# HYTRONIK®

🅱® 🖿 CB ⚠ CE IP20 **SELV** ▣ emc

## Product Description

HED1025 is a driver with a maximum output range of 25W that can be adjusted via switch-dim and DALI, or controlled by one of four different types of Bluetooth antenna options.By simply connecting Bluetooth sensor head HBT01/HBT02/HIR13/HIR16/HIR62/HIR62/R to the driver, it allows for motion detection and Bluetooth mesh control. Once the sensor head is connected to the driver, DALI & 1-10V control are then disabled and sensor antenna will take control. With Bluetooth wireless mesh networking, it makes communication between luminaires much easier without time-consuming hardwiring, which eventually saves costs for projects.Meanwhile, simple device setup and commissioning can be done via **Koolmesh**® app.

## 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)
- ▢ Push switch configuration
- 📅 Schedule to run scenes based on time and date
- ☀ Astro timer (sunrise and sunset)
- 🪜 Staircase function (primary & secondary)
- 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 BLE switches
- Continuous development in progress…

## Hardware Features

- Switch-Dim
- With DALI feedback
- 4 types of optional sensor heads available
- Plug'n'Play for flexible installation and cost saving assemble
- Photocell Advance™
- Insulated terminal cover with cord restraint
- Stand by power <0.5W
- Active PFC design
- Analogue flicker-free dimming
- Logarithmic dimming with multiple dimming inputs
- Configurable constant power (CC) output via DIP switch
- Open-circuit Protection
- Over-temperature Protection
- Short-circuit Protection
- Overload Protection
- 5-year warranty, designed for long lifetime up to 50,000 hours

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## Current Output Configuration

HED1025, 1x25W

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 700mA | ● | ● | ● | ● |
| 675mA | ○ | ● | ● | ● |
| 650mA | ● | ○ | ● | ● |
| 625mA | ○ | ○ | ● | ● |
| 600mA | ● | ● | ○ | ● |
| 575mA | ○ | ● | ○ | ● |
| 550mA | ● | ○ | ○ | ● |
| 525mA | ○ | ○ | ○ | ● |
| 500mA | ● | ● | ● | ○ |
| 475mA | ○ | ● | ● | ○ |
| 450mA | ● | ○ | ● | ○ |
| 425mA | ○ | ○ | ● | ○ |
| 400mA | ● | ● | ○ | ○ |
| 375mA | ○ | ● | ○ | ○ |
| 350mA | ● | ○ | ○ | ○ |
| 325mA | ○ | ○ | ○ | ○ |

**Bluetooth® Kinetic Switch**

HBKS01　HBKS02　HBKS03　HBKS01D　HBKS02D

EnOcean Self-powered IoT

Fully support EnOcean self-powered switch module
PTM215B（HBES01/W & HBES01/B）
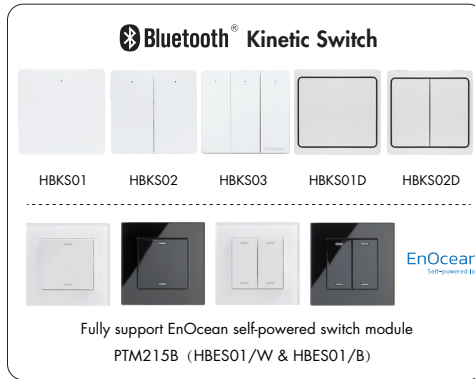
**Bluetooth 5.0 SIG mesh**

