

DALI-to Bluetooth Converter/Translator Module

HBEM038

DALI Emergency

HYTRONIK®



Product Description

HBEM038 is a wireless DALI/Bluetooth converter designed for DALI and DALI-2 emergency lighting systems, enabling centralized monitoring, testing, and maintenance through the Koolmesh Emergency system. It converts the output of a standard DALI/DALI-2 emergency driver into Bluetooth communication and features a built-in 30mA DALI power supply. The device supports automatic functional and duration testing, emergency status monitoring, fault notifications, and automatic report generation, helping reduce maintenance effort while improving compliance and system visibility. It can also control multiple DALI/DALI-2 DT6 or DT8 drivers simultaneously and works with a wide range of microwave and PIR sensor heads via plug-and-play connection. All settings and parameters can be configured through the Koolmesh App, while reports and system information can be viewed and downloaded from the Koolmesh IoT Platform.



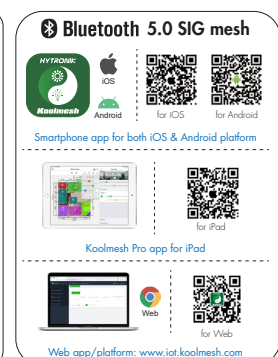
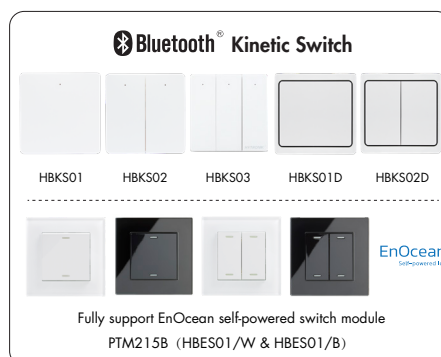
App Features

- Quick setup mode & advanced setup mode
- Web app/platform for project deployment & data analysis
- Koolmesh Pro app on iPad for on-site configuration
- Floorplan feature to simplify project planning
- One-key device replacement
- Device social relations check
- Staircase function (primary & secondary)
- Remote control via gateway support HBGW01
- Heat map
- Dynamic daylight harvest auto-adaptation
- Grouping luminaires via mesh network
- Scenes
- Dusk/Dawn photocell (Twilight function)
- Tri-level control
- Daylight harvest
- Push switch configuration
- Detailed motion sensor settings
- Schedule
- Astro timer (sunrise and sunset)
- Power-on status (memory against power loss)
- Offline commissioning
- Bulk commissioning (copy and paste settings)
- Different permission levels via authority management
- Network sharing via QR code or keycode

- Interoperability with Hytronik Bluetooth product portfolio
- Compatible with EnOcean BLE switches
- Internet-of-Things (IoT) featured
- Device firmware update over-the-air (OTA)
- Continuous development in progress...

Hardware Features

- DALI bus power supply:
I guaranteed: 30mA
I max: 80mA
- Plug'n'Play for flexible installation and cost saving assemble
- Support to control DT8 LED drivers
- 2 Push inputs for flexible manual control
- 5-year warranty



Note:

1. 1pc HBEM038 convertor for 1pc 3rd party DALI/DALI2 emergency driver.
2. 1pc HBEM038 convertor can control serval DALI/DALI2 DT6 or DT8 drivers at the same time.
3. With Bluetooth gateway HBGW01, users can remotely control and monitor emergency system via Koolmesh mobile/tablet app & web app platform.
4. HBEM038 & 3rd Party standard DALI/DALI2 emergency driver does not need to connect to central DALI PSU.
5. HBEM038 provides power supply to the 3rd party standard DALI/DALI2 emergency driver and DT6 or DT8 drivers.

