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®

Product Description

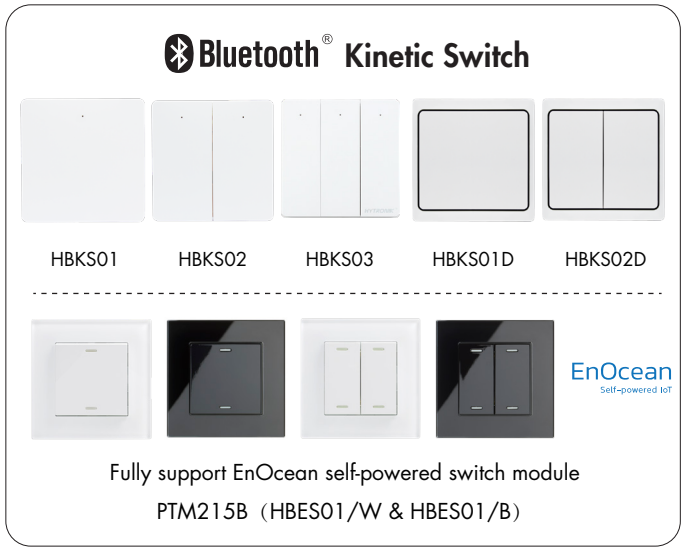
HBIR29/2CH is Bluetooth PIR standalone motion sensors with two independent channel outputs. One is DALI channel output (50mA DALI power supply built in), which can control up to 25 LED drivers. The other is voltage-free contact, which is NC (normally closed contact). It is ideal for typical indoor applications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

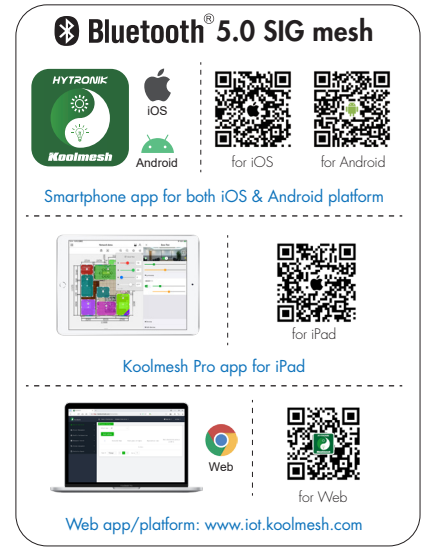
App Features

- 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 2 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
- Support D4i driver and collect energy, fault & diagnostics data
- Max withstandable in-rush current: 80A@160μs
- VFC: Volt-free Contact/Dry Contact ON/OFF relay switch
  - 24VDC@2A
  - 250VAC@2A
- 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.)
- 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





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°

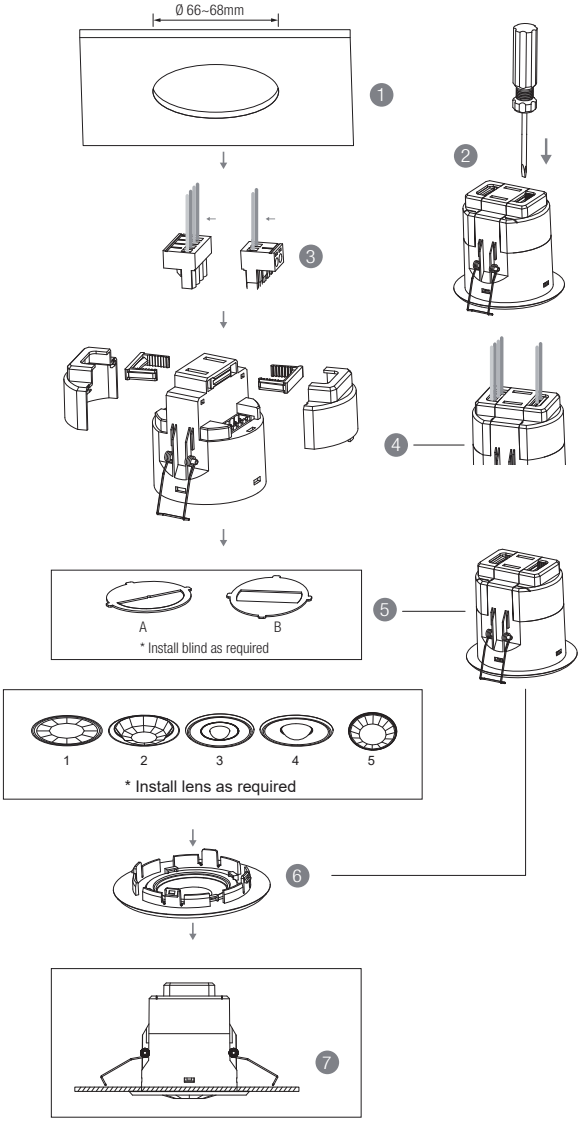
* For more details of detection range, please refer to "detection pattern" section.

