


PIR Standalone Motion Sensor with  Bluetooth® 5.0 SIG Mesh

HBIR31 HBIR31/R HBIR31/H HBIR31/RH

Low-bay Reinforced Low-bay High-bay Reinforced High-bay

HYTRONIK®



Product Description

HBIR31 is a Bluetooth PIR standalone motion sensor with 80mA DALI power supply built in, which can control up to 40 LED drivers. 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.



HBIR31

HBIR31/R






























HBIR31/H











HBIR31/RH
(3-pyro)


App Features

-  Quick setup mode & advanced setup mode
-  Tri-level control
-  Daylight harvest
-  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 (master & slave)
-  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 switch EWSSB/EWSDB
-  Continuous development in progress...


Hardware Features

-  80mA DALI broadcast output for up to 40 LED drivers
-  Support to control DT8 LED drivers
-  2 Push inputs for flexible manual control
-  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 1.5m in height)
-  5-year warranty


Bluetooth 5.0 SIG mesh




iOS



Android



for iOS




for Android

Smartphone app for both iOS & Android platform

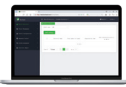


for iPad



for iPad

Koolmesh Pro app for iPad



Web



for Web


Web app/platform: www.iot.koolmesh.com



EnOcean
Self-powered IoT

Fully support
EnOcean switch
EWSSB/EWSDB

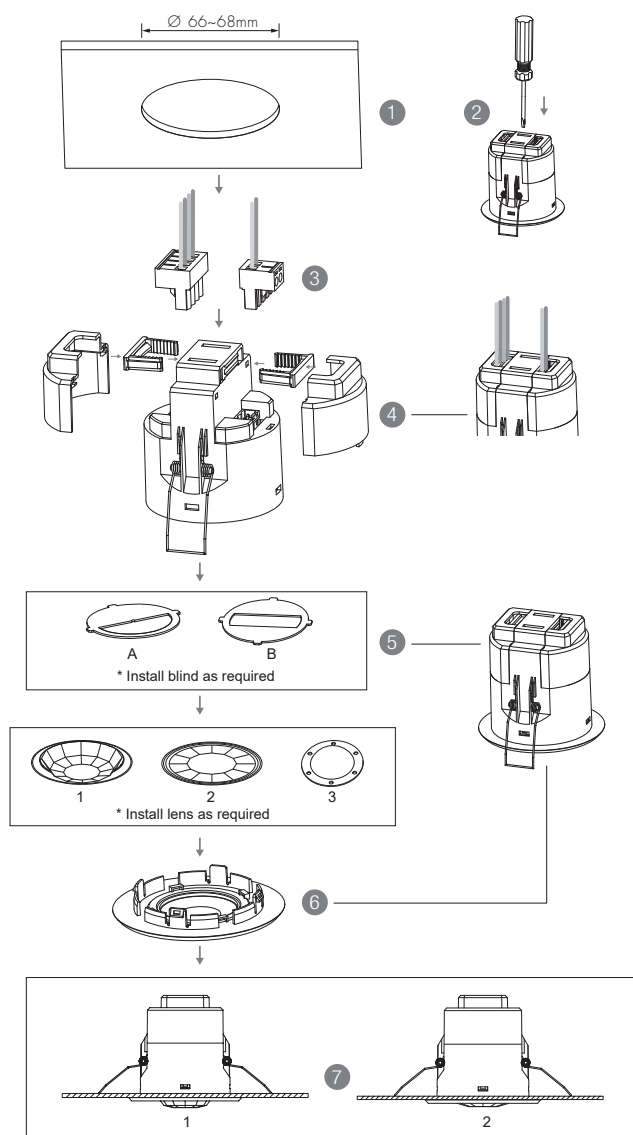
Technical Specifications

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
HBIR31	Installation Height : 6m Detection Range(Ø) : 9m
HBIR31/R	Installation Height : 6m Detection Range(Ø) : 10m
HBIR31/H	Installation height: 1.5m (forklift) 1.2m (person) Detection range (Ø): 24m
HBIR31/RH	Installation height: 4.0m (forklift) 1.2m (person) Detection range (Ø): 40m
Detection angle	360°

