PIR Standalone Motion Sensor with ✸ Bluetooth® 5.0 SIG Mesh

HBIR29/2CH Low-bay	**HBIR29/2CH/R** Reinforced Low-bay	**HBIR29/2CH/W** Wide range Low-bay
HBIR29/2CH/H High-bay	**HBIR29/2CH/UH** Ultra High-bay	

HYTRONIK®

✸® ⬭DALI CB ⟁ CE RED emc UKCA

Product Description

HBIR29/2CH is Bluetooth PIR standalone motion sensors with two independent channel outputs. One is DALI channel output (50mA DALI power supply built in), which can control up to 25 LED drivers. The other is voltage-free contact, which is NC (normally closed contact). 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.

HBIR29/2CH   HBIR29/2CH/R

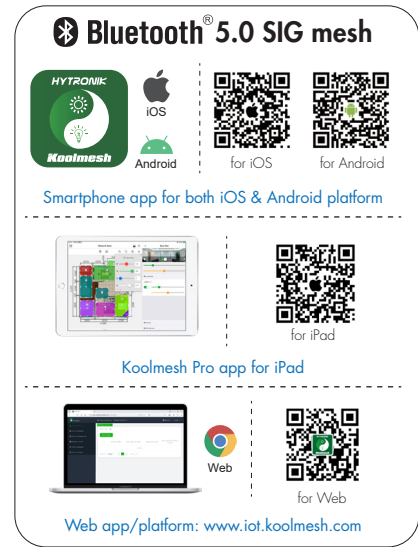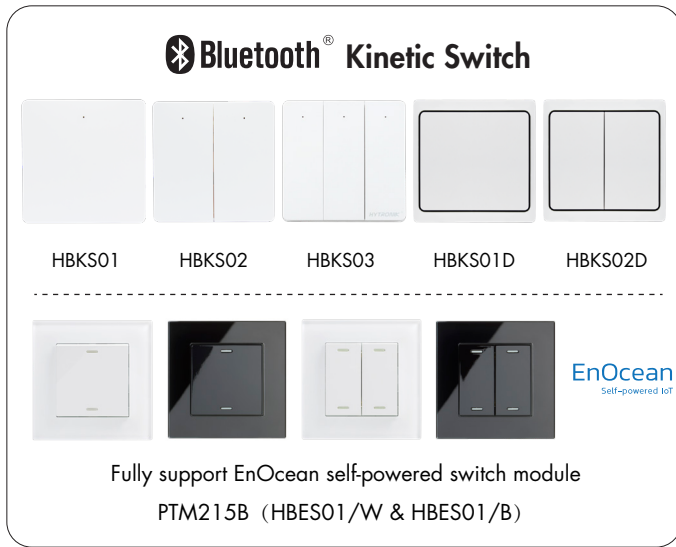HBIR29/2CH/W   HBIR29/2CH/H

HBIR29/2CH/UH

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
- DALI coming soon
- 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
- Circadian rhythm (Human centric lighting)
- 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

- 50mA DALI broadcast output
- Support to control DT8 LED drivers
- Max withstandable in-rush current: 80A@160μs
- VFC: Volt-free Contact/Dry Contact ON/OFF relay switch
  – 24VDC@2A
  – 250VAC@2A
- NC contact
- 2 Push inputs for flexible manual control
- Black & White & Gray metal surface mount box options
- Various PIR lens and blind inserts options
- User-friendly design for installation
- High bay version available (up to 21m in height)
- 5-year warranty

Bluetooth® Kinetic Switch

HBKS01   HBKS02   HBKS03   HBKS01D   HBKS02D

EnOcean
Self-powered IoT

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

Bluetooth® 5.0 SIG mesh

HYTRONIK
Koolmesh   iOS   Android   for iOS   for Android

Smartphone app for both iOS & Android platform

Koolmesh Pro app for iPad   for iPad

Web   for Web

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

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 detection
HBIR29/2CH	Installation Height : 6m Detection Range(Ø) :9m
HBIR29/2CH/R	Installation Height : 6m Detection Range(Ø) :10m
HBIR29/2CH/W	Installation Height : 6m Detection Range(Ø) :18m
HBIR29/2CH/H	Installation height: 15m (forklift) 12m (person) Detection range (Ø): 24m
HBIR29/2CH/UH	Installation Height : 21m Detection Range(Ø) :28m
Detection angle	360°