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

| | Model No. | HED1025 |
|---|---|---|
| Input | Mains Voltage | 220~240VAC  50/60Hz |
| | Mains Current | 0.15~0.13A |
| | Power Factor | 0.9 |
| | Max. Efficiency | 88% |
| | Dielectric Strength | Input→Output : 3000VAC |
| | Leakage Current | < 0.25mA |
| Output | Ripple Current | <3% |
| | Uout Max. | 90V |
| | Turn-on Time | < 0.5s |
| | Dimming Interface | DALI, Switch-Dim |
| Environment | Operation Temp. | Ta: -20~+50℃ |
| | Case Temp. (Max.) | 80℃ |
| | IP Rating | IP20 |
| Safety and EMC | EMC Standard | EN55015, EN61547, EN61000-3-2, EN61000-3-3 |
| | Safety Standard | EN61347-1,EN62493,EN61347-2-13 |
| | DALI Standard | IEC62386-101 ; IEC62386-102 ; IEC62386-207 |
| | Certifications | CB, RCM, CE , EMC |

| Model No. | Max. output power/current/voltage range | | | |
|---|---|---|---|---|
| HED1025 | 19.5W/ 325mA /12~60V | 21W/ 350mA /12~60V | 22.5W/ 375mA /12~60V | 24W/ 400mA /12~60V |
| | 25.5W/ 425mA /12~60V | 27W/ 450mA /12~60V | 26W/ 475mA /12~55V | 27.5W/ 500mA /12~55V |
| | 26W/ 525mA /12~50V | 27.5W/ 550mA /12~50V | 26W/ 575mA /12~45V | 27W/ 600mA /12~45V |
| | 28W/ 625mA /12~45V | 28W/ 650mA /12~43V | 27W/ 675mA /12~40V | 28W/ 700mA /12~40V |

# Mechanical Structure & Dimensions （unit:mm)

## Model: HED1025  1x25W

DIP switch (for LED current selection)
LED+
LED−
RJ12 (sesor antenna)

⏚
L
N
Switch-Dim
DALI
DALI

3

36

4.2

254.6

269

21.5
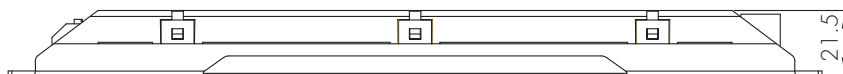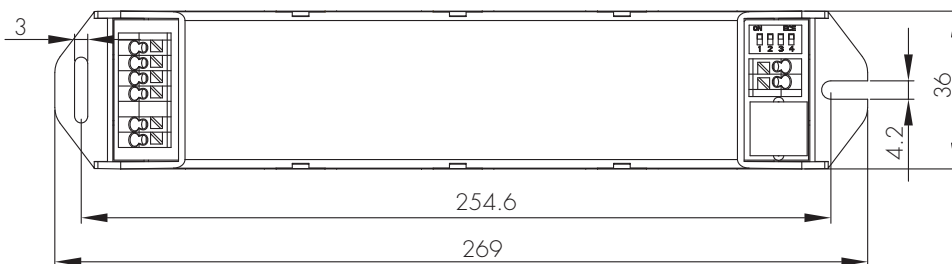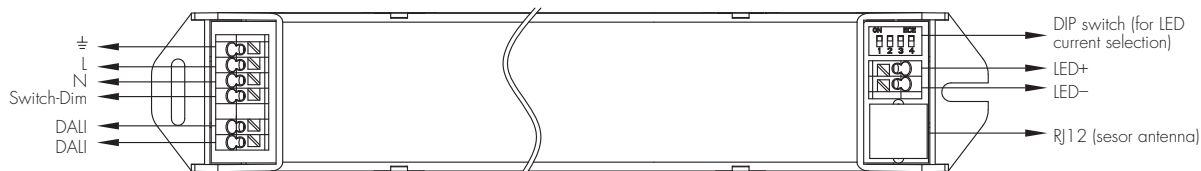
## Wiring Diagram