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

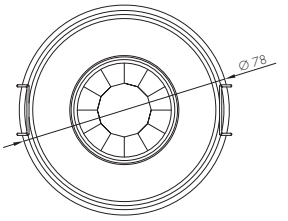
Safety & EMC	
EMC standard (EMC)	EN55015, EN61000, EN61547
Safety standard (LVD)	EN60669-1, EN60669-2-1 AS/NZS60669-1/-2-1
RED	EN300328, EN301489-1/-17
Certification	CB, CE, EMC, RED, RCM, UKCA

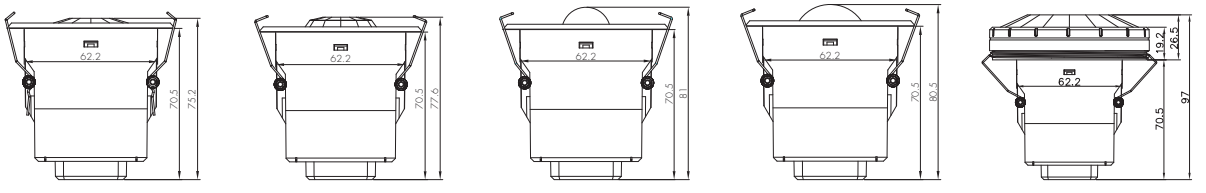
Environment	
Operation temperature	Ta: -20°C ~ +50°C
IP rating	IP20
IP rating (facial part)	IP54

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



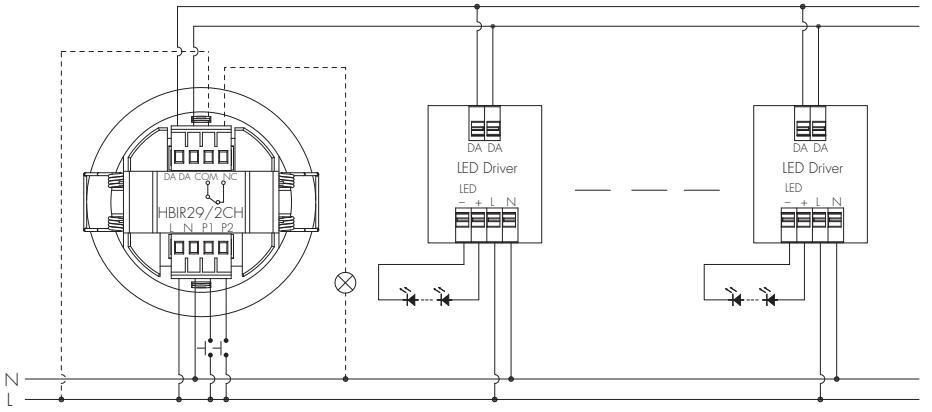
1. Ceiling (drill hole Ø 66~68mm)
2. Carefully prise off the cable clamps.
3. Make connections to the pluggable terminal blocks.
4. Insert plug connectors and secure using the provided cable clamps, then clip terminal covers to the base.
5. Fit detection blind (if required) and desired lens.
6. Clip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



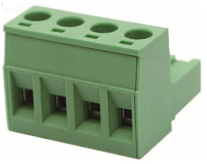


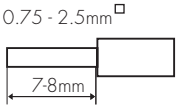
HBIR29/2CH HBIR29/2CH/R HBIR29/2CH/W HBIR29/2CH/H HBIR29/2CH/UH

