

**SAM15**

DALI-2 Broadcast Output, High-Bay

**Product Description**

SAM15 is a 50mA output broadcast high-bay HF motion sensor with dimming, tunable white and daylight control. It includes Photocell Advance technology, using two photocells to differentiate natural from artificial light. Equipped with an integrated DALI bus power supply, it can directly power connected DALI devices without the need for an external PSU. Compatible with Zhaga Book 18 and DALI-2, it features an IP65 rating and 15m installation height, making it suitable for industrial and outdoor environments. All sensor parameters can be programmed through remote controller HRC-11, like adjusting sensitivity, time, lux level, and brightness settings.

**Hardware Features**

-  50mA DALI-2 Broadcast output
-  Support the control of DT6/DT8 and D4i drivers
-  Photocell Advance™
-  Zhaga Book 18 standard
-  IP65 design
-  Robust HF antenna design wireless interference
-  High-bay (up to 15m height)
-  5-year warranty

**Technical Specifications**

| Input & Output Characteristics |                    |
|--------------------------------|--------------------|
| Operating voltage              | 24VDC              |
| Current consumption            | 25mA               |
| Output                         | I guaranteed: 30mA |
|                                | I max: 50 mA       |
|                                | U rated: 16VDC     |

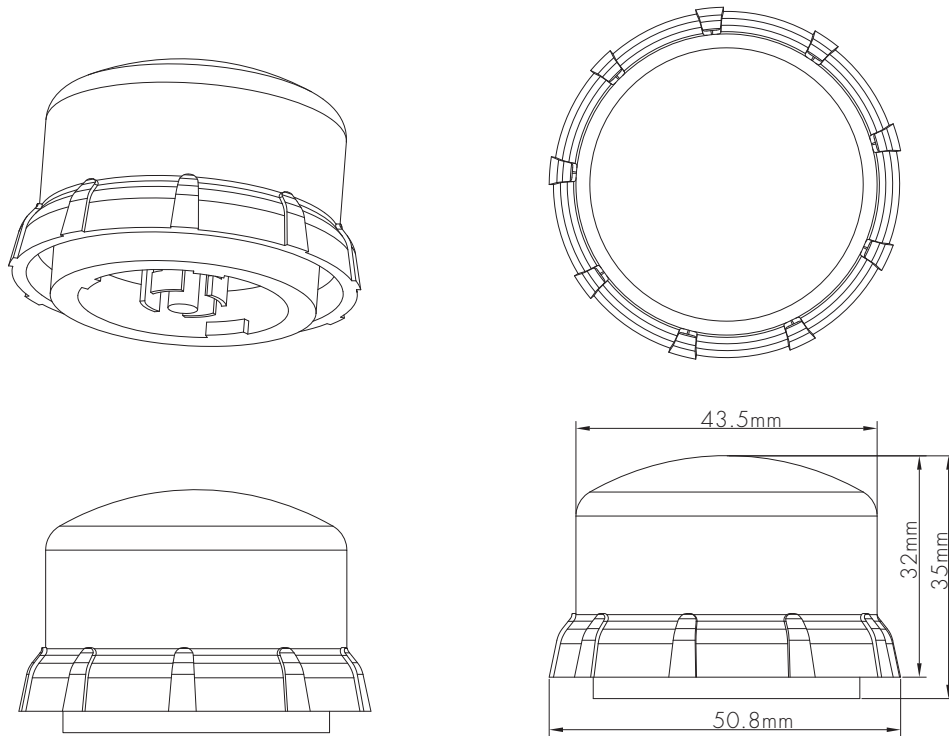
| Sensor Data      |                                                                          |
|------------------|--------------------------------------------------------------------------|
| Sensor principle | High Frequency (microwave)                                               |
| Detection range* | Max installation height: 15m (forklift)                                  |
|                  | 12m (single person)                                                      |
|                  | Max detection range: $\phi$ 20m (forklift)<br>$\phi$ 12m (single person) |
| Detection angle  | 360°                                                                     |
| Lux range        | 0-1000Lux                                                                |
| Sensitivity      | 10% / 50% / 75% / 100%                                                   |

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

| Environment           |                   |
|-----------------------|-------------------|
| Operation temperature | Ta: -20°C ~ +50°C |
| Storage temperature   | Ta: -40°C ~ +70°C |
| Relative humidity     | 10 ~ 90%          |
| IP rating             | IP65              |
| Insulation            | Class II          |

| Safety & EMC          |                         |
|-----------------------|-------------------------|
| EMC standard (EMC)    | EN61547, EN50015        |
| Safety standard (LVD) | EN61347-1 EN61347-2-11  |
| Certification         | CE, UKCA                |
| RED                   | EN300440, EN301489-1/-3 |
| Compliance            | RoHs, Reach             |
| DALI standard         | IEC62386-101/103        |

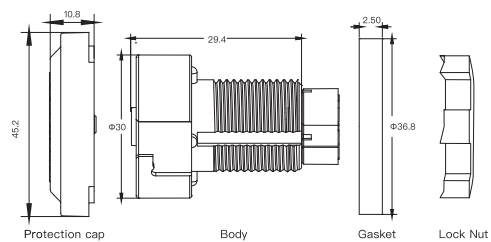
## Mechanical Structure & Dimensions



## Receptacle Accessory

The HA18SKT receptacle is designed to be compatible with the SAM15 and HIR15 series products. It provides a Zhaga Book 18 standard interface, suitable for roadway lighting, area lighting, and occupancy lighting applications.

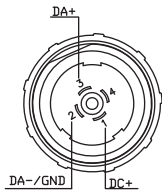
## Mechanical Structure & Dimensions



For more details, please refer to <https://hytronik.com/product/ha18skt>

Note: HA18SKT not included in the package.

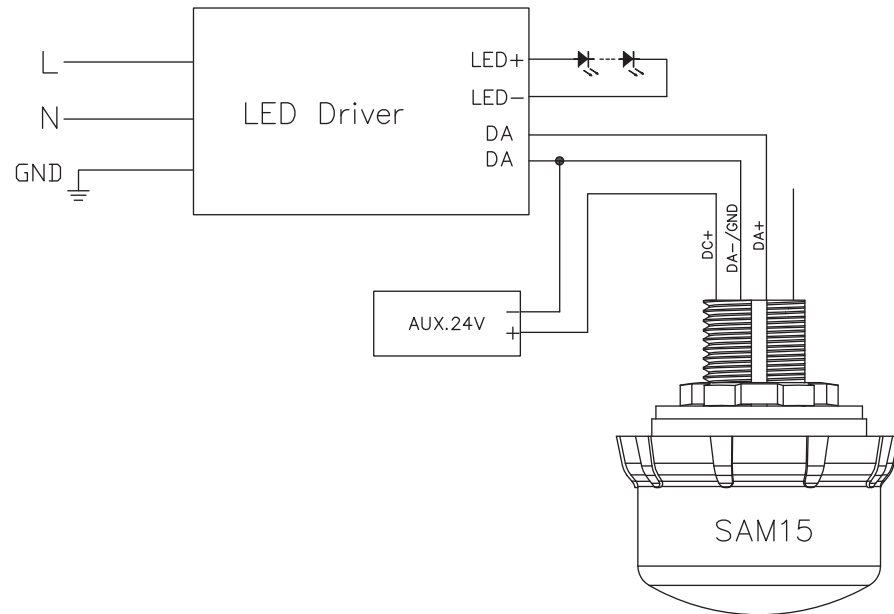
## Wiring Diagram Notes



- Terminal block 4 is left unpopulated by default. No wiring required.
- For reliable operation, ensure at least one DALI PSU is present on the bus. If multiple PSUs are connected in parallel, the total output must not exceed 250 mA. (For better compatibility, a single PSU is recommended.)
- SAM15 does not have a PSU switch.

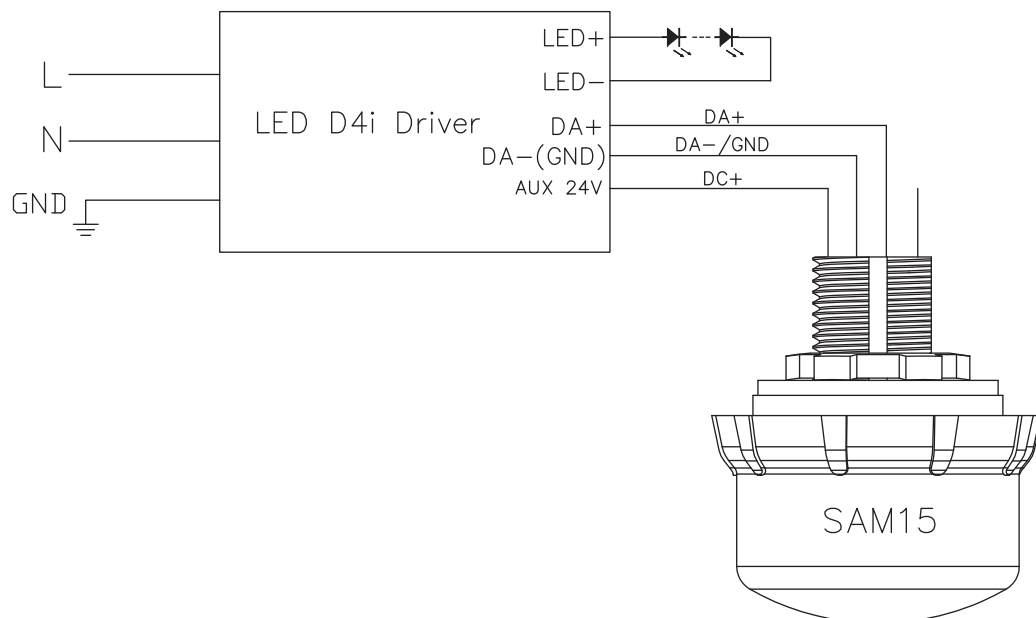
## Wiring Diagram 1

Standard Driver with External AUX Power



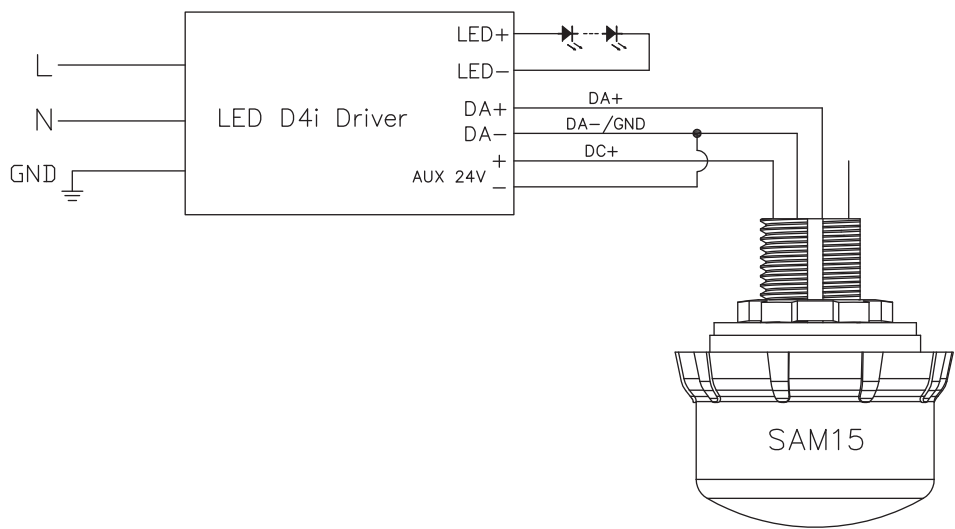
## Wiring Diagram 2

D4i Driver with Common Negative



### Wiring Diagram 3

#### D4i Driver with Isolated Negative

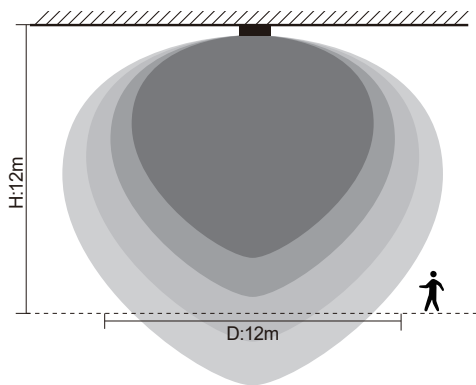


### Detection Range

\*The sensor detection area shown in this table is based on an open space.  
In environments with hard surfaces such as metal racking or glass corridors, the detection range may be extended by up to 30% due to reflections or signal penetration.

The data above is tested under following conditions:

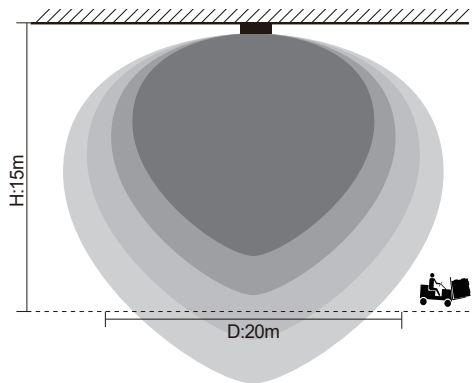
- Single person walking;
- Sensor not connected to any driver that may have soft-on period;
- Testing temperature  $T_a = 20^{\circ}\text{C}$ ;



| Height (m)     | Sensitivity |     |     |      |
|----------------|-------------|-----|-----|------|
|                | 100%        | 75% | 50% | 10%  |
| Diameter (Ø:m) |             |     |     |      |
| 12             | 12          | 9   | 6   | none |
| 8              | 13          | 10  | 6   | none |
| 5              | 14          | 11  | 7   | 2    |
| 3              | 15          | 12  | 8   | 5    |

The data above is tested under following conditions:

- Forklift driving at a speed of 5km/h;
- Sensor not connected to any driver that may have soft-on period;
- Testing temperature  $T_a = 20^{\circ}\text{C}$ ;



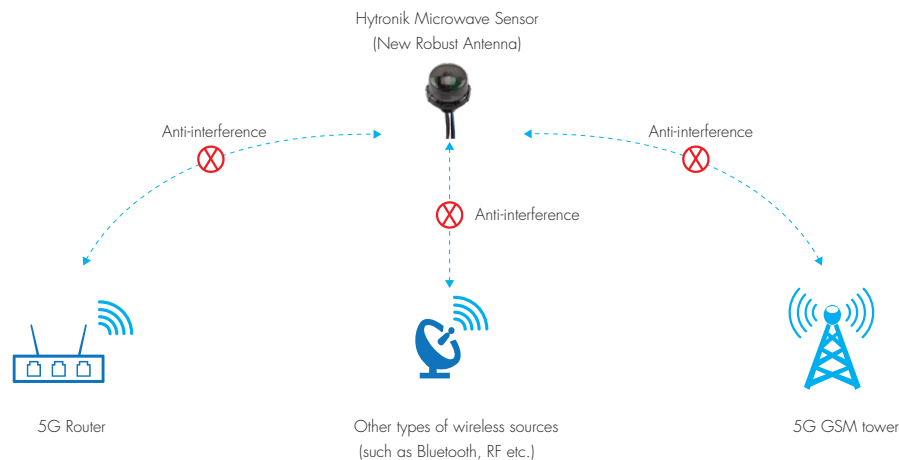
| Height (m) | Sensitivity      |
|------------|------------------|
|            | 100%             |
| 15         | Diameter (Ø : m) |
|            | 20               |

## Robust HF Sensors Design – Anti-interference Technology

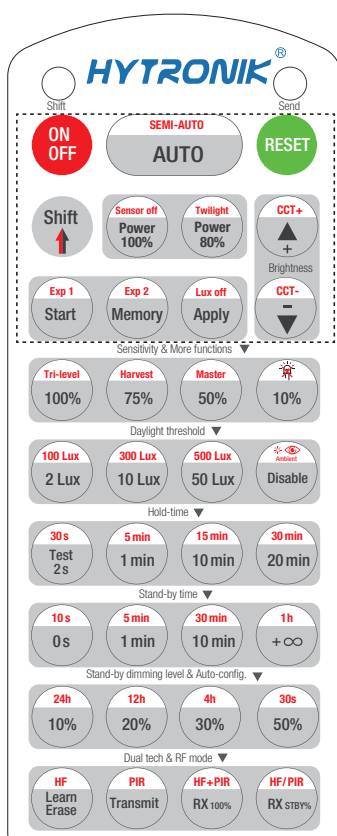


Hytronik's microwave motion sensor uses 5.8GHz high frequency (HF) antenna in the product design. With the increasing density of wireless environments such as 5G GSM tower and 5G Wi-Fi coverage, this has created extra challenges for sensor's operation because the air is shared by all kinds of wireless signals, and transmissions from any device at the similar frequency could potentially cause interference. The effects of interference which can be noticed by users are usually false triggering of sensors (turning on/off erratically), or lights staying on even after hold time etc.

To get around such tough environment, Hytronik has developed a new series of robust HF modules, designed to be loaded with our own special sophisticated software algorithms. These robust HF modules can withstand different types of wireless interferences in the real application. We believe this is the ultimate solution towards demanding installation environments in the future.

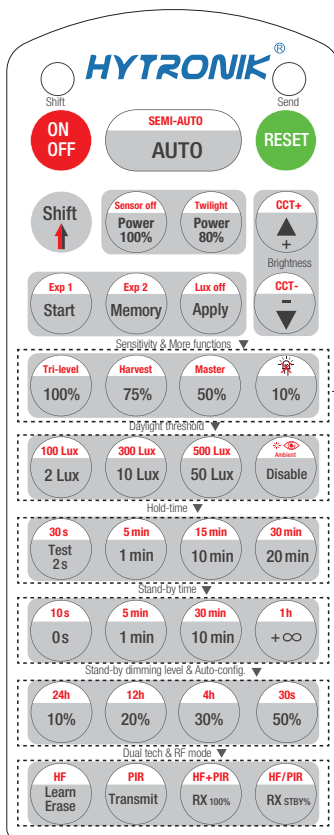


## Settings (Remote Control HRC-11)



HRC-11

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | Press button "ON/OFF" to select permanent ON or permanent OFF mode.<br>* Press button "AUTO" / "RESET" to exit this mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                            | Press button "RESET", perform the latest DIP Switch/Rotary Switch settings.<br>The default settings are: Auto mode; DALI Master mode; Detection range 100%; Hold-time 5min; Daylight sensor disable; Stand-by time 10min; Stand-by dimming level 20%; Maximum Brightness & Color turning; LED indication off; Lux off activated; HFDetection mode.                                                                                                                                                                                                                                                                                                                                                                                       |
|                            | Press button "Shift", the LED on the top left corner is on to indicate mode selection.<br>All values / settings in RED are valid for 20 seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| AUTO                       | Press button "AUTO" to initiate automatic mode. The sensor starts working and all settings remain as before the light is switched ON/OFF;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SEMI-AUTO                  | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Power 100% 80%             | Press buttons in zone "Power out" to select the light output at 80% (at initial 10,000 hours) or 100%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Sensor off<br><br>Twilight | 1. Press button "Shift", the red LED on.<br>2. Press button "Sensor off", the function of movement detection is disabled, the function of photocell is also disabled.<br>OR Press button "Twilight", the function of movement detection is disabled, but the function of photocell is still working, and the product becomes a pure dusk/ dawn daylight sensor.<br>To exit from "Sensor off"/"Twilight" mode, press button "AUTO"/"SEMI-AUTO"/"RESET".                                                                                                                                                                                                                                                                                   |
|                            | Press these two buttons to adjust the light output brightness and set a new target lux level. The daylight sensor can measure ambient daylight level and ignore the LED light, so as to calculate how much artificial light is needed to maintain the target lux level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CCT+<br>CCT-               | 1. Press button "Shift", the red LED on.<br>2. Press "CCT+" or "CCT-" button to adjust colour turning.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Start<br>Memory<br>Apply   | 1. Press button "Start" to program.<br>2. Select the buttons in "Detection range", "Daylight threshold", "Hold-time", "Stand-by time", "Stand-by dimming level" to set all parameters.<br>3. Press button "Memory" to save all the settings programmed in the remote control.<br>4. Press button "Apply" to set the settings to each sensor unit(s).<br><br><i>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:</i><br><i>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).</i> |
| Lux off                    | The "Lux off" function is activated as default. When the ambient lux level exceeds the target level continuously for more than 5 minutes, the lights will be turned off.<br><br>In AUTO /SEMI-AUTO/Twilight modes, to disable "Lux off":<br>1. Press "Shift" button first, the red LED on.<br>2. Press "Lux off" button, the "Lux Off" function will be deactivated. The lights will not turn off even when the ambient lux level exceeds the target lux level but will dim down the brightness to the stand-by time level.<br><br><i>For Sensor LED indicator references: 1.Fast flash 1s, "Lux off" function activated.<br/>2.Remains on 2s, "Lux off" function deactivated.</i>                                                       |
| Exp 1<br>Exp 2             | "Exp" refer to Expansion, these two buttons are reserved functions and pending future development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



HRC-11

| Sensitivity & More functions                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100% 75%<br>50% 10%                                          | In AUTO /SEMI-AUTO modes, press buttons in zone "Detection range" to set detection range at 100%/75%/50%/10%.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Tri-level Harvest</b>                                     | 1.Press button "Shift", the red LED on.<br>2. Press buttons "Tri-level" or "Daylight harvest" to shift between Tri-level control mode and Daylight harvest mode.                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Master</b>                                                | 1.Press button "Shift", the red LED on.<br>2. Press button "Master" to select a DALI sensor in a DALI line to be a "master", so that all other DALI sensors in the same DALI line will perform daylight harvesting/tri-level control based on the lux reading from this "master" sensor's daylight sensor.                                                                                                                                                                                                                                                    |
| Daylight threshold                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2 Lux 100 Lux<br>10 Lux 300 Lux<br>50 Lux 500 Lux<br>Disable | Press buttons in zone "Daylight threshold" to set daylight sensor at 2Lux/ 10Lux / 50Lux / 100Lux / 300Lux/500Lux / Disable.<br><i>Note: To set daylight sensor at 100Lux / 300Lux/500Lux , press "Shift" button first.</i>                                                                                                                                                                                                                                                                                                                                   |
| Ambient                                                      | 1. Press button "Shift", the red LED on.<br>2. Press button "Ambient", the surrounding lux level is sampled and set as daylight threshold / target Lux level.                                                                                                                                                                                                                                                                                                                                                                                                 |
| Hold-time mode                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Test 2s 30s<br>1min 5min<br>10min 15min<br>20min 30min       | In AUTO /SEMI-AUTO modes, press buttons in zone "hold-time" to set the hold-time at 2s / 30s / 1min / 5min / 10min / 15min / 20min / 30min.<br><i>Note: 1. To set hold-time at 30s / 5min / 15min / 30min, press "Shift" button first.<br/>2. 2s is for testing purpose only, stand-by period and daylight sensor settings are disabled in this mode.<br/>*To exit from Test mode, press button "RESET" or any button in "Hold-time".</i>                                                                                                                     |
| Stand-by time mode                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 0s 10s<br>1min 5min<br>10min 30min<br>+∞ 1h                  | Press buttons in zone "stand-by time" to set the stand-by period at 0s / 10s / 1min / 5min / 10min / 30min / 1h / +∞.<br><i>Note: 1. To set stand-by-time at 10s/ 5min / 30min / 1h, press "Shift" button first.<br/>2. "0s" means on/off control;<br/>3. "+∞" 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. Only when the stand-by time is set in "+∞" and the ambient lux level is below the target lux level, the lux will auto-on.</i> |
| Stand-by dimming level & Auto-config.                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 10% 20%<br>30% 50%                                           | Press the button in zone "stand-by dimming level" to set the stand-by dimming level at 10% / 20% / 30% / 50%.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>24h</b><br><b>12h</b><br><b>4h</b><br><b>30s</b>          | 1.Press button "Shift", the red LED on.<br>2.Select a time period and the sensor will do light level measurement and determine/save the lowest light level (commission line) with 100% light on, so as to set the target lux level automatically.<br><i>Note:1.Make sure the light level measurement covers the night time.<br/>2.The fixture will go into sensor mode after the measurement, all sensor setting remain unchanged.</i>                                                                                                                        |
| Dual tech & RF mode                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Learn<br>Erase<br>Transmit                                   | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| RX 100%<br>RX STBY%                                          | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>HF</b><br><b>PIR</b><br><b>HF+PIR</b><br><b>HF/PIR</b>    | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

# Commissioning Instructions and Precautions

## A. Installation Preparations

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

## B. DALI-2 Compliance

2. This product has been tested in accordance with IEC 62386 and complies with the relevant DALI-2 application parts. DALI-2 testing was performed using the official DALI test sequence software (version 2.5.0.0), covering the applicable IEC 62386 parts (e.g. Part 101, Part 103). DALI-2 certification verifies compliance within the defined test scope. However, certification does not eliminate the possibility of system-level compatibility issues arising from differences in device implementation or system design among manufacturers. Therefore, functional verification and on-site testing are required as part of the final system commissioning to ensure proper operation and compliance with project requirements.

**Warning:** For additional important documents, including installation precautions, product guidelines, and guarantee conditions, please refer to <https://hytronik.com/service/downloads>

## Additional Information / Documents

1. To learn more about detailed product features/functions, please kindly refer to <https://hytronik.com/product/sam15>
2. Regarding precautions for Microwave sensor installation and operation, please kindly refer to <https://hytronik.com/service/downloads> (Microwave Sensors Precautions for Product Installation and Operation)
3. Data sheet is subject to change without notice. Please always refer to the most recent release on <https://hytronik.com/products/motion-daylight-sensors>
4. Regarding Hytronik standard guarantee policy, please kindly refer to <https://hytronik.com/service/downloads> (Guarantee Conditions document)