

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
-  Detailed motion sensor settings
-  Push switch configuration
-  Schedule to run scenes based on time and date
-  Astro timer (sunrise and sunset)
-  Staircase function (master & slave)
-  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, designed for long lifetime up to 50,000 hours

* 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







Smartphone app for both iOS & Android platform




Koolmesh Pro app for iPad





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



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

Output Configuration

LED Current Selection

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	89%
Psb/Pno	<0.5W

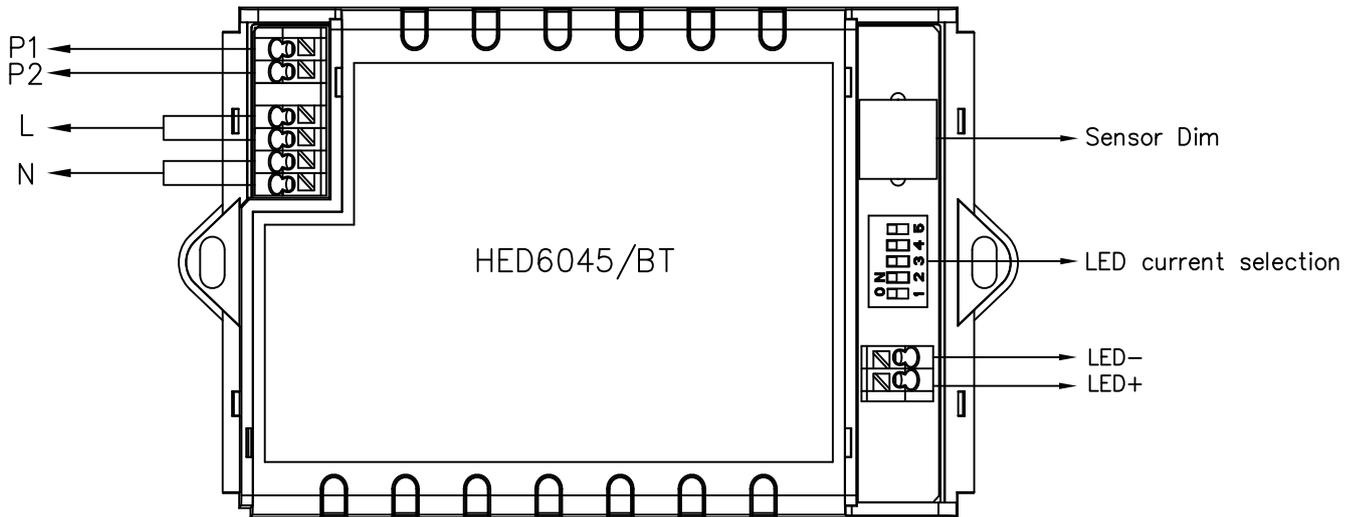
Output	
Output Current	350mA~1050mA
Output Voltage	10-54V
Uout Max.	75VDC
Turn-on Time	<0.5s
Dimming Interface	Switch-Dim

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

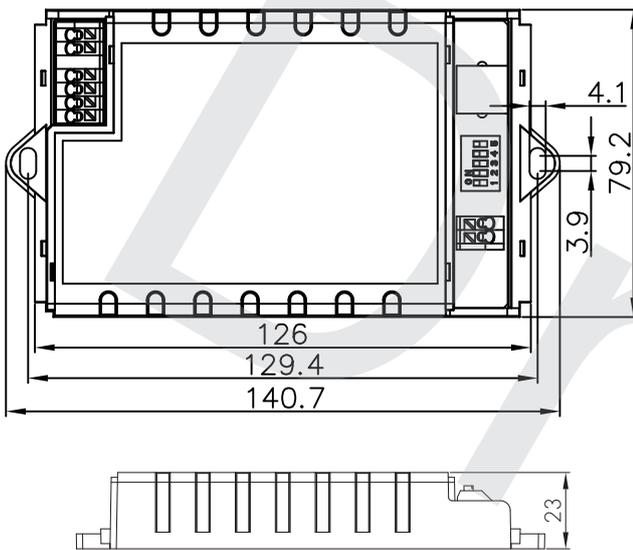
Safety and EMC	
EMC Standard	EN55015, EN61547, EN61000-3-2/-3-3, EN300328, EN301489-1/-17, EN50663
Safety Standard	EN61347-1, EN61347-2-13
Dielectric strength	Input→output: 3000VAC / 5mA / 1min.
Abnormal protection	Output short-circuit protection Overload Protection Open-circuit Protection

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

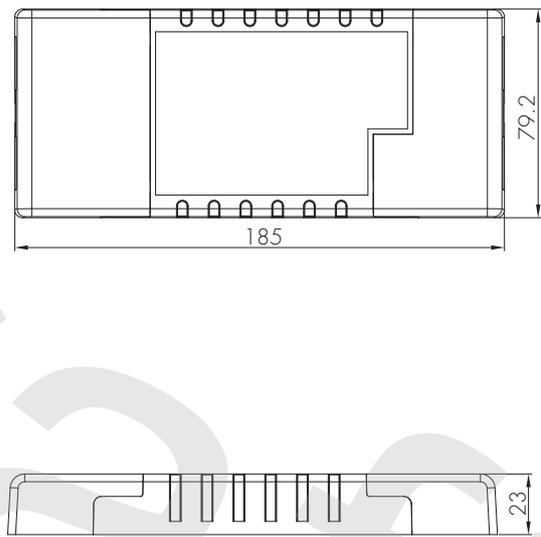
Mechanical Structure & Dimensions



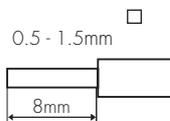
Built-in installation



Stand-alone installation

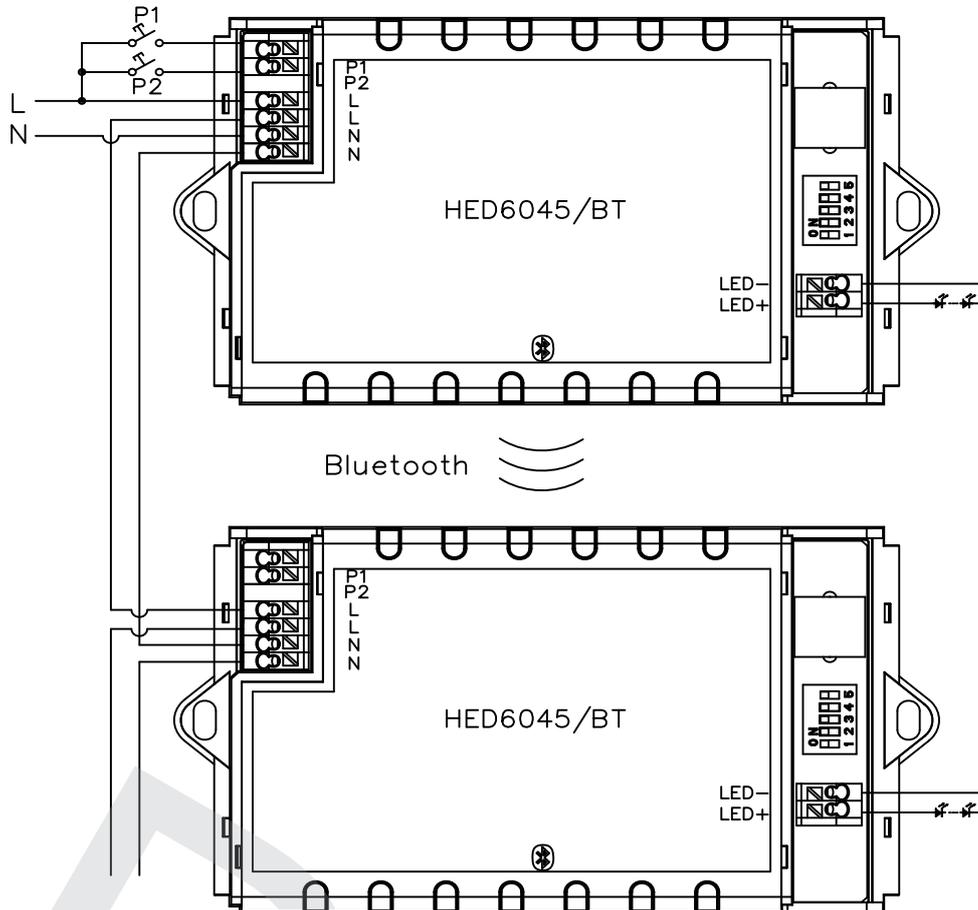


Wire Preparation



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

Wiring Diagram



Note: There is no need for any hardwirings 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.

Loading and In-rush Current

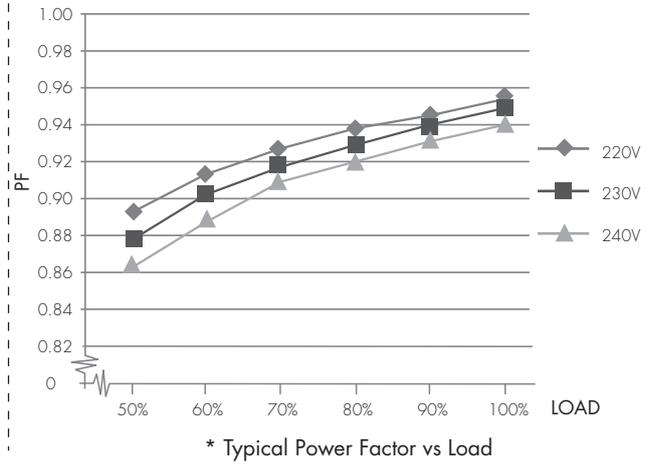
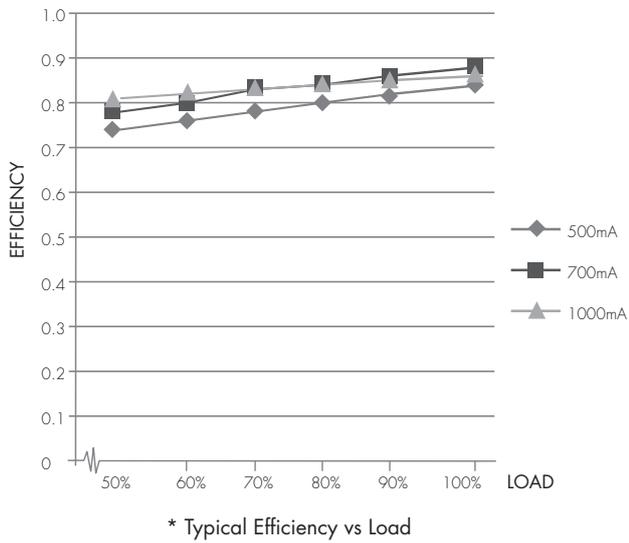
Model	HED6045/BT
In-rush Current (I _{max.})	17.8A
Pulse Time	72 μs

Circuit Breaker Information

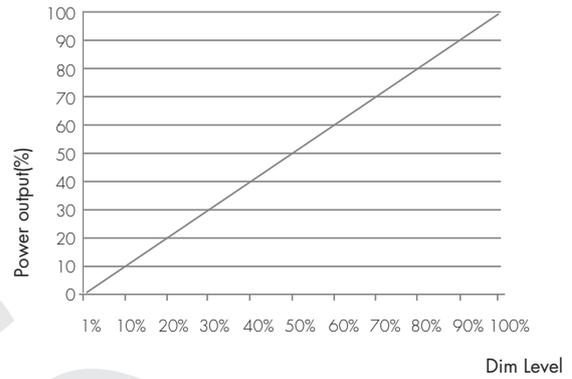
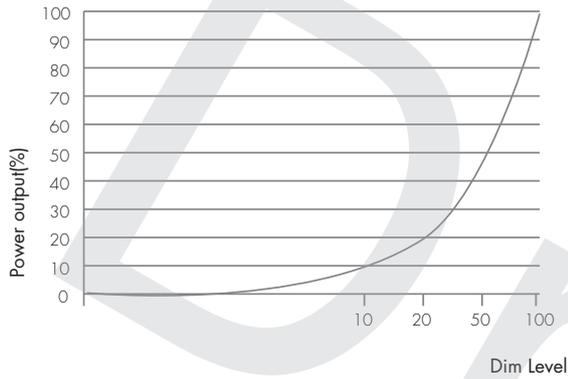
Automatic circuit breaker type	B16A	B10A	B13A	B20A	B25A
HED6045/BT	43	27	35	54	67

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



Technical Specifications for Sensor Heads

PIR Sensor Properties		
Sensor principle	PIR detection	
Operating voltage	5VDC	
Detection range *	HIRO5 & HIRO5/FM HIRO5/AA & HIRO7	Max installation height: 3m; Max detection range: 6m (diameter)
	HIR11	Max installation height: 15m (forklift); 12m (single person); Max detection range: 24m (diameter)
	HIR12	Max installation height: 15m (forklift); 12m (single person); Max detection range: 18m*6m (L*W)
	HIR63 HIR63/R	Max installation height: 3m; Max detection range: 12m (diameter) Max installation height: 12m (forklift); 8m (single person); Max detection range: 14m (diameter)

HF Sensor Properties		
Sensor principle	High Frequency (microwave)	
Operating voltage	5VDC	
Operation frequency	5.8GHz +/- 75MHz	
Transmission power	<0.2mW	
Detection range *	SAM20 & SAM21 SAM22 & SAM22/AA	Max installation height: 3m; Max detection range: 1.2m (diameter)
	SAM23	Max installation height: 15m (forklift); 12m (single person); Max detection range: 20m (diameter)

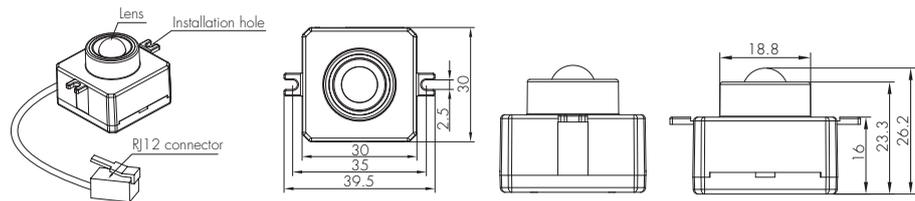
* The detection range is heavily influenced by sensor placement (angle) and different walking paces. It may be reduced under certain conditions.

PIR & microwave sensor heads

The range of PIR and microwave sensor heads below 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.

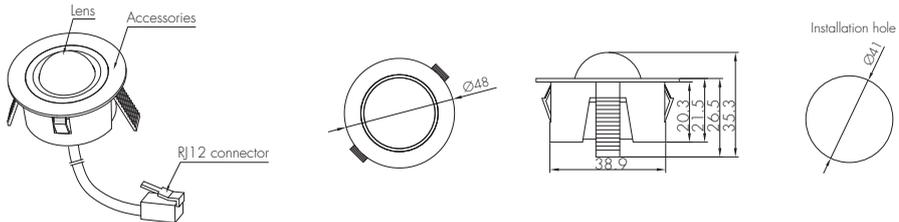
A. HIRO5

PIR sensor head
The cable length is around 30cm.



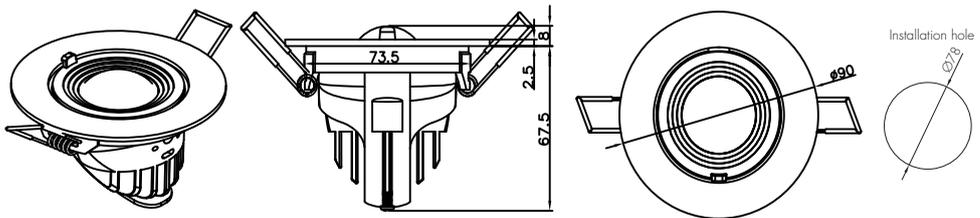
B. HIRO5/FM

PIR sensor head
The cable length is around 30cm.



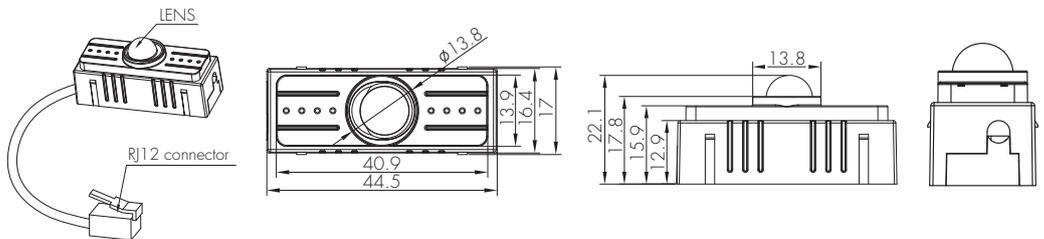
C. HIRO5/AA

PIR sensor head
Adjustable angle
The cable length is around 30cm.



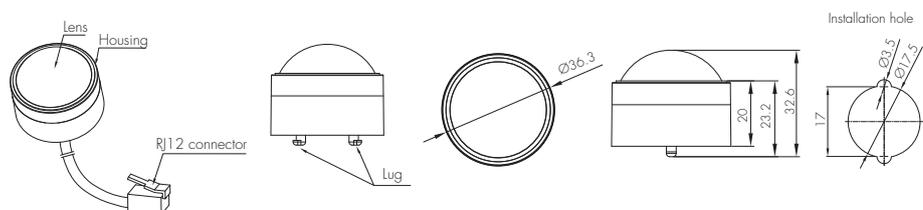
D. HIRO7

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



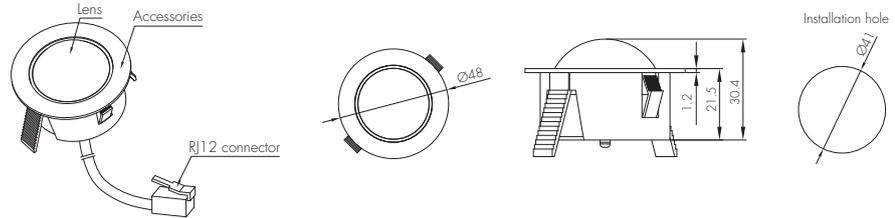
E. HIR11/S

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



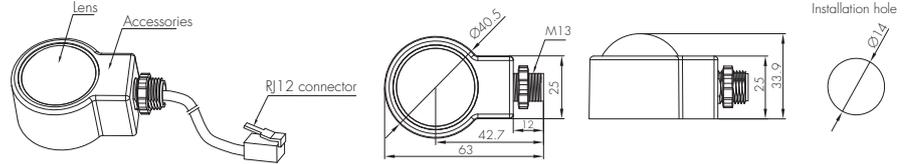
F. HIR11/F

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



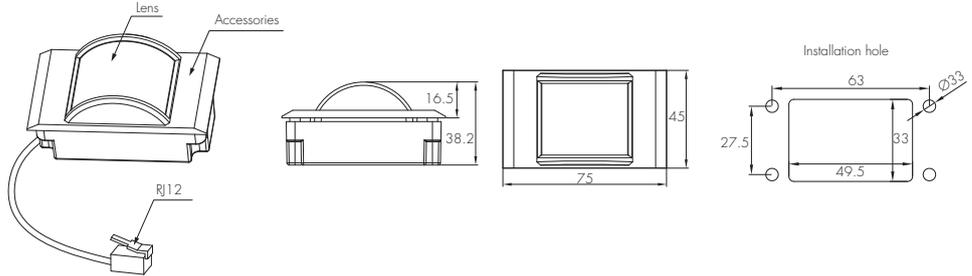
G. HIR11/C

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



H. HIR12

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



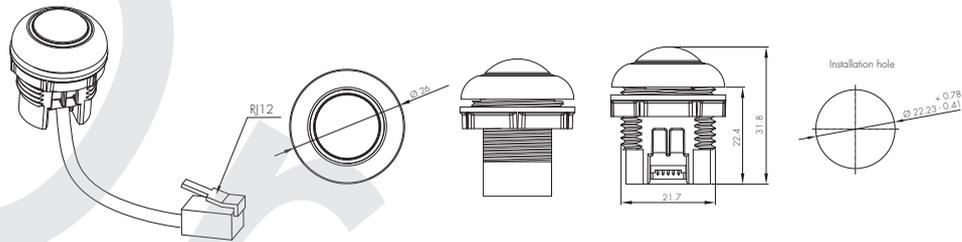
Installation for HIR12

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.

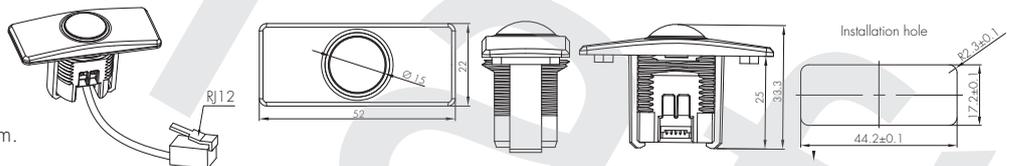
I. HIR63

PIR sensor head
 The cable length is around 30cm.



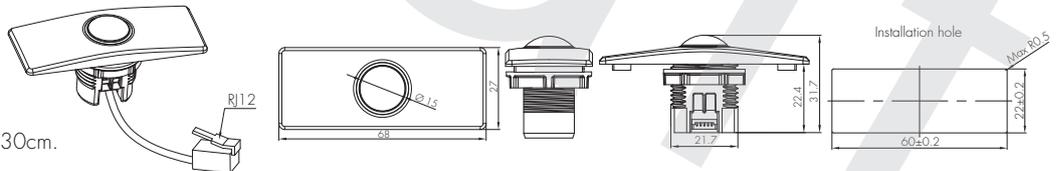
J. HIR63 with HA04

PIR sensor head
 Optional accessory
 The cable length is around 30cm.



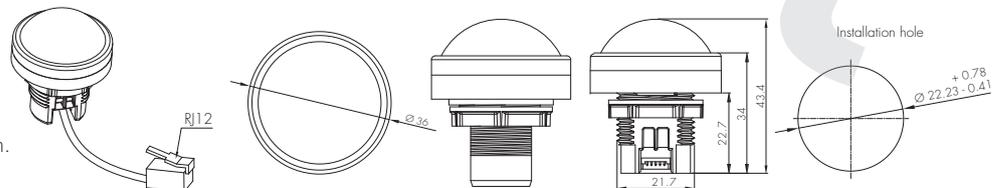
K. HIR63 with HA05

PIR sensor head
 Optional accessory
 The cable length is around 30cm.



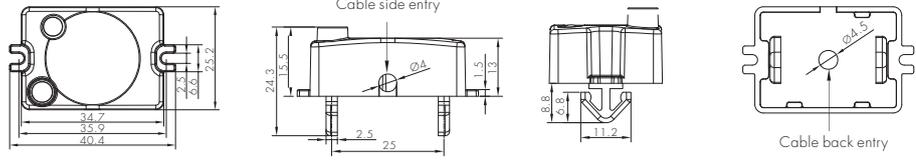
L. HIR63/R

PIR sensor head
 IP54 (facia / lens part)
 The cable length is around 30cm.



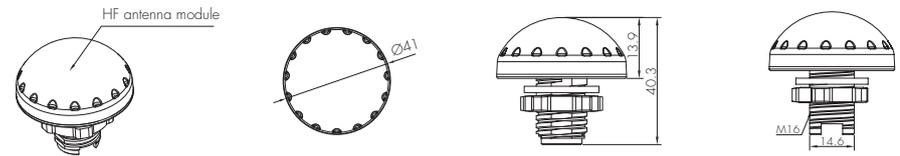
M. SAM20

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



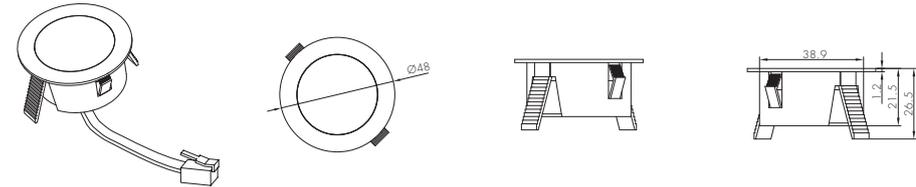
N. SAM21

HF sensor head
 IP65
 The cable length is around 30cm.



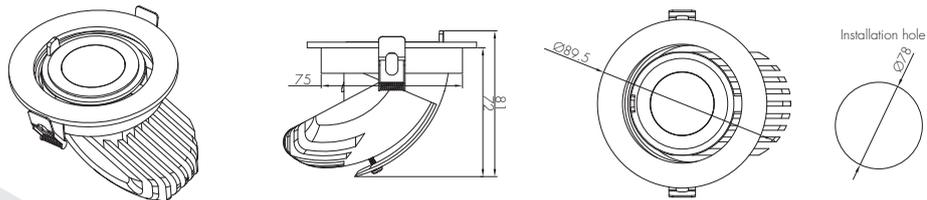
O. SAM22

HF sensor head
 Flush mount
 The cable length is around 30cm.



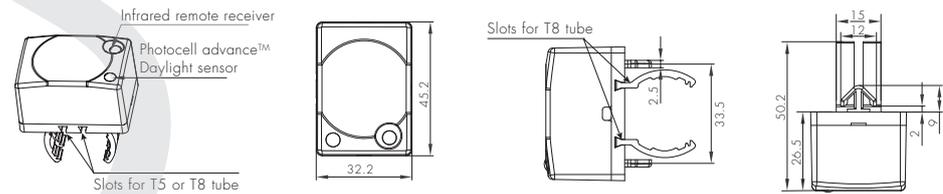
P. SAM22/AA

HF sensor head
 Adjustable angle
 The cable length is around 30cm.



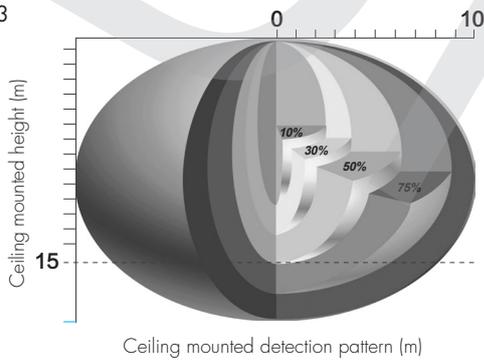
Q. SAM23

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

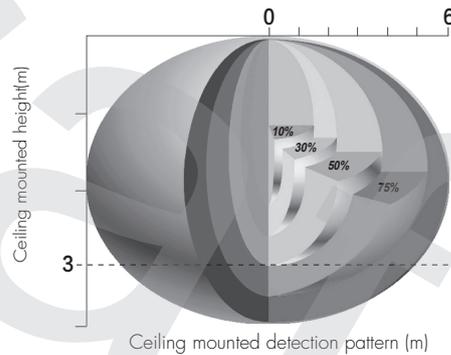


Detection Pattern

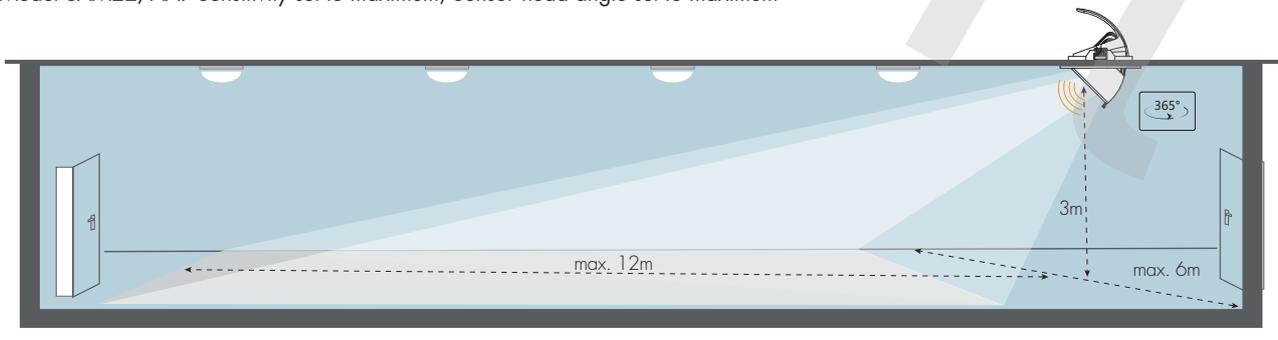
SAM23



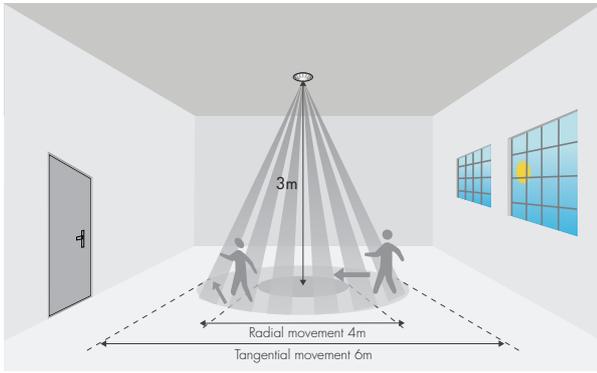
SAM20 & SAM21 & SAM22



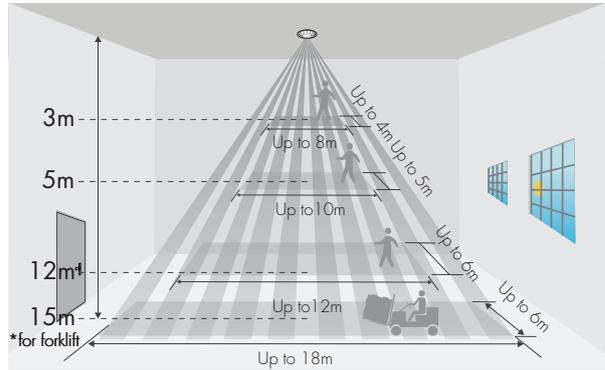
Model SAM22/AA: Sensitivity set to maximum, Sensor head angle set to maximum



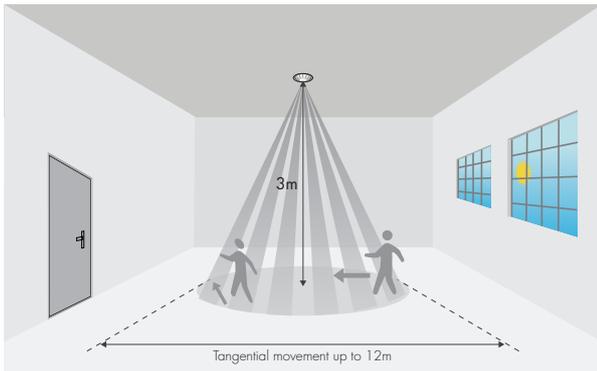
HIRO5 & HIRO5/FM & HIRO5/AA & HIRO7



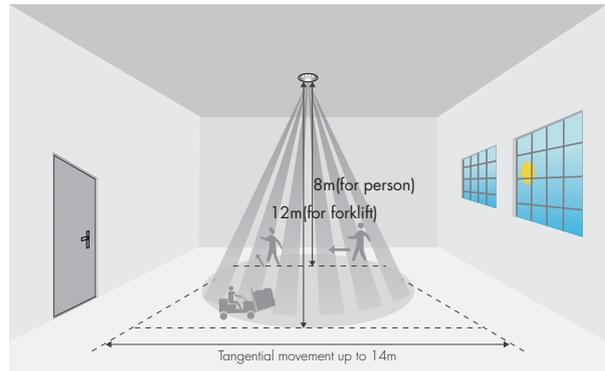
HIR12



HIR63



HIR63/R

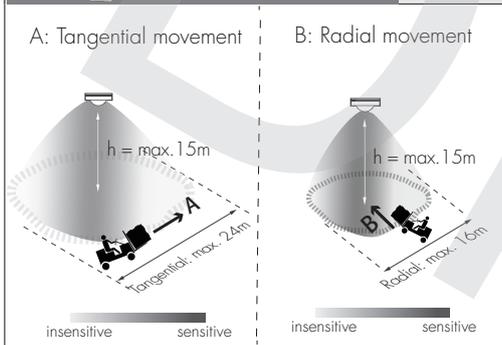


*The detection patterns are based on 5km/h movement speed.

HIR11 (High-bay)



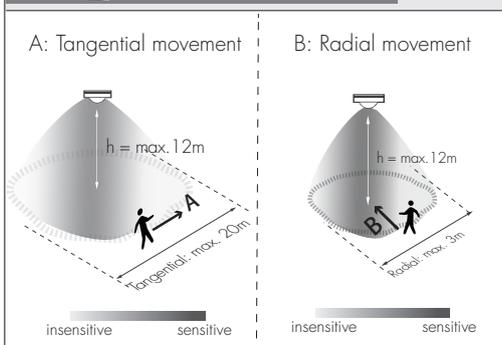
HIR11: High-bay lens detection pattern for forklift @ Ta = 20°C
(Recommended installation height **10m-15m**)



Mount height	Tangential (A)	Radial (B)
10m	max 380m ² (Ø = 22m)	max 201m ² (Ø = 16m)
11m	max 452m ² (Ø = 24m)	max 201m ² (Ø = 16m)
12m	max 452m ² (Ø = 24m)	max 201m ² (Ø = 16m)
13m	max 452m ² (Ø = 24m)	max 177m ² (Ø = 15m)
14m	max 452m ² (Ø = 24m)	max 133m ² (Ø = 13m)
15m	max 452m ² (Ø = 24m)	max 113m ² (Ø = 12m)



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



Mount height	Tangential (A)	Radial (B)
2.5m	max 50m ² (Ø = 8m)	max 7m ² (Ø = 3m)
6m	max 104m ² (Ø = 11.5m)	max 7m ² (Ø = 3m)
8m	max 154m ² (Ø = 14m)	max 7m ² (Ø = 3m)
10m	max 227m ² (Ø = 17m)	max 7m ² (Ø = 3m)
11m	max 269m ² (Ø = 18.5m)	max 7m ² (Ø = 3m)
12m	max 314m ² (Ø = 20m)	max 7m ² (Ø = 3m)

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.	- Turn on/off - Turn on only - Turn off only - Recall a scene - Exit manual mode - Do nothing
	Double push	- Turn on only - Turn off only - Recall a scene - Exit manual mode - Do nothing
	Long press (≥1 second)	- Dimming - Colour tuning - Do nothing
Simulate sensor	/	- Upgrade a normal on/off motion sensor to a Bluetooth controlled motion sensor

Additional Information / Documents

1. 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](http://www.hytronik.com/download->knowledge->LED%20Drivers%20-%20Precautions%20for%20Product%20Installation%20and%20Operation)
2. To learn more about detailed product features/functions, please refer to [www.hytronik.com/download->knowledge ->Introduction of App Scenes and Product Functions](http://www.hytronik.com/download->knowledge->Introduction%20of%20App%20Scenes%20and%20Product%20Functions)
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](http://www.hytronik.com/download->knowledge->Bluetooth%20Products%20-%20Precautions%20for%20Product%20Installation%20and%20Operation)
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 Drivers](http://www.hytronik.com/products/bluetooth%20technology->Bluetooth%20Drivers)
5. Regarding Hytronik standard guarantee policy, please refer to [www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy](http://www.hytronik.com/download->knowledge->Hytronik%20Standard%20Guarantee%20Policy)