























HED6045/BT

Dimmable Driver & Constant Current














HYTRONIK®**Product Description**

HED6045/BT is a Bluetooth dimmable LED driver, with maximum power output of 45W. It comes with Switch-Dim interface by using Push switch (retractive switch) and of course Bluetooth dimming interface. The driver comes with an RJ12 terminal, ready to plug in a wide selection of motion sensors, ranging from HF to PIR, from low bay to high bay etc. It is ideal for direct projects or new luminaires design for lighting manufacturers. 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
-  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
-  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)
-  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 switch HBES01/W & HBES01/B
-  Continuous development in progress...

Hardware Features

-  Switch-Dim
-  Flicker free (1-100%)
-  Bluetooth dimmable control
-  Insulated terminal cover with cord restraint
-  Active PFC design
-  Logarithmic Dimming
-  Linear Dimming
-  Configurable constant current (CC) output via DIP switch
-  Loop-in and loop-out terminals for efficient installation
-  Open-circuit Protection
-  Short-circuit Protection
-  Overload Protection
-  5-year warranty

* Certain scenes which require external photocell can be achieved by using together with Hytronik Bluetooth sensors, such as HBIR29, HCD038/BT + sensor head etc.

Bluetooth 5.0 SIG mesh

HYTRONIX
Koolmesh

for iOS
for Android

Smartphone app for both iOS & Android platform

Koolmesh Pro app for iPad

Web

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

Bluetooth® Kinetic Switch

HBKS01 HBKS02 HBKS03 HBKS01D HBKS02D

EnOcean
Self-powered IoT

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

Output Configuration

1050mA	●●●●●
1000mA	●●●●○
950mA	●●●○●
900mA	●●○●●
800mA	●●●○●
700mA	●●○●●
600mA	●●●○●
500mA	●●○●●
350mA	○●●●○
	1 2 3 4 5

Warning: Please make sure the correct current is selected before starting the driver!

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

Input	
Mains Voltage	220~240VAC 50/60Hz
Mains Current	0.24~0.22A
Power Factor	0.95
Max. Efficiency	88%
Psb/Pno	<0.5W

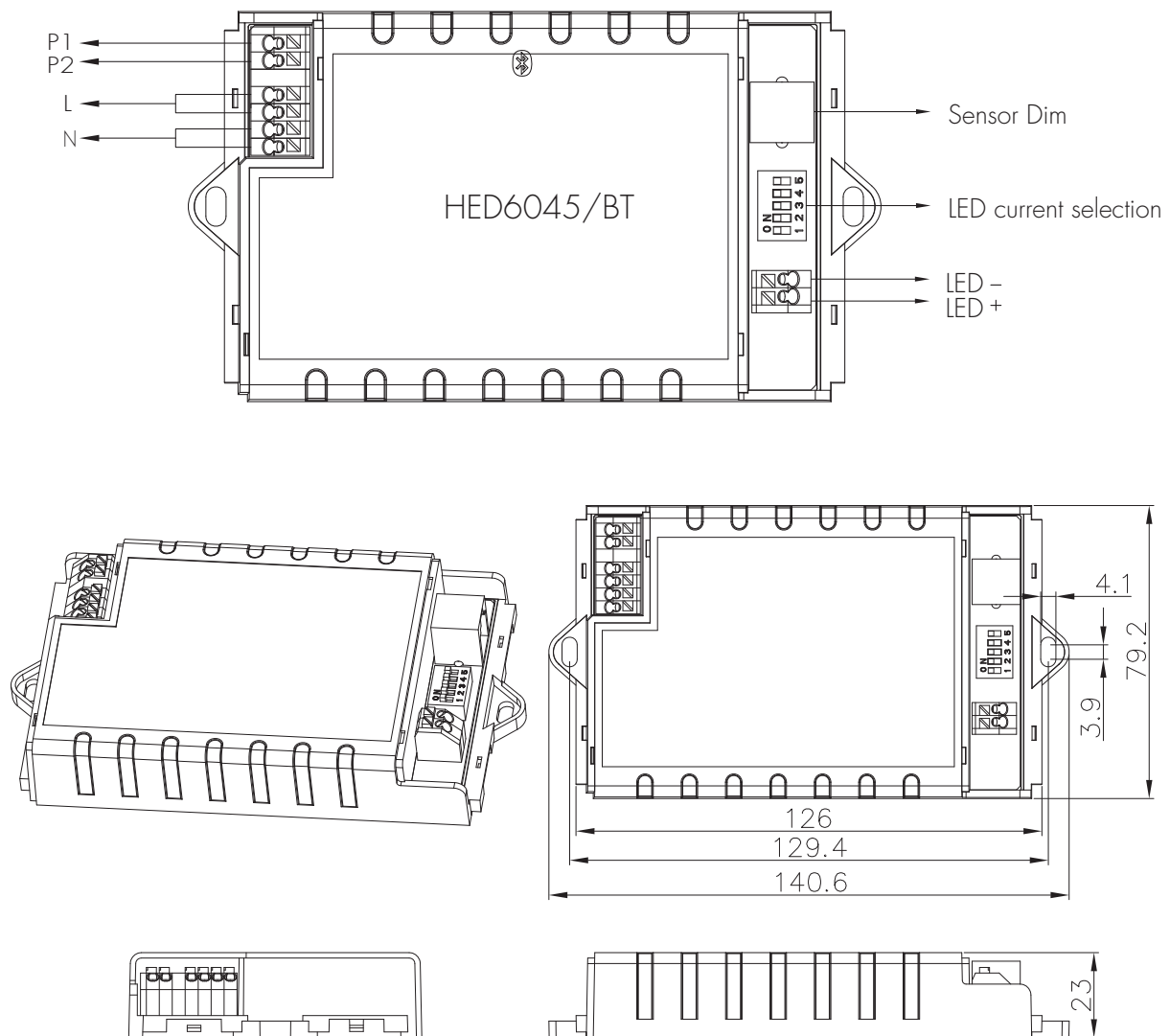
Output	
Output Current	350mA~1050mA
Output Voltage	10 - 54V
Uout Max.	75VDC
Turn-on Time	<0.5s
Dimming Interface	Switch-Dim

