IP65 High Bay Dual Sense Sensor

DUALsense ™

HYTRONIK ®

HIM32
HF and PIR, Daylight Harvest with Remote Control

Technical Data

Input Characteristics

Model No.	HIM32
Mains voltage	220-240VAC 50/60Hz
Stand-by power	<1W
Load ratings:	
Capacitive	800VA@120V; 800VA@220-277V
Resistive	1000W@120V; 1600W@220-277V
Warming-up	30s

Sensor Data

Model No.	HIM32
Sensor principle	High Frequency (microwave), PIR
Operation frequency	5.8GHz +/- 75MHz (HF)
Transmission power	<0.2mW (HF)
Sensor mode	4 modes: PIR, HF, PIR+HF, PIR/HF
Detection range	Max. (Ø x H) 18m x 15m
Detection angle	360°

Safety and EMC

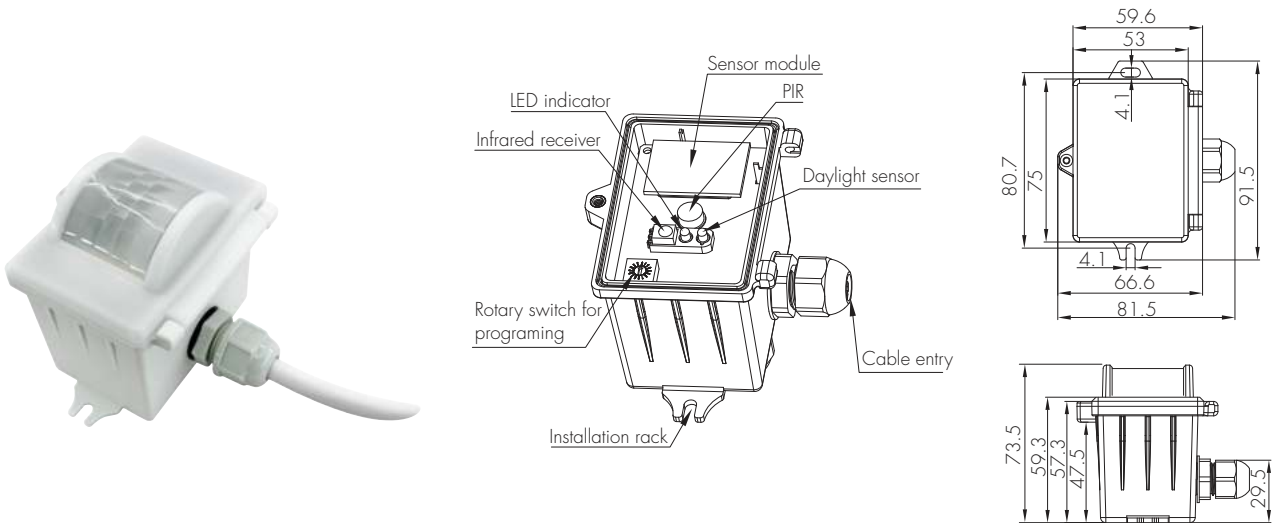| EMC standard (EMC)	EN55015, EN61000
Safety standard (LVD)	EN60669, AS/NZS60669
Radio Equipment (RED)	EN300440, EN301489-1, EN62479
Certification	Semko, CB, CE , EMC, RED, SAA

Environment

Operation temperature	Ta: -20°C ~ +50°C
IP rating	IP65

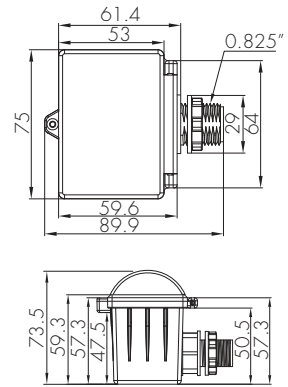CE emc RED Ⓢ Intertek SAA CB IP65

Mechanical Structures and Installations
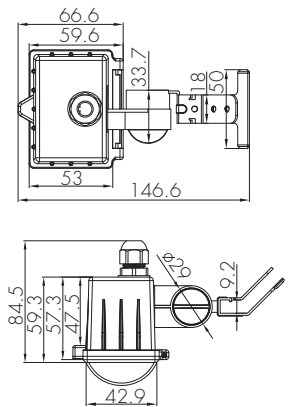
For more details, please refer to user manual.