*Note: If connecting an antenna，the DALI inputs are disabled.*

Switch-Dim Connections

L
N
H
SWITCH

L
N
SWITCH–DIM
LED+
LED−

L
N
SWITCH–DIM
LED+
LED−

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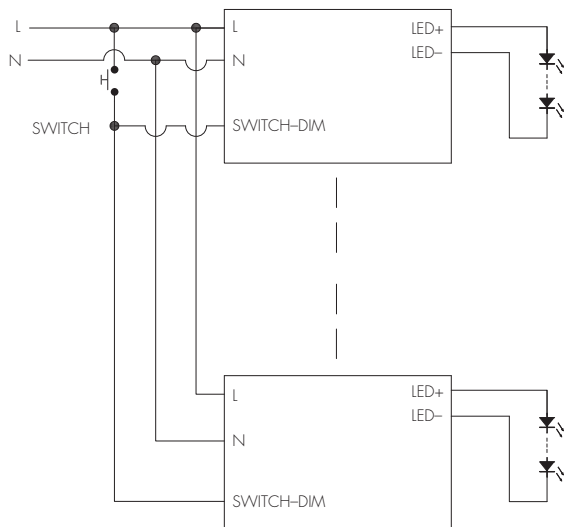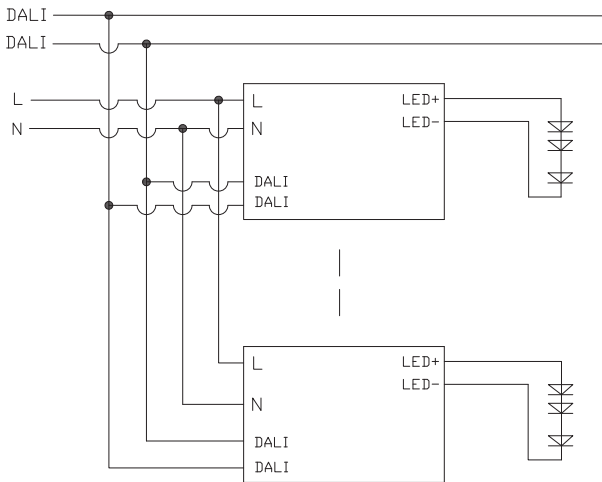
DALI Connections

Antenna Connections (with optional Switch-Dim)
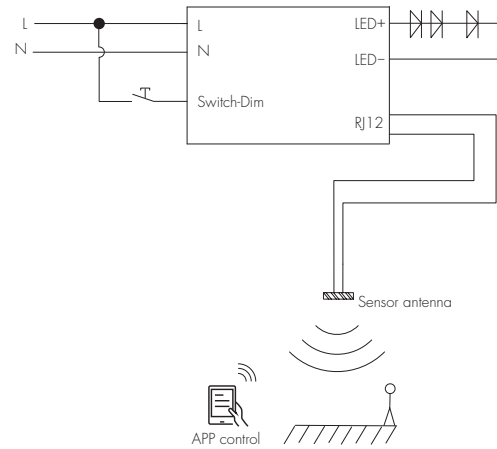
Note: 1. Unused terminals have been omitted for clarity.
2. If connecting an antenna, the DALI input is disabled.

## Wire Preparation

0.5 - 1.5mm

8mm
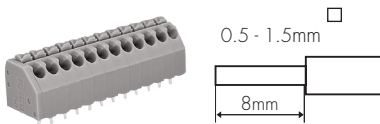
To make or release the wire from the terminal, use a screwdriver to push down the button.

## Loading and In-rush Current

| Model | HED1025 |
|---|---|
| In-rush Current (Imax.) | 40A |
| Pulse Time | 98.4 μs |

## Circuit Breaker Information

| Automatic circuit breaker type | B16A | B10A | B13A | B20A | B25A |
|---|---|---|---|---|---|
| HED1025 | 72 | 45 | 59 | 90 | 113 |

The data above is calculated according to the formula: Maximum Amount = 16/(Pn/230). In order to provide a more reliable reference in real application, the data have been revised to take 60% of the number calculated, i.e. 16/(Pn/230) x 60%. Please kindly take note that the calculation is based on ABB circuit breaker series S200. Actual values may differ due to different types of circuit breaker used and installation environment.