Environment	
Operation Temp.	-20 ~ +50°C
Case Temp. (Max.)	80°C
IP Rating	IP20

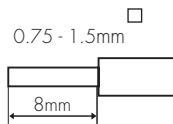
Safety and EMC	
EMC Standard	EN55015, EN61547, EN61000-3-2/-3-3
Safety Standard	EN62493, EN61347-1, EN61347-2-13
Dielectric strength	Input→output: 3000VAC / 5mA / 1min
Abnormal protection	Output short-circuit protection Overload Protection Open-circuit Protection
RED	EN300328, EN301489-1/-17, EN50663

Max. output power/current/voltage range	
HED6045/BT	3.5-19W/ 350mA / 10-54VDC 5-27W/ 500mA / 10-54VDC 6-32W/ 600mA / 10-54VDC 7-38W/ 700mA / 10-54VDC 8-42W/ 800mA / 10-52VDC 9-45W/ 900mA / 10-50VDC 9.5-45W/ 950mA / 10-47VDC 10-45W/ 1000mA / 10-45VDC 10.5-44W/ 1050mA / 10-42VDC

Mechanical Structure & Dimensions



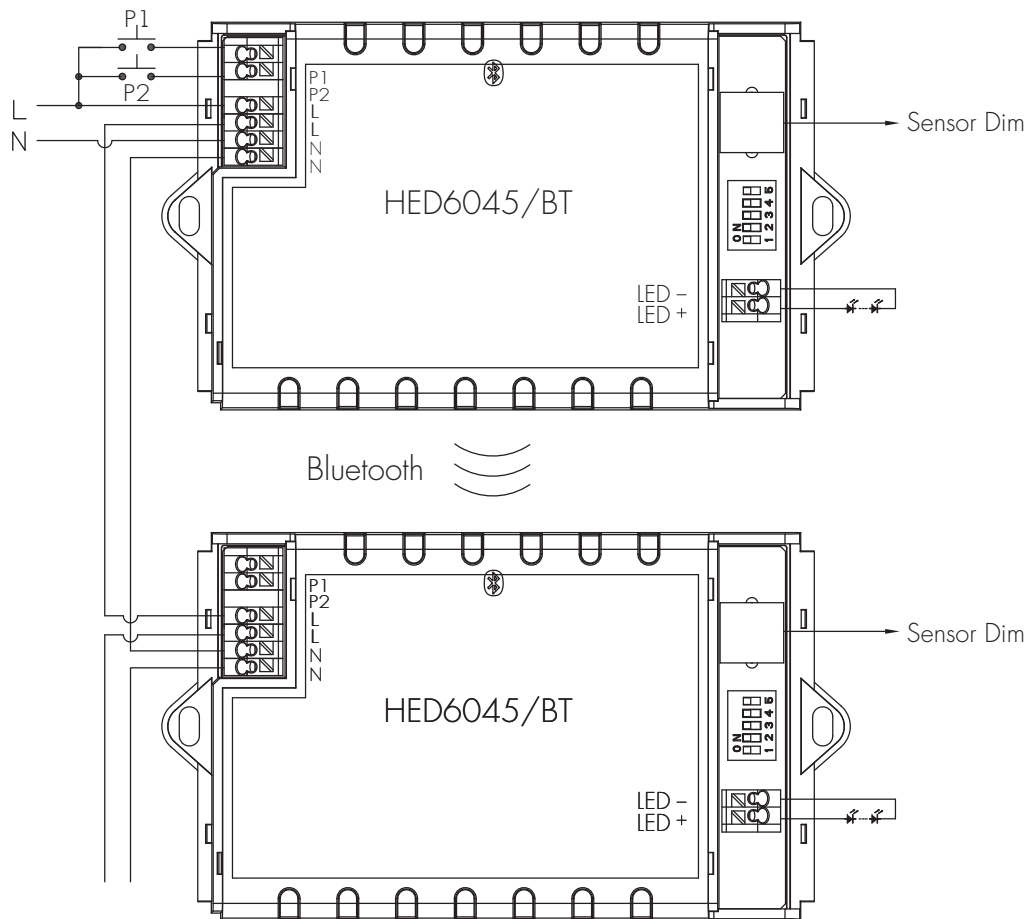
Wire Preparation



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

Note: There is no need for any hardwiring on "push" terminal between one driver to another. The installer only needs to connect the push switches to the nearest driver to save labor and cost. The push switches can be assigned to control any Bluetooth driver through the app commissioning.

Wiring Diagram



Loading and In-rush Current

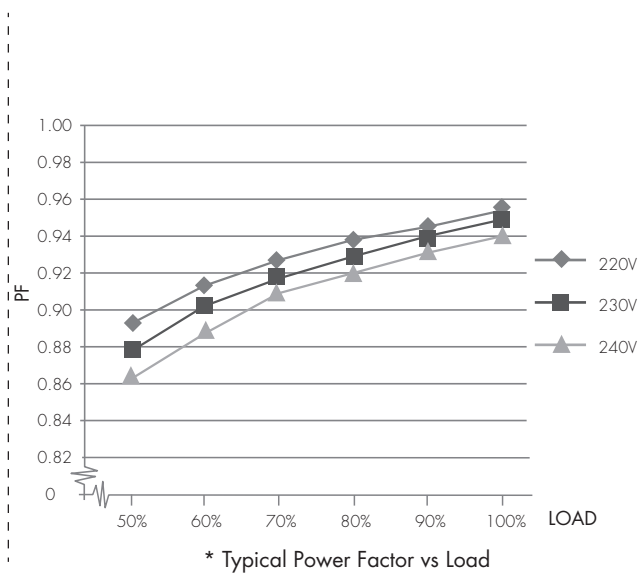
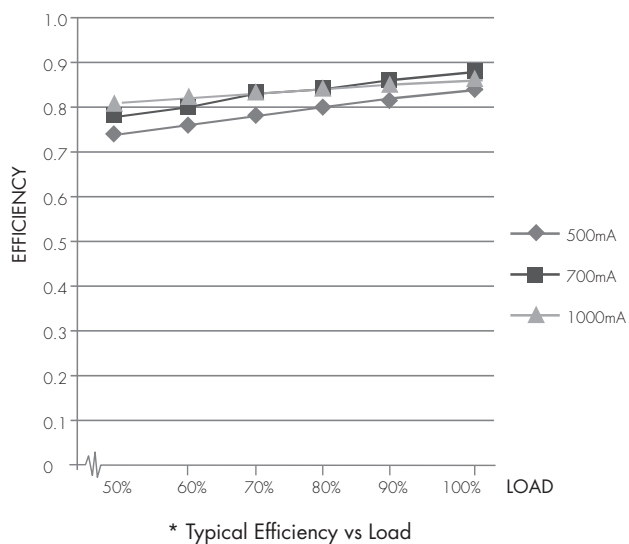
Model	HED6045/BT
In-rush Current (I _{max.})	17.8A
Pulse Time	72 μs