Wiring Diagram



Wire Preparation



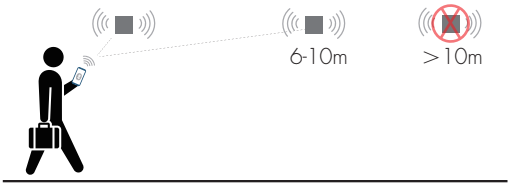


Pluggable screw terminal. It is recommended to make connections to the terminal before fitting to the sensor.

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

Placement Guide and Typical Range

Smart Phone to Device Range

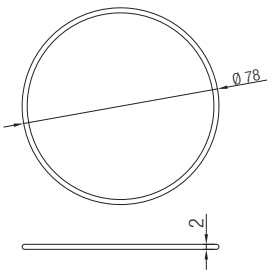


The smart device with the App installed will have a typical range of 10m, but varies from device to device. During commissioning, the installer will need to be in range of the devices when searching for devices to add to the network.

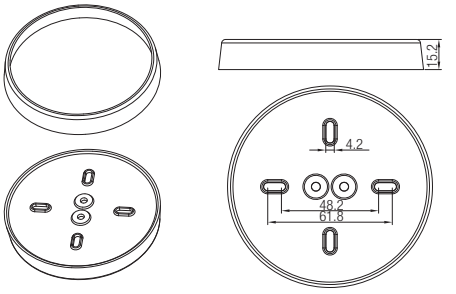
Once the devices have been added to the network via the App, the devices will start communicating within the wireless mesh. This means that once the network is complete, all devices are accessible from the smart device when in a 20m range of a single point.

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)



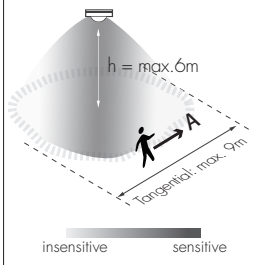
Note: The small silicon water-proof gasket is not suitable for HBIR29/2CH/W and HBIR29/2CH/UH
The Big silicon water-proof gasket is not suitable for HBIR29/2CH/W

1. HBIR29/2CH (Low-bay)

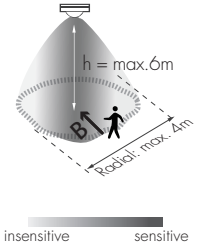
HBIR29/2CH: Low-bay flat lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

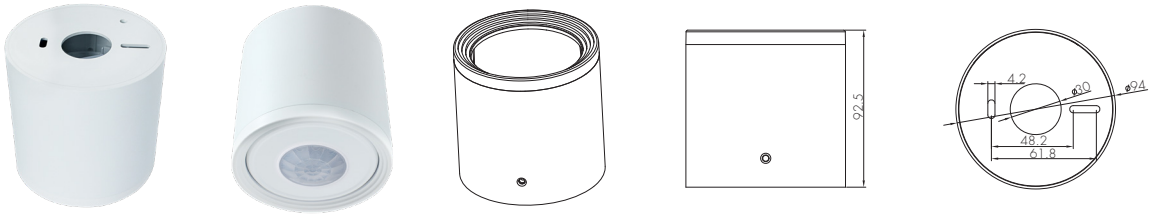


B: Radial movement

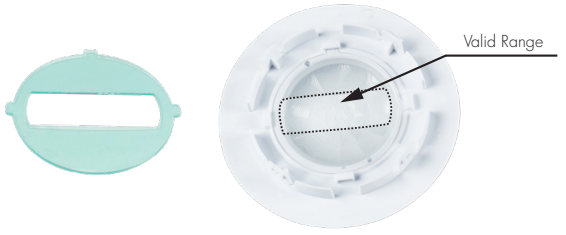


Mount height	Tangential (A)	Radial (B)
2.5m	max 50m² (Ø = 8m)	max 13m² (Ø = 4m)
3m	max 64m² (Ø = 9m)	max 13m² (Ø = 4m)
4m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)
5m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)
6m	max 38m² (Ø = 7m)	max 13m² (Ø = 4m)