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

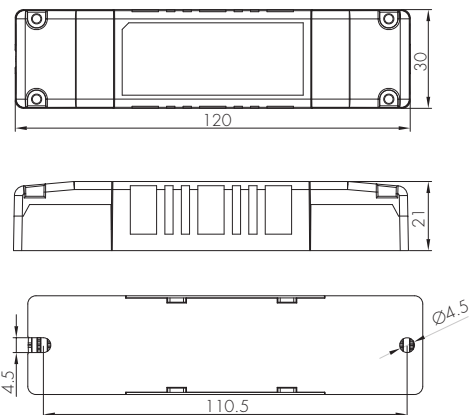
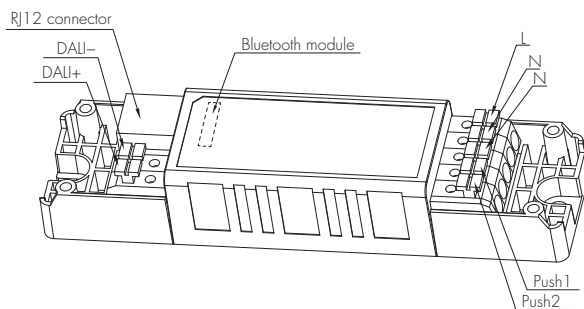
Safety & EMC	
EMC standard (EMC)	EN55015, EN61000-3-2, EN61000-3-3, EN61547
Safety standard (LVD)	EN60669-1, EN60669-2-1
RED	EN300328, EN301489-1/-17
Certification	CE, UKCA, RCM

Input & Output Characteristics	
Operating voltage	220~240VAC 50/60Hz
Stand-by power	<1W
Warming-up	20s

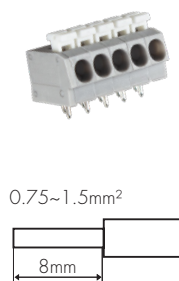
Environment	
Operation temperature	Ta: -20°C ~ +55°C
Case temperature (Max.)	Tc: +75°C
IP rating	IP20

DALI Bus Power Supply	
I guaranteed	30mA
I max	80mA

Mechanical Structure & Dimensions

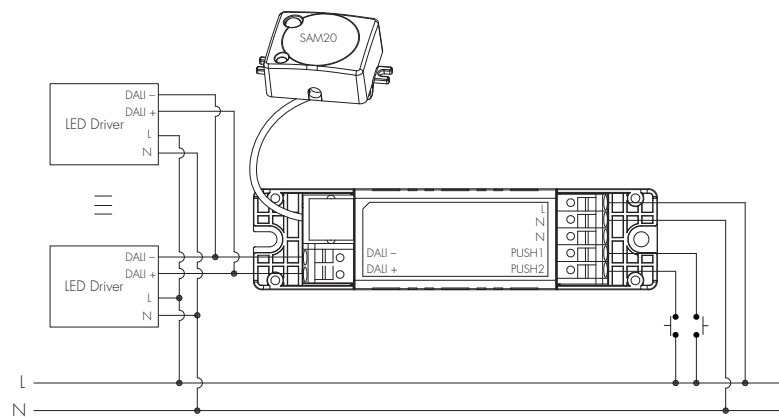


Wire Preparation



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

Wiring Diagram



Technical Specifications for Sensor Heads

PIR Sensor Properties		
Sensor principle	PIR detection	
Operating voltage	5VDC	
Detection range *	HIRO5 & HIRO5/FM HIRO5/AA & HIRO7	Max installation height: 3m; Max detection range: 6m (diameter)
	HIR11	Max installation height: 15m (forklift); 12m (single person); Max detection range: 24m (diameter)
	HIR12	Max installation height: 15m (forklift); 12m (single person); Max detection range: 18m*6m (L*W)
	HIR63	Max installation height: 3m; Max detection range: 12m (diameter)
	HIR63/R	Max installation height: 12m (forklift); 8m (single person); Max detection range: 14m (diameter)

HF Sensor Properties		
Sensor principle	High Frequency (microwave)	
Operating voltage	5VDC	
Operation frequency	5.8GHz +/- 75MHz	
Transmission power	<0.2mW	
Detection range *	SAM20 & SAM21 SAM22 & SAM22/AA	Max installation height: 3m; Max detection range: 12m (diameter)
	SAM23	Max installation height: 15m (forklift); 12m (single person); Max detection range: 20m (diameter)

* The detection range is heavily influenced by sensor placement (angle) and different walking paces.
It may be reduced under certain conditions.