Circuit Breaker Information

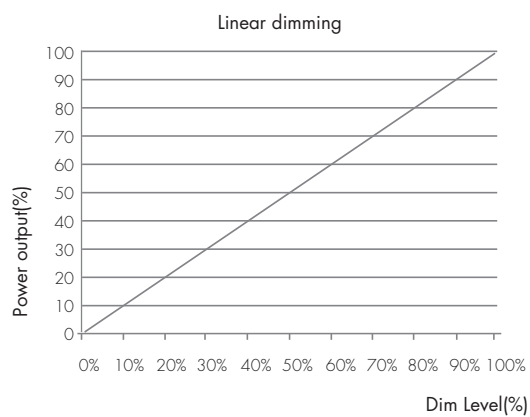
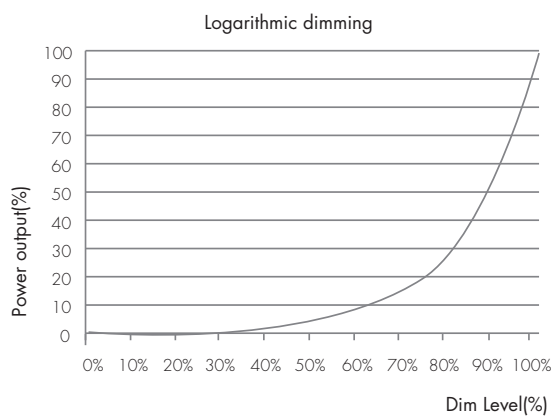
Automatic circuit breaker type	B16A	B10A	B13A	B20A	B25A
HED6045/BT	43	27	35	54	67

The data above is calculated according to the formula: Maximum Amount = $16 / (P_n / 230)$. 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. $16 / (P_n / 230) \times 60\%$. 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



Dimming Characteristics



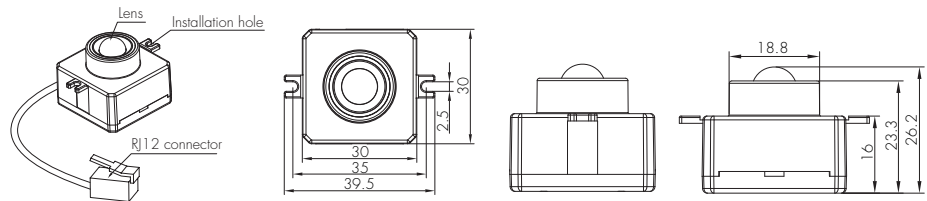
PIR & microwave sensor heads

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. HIR05

PIR sensor head

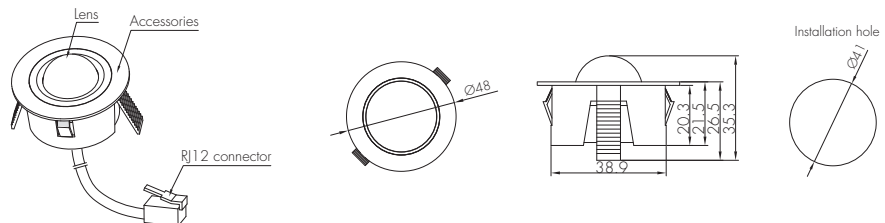
The cable length is around 65cm.



B. HIR05/FM

PIR sensor head

The cable length is around 65cm.

