

# SAM15

DALI HF Highbay | Built-in PSU | Zhaga Book 18 Standard

**HYTRONIK**<sup>®</sup>  
POWERED BY **Koolmesh**<sup>®</sup>



## Benefits

Standardized: Zhaga Book 18 with IP65 for reliable highbay integration

Integrated: Built-in 30mA DALI PSU simplifying system wiring

Simple: Remote control enabling fast commissioning

## Applications

UFO luminaires with a height of up to 15m

Warehouse/ Logistic

Outdoor/Street lights

Check Out the Complete System Solution on the Website:  
<https://www.hytronik.com/product/SAM15>



RoHS



## Product Description

SAM15 is a Zhaga Book 18 compliant high-bay HF motion sensor with integrated 30 mA DALI bus power supply, designed to simplify DALI system deployment for industrial and outdoor lighting applications. Supporting dimming and daylight control, it features dual photocell technology for more accurate daylight sensing. With IP65 protection and a typical mounting height of up to 15 m, it is well suited for demanding high-bay environments. The integrated DALI PSU eliminates the need for an external power supply, reducing installation complexity and system cost. All parameters can be configured easily via remote control for fast commissioning.

## Functions and Features

See additional details at the end of datasheet



D4i Driver  
Compatibility



DALI-2 Certified



DT6/DT8 Lighting  
Control



Daylight Harvest

**IP65**

IP65 Protection



Photocell  
Advance



Robust HF  
Antenna Design



Tri-level Dimming



Zhaga Book 18  
Standard

## Specifications

### Main Capabilities

|                            |               |
|----------------------------|---------------|
| Dimming (Output) Interface | DALI/DALI-2   |
| Connector Type             | Zhaga book 18 |

### Sensor Data

|                                 |                        |
|---------------------------------|------------------------|
| Detection angle                 | 360°                   |
| Lux range                       | <1000 lux              |
| Max. Detection range (Diameter) | 20.0 m                 |
| Maximum Mounting Height         | 15.0 m                 |
| Detection area                  | 314 m <sup>2</sup>     |
| Sensitivity                     | 10% / 50% / 75% / 100% |
| HF operating frequency (Ghz)    | 5.8Ghz+/-75MHz         |
| Detection Methods               | Microwave (MW)         |

### Electrical Data

|                                                     |             |
|-----------------------------------------------------|-------------|
| Operating voltage range                             | 24VDC       |
| Stand-by power (Psb)                                | <0.5W       |
| DALI bus maximum rated current (I <sub>n</sub> max) | 50 mA       |
| DALI bus nominal DC voltage range (Un)              | 16 V        |
| DALI bus nominal current (I guaranteed)             | 30 mA       |
| DALI Bus Current Consumption                        | 2.0 mA      |
| Auxiliary Supply Current Consumption                | 25mA        |
| HF Transmission power                               | <0.2mW (HF) |

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## Specifications

| Technical           |              |
|---------------------|--------------|
| Product weight      | 33.0 g       |
| Product height      | 35.0 mm      |
| Product length      | 50.8 mm      |
| Product width       | 50.8 mm      |
| Ambient temperature | -20 ~ +50 °C |
| Storage temperature | -40 ~ +70 °C |
| Humidity max        | 10 ~ 90%     |
| IP Rate             | IP65         |