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

Input & Output Characteristics	
Operating voltage	220~240VAC 50/60Hz
Load ratings	Channel 1: Max. 50mA Channel 2: 24VDC@2A,250VAC@2A
Max withstandable in-rush current	80A@160μs
Warming-up	20s

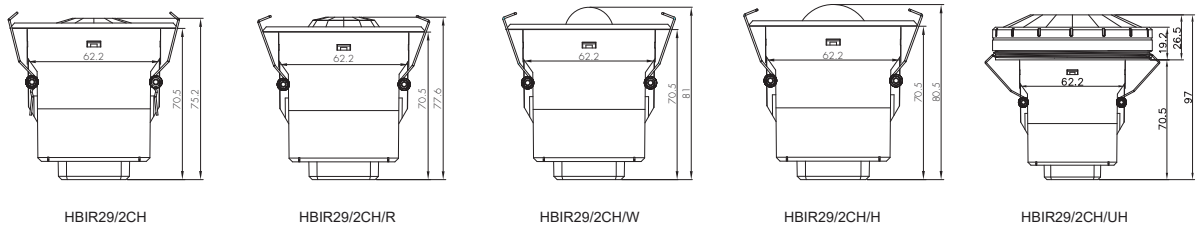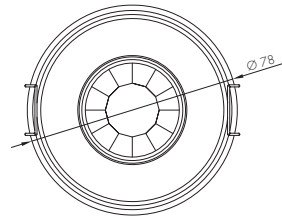| Safety & EMC	
EMC standard (EMC)	EN55015, EN61000, EN61547
Safety standard (LVD)	EN60669-1, EN60669-2-1 AS/NZS60669-1/-2-1
RED	EN300328, EN301489-1/-17
Certification	CB, CE, EMC, RED, RCM, UKCA

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

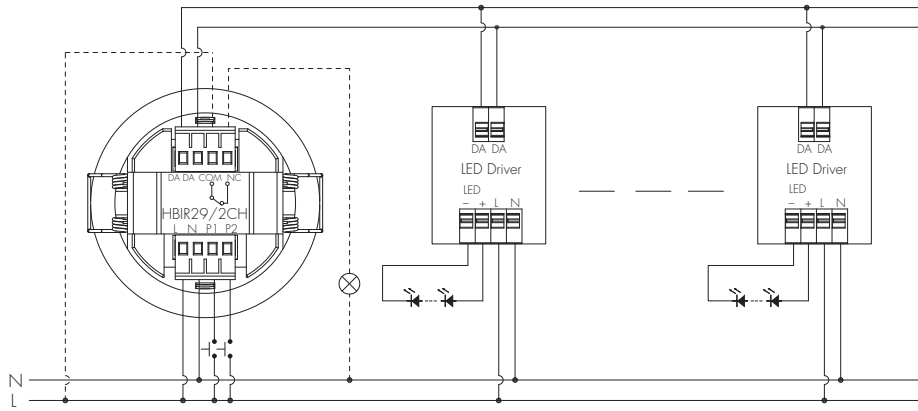*IP54 (facial part) only for lens of standard,/R,/H,/UH
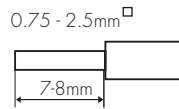
Mechanical Structure & Dimensions
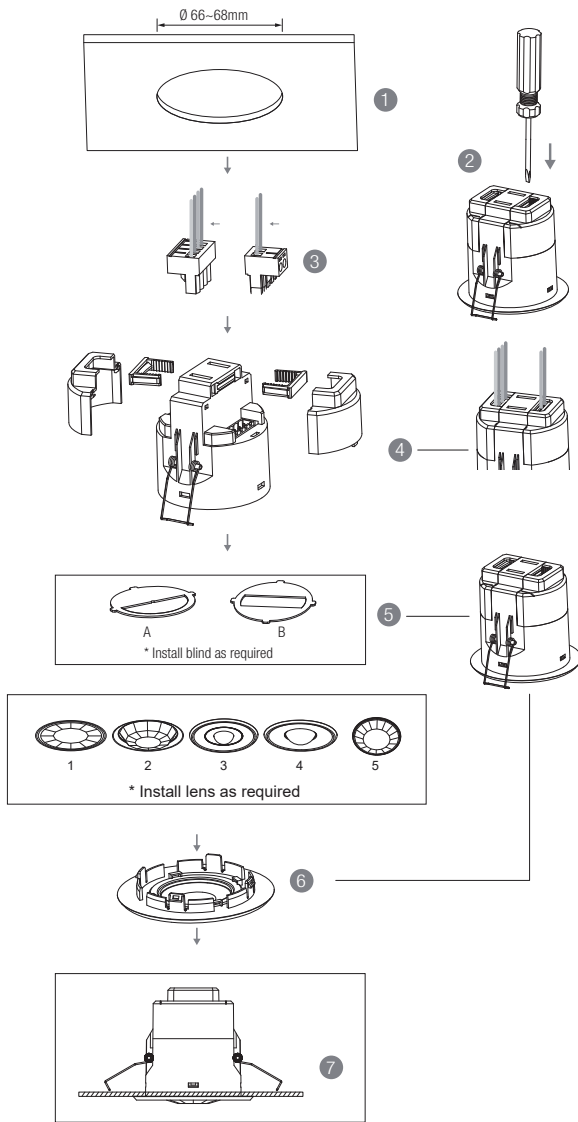
Ø 66~68mm

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.

A   B

* Install blind as required

1   2   3   4   5

* Install lens as required

Ø 78

HBIR29/2CH   HBIR29/2CH/R   HBIR29/2CH/W   HBIR29/2CH/H   HBIR29/2CH/UH

62.2   62.2   62.2   62.2   62.2

70.5   70.5   70.5   70.5   70.5

75.2   77.6   81   80.5   97

19.2   26.5

Wiring Diagram

Wire Preparation

0.75 - 2.5mm²

7-8mm

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℃)

Placement Guide and Typical Range

Smart Phone to Device Range

6-10m   >10m

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)

Ø 78

2

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

15.2

4.2

48.2
61.8
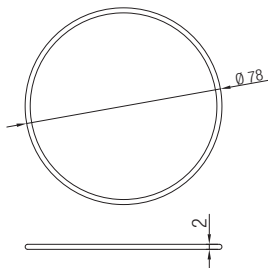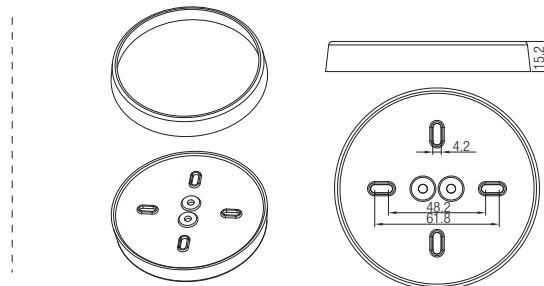
Note: The small silicon water-proof gasket is not suitable for HBIR29/2CH/W and HBIR29/2CH/UH
The Big silicon water-proof gasket is not suitable for HBIR29/2CH/W
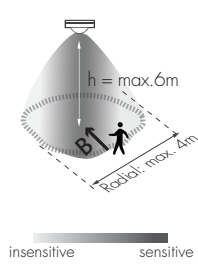
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1. HBIR29/2CH (Low-bay)

HBIR29/2CH: Low-bay flat lens detection pattern for **single person** @ Ta = 20°C

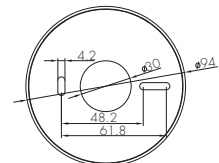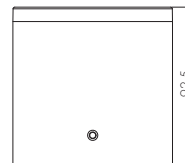(Recommended ceiling mount installation height **2.5m-6m**)

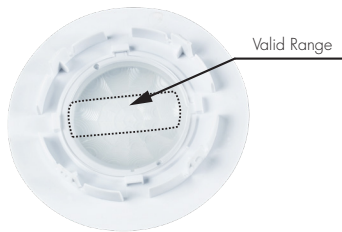| A: Tangential movement	B: Radial movement
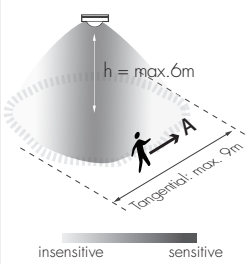
Mount height	Tangential (A)	Radial (B)
2.5m	max 50m² (Ø = 8m)	max 13m² (Ø = 4m)
3m	max 64m² (Ø = 9m)	max 13m² (Ø = 4m)
4m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)
5m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)
6m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)

h = max.6m

Tangential: max. 9m

Radial: max. 4m

insensitive — sensitive

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

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

Valid Range

Valid Range

Blind Option 1 --- Aisle Detection
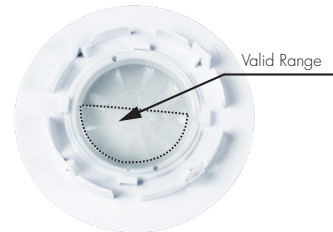
Blind Option 2 --- 180° Detection
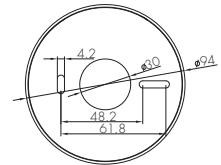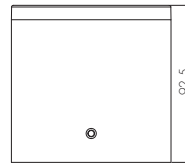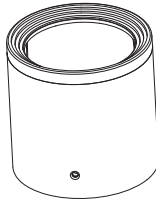
2. HBIR29/2CH/R (Reinforced Low-bay)

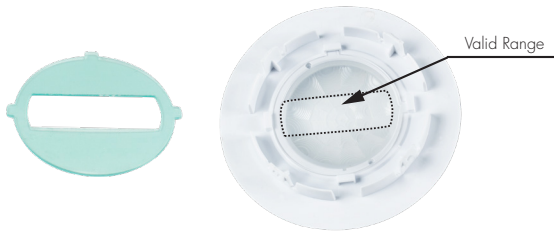**HBIR29/2CH/R**: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

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

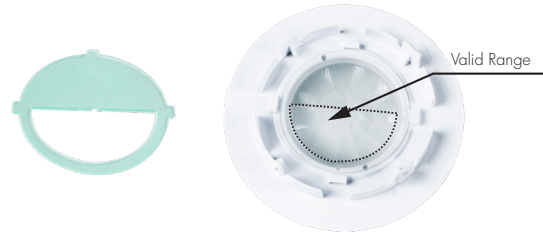| A: Tangential movement	B: Radial movement	Mount height	Tangential (A)	Radial (B)
		2.5m	max 79m² (Ø = 10m)	max 20m² (Ø = 5m)
		3m	max 79m² (Ø = 10m)	max 20m² (Ø = 5m)
		4m	max 64m² (Ø = 9m)	max 20m² (Ø = 5m)
		5m	max 50m² (Ø = 8m)	max 20m² (Ø = 5m)
		6m	max 50m² (Ø = 8m)	max 20m² (Ø = 5m)

h = max.6m
insensitive — sensitive

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

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

Valid Range

Valid Range

Blind Option 1 --- Aisle Detection

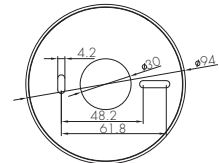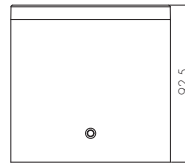Blind Option 2 --- 180° Detection

3. HBIR29/2CH/W (Wide range Low-bay)

HBIR29/2CH/W: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

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

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)

A: Tangential movement

B: Radial movement

h = max.6m

Tangential: max. 18m

Radial: max. 6m

insensitive — sensitive

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

4. HBIR29/2CH/H (High-bay)

HBIR29/2CH/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 (∅ = 22m)	max 201m² (∅ = 16m)
	11m	max 452m² (∅ = 24m)	max 201m² (∅ = 16m)
	12m	max 452m² (∅ = 24m)	max 201m² (∅ = 16m)
	13m	max 452m² (∅ = 24m)	max 177m² (∅ = 15m)
	14m	max 452m² (∅ = 24m)	max 133m² (∅ = 13m)
	15m	max 452m² (∅ = 24m)	max 113m² (∅ = 12m)

A: Tangential movement — h = max.15m — Tangential: max. 24m — insensitive / sensitive