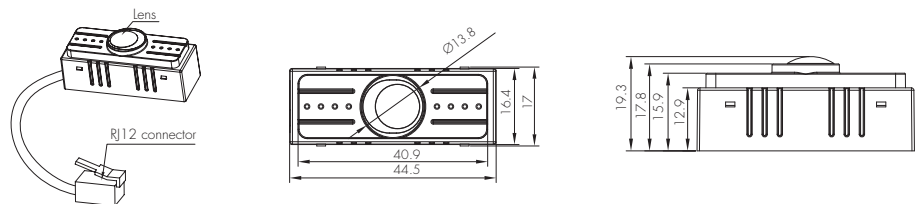


C. HIR07

PIR sensor head

Photocell Advance™

The cable length is around 30cm.



D. HIR11/S

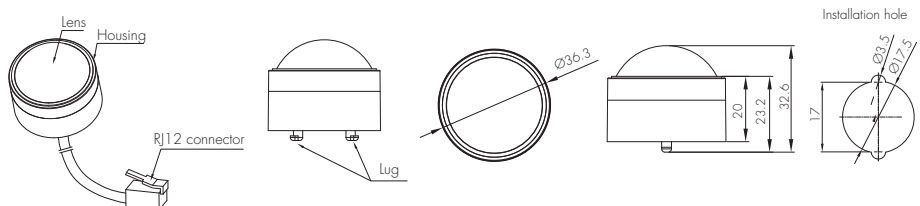
PIR sensor head

Surface mounting

For highbay application

IP65 (facia / lens part)

The cable length is around 65cm.



E. HIR11/F

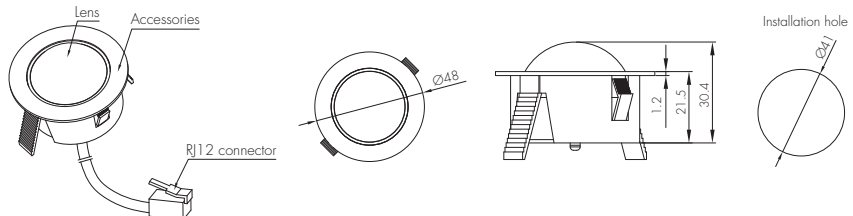
PIR sensor head

Flush mounting

For highbay application

IP65 (facia / lens part)

The cable length is around 65cm.



F. HIR11/C

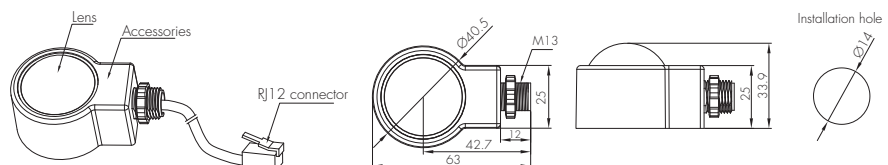
PIR sensor head

Screw to the luminaire by conduit

For highbay application

IP65 (facia / lens part)

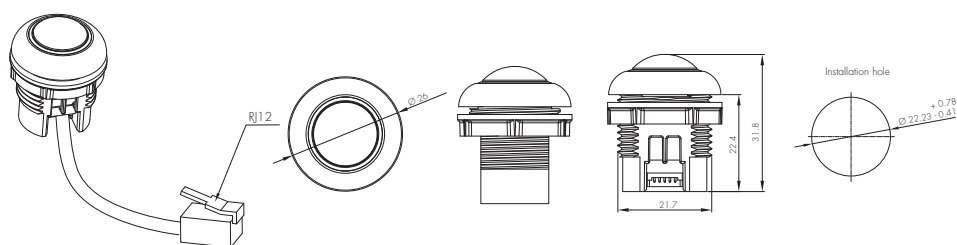
The cable length is around 65cm.



G. HIR63

PIR sensor head

The cable length is around 30cm.

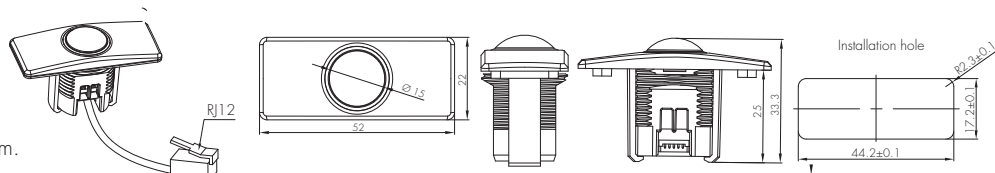


H. HIR63 with HA04

PIR sensor head

Optional accessory

The cable length is around 30cm.

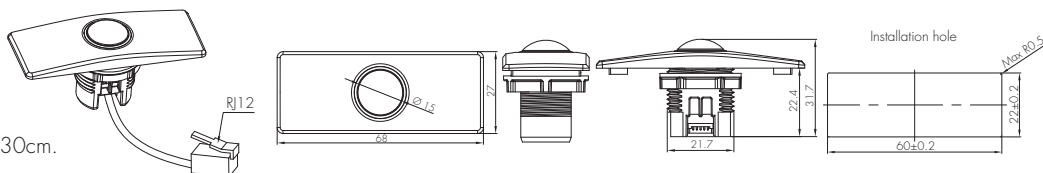


I. HIR63 with HA05

PIR sensor head

Optional accessory

The cable length is around 30cm.

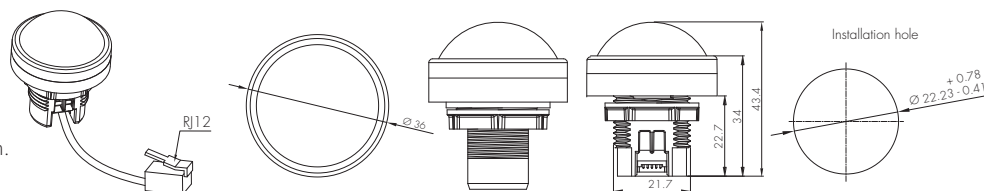


J. HIR63/R

PIR sensor head

IP65 (facia / lens part)

The cable length is around 30cm.



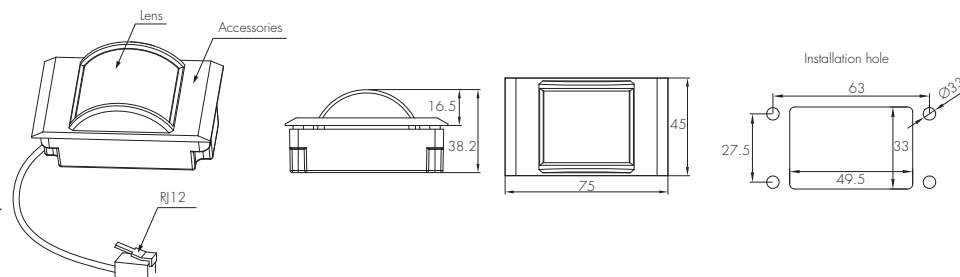
K. HIR12

PIR sensor head

For highbay application

IP65 (facia / lens part)

The cable length is around 65cm.



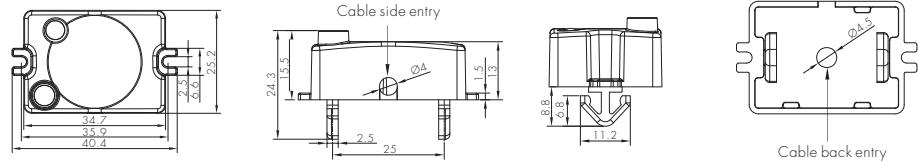
Installation for HIR12



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

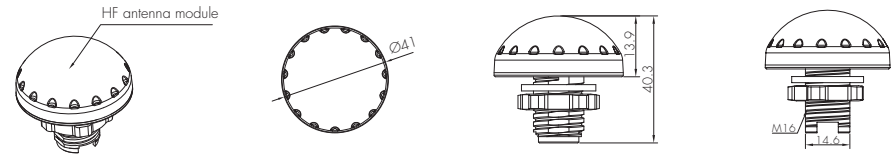
L. SAM20

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



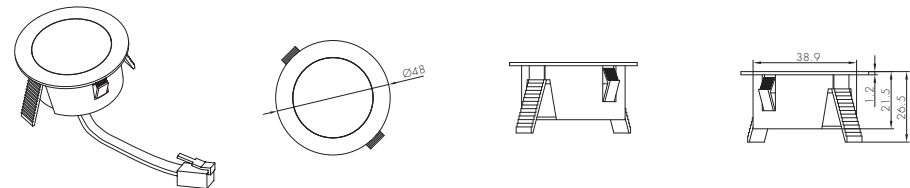
M. SAM21

HF sensor head
IP65
The cable length is around 65cm.