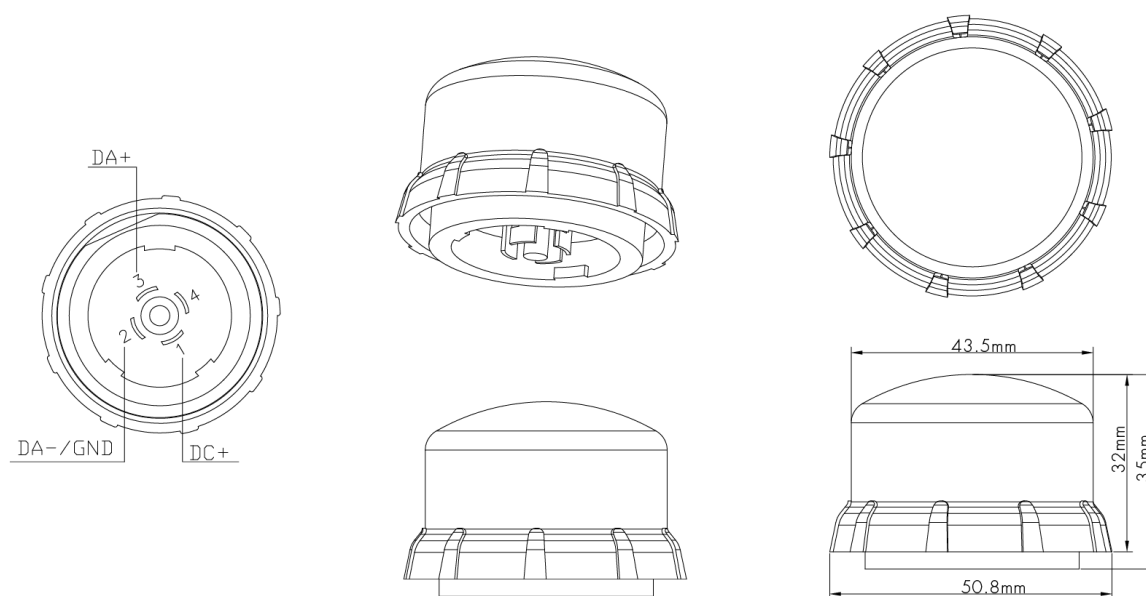
| Standard        |                                             |
|-----------------|---------------------------------------------|
| EMC             | EN 55015, EN 61547                          |
| LVD             | EN 61347-1, EN 61347-2-11                   |
| RED             | EN 300440, EN301489-1, EN301489-3, EN 50663 |
| DALI-2 Standard | IEC62386-101, 103                           |

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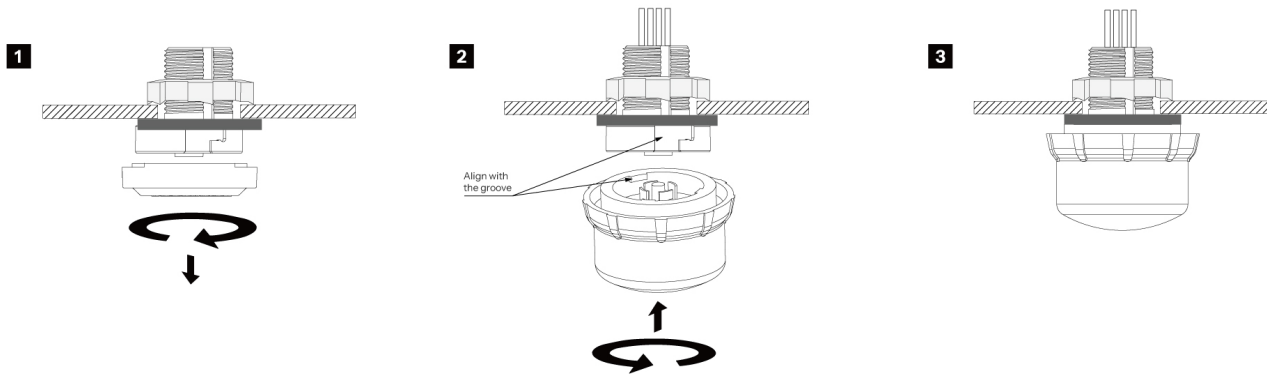
## Technical Drawing



## Application Example



## Installation Process



## Detailed Installation Instructions

### 1. Remove the receptacle cap

Unscrew and remove the protective cap from the receptacle before installation.

### 2. Install the sensor

Align the large groove on the receptacle with the corresponding large protrusion on the sensor. Push the sensor upward firmly until fully seated, then rotate counterclockwise until a clear click is heard. Ensure the sensor cannot be pulled out to confirm it is securely locked.