## Performance Characteristics



EFFICIENCY (%) vs LOAD
- 325mA
- 525mA
- 700mA
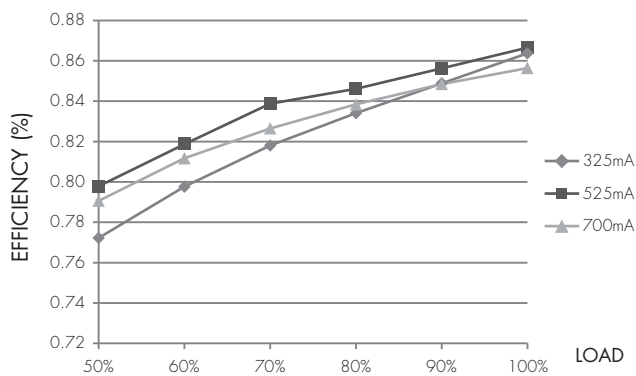
* Typical Efficiency vs Load



PF vs LOAD
- 220V
- 230V
- 240V
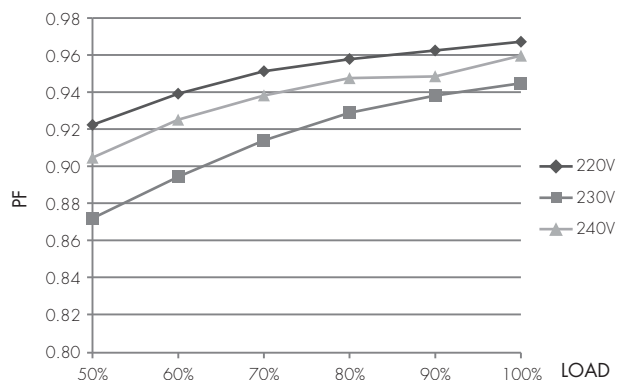
* Typical Power Factor vs Load

## Dimming Profile

—— Analogue dimming
---- PWM



Dimming Method
(DALI Push)
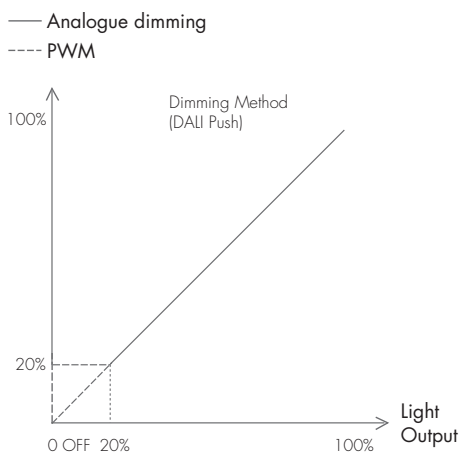
| Dimming range | Dimming technique |
|---|---|
| 20%-100% | Analogue |
| 1%-20% | PWM |

## Technical Specifications for Sensor Heads

| 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 ~ +55°C |
| Storage temperature | -20℃ ~ +70℃ |
| Relative humidity | 0 ~ 90% |
| IP rating | IP20 |

| HF Sensor Properties (HBT01) | |
| --- | --- |
| Sensor principle | High Frequency (microwave) |
| Operation frequency | 5.8GHz +/- 75MHz |
| Transmission power | <0.2mW |
| Detection range* | Max installation height: 3m<br>Max detection range (Ø): 8m |
| Detection angle | 30° ~ 150° |

| PIR Sensor Properties (HIR13 & HIR16 & HIR62 & HIR62/R) | |
| --- | --- |
| Sensor principle | PIR detection |
| Operation voltage | 5VDC |
| Detection range * | HIR13<br>Max installation height: 15m (forklift)<br>12m (single person)<br>Max detection range (Ø): 24m<br>HIR16<br>Max installation height: 15m (forklift)<br>12m (single person)<br>Max detection range: 18m * 6m (L * W)<br>HIR62<br>Max installation height: 3m (single person)<br>Max detection range (Ø): 12m<br>HIR62/R<br>Max installation height: 8m (single person)<br>Max installation height: 12m (forklift)<br>Max detection range (Ø): 14m |
| Detection angle | 360° |

\* 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 with Bluetooth modules built in offers powerful number of Plug'n'Play feature options to expand the flexibility of luminaires design. This approach to luminaire design reduces space requirements and component costs whilst simplifying production.

