

# IP65 High Bay Dual Sense Sensor



# HYTRONIK®

HIM38/RF HIM39/RF

HF and PIR, 1-10V Dimming / Independent DALI Control with RF Wireless

## Technical Data

### Input Characteristics

Model No.	HIM38/RF	HIM39/RF
Mains voltage	120~277VAC 50/60Hz	
Stand-by power	<1.5W	
Load ratings:		
Capacitive	400VA@120V; 800VA@220-277V	
Resistive	800W@120V; 1600W@220-277V	
HIM39/RF	max. 20 devices, max. 40mA	
HCO34RF (IP20)	400W (capacitive); 1200W (resistive)	
HCO54RF (IP20)	400W (capacitive); 1200W (resistive)	
HCO64RF (IP20)	max. 20 devices, max. 40mA	
Warming-up	30s	

### Safety and EMC

EMC standard (EMC)	EN55015, EN61000
Safety standard (LVD)	EN60669, AS/NZS60669
Radio Equipment (RED)	EN300440, EN300328, EN301489
Certification	Semko, CB, CE, EMC, RED, SAA

### Sensor & RF Data

Model No.	HIM38/RF	HIM39/RF
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°	
RF frequency	868MHz (FSK mode, default)	
RF transmission distance	30m indoor, 50m outdoor	

### Environment

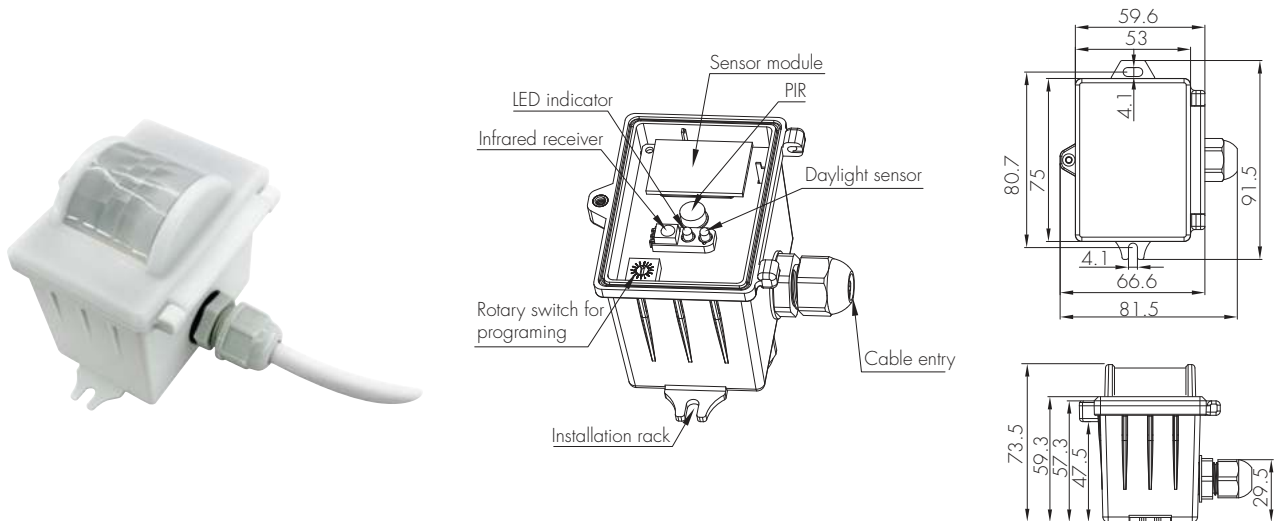
Operation temperature	Ta: -20°C ~ +50°C
IP rating	IP65

CE emc RED SAA CB IP65

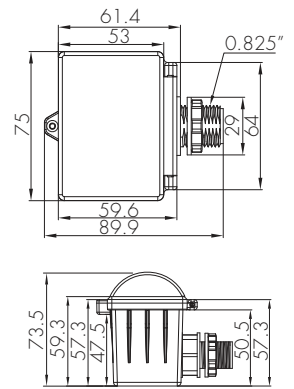
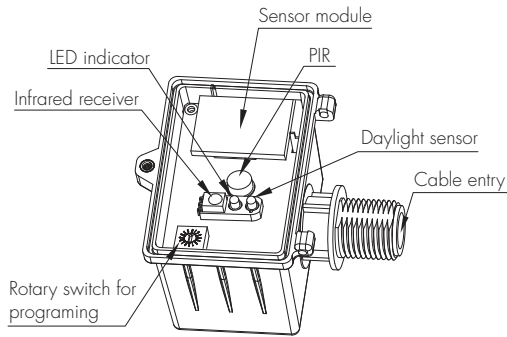
## Mechanical Structures and Installations

For more details, please refer to user manual.

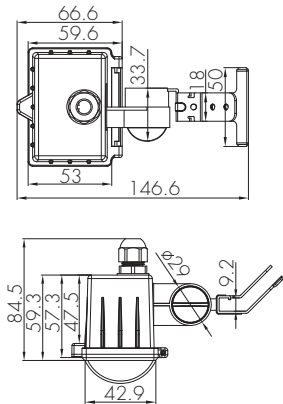
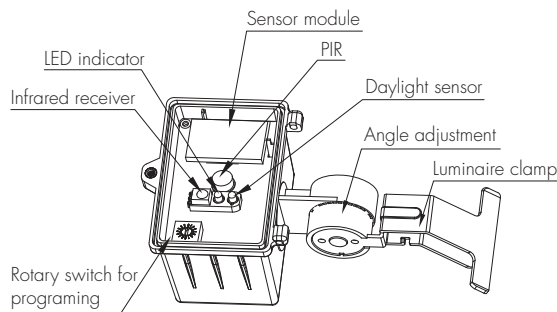
### A. Ceiling mount



B. Screw to the Luminaire by conduit



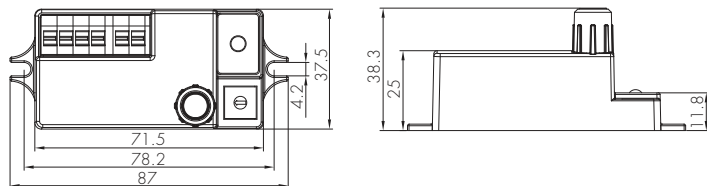
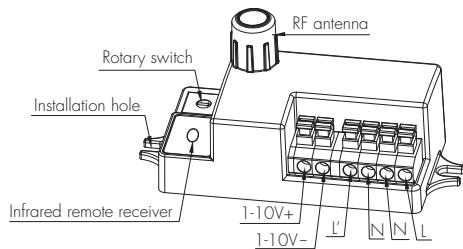
C. Attach to the shade by clamp



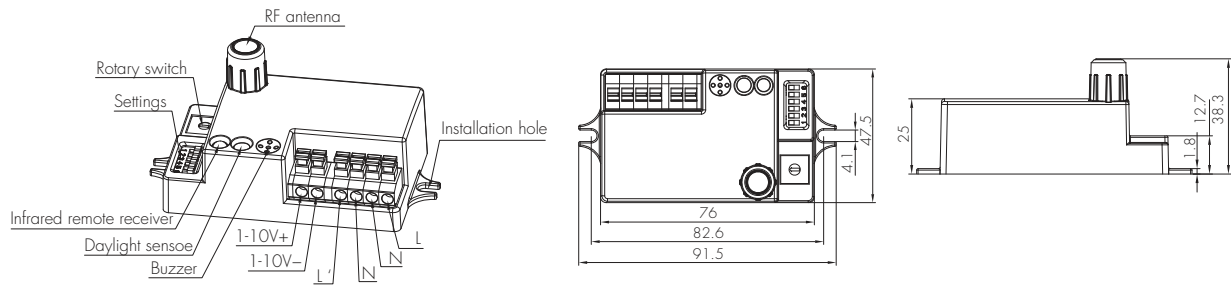
The motion detected by the master unit HIM38/RF passes to all other units programmed on the same group via RF transmission. The transmission can reach 30 meters indoor and 50 meters in open areas. A daylight sensor is also built-in to prevent the light switching on when surrounding natural light is sufficient.

**RF receiver** serves as slave only, which turns on the light after receiving the RF "ON" signal from the master. Total 3 receivers for different applications:

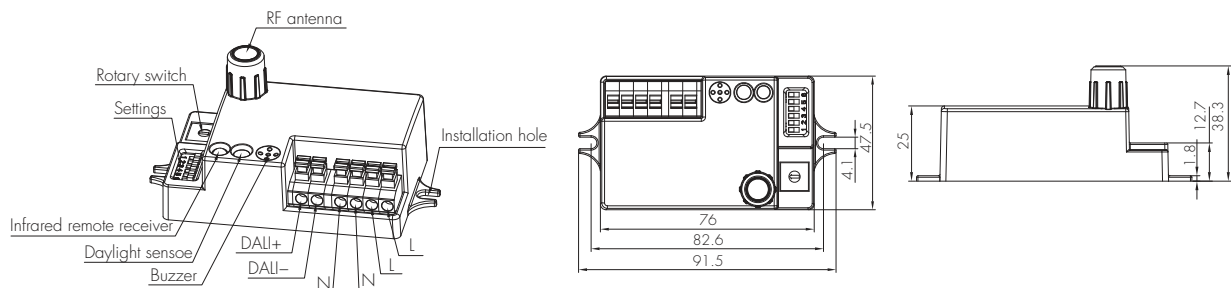
Option ① : HC034RF (1-10V output, RF grouping by rotary switch or remote control)



Option ② : HC054RF (1-10V output with Photocell Advance™)



Option ③ : HC064RF (DALI output with Photocell Advance™)



## 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



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

### 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.

### Advantage



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

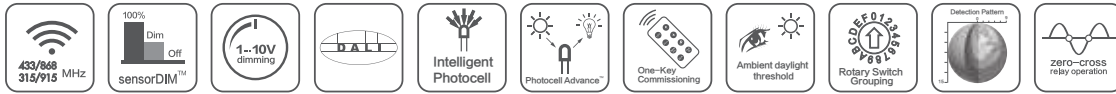
### Disadvantage

- \* 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;



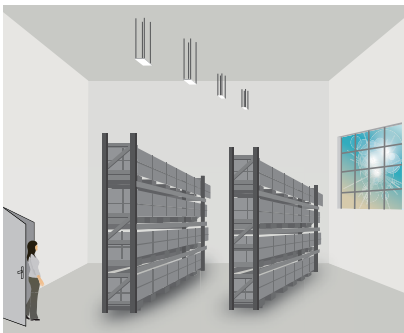
## Functions and Features

### 1 Tri-level Control (Corridor Function)

Hytronik builds this function inside the motion sensor to achieve tri-level control, for some areas which require a light change notice before switch-off. The sensor offers 3 levels of light: 100% → dimmed light (natural light is insufficient) → off; and 2 periods of selectable waiting time: motion hold-time and stand-by period; Selectable daylight threshold and freedom of detection area.

### 2 Intelligent Photocell (daylight detection prior to motion detection)

The built-in photocell will also automatically turn off the light when the ambient natural light exceeds the programmed lux level for more than 5min, regardless of whether motion is detected or not. This feature can be disabled if it is required that the fixture stays at dimmed level during absence.



With sufficient natural light, the light does not switch on when presence is detected.



With insufficient natural light, the sensor switches on the light automatically when presence is detected.



The sensor switches off the light when natural light is sufficient, even with presence.

*Note: if the stand-by time is preset at "+∞", the fixture never switches off but stays at preset dimming level even when natural light is sufficient.*

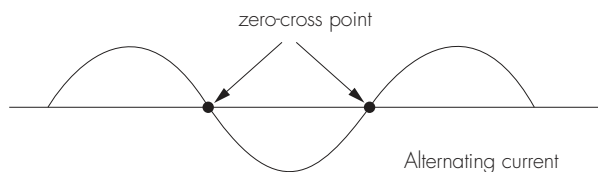
### 3 Photocell Advance™ Function (HC054RF & HC064RF)

It's well known that LED lights have a totally different spectrum to natural light. Hytronik uses this principle and comes up with special photocell and sophisticated software algorithm to measure and differentiate natural light from LED light from behind the fixture cover, so that this photocell can ignore internal LED light and only respond to the natural light outside.

Our technology has no infringement to the existing patents in the market.

### 4 Zero-cross Relay Operation (HIM38/RF)

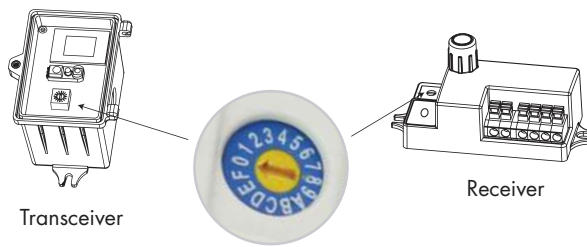
Designed in the software, sensor switches on/off the load right at the zero-cross point, to ensure that the in-rush current is minimised, enabling the maximum lifetime of the relay.



## RF Grouping by Rotary Switch (Maximum 15 channels)

15 channels are available for fast grouping via rotary switch on both HIM38/RF and the receiver HC034RF, HC054RF, HC065RF. Simply selecting the same channel on each unit, the grouping is automatically completed.

*Noted: channel "0" is not for fast grouping, and sensors can only be grouped by remote control.*



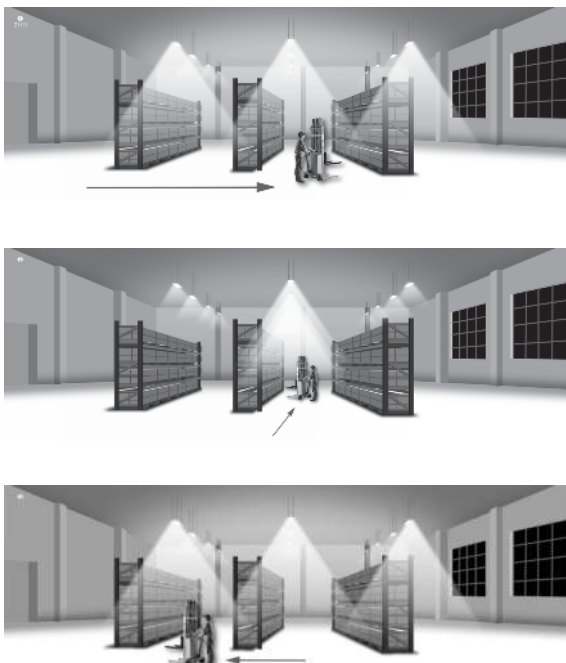
## Typical Applications

1 For warehouse (HIM38/RF or HIM39/RF as both transmitter and receiver)

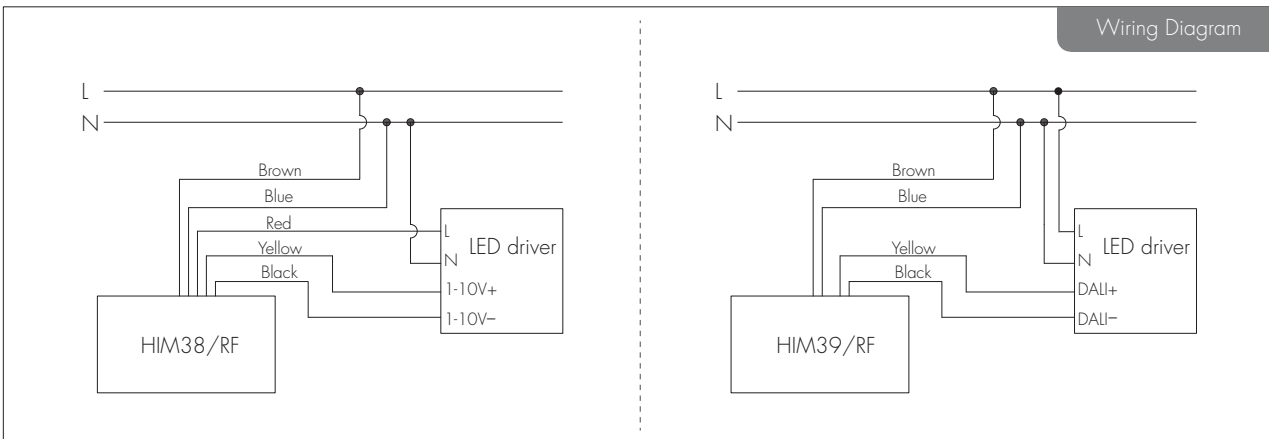
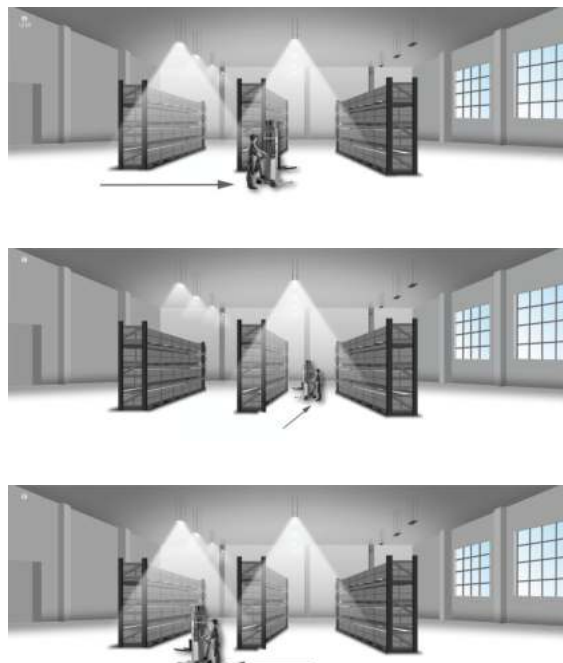
**Settings on this demonstration:**

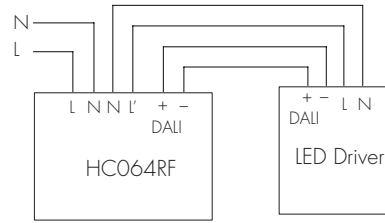
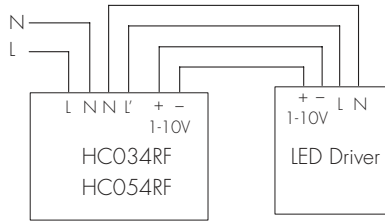
Detection range: 100% Hold-time: 10min Daylight threshold: 100lux Stand-by dimming level: 30% Stand-by period: 10min RX: STBY%

Night



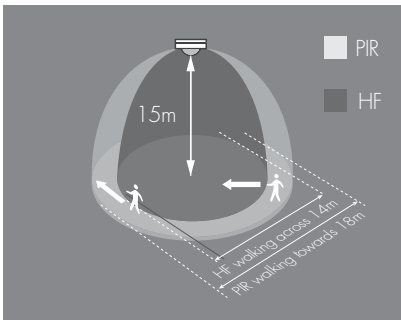
Daytime



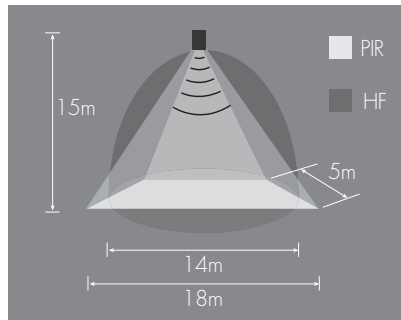


### Detection Pattern

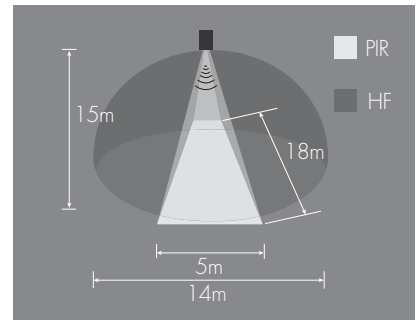
End user can choose the suitable PIR lens in real application to fulfill various requirements. Three options are offered for selection:



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.)

## Settings (Remote Control HRC-11)



### 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 Settings

Press button "RESET", all settings go back to default settings.



### 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.



### 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.*



### Power output

Press the buttons to select light output at 80% (at initial 10,000 hours) or 100%.

*Note: "Sensor off" and "Twilight" functions are disabled.*



### Brightness +/-

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



### 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 (for Transceiver only)

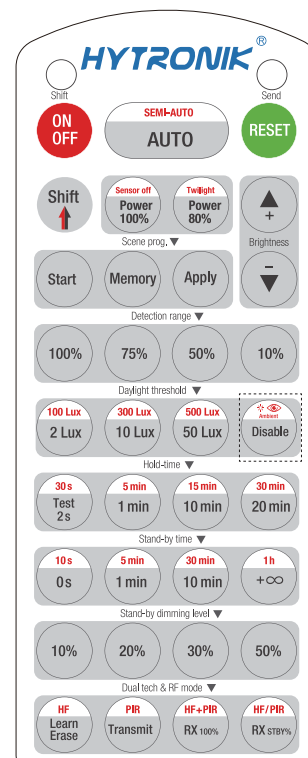
Press buttons in zone "Detection range" to set detection range at 100% / 75% / 50% / 10%.

### Daylight threshold

Press buttons in zone "Daylight threshold" to set daylight sensor at 2Lux / 10Lux / 50Lux / 100Lux / 300Lux / 500Lux / Disable.

*Note: To set daylight sensor at 100Lux / 300Lux / 500Lux, press "Shift" button first.*

*Disabled for HC034RF.*



HRC-11

### Load Indication:

*The light will flash ONCE rapidly after receiving the command from the remote control successfully.*

## 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.

## 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. For RF grouping via remote control, please refer to steps below:

## RF grouping by HRC-11

Short press "Learn/Erase" button on RC to activate pairing mode, and the receiver unit starts to beep once every second for 3min.

**Note:** up to 30 units can be paired.

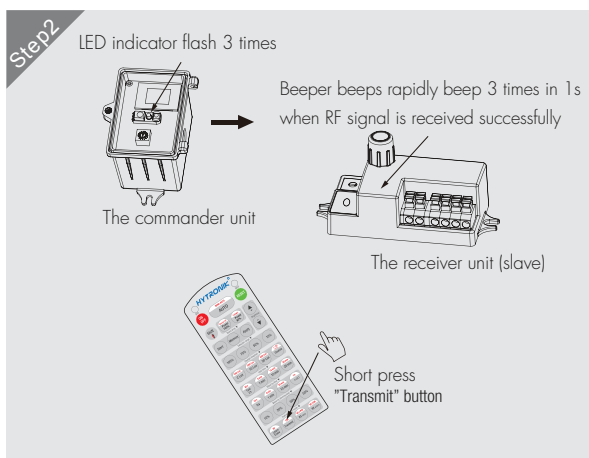


Short press "Transmit" button on RC, the commander unit (master unit) beeps one time to send the transmission signal.

Upon receiving the transmission signal, the receiver unit (slave unit) rapidly beeps 3 times in 1s to indicate the success of pairing. Repeat this step to pair more units.

One more short press on "Learn/Erase" button to the receiver unit to complete the pairing process, the receiver unit will quit the pairing mode.

**Note:** Press button RX100%, the light on receiver unit is 100% on upon receiving RF on signal; Press "RX STBY%" button, the light(s) goes to preset stand-by dimming level directly.



Erase:

Long press "Learn/Erase" button for 3s to the sensor unit. The beeper beeps rapidly for about 5s. All commands received before are erased.

