

HIR13/F

Bluetooth PIR Highbay | Circadian Rhythm | RJ12 connector to control body

HYTRONIK[®]
SENSORS & LIGHTING CONTROL



Benefits

Compact: Plug&Play sensor design with flush mount installation

Versatile: Tri-level dimming + Daylight harvest + Circadian Rhythm

Easy configuration: Wireless Bluetooth 5.0 SIG-Mesh

Applications

Flush mount installation

Offices

Classrooms

Check Out the Complete System Solution on the Website:
<https://www.hytronik.com/product/HIR13-F>

Product Description

HIR13/F is a Bluetooth PIR sensor head and compatible with the Daylight Harvest. It can work with the linear shaped control base such as HCD038V and HCD038/P. It offers powerful number of Plug'n'Play feature options to expand the flexibility of luminaires design.

Functions and Features

See additional details at the end of datasheet



Daylight Harvest



Human Centric
Lighting (HCL)



Koolmesh - See
bluetooth control
below



RJ12 Connection



Tri-level Dimming

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Specifications

Main Capabilities

Connector Type	RJ12
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Sensor Data

Detection angle	360°
Max. Detection range (Diameter)	20.0 m
Maximum Mounting Height	15.0 m
Detection area	314 m ²
Detection Methods	Passive Infrared (PIR)

Electrical Data

Bluetooth Platform	Nordic nRF52832
Bluetooth frequency	2.4 GHz - 2.483 GHz
Bluetooth range (Phone to Device)	10-30m
Bluetooth transmit power	4 dBm
Bluetooth system	Koolmesh
Operating voltage range	5 VDC
Warming-up	20 s

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Specifications

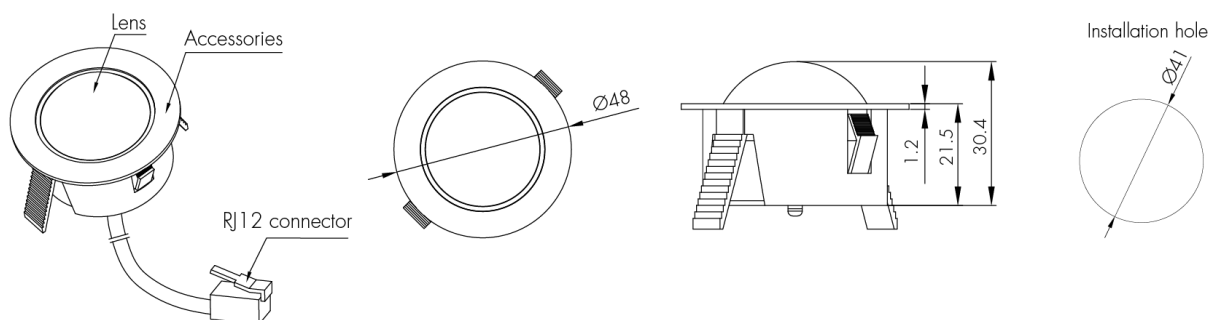
Technical	
Product weight	36.0 g
Product height	26.5 mm
Product length	48.0 mm
Product width	48.0 mm
Mounting hole	39.0 mm
Cable length	30.0 cm
Ambient temperature	-20 ~ +70 °C
Storage temperature	-40 ~ +70 °C
Humidity max	10 ~ 90%
IP Rate	IP20
IP Rate (facial part)	IP 65

Standard	
EMC	EN 55015, EN 61000, EN 61547
LVD	AS/NZS 60669-1/-2-1, EN60669-1/-2-1
RED	EN 300328, EN 300440, EN 301489-3-17, EN 62479

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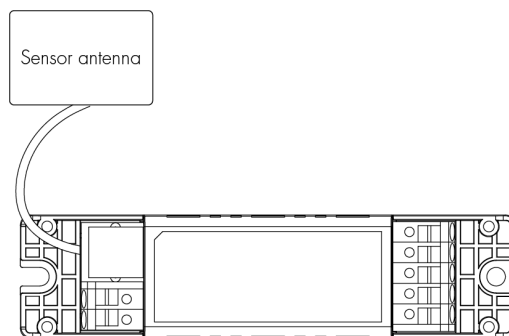
Technical Drawing



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Wiring Diagram



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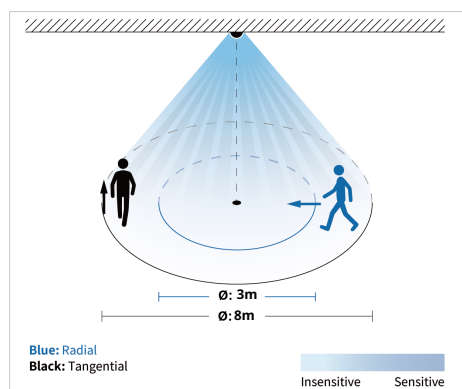
Detection Range

Single Person Walk (Ceiling mount)

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 $T_a = 20^{\circ}\text{C}$
- The testing is conducted in an open and spacious indoor field, without noticeable obstacles or influences that may affect PIR performances.

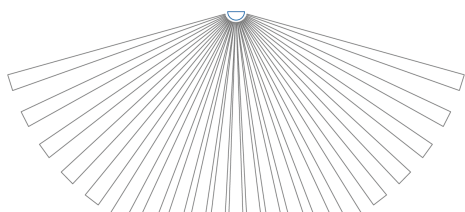
Detection example 2.5m mounting height:



Tangential movement						
H[m]	2.5	6	8	10	11	12
Ø[m]	8	11.5	14	17	18.5	20

Radial movement						
H[m]	2.5	6	8	10	11	12
Ø[m]	3	3	3	3	3	3

Detection schematic diagram

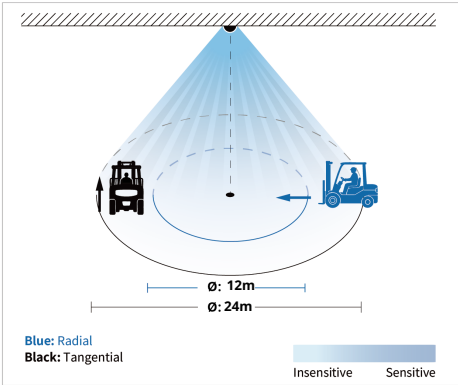


Detection Range

Forklift (Ceiling mount)

- 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.

Detection example 15m mounting height:



Tangential movement						
H[m]	10	11	12	13	14	15
Ø[m]	22	24	24	24	24	24

Radial movement						
H[m]	10	11	12	13	14	15
Ø[m]	16	16	16	15	13	12

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Commissioning Instructions and Precautions

A. Installation Note

1. This product should be installed by a qualified electrician.

Warning: For additional important documents, including installation precautions, product guidelines, and guarantee conditions, please refer to the official downloads.

<https://hytronik.com/service/downloads>

Dimming Interface Operation Notes

The Virtual Push interface provides a software-based dimming control method without the need for a physical wall switch. Push functions are simulated via the Koolmesh app, where detailed push behaviors and parameters can be flexibly configured.

Note: Single press, double press, and press-and-hold actions can each be independently assigned to one function via the app. Once configured, each action triggers only its assigned function. Multiple functions cannot be activated by a single press action.

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.

Note: Single press, double press, and press-and-hold actions can each be independently assigned to one function via the app. Once configured, each action triggers only its assigned function. Multiple functions cannot be activated by a single press action.

Switch function	Action	Descriptions
Emergency Self-Test Function	Single press (>0.1s) Double press Press and hold (>= 1s)	• Disable • Function test • Duration test • Erminated test
Fire Alarm Function	Refer to https://support.koolmesh.com/	• 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.
Virtual-Normal PUSH (Retractive Switch)	Single press (>0.1s) Double press Press and hold (>=1s)	• ON/OFF • OFF only • Recall this scene • Sensor take over • Not in use
Normal PUSH (Retractive Switch)	Single press (> 0.1s) Double press Press and hold (>= 1s)	• ON/OFF • OFF only • Recall this scene • Sensor take over • Not in use
Sensor-Link	/	• Hold time/scene • Stand-by time/scene • Upgrade a normal on/off motion sensor to a Bluetooth-controlled motion sensor

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Options

Compatible products (for full functionality)



HC038V

Control unit | 1-10V | Attachable sensor heads
www.hytronik.com/product/HC038V



HC438V

Control unit | 1-10V Dimming | Attachable sensor heads |
US Certified
www.hytronik.com/product/HC438V



HCD038

Control unit | DALI with PSU | Attachable sensor heads
www.hytronik.com/product/HCD038



HCD038/P

Control unit | DALI with PSU | Attachable sensor heads
www.hytronik.com/product/HCD038-P



HCD438

Control body | DALI with PSU | Attachable sensor heads |
US Certified
www.hytronik.com/product/HCD438



HEC7030/BF

DALI DT6 LED Driver (CC) 30W | Dimmable | Built-in version
www.hytronik.com/product/HEC7030-BF



HED1025

DALI LED Driver 25W (CC) | Dimmable | Built-in version
www.hytronik.com/product/HED1025



HED8045

DALI-2 DT8 LED Driver 45W (CC) | Tunable white |
Built-in/Stand alone
www.hytronik.com/product/HED8045

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Koolmesh - Operating guide

Bluetooth



Smartphone(ios)



Smartphone (Android)



iPad



Web

For additional information, including project and network, device, and scenes, please refer to: <http://faq.koolmesh.com/>

Shared Koolmesh App Features

- | | |
|--|---|
|  Alert for excess lux / temperature / humidity via multi-meter HBLM01 |  Network sharing via QR code or keycode |
|  Astro timer (sunrise and sunset) |  Offline commissioning |
|  Bulk commissioning (copy and paste settings) |  One-key device replacement |
|  Compatible with Shelly energy metering |  Quick setup mode & advanced setup mode |
|  Device firmware update over-the-air (OTA) |  Remote control via Hytronik gateway & touch screen HPAD-TSJASE1 |
|  Device social relations check |  Scenes |
|  Different permission levels via authority management |  Schedule |
|  Floorplan feature to simplify project planning |  Staircase function for quick setup |
|  Grouping luminaires via mesh network |  Test mesh network connection quality |
|  Internet-of-Things (IoT) featured |  Web platform for project deployment & data analysis |
|  Koolmesh Pro iPad for on-site configuration | |

Device-specific Koolmesh App features

- | | |
|--|---|
|  Adjustable motion & static sensitivity & adjustable sensing distance |  Dynamic daylight harvest auto-configuration |
|  Compatible with EnOcean kinetic switches |  Motion sensor range test |
|  Detailed motion sensor settings |  Motion sensor trigger diagnosis |
|  Dusk/Dawn photocell (twilight function) |  Push switch configuration |

Bluetooth Mesh Network Installation & Device Access Range

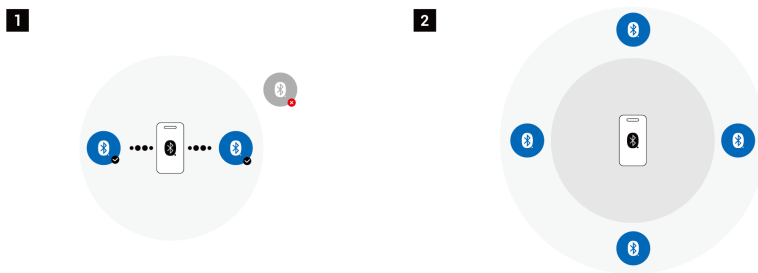
1. Phone/Pad to Device Range (Bluetooth Connection)

During installation and commissioning, the device is added via the App over Bluetooth. The installer must stay within the effective Bluetooth range of the target device to ensure successful addition. The Bluetooth transmission range varies by product — refer to the "Specification" section of this datasheet for details.

2. Device to Device Range (Mesh Network Communication)

Once devices have been successfully added via the App, they automatically communicate with each other through the wireless mesh network. After the mesh network is established, the user can access and control any device in the network as long as they are within the communication range of at least one mesh node.

Note: a. The Bluetooth transmission range for each product varies. Please proceed to the "Specification" section of this datasheet to view more details. b. Performance is based on testing with individual devices in open, unobstructed environments without wireless interference. Actual communication range may vary depending on product type, obstacles, environmental conditions, and luminaire structure.



Bluetooth Network Components



HBGW02

Bluetooth Mesh Gateway | Ethernet or Wi-Fi 2.4GHz | wall/flat surface mounting
www.hytronik.com/product/HBGW02



HBKS02/W

Bluetooth Kinetic Switch | Two-gang | White Color
www.hytronik.com/product/HBKS02-W



HBGW02/D

Bluetooth Mesh Gateway | Dual-band Wi-Fi | wall/flat surface mounting
www.hytronik.com/product/HBGW02-D



HBKS02D/W

Bluetooth Kinetic Switch | Double Rocker | White Color
www.hytronik.com/product/HBKS02D-W



HBGW03/R

BACnet Gateway | Dual-band Wi-Fi or Ethernet | DIN rail/wall/flat surface mounting
www.hytronik.com/product/HBGW03-R



HBKS03/W

Bluetooth Kinetic Switch | Three-gang | White Color
www.hytronik.com/product/HBKS03-W



HBKS01/W

Bluetooth Kinetic Switch | One-gang | Wireless Control
www.hytronik.com/product/HBKS01-W



HPAD-TS/APP

Bluetooth Touch Tablet | Switch Boxes | Smart Lighting Management
www.hytronik.com/product/HPAD-TS-APP



HBKS01D/W

Bluetooth Kinetic Switch | Single Rocker | White Color
www.hytronik.com/product/HBKS01D-W



HPAD-TSJASE1

Bluetooth Touch Tablet | Gateway Integrated | Switch Boxes
www.hytronik.com/product/HPAD-TSJASE1

Functions and Features



Daylight Harvest

Right time, right place and the right amount of light! Daylight harvest (Also known as daylight regulating or daylight interaction) is a must in the future lighting norms. It automatically measures available natural light and adjusts artificial lighting output to maintain the target illuminance level. Using daylight sensor feedback, control signals are transmitted to the LED drivers via DALI or 0–10V interfaces, ensuring the required light output is delivered only when needed, improving visual comfort and reducing energy consumption.



Human Centric Lighting (HCL)

Human Centric Lighting (HCL) helps reduce energy consumption while supporting human wellbeing and productivity in artificially lit environments. Through Hytronik's decentralised tunable white control with integrated time-based operation, HCL enables cost-effective circadian rhythm lighting without the complexity of centralised lighting systems. Designed as a simple and flexible solution, it is ideal for offices, schools, and healthcare applications requiring dynamic white light adjustment throughout the day.



RJ12 Sensor Connection

The product features an RJ12 plug-and-play connection interface, enabling quick, tool-free installation and easy maintenance. The standardized connector supports flexible integration between drivers, sensor bases and sensor heads, ensuring reliable communication and simplifying replacement or system expansion. This modular connection method enhances installation efficiency and reduces wiring complexity in both new and retrofit applications.



Tri-level Dimming

Hytronik's tri-level dimming products offer 3 levels of light control: 100% dimmed light off, with settable time periods between each phase, as well dimming level and daylight threshold.

*All Hytronik's tri-level dimming products can also be configured as bi-level control (by setting the stand-by period to infinity), so that the light always remains in the dimmed mode in absence for areas where there are safety, security or enhanced comfort requirements.

Check out for further explanation of features

<https://hytronik.com/solutions/lighting-control-features>