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

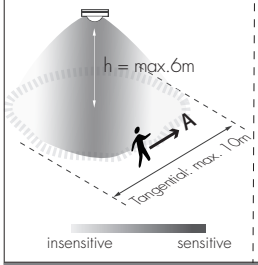
Blind Option 2 --- 180° Detection

2. HBIR29/2CH/R (Reinforced Low-bay)

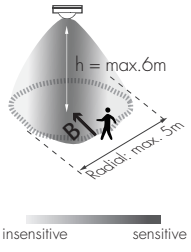
HBIR29/2CH/R: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

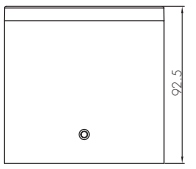


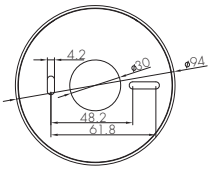
B: Radial movement



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)

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

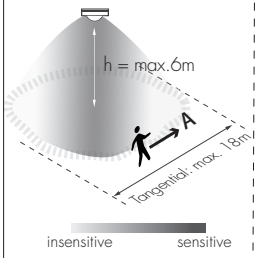
Blind Option 2 --- 180° Detection

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

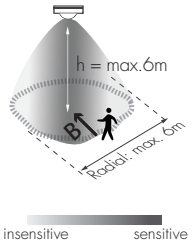
HBIR29/2CH/W: Low-bay convex lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

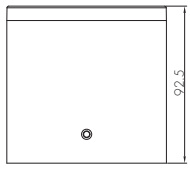


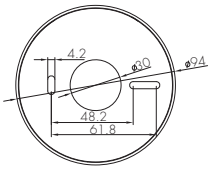
B: Radial movement



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



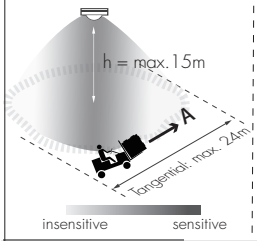


4. HBIR29/2CH/H (High-bay)

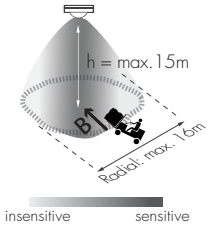
HBIR29/2CH/H: High-bay lens detection pattern for **forklift** @ Ta = 20°C

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

A: Tangential movement



B: Radial movement

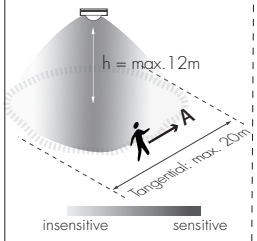


Mount height	Tangential (A)	Radial (B)
10m	max 380m² (Ø = 22m)	max 201m² (Ø = 16m)
11m	max 452m² (Ø = 24m)	max 201m² (Ø = 16m)
12m	max 452m² (Ø = 24m)	max 201m² (Ø = 16m)
13m	max 452m² (Ø = 24m)	max 177m² (Ø = 15m)
14m	max 452m² (Ø = 24m)	max 133m² (Ø = 13m)
15m	max 452m² (Ø = 24m)	max 113m² (Ø = 12m)

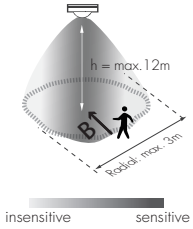
HBIR29/2CH/H: High-bay lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

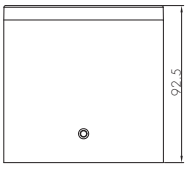


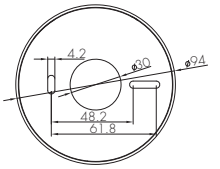
B: Radial movement



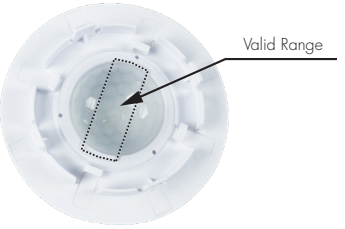
Mount height	Tangential (A)	Radial (B)
2.5m	max 50m² (Ø = 8m)	max 7m² (Ø = 3m)
6m	max 104m² (Ø = 11.5m)	max 7m² (Ø = 3m)
8m	max 154m² (Ø = 14m)	max 7m² (Ø = 3m)
10m	max 227m² (Ø = 17m)	max 7m² (Ø = 3m)
11m	max 269m² (Ø = 18.5m)	max 7m² (Ø = 3m)
12m	max 314m² (Ø = 20m)	max 7m² (Ø = 3m)