### 3. Installation complete

#### Note:

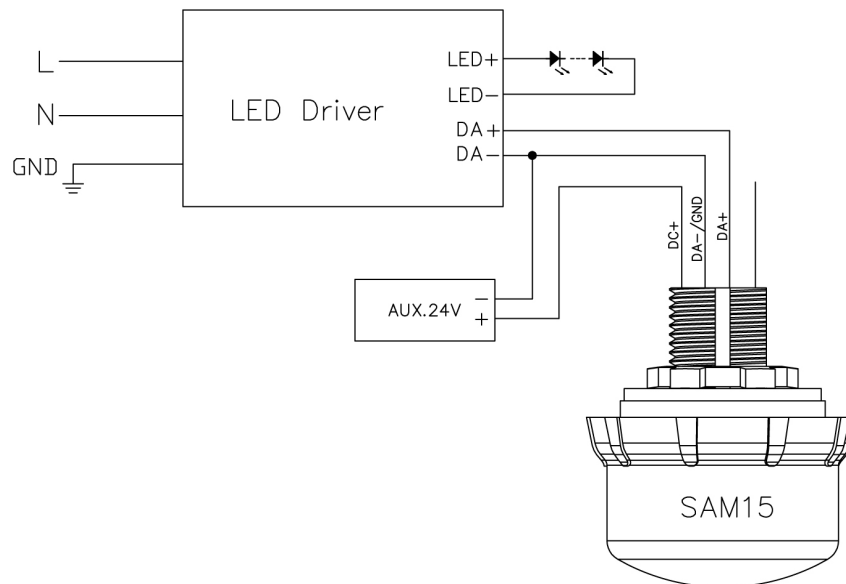
- Any luminaire that complies with the Zhaga Book 18 standard allows plug-and-play connection by simply mating the pins with the base.
- Socket not included, it must be supplied by the customer or purchased separately.

## ⚠ Wiring Guidelines

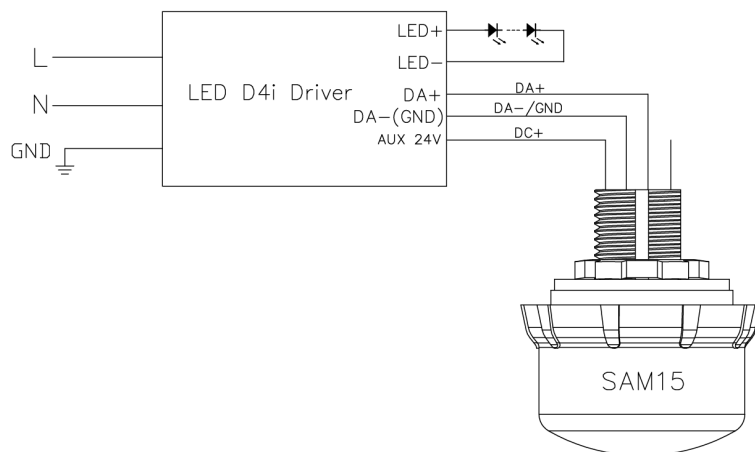
1. Installation by a qualified electrician only and in accordance with local electrical regulations.
2. Disconnect mains power before installation, wiring, maintenance or replacement.
3. Failure to follow the wiring diagram may result in product damage and malfunction.
4. Do not connect mains voltage (L/N) to the DALI terminals.
5. For polarity-marked DALI terminals (DA+/DA-), observe correct DALI polarity.
6. For non-polarity-marked DALI terminals (DA/DA), DALI wiring is polarity-free.
7. Terminal block 4 is left unpopulated by default. No wiring required.
8. 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.)

## Wiring Diagram

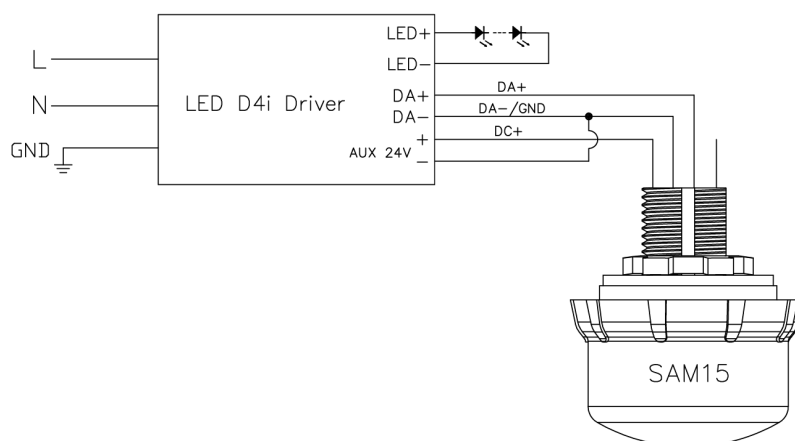
### Standard Driver with External AUX Power



## D4i Driver with Common Negative



## D4i Driver with Isolated Negative



Detection Range

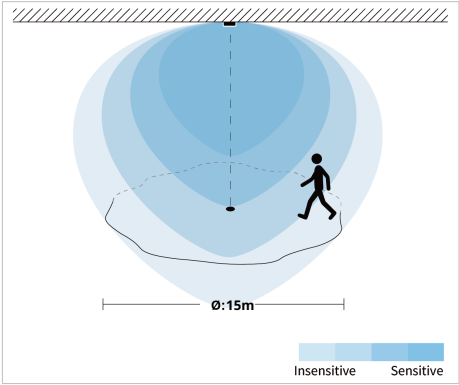
Single Person Walk (Ceiling mount)

The data is tested under following conditions:

- Single person walking
- Sensor not connected to any driver that may have soft-on period
- Testing temperature Ta = 20°C

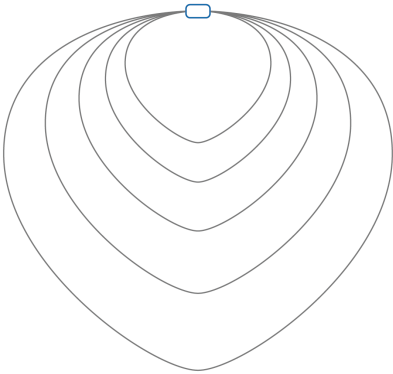
• The sensor detection area shown in this table is based on an open space. In environments with hard surfaces such as metal racking or glass corridors, the detection range may be extended by up to 30% due to reections or signal penetration.

Detection example 3m mounting height:



| H[m] | Sensitivity |     |     |      |      |
|------|-------------|-----|-----|------|------|
|      | 100%        | 75% | 50% | 30%  | 10%  |
|      | {diameter}  |     |     |      |      |
| 3    | 15          | 12  | 8   | 6    | 5    |
| 5    | 14          | 11  | 7   | 5    | 2    |
| 8    | 13          | 10  | 6   | 2    | none |
| 12   | 12          | 9   | 6   | none | none |

Detection schematic diagram





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## Detection Range

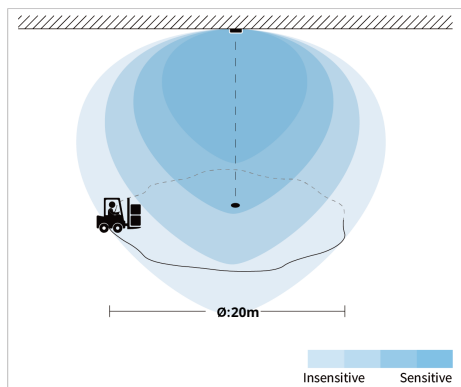
### Forklift ( Ceiling mount)

The data 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 Ta = 20°C

• 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.

Detection example 15m mounting height:



| HF   | Sensitivity |
|------|-------------|
| H[m] | 100%        |
|      | Ø[m]        |
| 15   | 20          |

## Commissioning Instructions and Precautions

### A. DALI Bus Current Notes

1. Typical DALI bus current consumption per driver is approximately 2 mA. Before installation, calculate the total bus current consumption of all devices connected to the same DALI bus. Ensure that the total current consumption does not exceed the guaranteed supply current of the DALI bus power supply, and allow sufficient system margin.

### B. DALI-2 Compliance

1. 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.

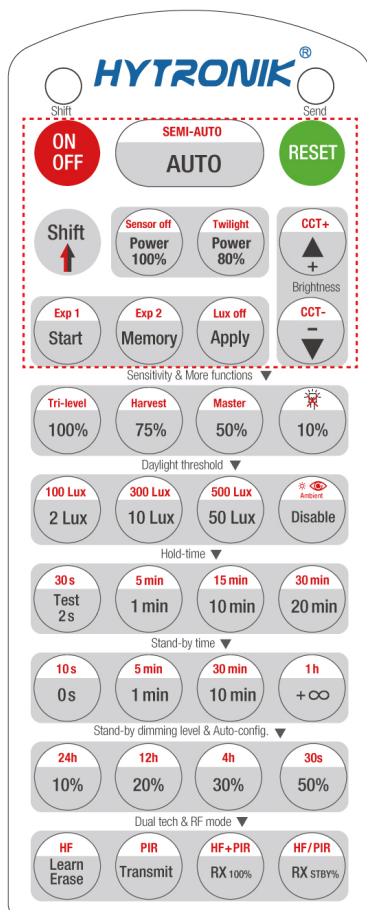
However, certification does not eliminate the possibility of system-level compatibility issues arising from differences in device implementation or system design among manufacturers. Therefore, functional verification and on-site testing are required as part of the final system commissioning to ensure proper operation and compliance with project requirements.

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

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

## Commissioning via Remote Control - Page 1

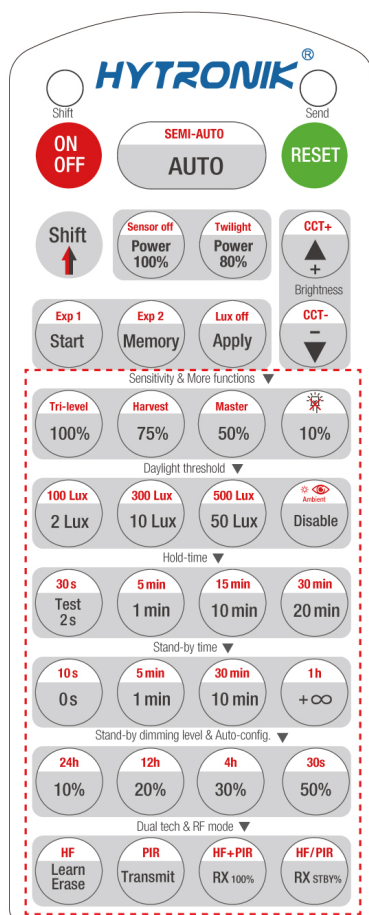
### Settings (Remote Control HRC-11)



|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ON OFF</b>               | Press "ON/OFF" to set the luminaire to permanent ON or OFF mode.<br>Press "AUTO" or "RESET" to exit this mode and resume normal sensor mode.<br>Note: After mains power is disconnected and restored, the sensor will automatically return to AUTO mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>RESET</b>                | Press "RESET" in any state to resume the sensor to AUTO mode.<br>For models with DIP or rotary switches, the parameters will follow the current DIP or rotary settings. For models without DIP or rotary switches, the parameters will restore the factory default settings.<br>Resettable parameters: operating mode, brightness, sensitivity, hold-time, stand-by time and daylight threshold.<br>*This product is set by default to: 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; HF detection mode.                                                            |
| <b>Shift</b>                | Press "Shift" to activate the auxiliary function layer. The top-left indicator will light up for 20sec, indicating the mode selection status. Each button will switch to the red-marked function shown on its upper half.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SEMI-AUTO</b>            | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>AUTO</b>                 | Press "AUTO" to enter automatic sensing mode. The sensor will exit ON/OFF and SEMI-AUTO mode and resume automatic operation. All parameters will remain as previously set.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Sensor off</b>           | Press "Shift" first. After red indicator is on, press "Sensor off".<br>In this mode, motion detection and daylight control are disabled, and the device works as a dimmer only. The system will memorize the last brightness level, CCT (if applicable) and ON/OFF status, regardless of ambient light.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Twilight</b>             | Press "Shift" first. After red indicator is on, press "Twilight".<br>In this mode, motion detection is disabled and only daylight control remains active. The device works as a daylight sensor only.<br>Press "AUTO", "SEMI-AUTO" or "RESET" to exit this mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Power 100% Power 80%</b> | Press "Power 100%" or "Power 80%" to set the maximum brightness accordingly. The selected brightness will be memorized by the sensor. In OFF mode, pressing this button will turn on the luminaire and set the maximum brightness at the same time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>▲ ▼</b>                  | Press this button to adjust brightness. The transition from maximum to minimum brightness or vice versa takes 6-10sec. The dimming range is 100%-10% and limited by the Power 80% / 100% setting.<br>For devices with daylight harvest function, this button is used to adjust the target Lux level.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>CCT+ CCT-</b>            | Press "Shift" first. After red indicator is on, press "CCT+" or "CCT-" to adjust the colour temperature. The transition from lowest to highest CCT takes about 6sec.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Start Memory Apply</b>   | Press "Start" to enter study mode. Select the required parameters in according area (Sensitivity, Daylight threshold, Hold time, Stand-by time and Stand-by dimming level). Press "Memory" to store the parameters, then press "Apply" to send the parameters to the sensor. The same parameter group can be applied to multiple sensors at the same time. "RESET" will not clear the parameters stored in "Memory".                                                                                                                                                                                                                                                                                                                          |
| <b>Lux off</b>              | Press "Shift" first. After red indicator is on, press "Lux off" to enable or disable this function. Indicator flashes 1sec when enabled, 2sec when disabled.<br>"Lux off" function is enabled by default. During hold time and stand-by time, if ambient light remains above the preset threshold for more than 5min, the luminaire will switch OFF. When stand-by time is set to ∞, the luminaire will turn on automatically after ambient light meets the preset Lux condition for 10sec, and meanwhile enter the stand-by dimming level (Lux on). When "Lux off" function is disabled, the luminaire will not switch off automatically due to excessive ambient light and will operate only based on hold time and stand-by time settings. |
| <b>Exp 1 Exp 2</b>          | "Exp" stands for "Expansion". These two buttons are reserved functions for future development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Commissioning via Remote Control - Page 2

### Settings (Remote Control HRC-11)



| Sensitivity & More Functions                                                                       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100% 75%<br>50% 10%                                                                                |  | In AUTO or SEMI-AUTO mode, press the buttons in "Sensitivity" area to set detection range as required. The setting overrides the DIP switch and is saved in memory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Tri-level</b><br><b>Harvest</b>                                                                 |  | Press "Shift" first. After red indicator is on: (a) press "Tri-level" to enter three-level sensing mode, or (b) press "Harvest" to enter daylight harvesting mode. The above two modes are interchangeable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Master</b>                                                                                      |  | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Daylight threshold                                                                                 |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 2 Lux 100 Lux<br>10 Lux 300 Lux<br>50 Lux 500 Lux<br>Disable                                       |  | Press the buttons in "Daylight threshold" area to set starting Lux level as required. The setting will override the DIP switch settings and be stored in the sensor memory.<br>Note: Red-marked options require pressing "Shift" first.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  <b>Ambient</b> |  | Press "Shift" first. After red indicator is on, press "Ambient". The load will switch off and the sensor will learn the current ambient Lux and set it as the starting / target threshold. During learning, the buzzer will beep 5 times and then 1 long beep when completed. The system will store the current brightness and enters "AUTO" mode - the luminaire turns on only when motion is detected. If the learned Lux exceeds the device's saturation, the buzzer will beep 10 times rapidly and the daylight threshold will be set to Disable.<br>Note: if DIP switches equipped, its settings and remote settings override each other, and the latest setting takes priority. |
| Hold-time mode                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Test 2s 30 s<br>1 min 5 min<br>10 min 15 min<br>20 min 30 min                                      |  | In "AUTO" or "SEMI-AUTO" mode, press the buttons in "Hold-time" area to set hold time as required. The setting will override the DIP switch settings and be stored in the sensor memory.<br>Note:<br>• Red-marked options require pressing "Shift" first.<br>• The 2s button is for test mode only. In this mode, stand-by time and daylight control are disabled. Press "RESET" or any buttons in "Hold-time" area to exit this mode.                                                                                                                                                                                                                                                |
| Stand-by time mode                                                                                 |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 0s 10 s<br>1 min 5 min<br>10 min 30 min<br>+ ∞ 1 h                                                 |  | Press the buttons in "Stand-by time" area to set stand-by time as required. The setting will override the DIP switch settings and be stored in the sensor memory.<br>Note: +∞ indicates bi-level control. In this mode, the luminaire turns on at 100% brightness if motion is detected, and switches to stand-by dimming level after the stand-by time. Meanwhile, the "Lux off" function is disabled. The luminaire will turn on and enter the stand-by dimming level only when ambient Lux is below the preset threshold.                                                                                                                                                          |
| Stand-by dimming level & Auto-config.                                                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 10% 20%<br>30% 50%                                                                                 |  | Press the buttons in "Stand-by dimming level" area to set stand-by dimming level as required. The setting will override the DIP switch settings and be stored in the sensor memory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>24h 12h</b><br><b>30s 4h</b>                                                                    |  | Press Shift first, then select the required self-testing time. During the testing period, the luminaire stays at 100% brightness and will not switch off, and the sensor continuously measures ambient light to set the lowest value as the target lux level. After completion, the sensor will enter "AUTO" mode with all other parameters unchanged. Note: the self-testing period must include nighttime. This function is only available for daylight harvesting products.                                                                                                                                                                                                        |
| Dual tech & RF mode                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Learn<br>Erase                                                                                     |  | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Transmit                                                                                           |  | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>HF HF+PIR</b><br><b>PIR HF/PIR</b>                                                              |  | This key is not applicable on this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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## Options

### Compatible products (for full functionality)



#### HA18SKT

Receptacle | Zhaga Book 18 Standard | Black Color  
[www.hytronik.com/product/HA18SKT](http://www.hytronik.com/product/HA18SKT)



#### HRC-11

Sensor remote controller | Diverse function | White color  
[www.hytronik.com/product/HRC-11](http://www.hytronik.com/product/HRC-11)

## Functions and Features



### D4i Driver Compatibility

Designed to operate with D4i-certified drivers within D4i luminaires, supporting standard DT6 / DT8 control behaviour in D4i systems.



### DALI-2 Certified

The product is DALI-2 certified, ensuring compatibility with DALI-2 control devices and compliance with relevant international lighting control standards. Certified product details can be verified via the DALI Alliance product database.



### DT6 / DT8 Lighting Control

Supports DT6 (single-channel dimming) and/or DT8 (tunable white / colour) lighting control via DALI, enabling brightness and colour temperature adjustment based on control logic such as occupancy or daylight.



### 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.



### IP65 Protection

This product features an IP65-rated enclosure, providing complete protection against dust ingress and low-pressure water jets to ensure reliable operation in demanding indoor and outdoor environments. The robust environmental sealing supports long-term stability and consistent performance in applications such as warehouses, parking areas and industrial facilities.



### Photocell Advance

This advanced daylight-sensing function accurately measures ambient light while minimising interference from the luminaire itself and distinguishing natural light from artificial light. It automatically switches lighting on or off and adjusts brightness according to the available daylight, providing reliable dusk-to-dawn control, improved visual comfort and greater energy efficiency.



### Robust HF Antenna Design

The touch panel supports both manual and automatic adjustment of the display brightness. In automatic mode, the screen adapts its brightness according to the surrounding ambient light to maintain optimal visibility and energy efficiency. In manual mode, users can set the preferred screen brightness level directly on the device, ensuring clear viewing under various installation conditions.



### 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.



### Zhaga Book 18 Standard

This product complies with the Zhaga Book 18 standard, providing a standardised mechanical, electrical and digital interface for indoor and outdoor luminaires, including high-bay and exterior applications. It enables plug-and-play interchangeability of sensor and connectivity modules, ensuring interoperability, future-ready upgrades and reliable operation in demanding installation environments.

## Check out for further explanation of features

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