### A. HBT01

Surface mounting
Photocell Advance™
The cable length is around 30cm.
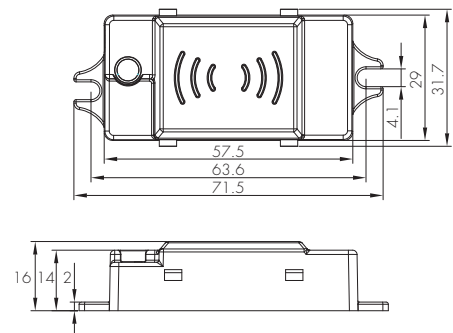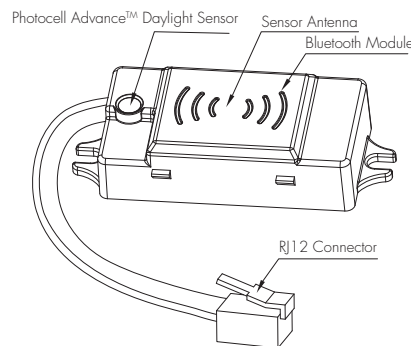


### B. HBT02

Surface mounting
Without motion sensor
Photocell Advance™
The cable length is around 30cm.
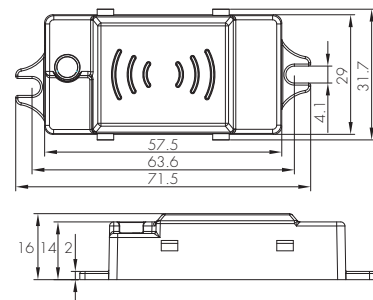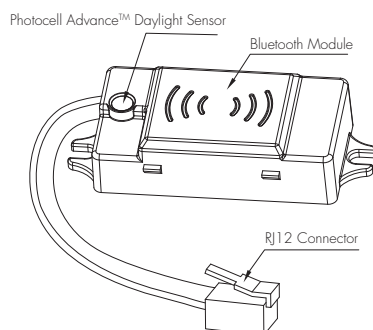
## C. HIR13/S

