

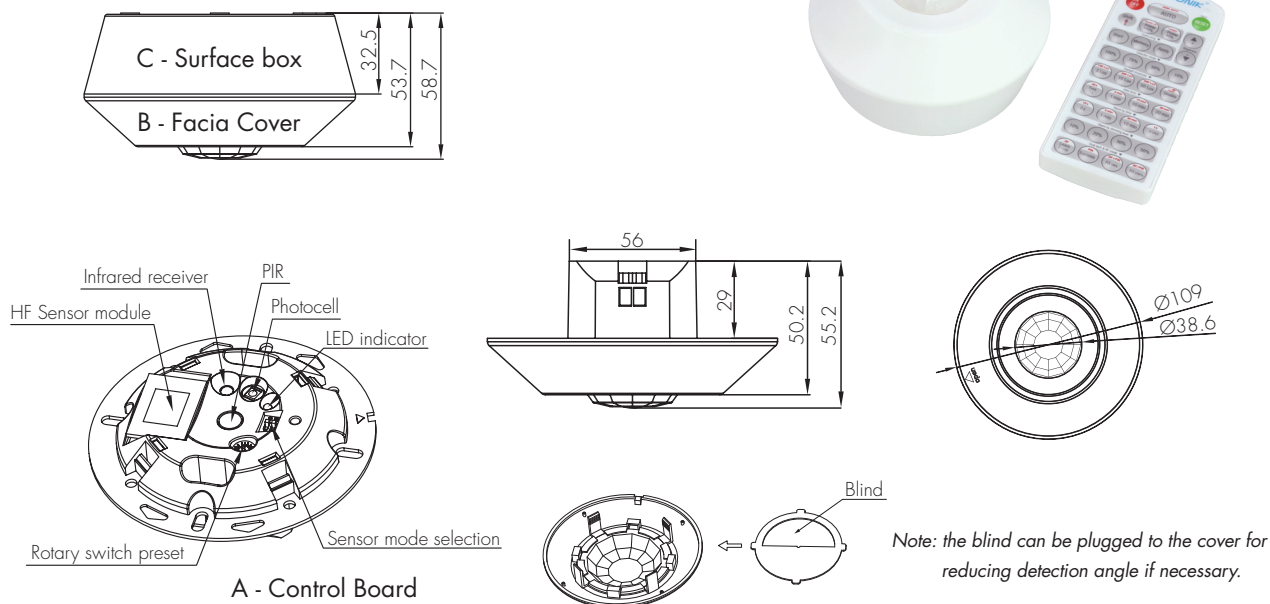
Stand-alone Dual Sense Motion Sensor **DUALsense™**

HYTRONIK®

HIM13

HF and PIR, Tri-level control for System DALI

Mechanical Structure



Installation:

For more details, please refer to user manual.

- ❶ Direct junction "J" box mounting



- ❷ Surface mount assembly



Technical Data

Input Characteristics

Model No.	HIM13
Operating voltage	9.5 ~ 22.5VDC
Stand-by power	0.25W
Input current	Approx. 12mA
Warming-up	30s

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

Sensor Data

Model No.	HIM13
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) 12m x 6m
Detection angle	360°

Environment

Operation temperature	Ta: -20°C ~ +55°C
IP rating	IP20

CE emc RED SAA CB IP20

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 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

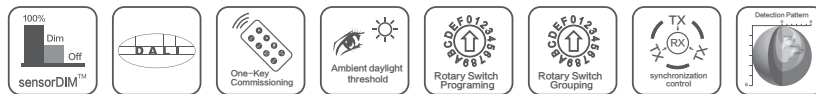
- * can be false triggered by air conditioner, smoke and other heat sources.

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 DIP switch or 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;

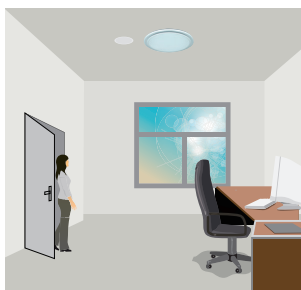
	1	2	
I	●	●	HF
II	○	●	PIR
III	●	○	HF+PIR
IV	○	○	HF/PIR



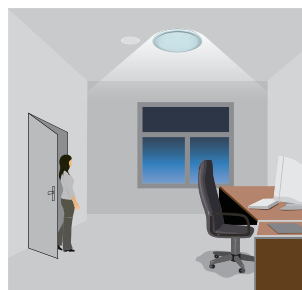
Functions and Features

1 Tri-level Control (Corridor Function)

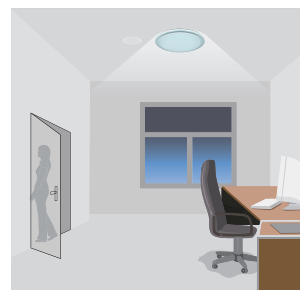
Hytronik builds this function inside the motion sensor to achieve tri-level control, for some areas which require a light change notice before switch-off. The sensor offers 3 levels of light: 100%-->dimmed light -->off; and 2 periods of selectable waiting time: motion hold-time and stand-by period; Selectable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



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.



After hold-time, the light dims to stand-by level.



Light switches off automatically after the stand-by period elapses.

2 Synchronisation Function

By connecting the DALI terminals in parallel (see wiring diagram), no matter which sensor detects motion, all HMW23 in the group will turn on the lights when surrounding natural light is below the daylight threshold. The detection area could be widely enlarged in this way.

DALI Grouping Selection

This DALI sensor is designed for incorporation in the DALI system, taking command from the DALI master, accepting and carrying out the grouping work with up to 64 luminaires. It can switch on/off, or dim the assigned group members and feed back the status to the DALI master.

DALI group configuration can be done either on PC, or on the rotary coding switch:

- There are 16 channels available on the rotary switch. "0" is for DALI broadcast, the rest 15 channels are for end-user to define the application unit.
- PC grouping can overwrite rotary switch grouping, and vice versa. The last setting controls.

The rotary switch channels are corresponding to the groups listed below:



DALI group selection

Switch channel	DALI group	Switch channel	DALI group
0	broadcast	8	group 7
1	group 0	9	group 8
2	group 1	A	group 9
3	group 2	B	group 10
4	group 3	C	group 11
5	group 4	D	group 12
6	group 5	E	group 13
7	group 6	F	group 14

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	2Lux	5min	10%
2	100%	5min	10Lux	10min	10%
3	100%	5min	30Lux	30min	10%
4	100%	5min	10Lux	0s	Disable
5	100%	5min	30Lux	+∞	10%
6	100%	5min	Disable	+∞	30%
7	100%	10min	2Lux	10min	10%
8	100%	10min	10Lux	30min	10%
9	100%	10min	30Lux	+∞	10%
A	100%	10min	Disable	+∞	30%
B	75%	10min	30Lux	+∞	10%
C	50%	10min	10Lux	+∞	10%
D	100%	30min	50Lux	+∞	10%
E	100%	30min	Disable	+∞	30%
F	100%	5s	2Lux	10s	10%



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 rotary switch settings. Sensor detection mode returns to DIP switch settings.



Shift Button

Press button "RESET", all settings go back to rotary switch settings. Sensor detection mode returns to DIP switch settings.



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: the function of Semi-auto is disabled.



Power output

The buttons are disabled.



Brightness +/-

The buttons are disabled.



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 HF detection range at 100% / 75% / 50% / 10%.

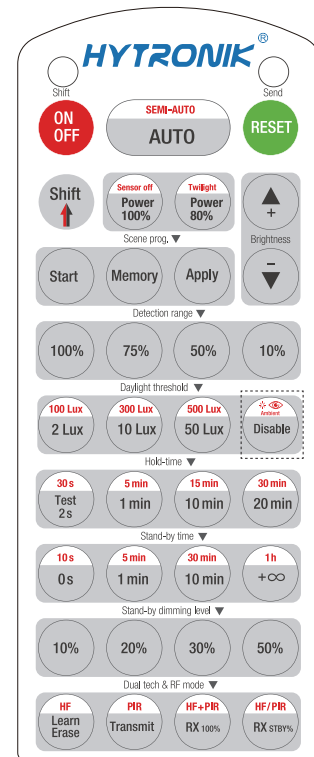
Daylight threshold

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

Note: 100Lux / 300Lux / 500Lux are disabled.

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.



HRC-11