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

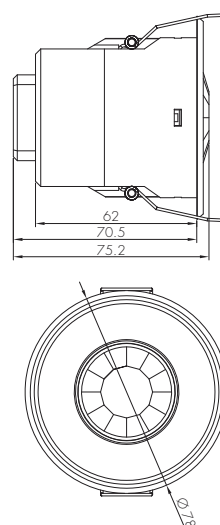
Mechanical Structure & Dimensions



Input & Output Characteristics	
Operating voltage	220~240VAC 50/60Hz
Stand-by power	<1W
Switched power	Max. 40 devices, 80mA
Warming-up	20s

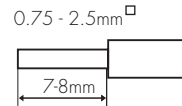
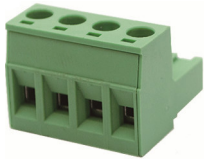
Safety & EMC	
EMC standard (EMC)	EN55015, EN61000, EN61547
Safety standard (LVD)	EN60669-1, EN60669-2-1 AS/NZS60669-1/-2-1
RED	EN300328, EN301489-1/-1.7
Certification	CB, CE, EMC, RED, RCM

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



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.

Wire Preparation



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

Detection Pattern & Optional Accessories

1. HBIR31 (Low-bay)

HBIR31: Low-bay flat lens detection pattern for single person @ Ta = 20°C

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

	Mount height	Tangential (A)	Radial (B)
A: Tangential movement	2.5m	max 50m ² (∅ = 8m)	max 13m ² (∅ = 4m)
B: Radial movement	3m	max 64m ² (∅ = 9m)	max 13m ² (∅ = 4m)
	4m	max 38m ² (∅ = 7m)	max 13m ² (∅ = 4m)
	5m	max 38m ² (∅ = 7m)	max 13m ² (∅ = 4m)
	6m	max 38m ² (∅ = 7m)	max 13m ² (∅ = 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

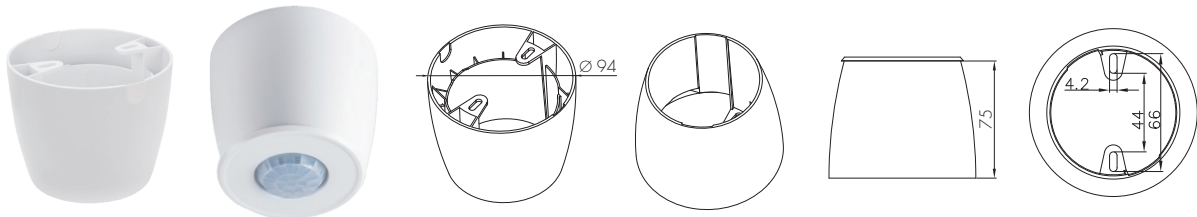
2. HBR31/R (Reinforced Low-bay)



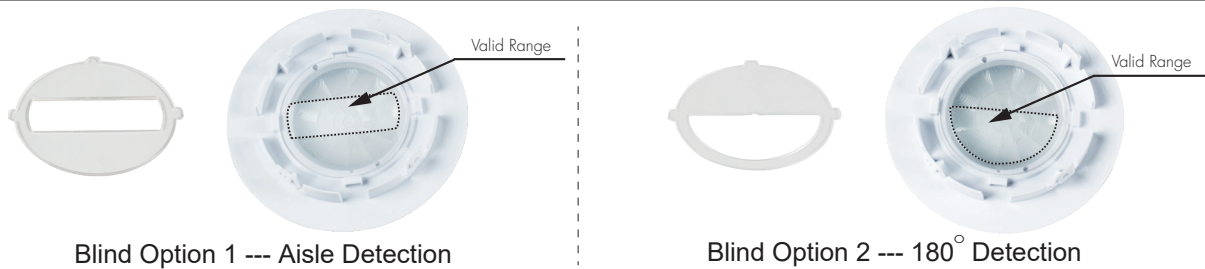
HBR31/R: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C
(Recommended ceiling mount installation height **2.5m-6m**)

A: Tangential movement	B: Radial movement	Mount height	Tangential (A)	Radial (B)
		2.5m	max 79m ² (Ø = 10m)	max 20m ² (Ø = 5m)
		3m	max 79m ² (Ø = 10m)	max 20m ² (Ø = 5m)
		4m	max 64m ² (Ø = 9m)	max 20m ² (Ø = 5m)
		5m	max 50m ² (Ø = 8m)	max 20m ² (Ø = 5m)
		6m	max 50m ² (Ø = 8m)	max 20m ² (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

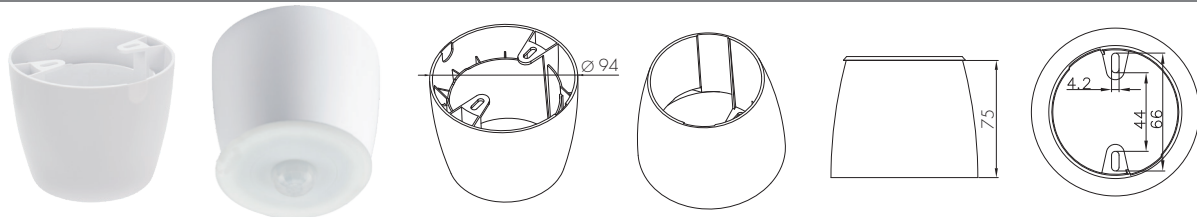
3. HBR31/R (Wide range Low-bay)



HBR31/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 254m ² (Ø = 18m)	max 28m ² (Ø = 6m)
		3m	max 254m ² (Ø = 18m)	max 28m ² (Ø = 6m)
		4m	max 154m ² (Ø = 14m)	max 28m ² (Ø = 6m)
		5m	max 113m ² (Ø = 12m)	max 28m ² (Ø = 6m)
		6m	max 79m ² (Ø = 10m)	max 13m ² (Ø = 4m)

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



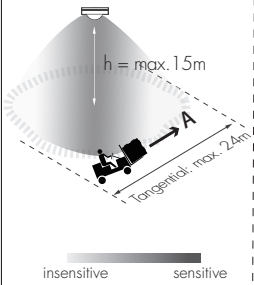
4. HBR31/H (High-bay)



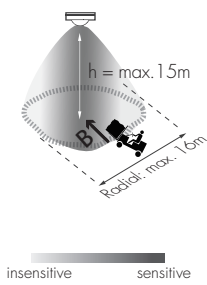
HBR31/H: High-bay lens detection pattern for forklift @ Ta = 20°C

(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)

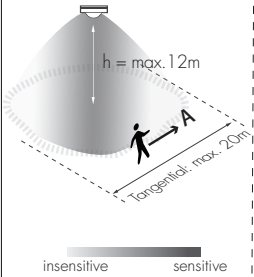
max 113m² (Ø = 12m)



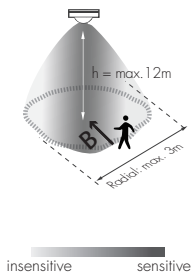
HBR31/H: High-bay lens detection pattern for single person @ Ta = 20°C

(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)