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

Lens   Housing

RJ12 connector

Lug

Ø36.3

20
23.2
32.6

Installation hole

Ø3.5
Ø17.5
17
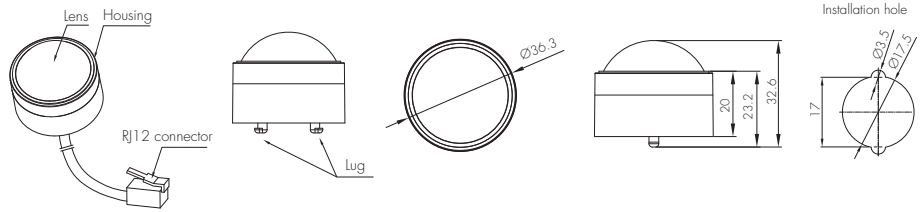
## D. HIR13/F

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

Lens   Accessories

RJ12 connector

Ø48

1.2
21.5
30.4

Installation hole

Ø41
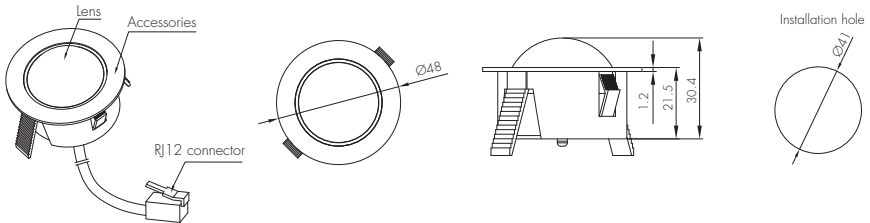
## E. HIR13/C

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

Lens   Accessories

RJ12 connector

Ø40.5   M13

25
42.7
12
63

25
33.9

Installation hole

Ø14
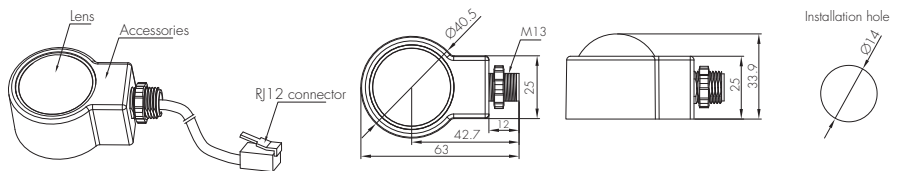
## F. HIR16

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

Lens   Accessories

RJ12

16.5
38.2

45
75

Installation hole

63
Ø33
33
27.5
49.5

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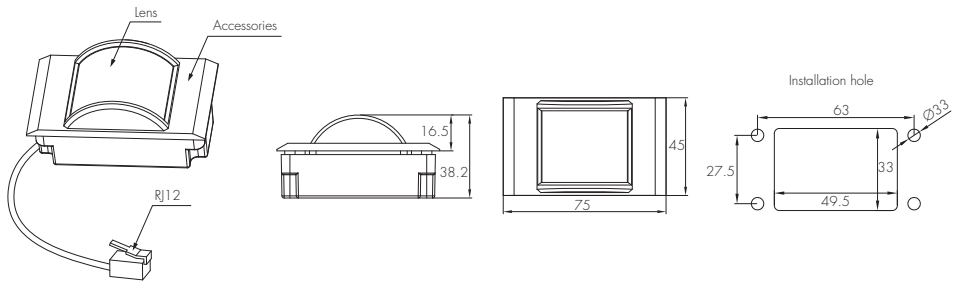
### Installation for HIR16

← Thickness: 0.8mm – 1.6mm

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

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## G. HIR62

Zhaga connection
The cable length is around 35cm.

RJ12

Ø 32 · 21.7 · 22.4 · 31.8 · Installation hole · Ø 22.23 +0.78 / -0.41
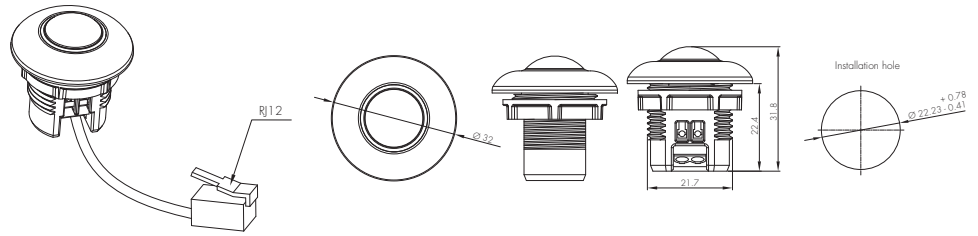
## H. HIR62 with HA04

Zhaga connection
Optional accessory
The cable length is around 35cm.

RJ12

Ø 15 · 22 · 52 · 33 · 9 · Installation hole · R2.3±0.1 · 17.2±0.1 · 44.2±0.1
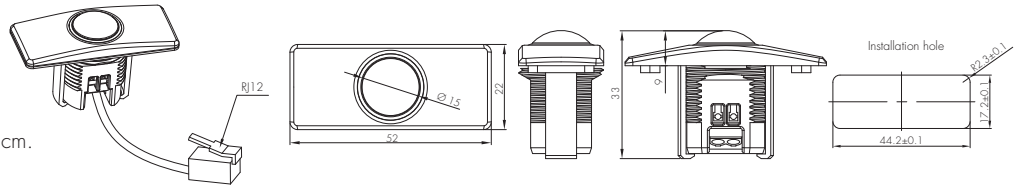
## I. HIR62 with HA05

Zhaga connection
Optional accessory
The cable length is around 35cm.