A. Ceiling mount

LED indicator
Infrared receiver
Sensor module
PIR
Daylight sensor
Rotary switch for programing
Cable entry
Installation rack

59.6
53
4.1
80.7
75
91.5
4.1
66.6
81.5

73.5
59.3
57.3
47.5
29.5

B. Screw to the Luminaire by conduit

Sensor module
LED indicator
PIR
Infrared receiver
Daylight sensor
Cable entry
Rotary switch for programing

61.4
53
0.825″
75
59.6
89.9
73.5
59.3
57.3
47.5
50.5
57.3
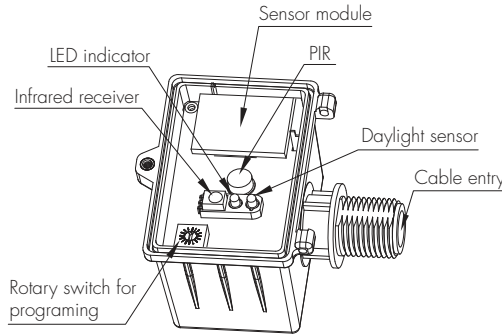
C. Attach to the shade by clamp

Sensor module
LED indicator
PIR
Infrared receiver
Daylight sensor
Angle adjustment
Luminaire clamp
Rotary switch for programing

66.6
59.6
33.7
53
146.6
84.5
59.3
57.3
47.5
9.2
42.9
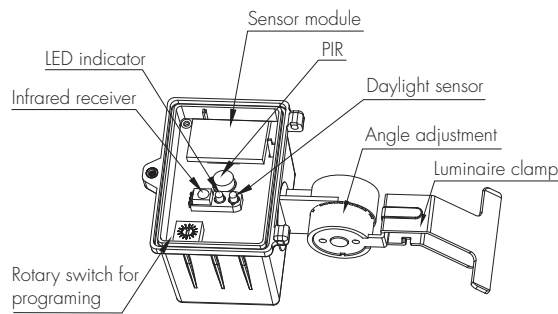
Dual Sense Introduction

It's commonly known Microwave and Infrared are main detecting technologies in lighting controls. Both have the advantage and disadvantage for industrial applications.

Advantage

HF

* sensitive to minor motion.
* sensitive to radial movement.
* can be reflected by objects hence covering big detection area
* resilient to heat source, smoke and and air conditioner.

Advantage

PIR

* no penetration, confined detection area.
* sensitive to tangential movement.
* resilient to motion object which has no heat radiation.

Disadvantage

* penetrates walls, picks up motions outside of the office area;
* back wave detection, false trigger by motions at the back.
* can be false triggered by ventilation fans, water pipe, elevators etc. in industrial application.

Disadvantage

* can be false triggered by air conditioner, smoke and other heat sources.

The remedy is to create Dual Sense by combining both technologies to make use of the advantage and bypass the disadvantage.

4 optional detection modes via remote control:

* HF: Microwave only
* PIR: PIR mode only
* HF+PIR: both PIR and microwave mode, to decrease the detection capability and detection area. Only when both detections are activated, the motion is considered valid. This is to prevent the sensor from false trigger by heat source, air conditioner, ventilation fans, water pipe and elevators etc…
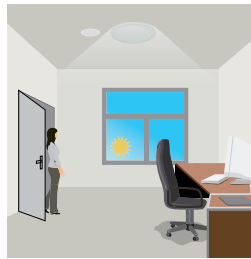* HF/PIR: either PIR or microwave mode, to increase the detection capability and detection area;
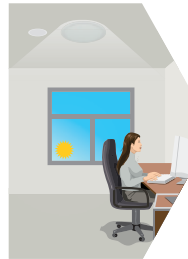

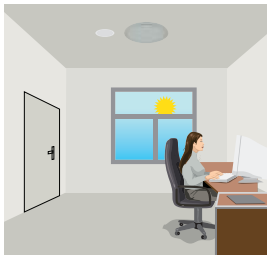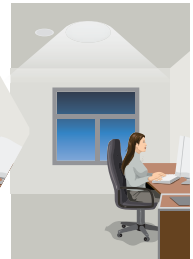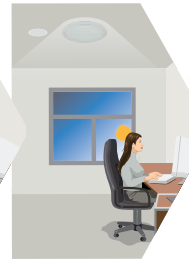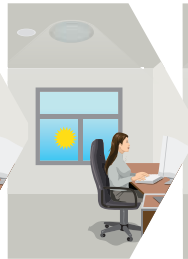## Functions and Features

1 Daylight Harvest

Light will not switch on when natural light is sufficient, even there is motion detected.

The light switches on automatically with presence when natural light is insufficient.
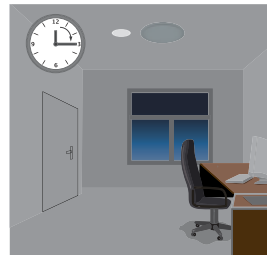
The light turns on at full or dims to maintain the lux level. The light output regulates accroding to the level of natural light available.

The light switches off when the ambient natural light is sufficient.
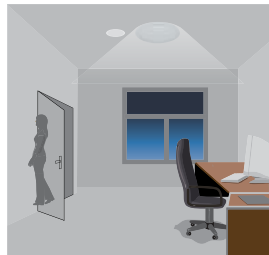
The light dims to stand-by period after hold-time and stays on selected minimum dimming level.

The light switches off completely after the stand-by period.

Note:
The Light automatically dims down and eventually turns off if the natural light lux level exceeds the daylight threshold. However, if the stand-by period is preset at "+∞", the fixture never switches off but dim to minimum level, even the natural light is sufficient.

2 Zero-cross Relay Operation

Designed in the software, sensor switches on/off the load right at the zero-cross point, to ensure that the in-rush current is minimised, enabling the maximum lifetime of the relay.

zero-cross point

Alternating current
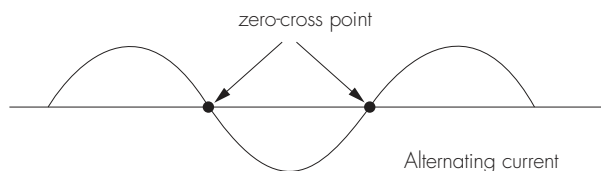
Rotary Switch Preset

A rotary switch is built inside the sensor for scene selection / fast programming. Total 16 channels are available:

Rotary switch preset

Note: settings can also be changed by remote control HRC-11. The last action controls.

Channel	Detection range	Hold-time	Daylight sensor	Stand-by time	Stand-by dim level
0	100%	5s	Disable	10s	10%
1	100%	1min	50Lux	5min	10%
2	100%	5min	50Lux	10min	10%
3	100%	5min	75Lux	+∞	10%
4	100%	5min	100Lux	+∞	10%
5	100%	5min	200Lux	+∞	30%
6	100%	10min	50Lux	30min	10%
7	100%	10min	75Lux	+∞	10%
8	100%	10min	100Lux	+∞	10%
9	100%	10min	200Lux	+∞	30%
A	100%	20min	100Lux	1h	10%
B	100%	20min	200Lux	+∞	30%
C	100%	30min	100Lux	+∞	10%
D	100%	30min	200Lux	+∞	30%
E	100%	30min	400Lux	+∞	50%
F	100%	5s	100Lux	10s	10%

Settings (Remote Control HRC-11)

ON/OFF Permanent ON/OFF function

Press button "ON/OFF" to select permanent ON or permanent OFF mode.
* Press button "AUTO", "RESET" to quit this mode.

RESET Reset Settings

Press button "RESET", all settings go back to rotary switch settings.

Shift Shift Button

Press button "Shift", the LED on the top left corner will flash to indicate mode selection. All values / settings in RED are valid for 20 seconds.

SEMI-AUTO AUTO AUTO mode

Press button "AUTO" to initiate automatic mode. The sensor starts working and all settings remain as before the light is switched ON/OFF.
Note: "Semi-auto" function is disabled.

Sensor off Power 100% Sensor off (Daylight harvest without occupancy)

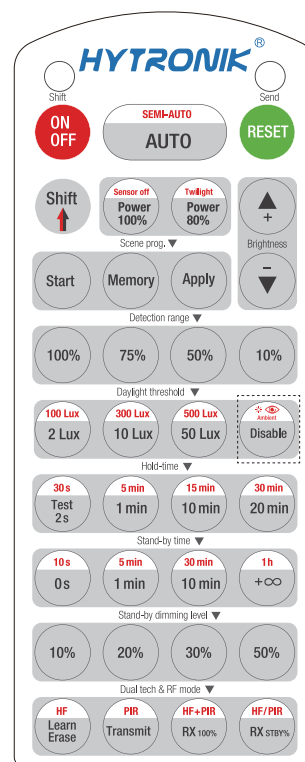1. Press button "Shift", the red LED is on for indication.
2. Press button "Sensor off", the function of movement detection is disabled.

Sensor off Power 100% / Twilight Power 80% Power output

Press the buttons to select light output at 80% (at initial 10,000 hours) or 100%.
Note: "Twilight" functions are disabled.

HRC-11

Load Indication:
The light will flash ONCE rapidly after receiving the commamd from the remote control successfully.

(▲+) (▼-) Brightness +/-

Press the buttons to adjust the light brightness during hold-time.

(Start) (Memory) (Apply) Scene program - *1-key commissioning*

1. Press button "Start" to program.
2. Select the buttons in "Detection range", "Daylight threshold", "Hold-time", "Stand-by time", "Stand-by dimming level" to set all parameters.
3. Press button "Memory" to save all the settings programmed in the remote control.
4. Press button "Apply" to set the settings to each sensor unit(s).

   For example, to set detection range 100%, daylight threshold Disable, hold-time 5min, stand-by time +∞, stand-by dimming level 30%, the steps should be: Press button "Start", button "100%", "Disable", "Shift", "5min", "Shift", "+∞", "30%", "Memory". By pointing to the sensor unit(s) and pressing "Apply", all settings are passed on the sensor(s).

Detection range

Press buttons in zone "Detection range" to set detection range at 100% / 75% / 50% / 10%.

Daylight threshold

Press buttons in zone " Daylight threshold" to set daylight sensor / target lux level at 50Lux / 100Lux / 300Lux / 500Lux / Disable.
Note: 2lux / 10lux are disabled.
   To set daylight sensor at 100Lux / 300Lux / 500Lux, press "Shift" button first.

Ambient daylight threshold

1. Press button "Shift", the red LED starts to flash.
2. Press button "Ambient", the surrounding lux level is sampled and set as the new daylight threshold / target lux level.

Hold-time

Press buttons in zone "hold-time" to set the hold-time at 2s / 30s / 1min / 5min / 10min / 15min / 20min / 30min.
Note: 1. To set hold-time at 30s / 5min / 15min / 30min, press "Shift" button first.
   2. 2s is for testing purpose only, stand-by period and daylight sensor settings are disabled in this mode.
*To exit from Test mode, press button "RESET" or any button in "Hold-time".

Stand-by time (corridor function)

Press buttons in zone "stand-by time" to set the stand-by period at 0s / 10s / 1min / 5min / 10min / 30min / 1h / +∞.
*Note: "0s" means on/off control; "+∞" means bi-level control, the fixture is 100% on when there is motion detected, and remains at the stand-by dimming level when no presence after motion hold-time.*

Stand-by dimming level

Press the button in zone "stand-by dimming level" to set the stand-by dimming level at 10% / 20% / 30% / 50%.
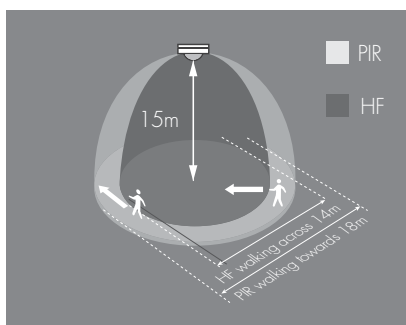
Dual tech & RF mode

1. Press buttons in this zone to select sensor technology.
   HF+PIR: the light is on when both HF and PIR sensors are activated.
   HF/PIR: the light is on when HF or PIR sensors are activated.
2. Learn / Erase, Transmit, RX100% and RX STBY% are disabled.

L

N

Brown

Blue

Red

Yellow

Black

L
N
1-10V+
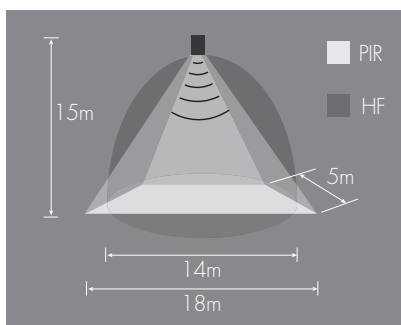1-10V−

LED driver

HIM32
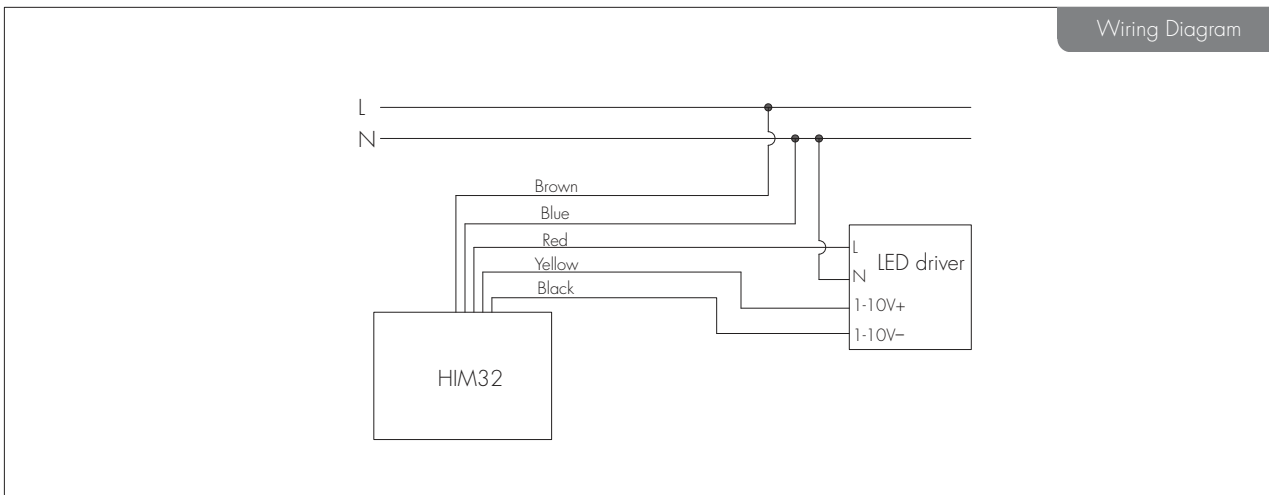
Detection Pattern

End user can choose the suitable PIR lens in real application to fulfill various requirements. Three options are offered for selection:

15m

PIR

HF

HF walking across 14m

PIR walking towards 18m

15m

PIR

HF

5m

14m

18m

15m

PIR

HF

18m

5m

14m

PIR detection: H x D:15 x 18m (max.)

HF detection: H x D:15 x 14m (max.)

PIR detection: L x W x H:18 x 5 x 15m (max.)

HF detection: H x D:15 x 14m (max.)
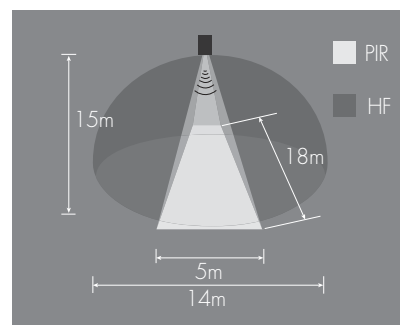
PIR detection: L x W x H:5 x 18 x 15m (max.)

HF detection: H x D:15 x 14m (max.)