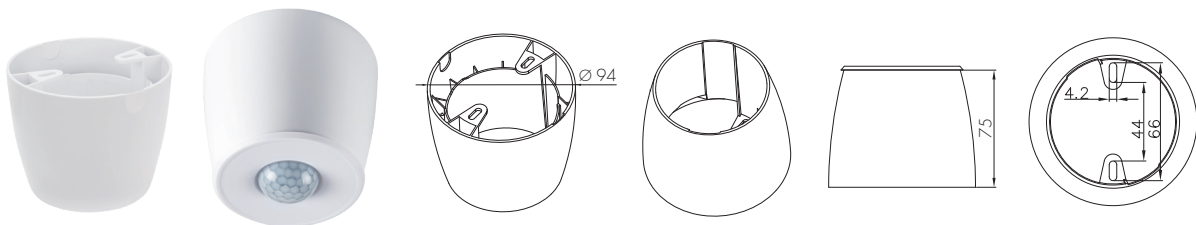
max 7m² (Ø = 3m)

12m

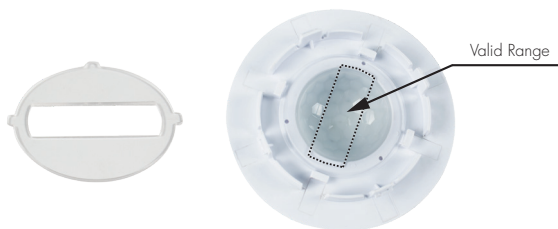
max 314m² (Ø = 20m)

max 7m² (Ø = 3m)

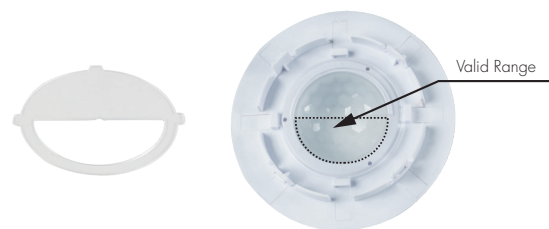
Optional Accessory --- Ceiling/Surface Mount Box: HA03



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



Blind Option 1 --- Aisle Detection



Blind Option 2 --- 180° Detection

5. HBR31/RH (Reinforced High-bay with 3-Pyro)



HBR31/RH: Reinforced high-bay lens detection pattern for **forklift** @ Ta = 20°C
(Recommended ceiling mount installation height **10m-20m**)

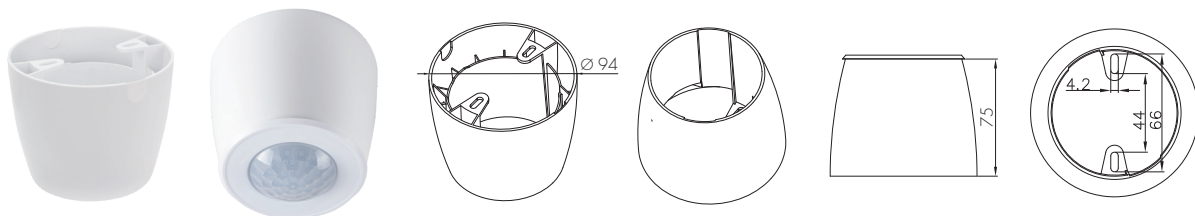
A: Tangential movement	B: Radial movement	Mount height	Tangential (A)	Radial (B)
		10m	max 346m ² (Ø = 21m)	max 177m ² (Ø = 15m)
		11m	max 660m ² (Ø = 29m)	max 177m ² (Ø = 15m)
		12m	max 907m ² (Ø = 34m)	max 154m ² (Ø = 14m)
		13m	max 962m ² (Ø = 35m)	max 154m ² (Ø = 14m)
		14m	max 1075m ² (Ø = 37m)	max 113m ² (Ø = 12m)
		15m	max 1256m ² (Ø = 40m)	max 113m ² (Ø = 12m)
		20m	max 707m ² (Ø = 30m)	max 113m ² (Ø = 12m)



HBR31/RH: Reinforced high-bay lens detection pattern for **single person** @ Ta = 20°C
(Recommended ceiling mount installation height **2.5m-12m**)