RJ12

Ø 15 · 27 · 68 · 31.8 · 9.4 · 21.7 · Installation hole · Max R0.5 · 22±0.2 · 60±0.2
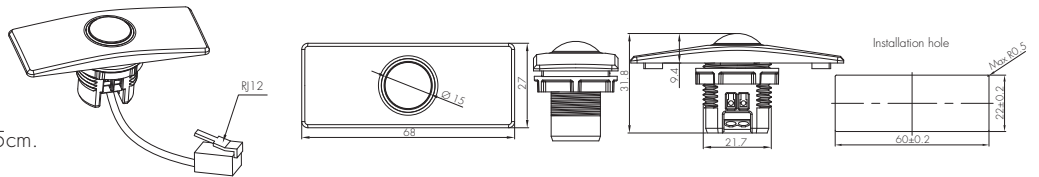
## J. HIR62/R

Zhaga connection
The cable length is around 35cm.
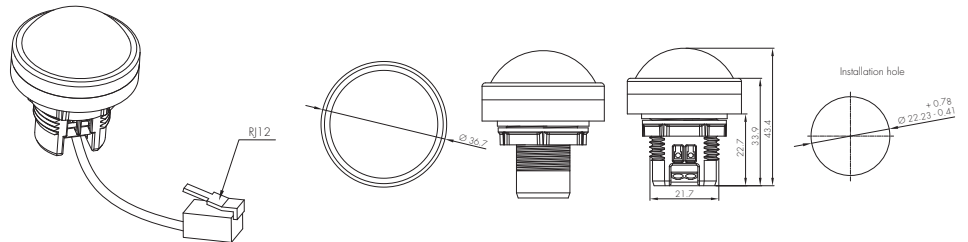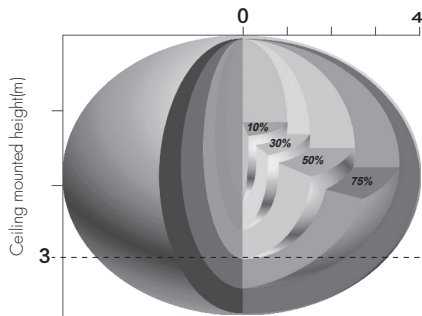
RJ12

Ø 36.7 · 21.7 · 33.9 · 43.4 · Installation hole · Ø 22.23 +0.78 / -0.41

## Detection Pattern

### HBT01



Ceiling mounted height(m)

0 · 4 · 10% · 30% · 50% · 75% · 3

The detection range is heavily influenced by sensor placement (angle) and different walking paces.

It may be reduced to 2m(diameter) & 3m(height) under certain conditions (walking across).

## HIR13 (High-bay)



### HIR13: High-bay lens detection pattern for **forklift** @ Ta = 20°C
### (Recommended installation height **10m-15m**)



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

B: Radial movement — h = max.15m — Radial: max. 16m

insensitive — sensitive

| 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) |

### HIR13: High-bay lens detection pattern for **single person** @ Ta = 20°C
### (Recommended installation height **2.5m-12m**)



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

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

insensitive — sensitive

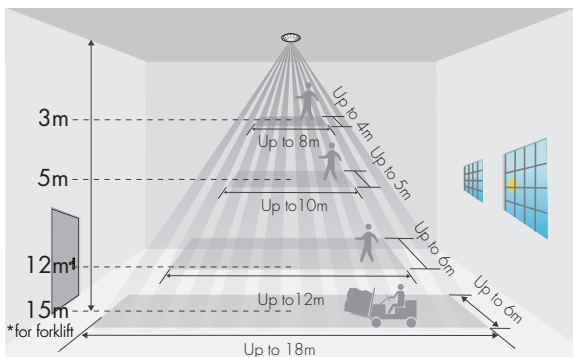| Mount height | Tangential (A) | Radial (B) |
|---|---|---|
| 2.5m | max 50m² (Ø = 8m) | max 7m² (Ø = 3m) |
| 6m | max 104m² (Ø = 11.5m) | max 7m² (Ø = 3m) |
| 8m | max 154m² (Ø = 14m) | max 7m² (Ø = 3m) |
| 10m | max 227m² (Ø = 17m) | max 7m² (Ø = 3m) |
| 11m | max 269m² (Ø = 18.5m) | max 7m² (Ø =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