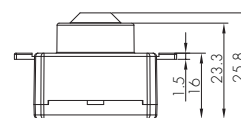
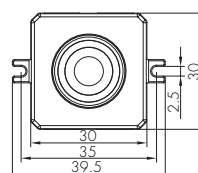
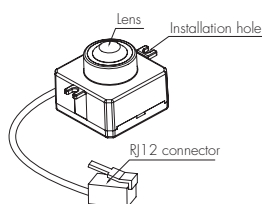
PIR & microwave sensor heads

The range of PIR and microwave sensor heads below offers powerful number of Plug'n'Play feature options to expand the flexibility of luminaire design. This approach to luminaire design reduces space requirements and component costs whilst simplifying production.

A. HIRO5

PIR sensor head

The cable length is around 30cm.

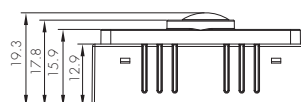
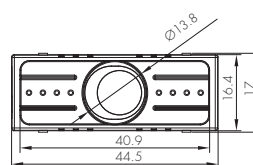
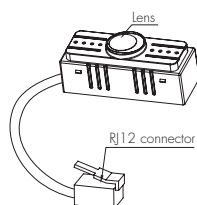


B. HIRO7

PIR sensor head

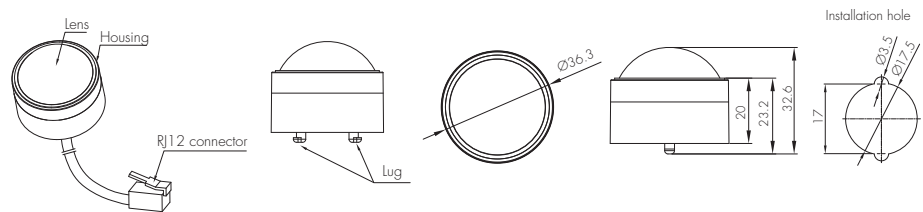
Photocell Advance™

The cable length is around 30cm.



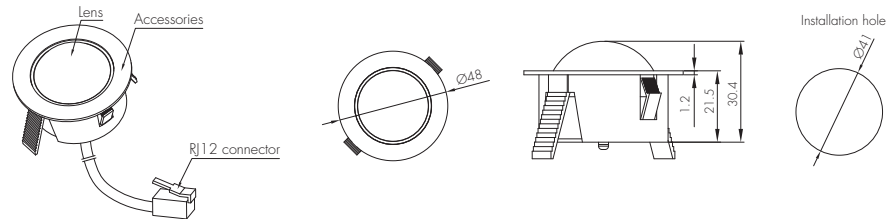
C. HIR11/S

PIR sensor head
Surface mounting
For highbay application
IP65 (facia / lens part)
The cable length is around 30cm.



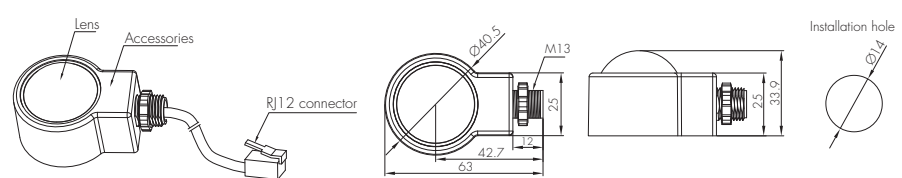
D. HIR11/F

PIR sensor head
Flush mounting
For highbay application
IP65 (facia / lens part)
The cable length is around 30cm.



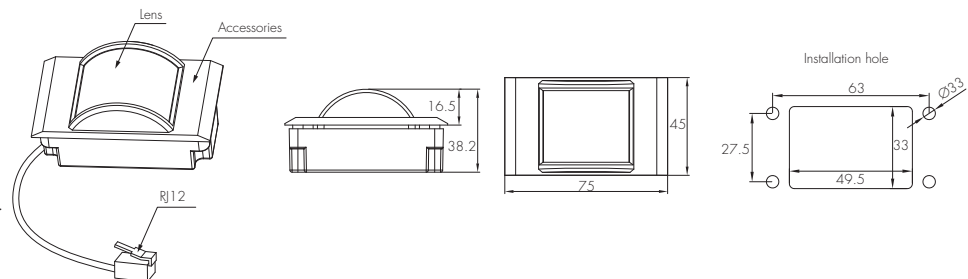
E. HIR11/C

PIR sensor head
Screw to the luminaire by conduit
For highbay application
IP65 (facia / lens part)
The cable length is around 30cm.



F. HIR12

PIR sensor head
For highbay application
IP65 (facia / lens part)
The cable length is around 30cm.



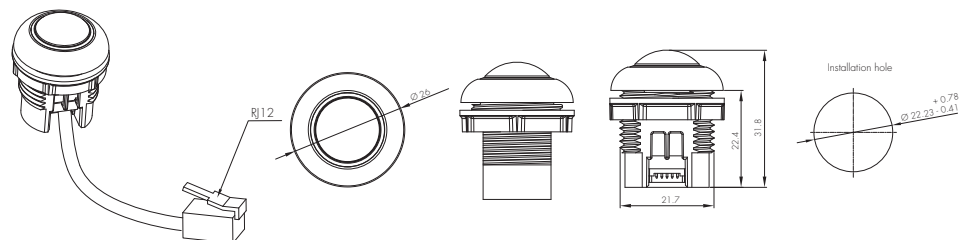
Installation for HIR12



We suggest that the metal plate thickness to be 0.8mm – 1.6mm to ensure perfect focal length for the PIR lens.

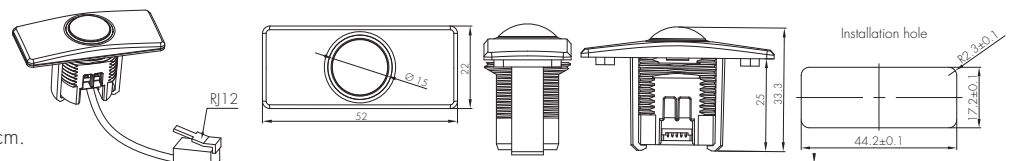
G. HIR63

PIR sensor head
The cable length is around 30cm.

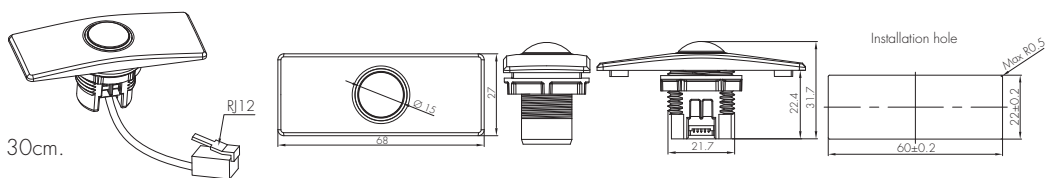


H. HIR63 with HA04

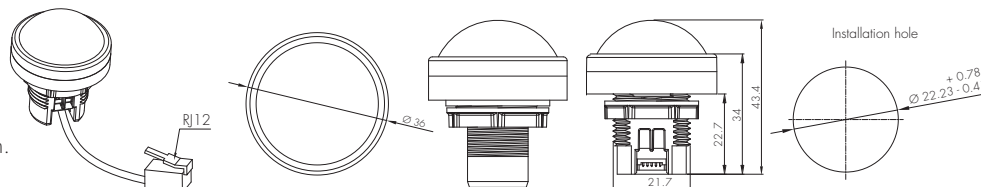
PIR sensor head
Optional accessory
The cable length is around 30cm.



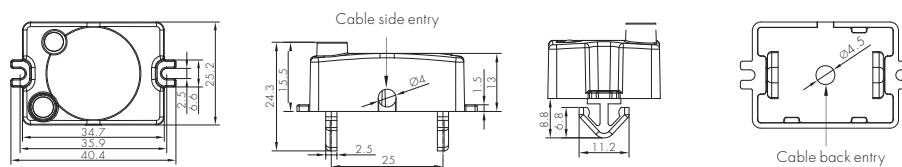
I. HIR63 with HA05
PIR sensor head
Optional accessory
The cable length is around 30cm.



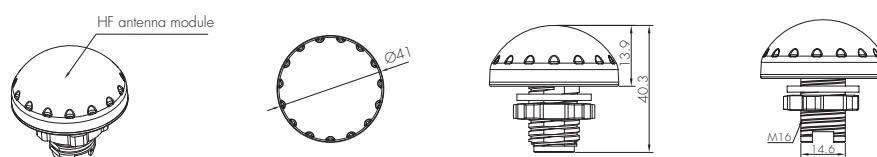
J. HIR63/R
PIR sensor head
IP65 (facia / lens part)
The cable length is around 30cm.