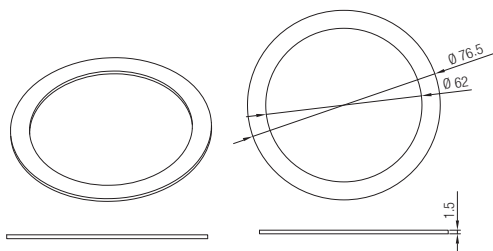
A: Tangential movement	B: Radial movement	Mount height	Tangential (A)	Radial (B)
		2.5m	max 38m ² (Ø = 7m)	max 7m ² (Ø = 3m)
		6m	max 154m ² (Ø = 14m)	max 7m ² (Ø = 3m)
		8m	max 314m ² (Ø = 20m)	max 7m ² (Ø = 3m)
		10m	max 531m ² (Ø = 26m)	max 13m ² (Ø = 4m)
		11m	max 615m ² (Ø = 28m)	max 13m ² (Ø = 4m)
		12m	max 707m ² (Ø = 30m)	max 13m ² (Ø = 4m)

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

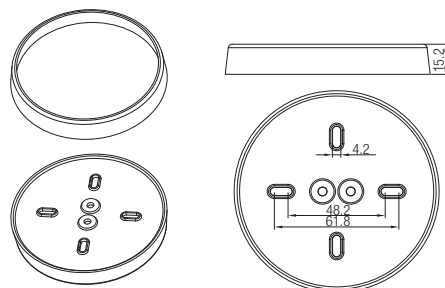


Big and small silicon gasket used to make IP65 degree protection when HIR23/D2 series device mounted into HA03 housing for ceiling mount

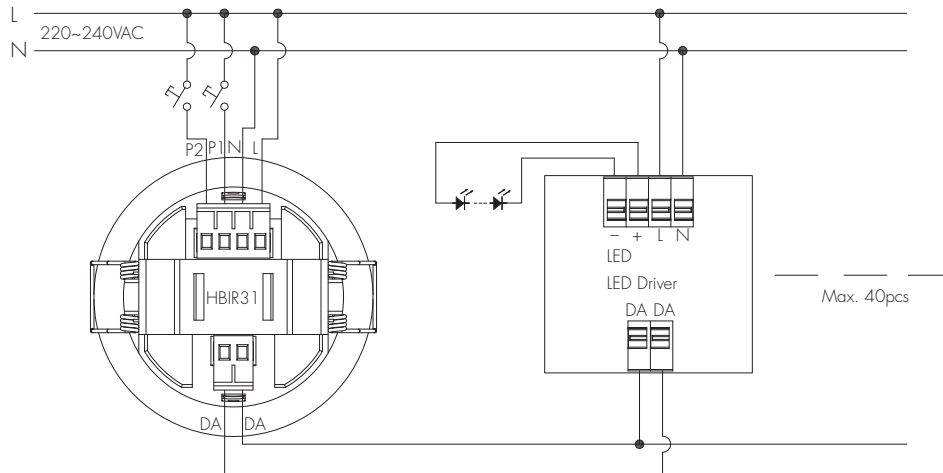
Small silicon water-proof gasket dimension(size:mm)



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



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

Additional Information / Documents

- To learn more about detailed product features/functions, please refer to [www.hytronik.com/download ->knowledge ->Introduction of App Scenes and Product Functions](http://www.hytronik.com/download->knowledge->Introduction%20of%20App%20Scenes%20and%20Product%20Functions)
- 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](http://www.hytronik.com/download->knowledge->Bluetooth%20Products%20-%20Precautions%20for%20Product%20Installation%20and%20Operation)
- 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](http://www.hytronik.com/download->knowledge->PIR%20Sensors%20-%20Precautions%20for%20Product%20Installation%20and%20Operation)
- 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](http://www.hytronik.com/products/bluetooth%20technology->Bluetooth%20Sensors)
- Regarding Hytronik standard guarantee policy, please refer to [www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy](http://www.hytronik.com/download->knowledge->Hytronik%20Standard%20Guarantee%20Policy)