## HIR16



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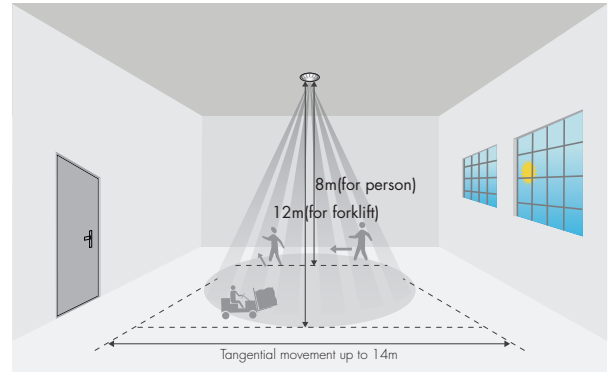
*The detection patterns are based upon 5km/h movement speed.

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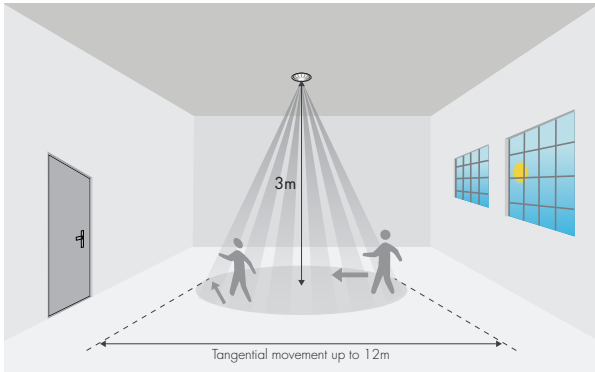
HIR62                                          HIR62/R



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

## Dimming Interface Operation Notes

### DALI

This series of products are supplied as 'plug n'play DALI' or 'independent DALI' system ready.
These models are also fully DALI addressable and may be assigned to groups within the limits specified by the DALI protocol or supporting DALI controllers by using a DALI programming tool.

### Switch-Dim

The provided Switch-Dim interface allows for a simple dimming method using commercially available non-latching (momentary) wall switches.
Up to 64 LED drivers maybe connected to one switch.

| Switch Action | Response |
|---|---|
| Short press (<0.4 second) | Toggle light on / off |
| Note: short press has to be longer than 0.1s, or it will be invalid. | |
| Long press (>0.4 second) | Toggle dim light / increase brightness |

### Synchronization

| Switch Action | Response |
|---|---|
| Long press (>15 seconds) | All lights will dim down to minimum then return to 50% brightness |

* We recommend the number of drivers connected to a switch does not exceed 25 pieces. The maximum length of the wires from push to driver should be no more than 20 meters.

## Additional Information / Documents

1. For full explanation of Hytronik Photocell Advance™ technology, please kindly refer to
   www.hytronik.com/download ->knowledge ->Introduction of Photocell Advance

2. To learn more about detailed product features/functions, please refer to
   www.hytronik.com/download ->knowledge ->Introduction of App Scenes and Product Functions

3. 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

4. Regarding precautions for microwave sensor installation and operation, please kindly refer to
   www.hytronik.com/download ->knowledge ->Microwave Sensors - Precautions for Product Installation and Operation

5. 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

6. Regarding precautions for LED driver installation and operation, please kindly refer to
   www.hytronik.com/download ->knowledge ->LED Drivers - Precautions for Product Installation and Operation

7. Data sheet is subject to change without notice. Please always refer to the most recent release on
   www.hytronik.com/products ->bluetooth technology ->Bluetooth Drivers

8. Regarding Hytronik standard guarantee policy, please refer to
   www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy