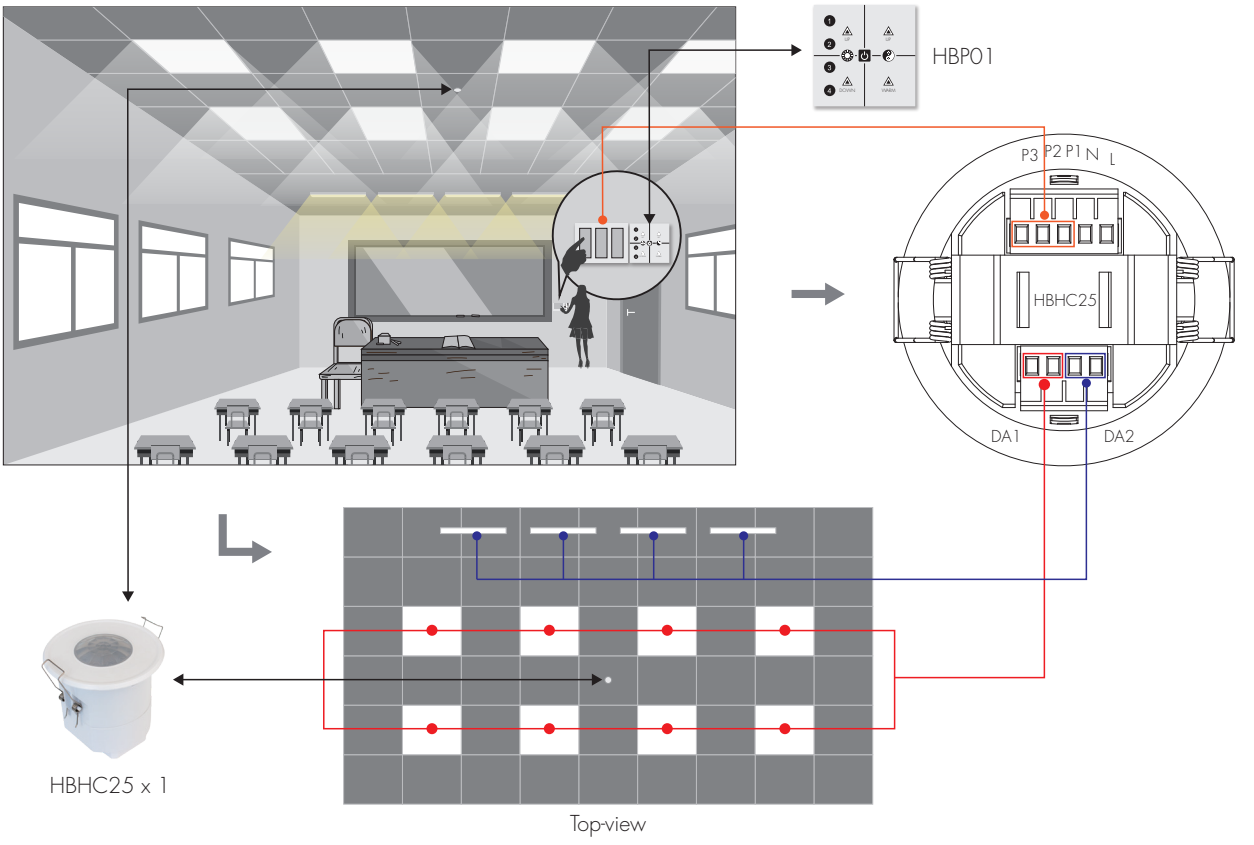

Big silicon water-proof gasket dimension(size:mm)



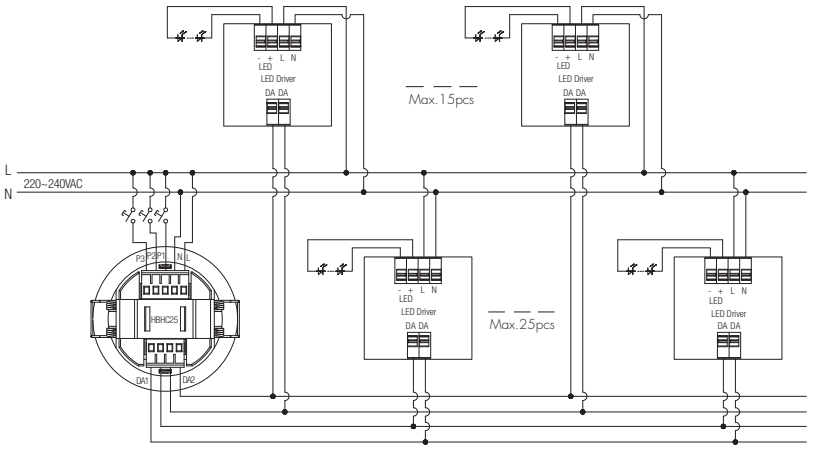
# Typical Application for Classroom (Human Centric Lighting)

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<br>• 2 DALI channels for whiteboard/electronic display area and student area independently<br>• Human Centric Function<br>• PIR motion sensing<br>• Daylight Harvest |
|  | Push switches x 3 | • Manual control: brightness adjustment, colour tuning, recall scenes etc. |
|  | HHC2045 x 8 for LED panels<br>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<br>• Can recall up to 6 scenes<br>• Switchable between each scene<br>• Brightness adjustment,colour tuning |
|  | QCB01 x 2 with cables and plugs (Optional) | • Labour cost saved significantly<br>• Hassle-free maintenance after installation<br>• Simplify wiring on site via plug 'n' play |
|  | HBGW01 gateway x 1 (Optional) | • Remote control access<br>• Data collection and analysis |
| | Free app | • Futureproof via OTA<br>• Off-line commissioning |
| | Cloud & server | • Settings data backup<br>• Accounts security |



## Wiring Diagram




## 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)<br>* Short press has to be longer than 0.1s, or it will be invalid. | - Turn on/off<br>- Turn on only<br>- Turn off only<br>- Recall a scene<br>- Exit manual mode<br>- Do nothing |
| | Double push | - Turn on only<br>- Turn off only<br>- Recall a scene<br>- Exit manual mode<br>- Do nothing |
| | Long press (≥1 second) | - Dimming<br>- Colour tuning<br>- Do nothing |
| Simulate sensor | / | - Upgrade a normal on/off motion sensor to a Bluetooth controlled motion sensor |

## Additional Information / Documents

1. To learn more about detailed product features/functions, please refer to
   www.hytronik.com/download ->knowledge ->Introduction of App Scenes and Product Functions

2. Regarding precautions for Bluetooth product installation and operation, please kindly refer to
   www.hytronik.com/download ->knowledge ->Bluetooth Products - Precautions for Product Installation and Operation

3. Regarding precautions for PIR Sensors installation and operation, please kindly refer to
   www.hytronik.com/download ->knowledge ->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
   www.hytronik.com/products/bluetooth technology ->Bluetooth Sensors

5. Regarding Hytronik standard guarantee policy, please refer to
   www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy