Bluetooth® 5.0 PIR Motion Sensor Compatible with Zhaga Book 20 Standard

HYTRONIK ®

Bluetooth® | DALI | CE | UKCA | RED | UKCA

HIR60
Low bay

HIR60/R
Mid bay with IP54

Product Description

HIR60 & HIR60/R are Bluetooth 5.0 SIG mesh PIR motion sensors, designed with Zhaga standard D4i (Book 20 connection) that enables lighting designers/manufactures to freely connect to Zhaga Book 20 standard LED Drivers via plug'n'play. It's embedded with Bluetooth module, PIR sensor and also a daylight sensor, and yet comes with a surprisingly super-mini size! With Bluetooth wireless mesh networking, it makes communication between luminaires much easier without time-consuming hardwiring, which is always a headache especially for old buildings – you do not need any extra wirings to upgrade old buildings with smart lighting! Meanwhile, simple device setup and commissioning can be done via **Koolmesh** app.

HIR60

HIR60/R

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)
- Schedule to run scenes based on time and date
- Astro timer (sunrise and sunset)
- Staircase function (primary & secondary)
- Compatible with EnOcean BLE switches
- 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
- Continuous development in progress…

Hardware Features

- 5-in-1: Bluetooth 5.0 + Zhaga standard + D4i + PIR motion sensor + Daylight sensor
- Optional accessories for different mounting style
- Super compact mini size
- Plug'n'Play via Zhaga Book 20 connection standard
- 5-year warranty
- DALI 2 coming soon...
- D4i coming soon...

Bluetooth 5.0 SIG mesh

HYTRONIK Koolmesh | iOS | Android | for iOS | for Android
Smartphone app for both iOS & Android platform

for iPad
Koolmesh Pro app for iPad

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

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

Environment	
Operation temperature	Ta: -20°C ~ 50°C
Storage temperature	-40°C ~ +70°C
Relative humidity	10 ~ 90%
IP rating	IP20

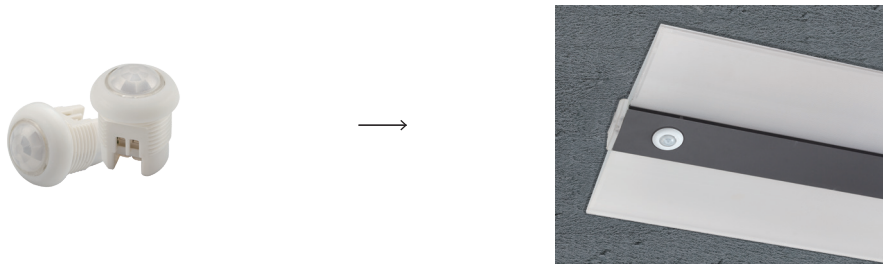| PIR Sensor Properties (HIR60 & HIR60/R)	
Sensor principle	PIR detection
Operation voltage	9.5~22.5VDC
Input current	Approx. 30mA
Detection range *	HIR60 Max installation height: 3m Max detection range (∅): 12m HIR60/R Max installation height: 8m (for person) Max installation height: 12m (for forklift) Max detection range (∅): 20m
Detection angle	360°