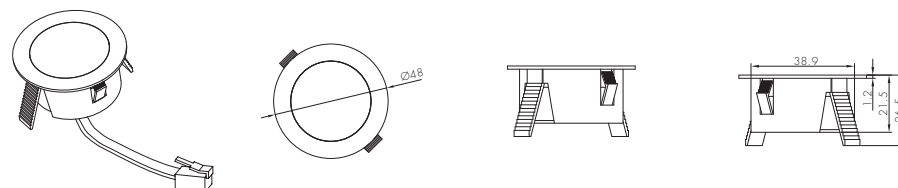
K. SAM20
HF sensor head
Photocell Advance™
The cable length is around 30cm.



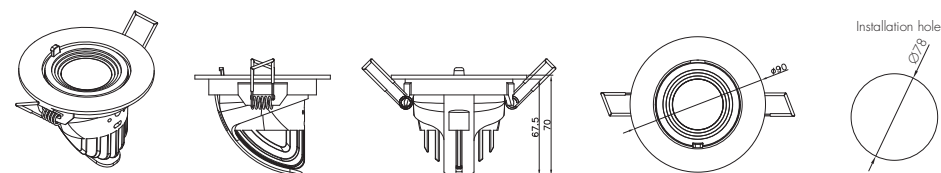
L. SAM21
HF sensor head
IP65
The cable length is around 30cm.



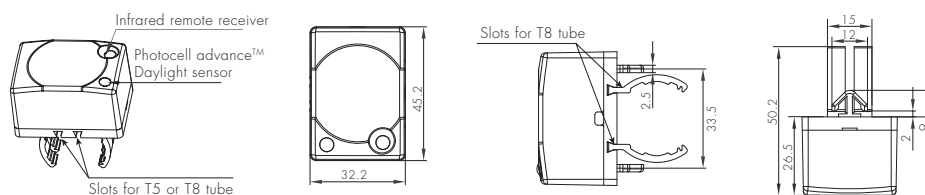
M. SAM22
HF sensor head
Flush mount
The cable length is around 30cm.



N. SAM22/AA
HF sensor head
Adjustable angle
The cable length is around 30cm.



O. SAM23
HF sensor head
Photocell advance™
Daylight sensor
For highbay application
The cable length is around 30cm.

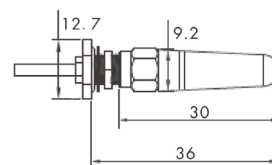
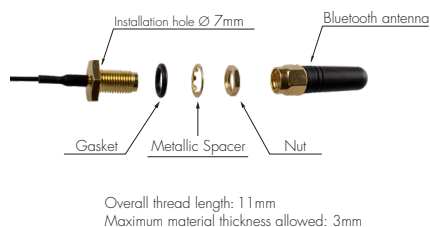


Optional Accessory: Reinforced Bluetooth Antenna

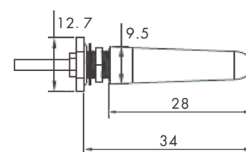
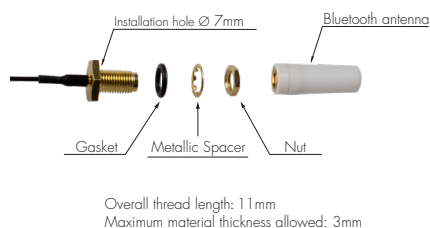
For some special applications, customers may need a larger Bluetooth transmission for both smartphone to device and device to device. Thanks to the reinforced Bluetooth antenna (optional black or white color to choose from), with it being added to the control base HBEM038, the transmission distance (smartphone to device) enlarges to 20m, the distance of device to device is around 50m.



HA01B



HA01W



Installation Method



Solder the antenna to the Bluetooth module



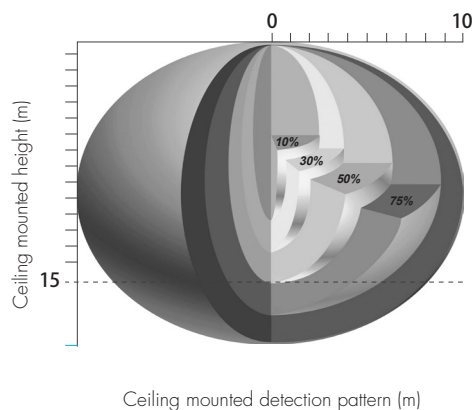
Drill a 7mm hole in the fixture
Assemble the antenna parts in turn



Make sure the antenna head is outside the fixture

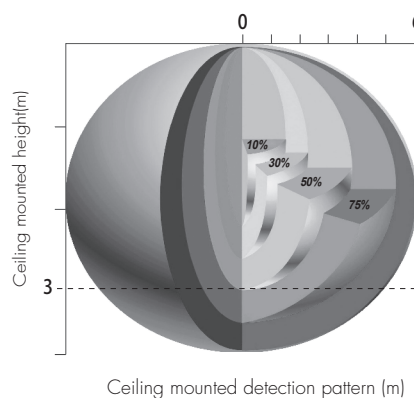
Detection Pattern

SAM23



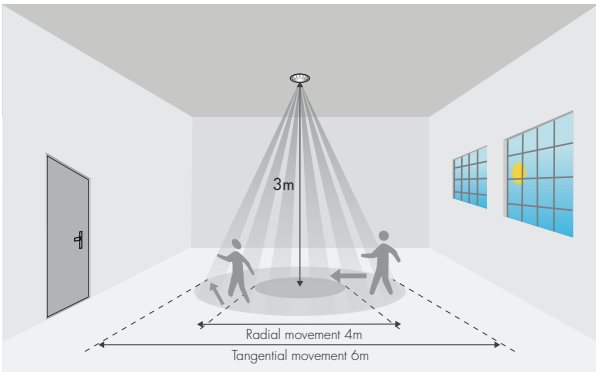
Ceiling mounted detection pattern (m)

SAM20 & SAM21 & SAM22 & SAM22/AA

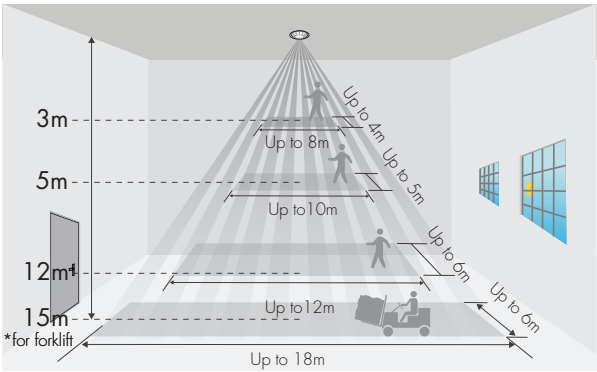


Ceiling mounted detection pattern (m)

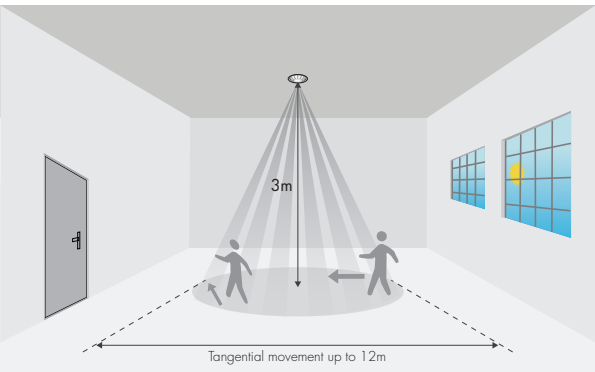
HIRO5 & HIRO5/FM & HIRO5/AA & HIRO7



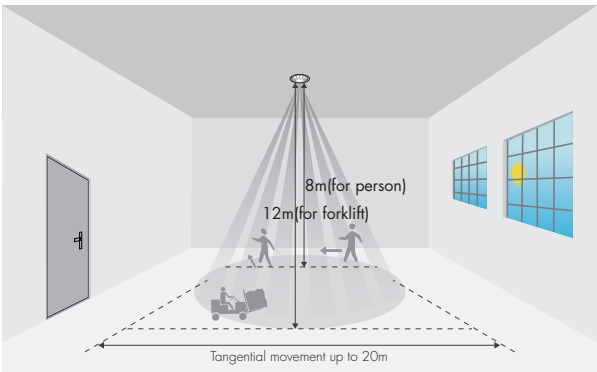
HIR12



HIR63



HIR63/R

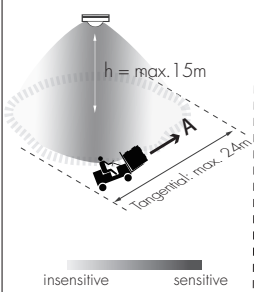
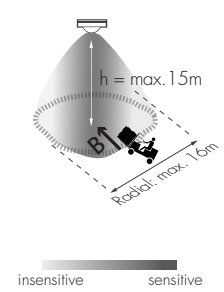


*The detection patterns are based upon 5km/h movement speed.

HIR11 (High-bay)

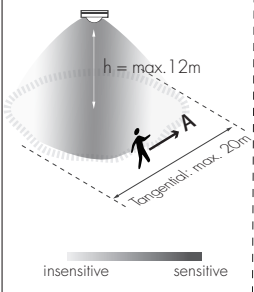
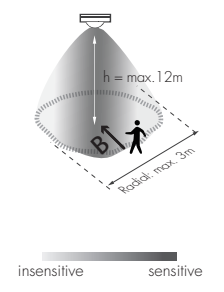


HIR11: High-bay lens detection pattern for forklift @ $T_a = 20^\circ\text{C}$
(Recommended installation height **10m-15m**)

A: Tangential movement	B: Radial movement	Mount height	Tangential (A)	Radial (B)
		10m	max 380m ² (Ø = 22m)	max 201m ² (Ø = 16m)
		11m	max 452m ² (Ø = 24m)	max 201m ² (Ø = 16m)
		12m	max 452m ² (Ø = 24m)	max 201m ² (Ø = 16m)
		13m	max 452m ² (Ø = 24m)	max 177m ² (Ø = 15m)
		14m	max 452m ² (Ø = 24m)	max 133m ² (Ø = 13m)
		15m	max 452m ² (Ø = 24m)	max 113m ² (Ø = 12m)



HIR11: High-bay lens detection pattern for single person @ $T_a = 20^\circ\text{C}$
(Recommended installation height **2.5m-12m**)

A: Tangential movement	B: Radial movement	Mount height	Tangential (A)	Radial (B)
		2.5m	max 50m ² (Ø = 8m)	max 7m ² (Ø = 3m)
		6m	max 104m ² (Ø = 11.5m)	max 7m ² (Ø = 3m)
		8m	max 154m ² (Ø = 14m)	max 7m ² (Ø = 3m)
		10m	max 227m ² (Ø = 17m)	max 7m ² (Ø = 3m)
		11m	max 269m ² (Ø = 18.5m)	max 7m ² (Ø = 3m)
		12m	max 314m ² (Ø = 20m)	max 7m ² (Ø = 3m)

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
Sensorlink	/	- Upgrade a normal on/off motion sensor to a Bluetooth controlled motion sensor
Emergency Self-Test Function	Short press (<1 second) * Short press has to be longer than 0.1s, or it will be invalid.	- Start Self test (Monthly) - Stop Self test - Start Self test (Annually) - Invalid
	Long press (≥ 1 second)	- Start Self test (Monthly) - Stop Self test - Start Self test (Annually) - Invalid
Fire Alarm (VFC signal only)	Refer to http://faq.koolmesh.com/docu/en/	- 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/hbem038>
2. Regarding precautions for Bluetooth product installation and operation, please kindly refer to
<https://hytronik.com/service/downloads> (Bluetooth Products Precautions for Product Installation and Operation)
3. Regarding precautions for Microwave sensor installation and operation, please kindly refer to:
<https://hytronik.com/service/downloads> (Microwave Sensors Precautions for Product Installation and Operation)
4. 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)
5. Data sheet is subject to change without notice. Please always refer to the most recent release on
<https://hytronik.com/products/system-level-components>
6. Regarding Hytronik standard guarantee policy, please refer to
<https://hytronik.com/service/downloads> (Guarantee Conditions document)