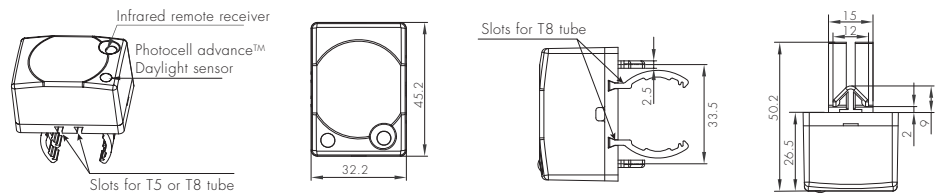
N. SAM22

HF sensor head
Flush mount
The cable length is around 65cm.



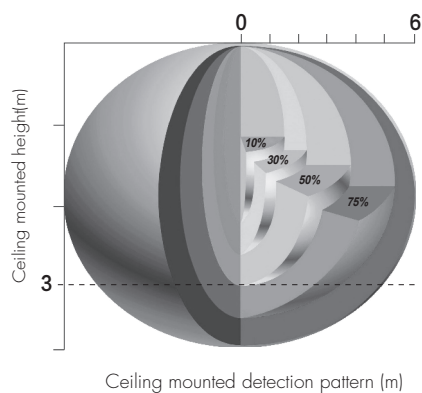
O. SAM23

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

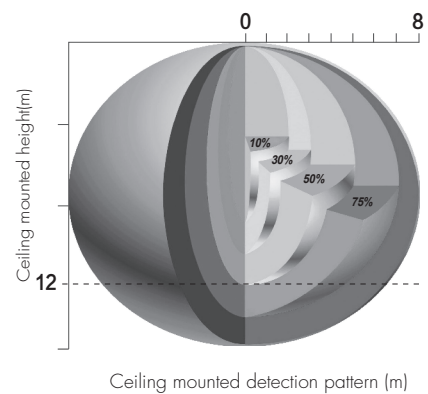


Detection Pattern

SAM20 / SAM21 / SAM22

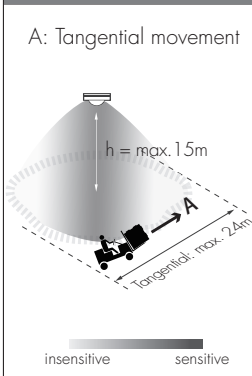
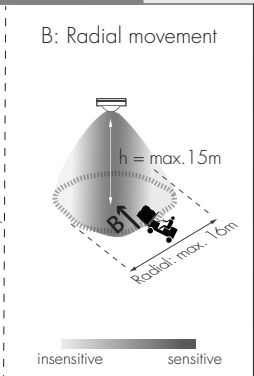


SAM23

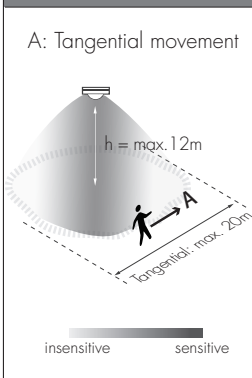
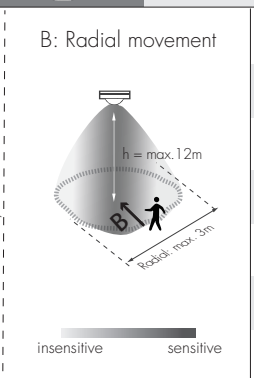


HIR11 (High-bay)

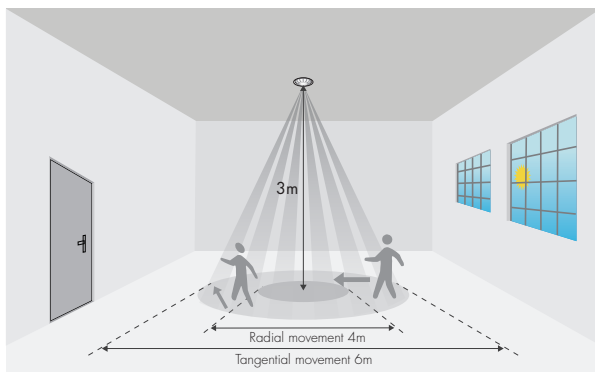
HIR11: High-bay lens detection pattern for forklift @ Ta = 20°C
(Recommended installation height **10m-15m**)

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)

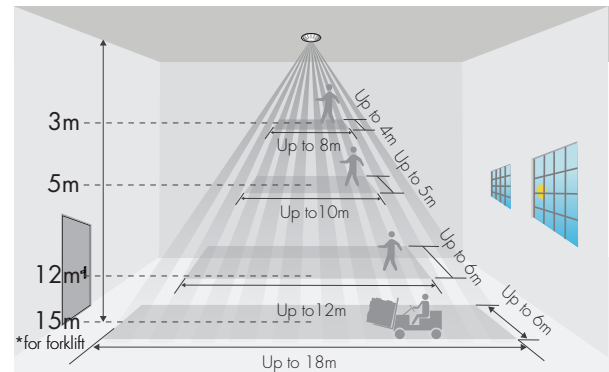
HIR11: High-bay lens detection pattern for single person @ Ta = 20°C
(Recommended installation height **2.5m-12m**)

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)

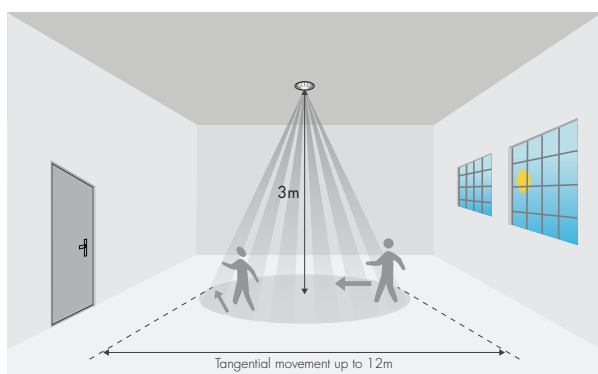
HIRO5 & HIRO5/FM & HIRO5/E & HIRO7



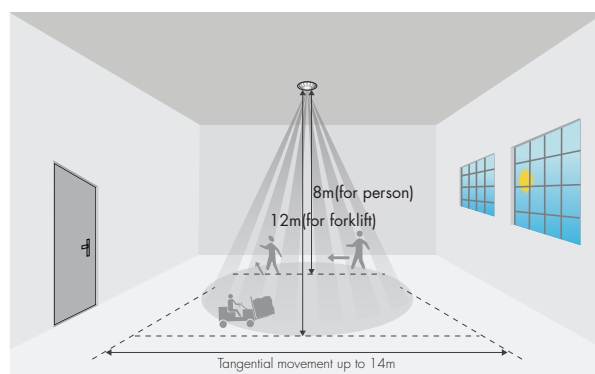
HIR12



HIR63



HIR63/R



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

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. Up to 64 LED drivers may be connected to one switch. 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.	<ul style="list-style-type: none"> - Turn on/off - Recall a scene - Turn on only - Quit manual mode - Turn off only - Do nothing
	Double push	<ul style="list-style-type: none"> - Turn on only - Quit manual mode - Turn off only - Do nothing - Recall a scene
	Long press (≥1 second)	<ul style="list-style-type: none"> - Dimming - Colour tuning - Do nothing
Sensor-link	/	<ul style="list-style-type: none"> - 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.	<ul style="list-style-type: none"> - Start Self test (Monthly) - Start Self test (Annually) - Stop Self test - Invalid
	Long press (≥1 second)	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Able to connect the Fire Alarm system - Once the fire alarm system is triggered, all the luminaires 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 luminaires 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/hed6045-bt>
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 LED Drivers installation and operation, please kindly refer to
<https://hytronik.com/service/downloads> (LED Drivers 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/led-drivers>
5. Regarding Hytronik standard guarantee policy, please kindly refer to
<https://hytronik.com/service/downloads> (Guarantee Conditions document)