B: Radial movement — h = max.15m — Radial: max. 16m — insensitive / sensitive
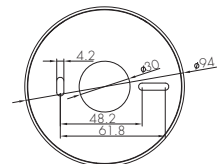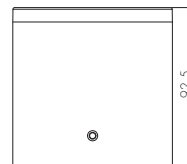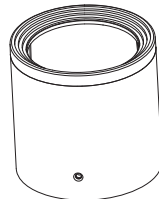
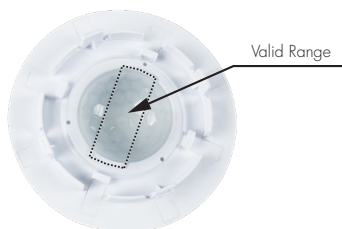**HBIR29/2CH/H**: High-bay lens detection pattern for **single person** @ Ta = 20°C

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

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

A: Tangential movement — h = max.12m — Tangential: max. 20m — insensitive / sensitive

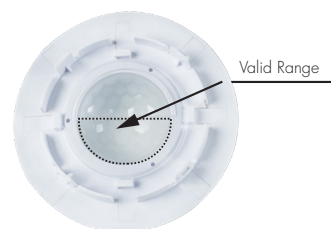B: Radial movement — h = max.12m — Radial: max. 3m — insensitive / sensitive

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

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

Valid Range

Valid Range

Blind Option 1 --- Aisle Detection

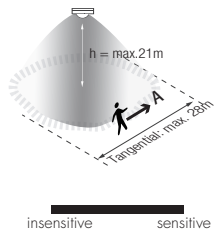Blind Option 2 --- 180° Detection
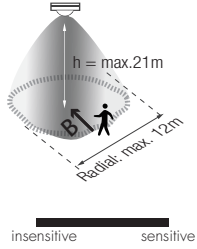
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5. HBIR29/2CH/UH (Ultra High-bay)

HBIR29/2CH/UH: Ultra High-bay convex lens detection pattern for **single person** @ Ta = 20°C

(Recommended ceiling mount installation height **3m-21m**)

A: Tangential movement

h = max.21m

Tangential: max. 28m

insensitive | sensitive

B: Radial movement

h = max.21m

Radial: max. 12m

insensitive | sensitive

| Mount height	Tangential (A)	Radial (B)
3m	max 12.5m^2 (Ø = 4m)	max 12.5m^2 (Ø = 4m)
6m	max 50m^2 (Ø = 8m)	max 28m^2 (Ø = 6m)
9m	max 113m^2 (Ø = 12m)	max 50m^2 (Ø = 8m)
12m	max 201m^2 (Ø = 16m)	max 79m^2 (Ø = 10m)
15m	max 314m^2 (Ø = 20m)	max 113m^2 (Ø = 12m)
18m	max 452m^2 (Ø = 24m)	max 113m^2 (Ø = 12m)
21m	max 615m^2 (Ø = 28m)	max 113m^2 (Ø = 12m)

Optional Accessory --- HA08
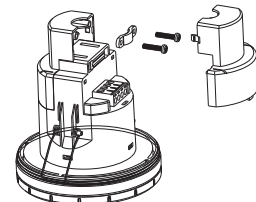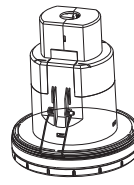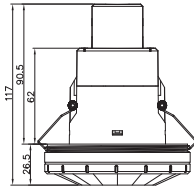
*Note: Optional Accessory HA09 & HA08 can not be uesd together.

Optional Accessory --- Ceiling/Surface Metal Mount Box: HA09/W, HA09/B, HA09/G
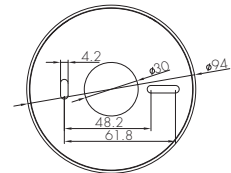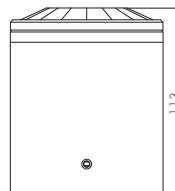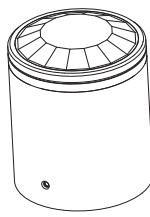
Dimming Interface Operation Notes

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 - Quit manual mode - Turn off only - Do nothing
	Double push	- Turn on only - Quit manual mode - Turn off only - Do nothing - Recall a scene
	Long press (≥1 second)	- Dimming - Colour tuning - Do nothing
Sensor-link	/	- 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) - Start Self test (Annually) - Stop Self test - Invalid
	Long press (≥1 second)	- Start Self test (Monthly) - Start Self test (Annually) - Stop Self test - Invalid
Fire Alarm (VFC signal only)	Refer to **Koolmesh** ® App User Manual V2.1	- 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/funcvtions, 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