* The detection range is heavily influenced by sensor placement (angle) and different walking paces. It may be reduced under certain conditions.
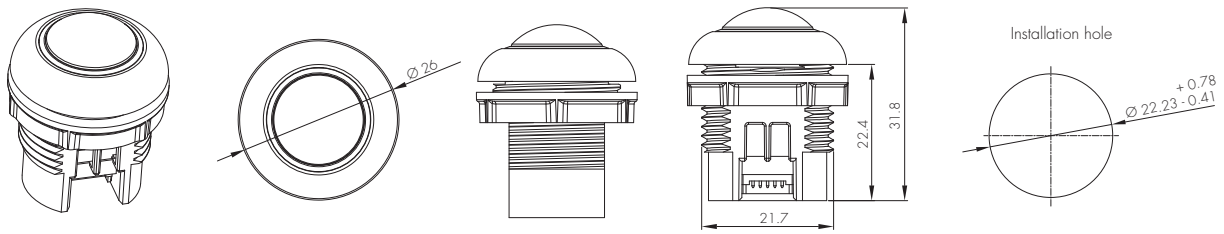
Optional Accessories
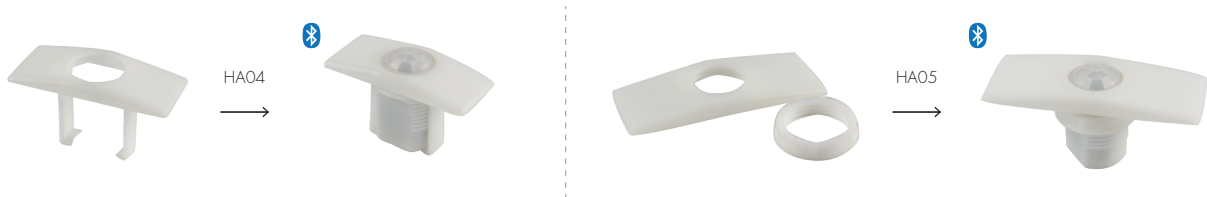
* Default: white housing, black version can be requested.
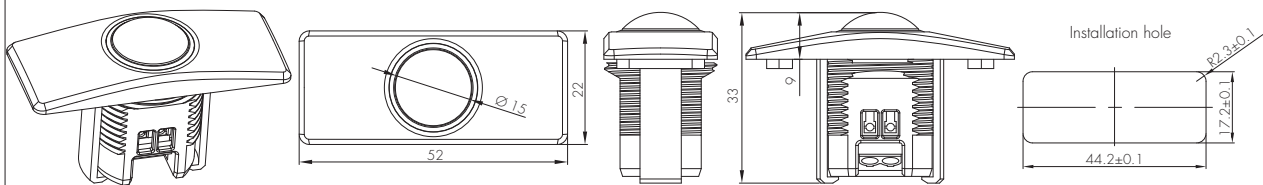
Demenstration of installation for transparent version

HIR60

Installation hole

Ø 26

31.8

22.4

21.7

Ø 22.23 +0.78 -0.41

HIR60 with HA04

Installation hole

Ø 15

22

52

33

9

R2.3±0.1

17.2±0.1

44.2±0.1
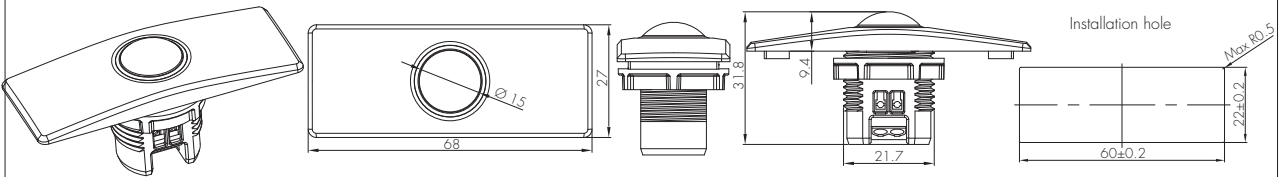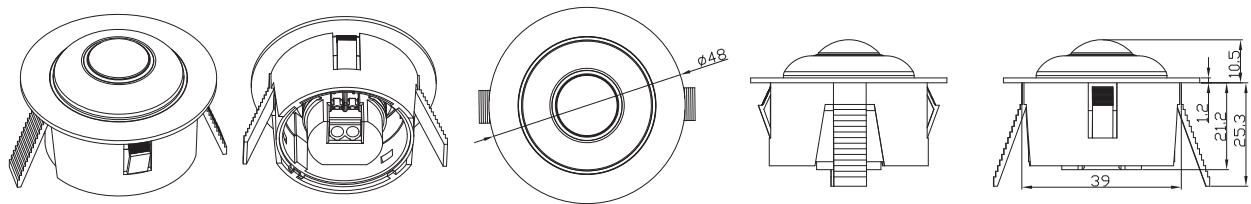
Note：We suggest that the metal plate thickness to be 0.8mm – 1.6mm to ensure perfect focal length for the PIR lens.

HIR60 with HA05

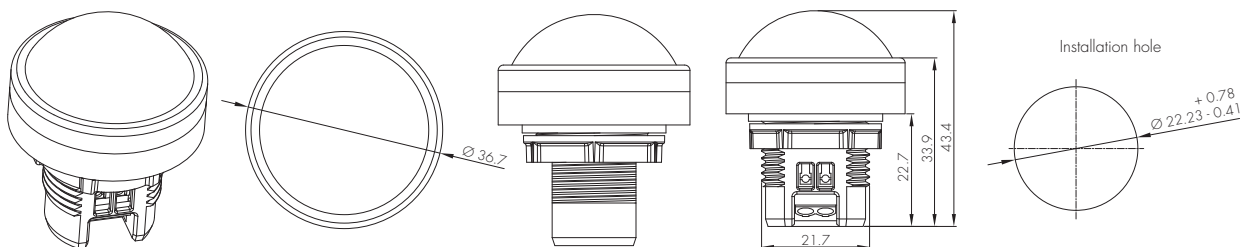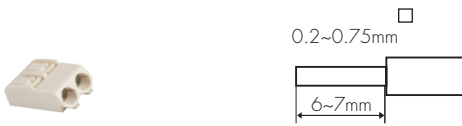Installation hole

Ø 15

27

68

31.8

9.4

21.7

Max R0.5

22±0.2

60±0.2

HIR60 with HA10

Ø48

10.5

1.2

21.2

25.3

39

HIR60/R (IP54)

Installation hole

Ø 36.7

33.9

43.4

22.7

21.7

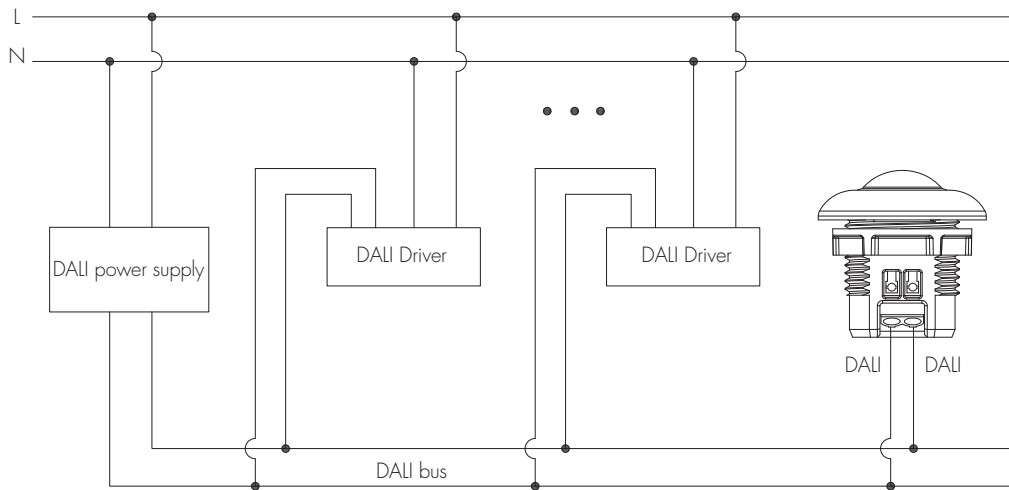Ø 22.23 +0.78 -0.41

Wire Preparation

0.2~0.75mm

6~7mm

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

1.100 metres (total) max. for 0.5mm² CSA (Ta = 50℃)
2.150 metres (total) max. for 0.75mm² CSA (Ta = 50℃)

Wiring Diagram

DALI Driver

L
N

• • •

DALI power supply

DALI Driver

DALI Driver

DALI   DALI

DALI bus

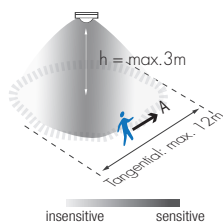## Detection Pattern - - Diagram 1

The data below is tested under following conditions:

- Single person walking;
- Sensor not connected to any driver that may have soft-on period;
- Testing temperature Ta = 20°C;
- The testing is conducted in an open and spacious indoor field, without noticeable obstacles or influences that may affect PIR performances.
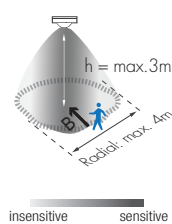
HIR60

A: Tangential movement

h = max.3m

Tangential. max. 12m

A

insensitive   sensitive

B: Radial movement

h = max.3m

Radial. max. 4m

B

insensitive   sensitive

Mount height	Tangential Movement (A)	Radial Movement (B)
3m	max 113m² (Ø = 12m)	max 12m² (Ø = 4m)

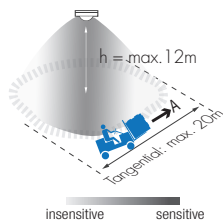# Detection Pattern - - Diagram 2

The data below is tested under following conditions:

- Forklift driving at a speed of 10km/h;
- Sensor not connected to any driver that may have soft-on period;
- Testing temperature Ta = 20°C;
- The testing is conducted in an open and spacious indoor field, without noticeable obstacles or influences that may affect PIR performances.

HIR60/R
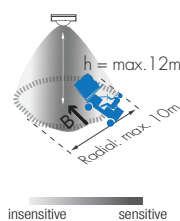
A: Tangential movement   B: Radial movement

h = max.12m

h = max.12m

Tangential: max. 20m

Radial: max. 10m

insensitive   sensitive

insensitive   sensitive

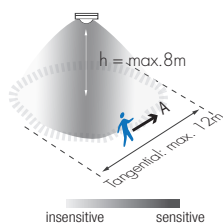| Mount height	Tangential Movement (A)	Radial Movement (B)
8m	max 201m² (Ø = 16m)	max 50m² (Ø = 8m)
9m	max 227m² (Ø = 17m)	max 50m² (Ø = 8m)
10m	max 254m² (Ø = 18m)	max 63m² (Ø = 9m)
11m	max 314m² (Ø = 20m)	max 78m² (Ø = 10m)
12m	max 314m² (Ø = 20m)	max 78m² (Ø = 10m)

Detection Pattern - - Diagram 3

The data below is tested under following conditions:

- Single person walking;
- Sensor not connected to any driver that may have soft-on period;
- Testing temperature Ta = 20°C;
- The testing is conducted in an open and spacious indoor field, without noticeable obstacles or influences that may affect PIR performances.
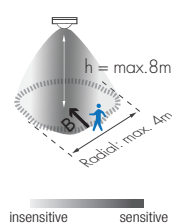
HIR60/R

A: Tangential movement   B: Radial movement

h = max.8m

h = max.8m

Tangential: max. 12m

Radial: max. 4m

insensitive   sensitive

insensitive   sensitive

Mount height	Tangential Movement (A)	Radial Movement (B)
3m	max 38m² (Ø = 7m)	max 7m² (Ø = 3m)
4m	max 50m² (Ø = 8m)	max 7m² (Ø = 3m)
5m	max 50m² (Ø =8m)	max 7m² (Ø =3m)
6m	max 64m² (Ø = 9m)	max 12m² (Ø = 4m)
7m	max 95m² (Ø = 11m)	max 12m² (Ø = 4m)
8m	max 113m² (Ø = 12m)	max 12m² (Ø = 4m)

Smart Phone to Device Range

6-10m   >10m
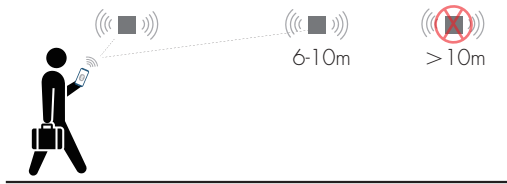
The smart device with the App installed will have a typical range of 10m, but varies from device to device. During commissioning, the installer will need to be in range of the devices when searching for devices to add to the network.

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.

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