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

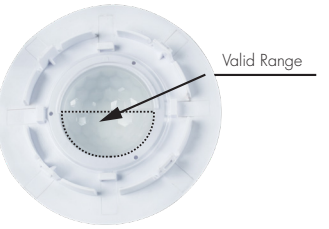




Optional Accessory --- Blind Insert for Blocking Certain Detection Angles



Blind Option 1 --- Aisle Detection



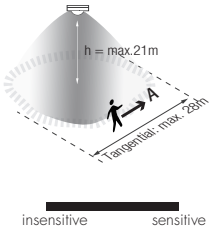
Blind Option 2 --- 180° Detection

5. HBIR29/2CH/UH (Ultra High-bay)

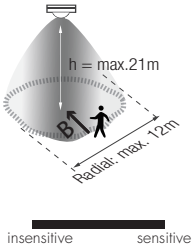
HBIR29/2CH/UH: Ultra High-bay convex lens detection pattern for **single person** @ Ta = 20°C

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

A: Tangential movement

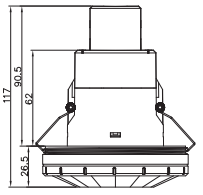


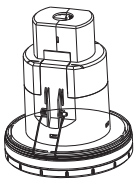
B: Radial movement

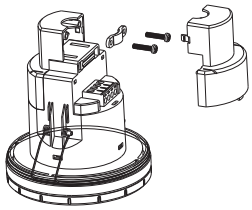


Mount height	Tangential (A)	Radial (B)
3m	max 12.5m² (Ø = 4m)	max 12.5m² (Ø = 4m)
6m	max 50m² (Ø = 8m)	max 28m² (Ø = 6m)
9m	max 113m² (Ø = 12m)	max 50m² (Ø = 8m)
12m	max 201m² (Ø = 16m)	max 79m²(Ø = 10m)
15m	max 314m² (Ø = 20m)	max 113m² (Ø = 12m)
18m	max 452m² (Ø = 24m)	max 113m² (Ø = 12m)
21m	max 615m² (Ø = 28m)	max 113m² (Ø = 12m)

Optional Accessory --- HA08

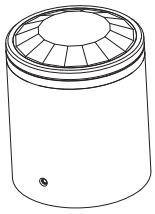


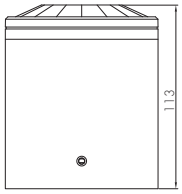


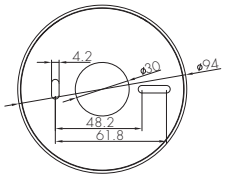


*Note: Optional Accessory HA09 & HA08 can not be uesd together.

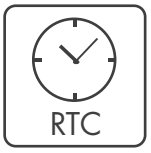
Optional Accessory --- Ceiling/Surface Metal Mount Box: HA09/W, HA09/B, HA09/G







Functions and Features



The ReakTime Clock (RTC) is a crilical component in many of our BlE (Bluekooth low Energy) products, paricularly those designed losupport circodian hythm systems. The primary funclion of the RTC is to maintain accurale time and dale informalion, even when thedevice is powered olf or experiences a power failure. This is cruciol for ensuring that the device can reume its correct operalion anaprovide timel dal or funclionality once power is restored.

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
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 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/functions, please kindly refer to
   https://hytronik.com/product/hbir29-2ch
2. Regarding precautions for Bluetooth product installation and operation, please kindly refer to
   https://hytronik.com/service/downloads (Bluetooth Products Precautions for Product linstallation 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)