# Installation and Instruction Manual

HYTRONIK®

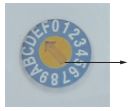
## FLUSH MOUNT MICROWAVE MOTION SENSOR — HMW21

## 1. Technical Specifications

| | |
|---|---|
| Product type | Tri-level control microwave motion sensor |
| Operating voltage | 220~240VAC 50/60Hz |
| Rated load | 1600W (resistive); 800VA (capacitive) |
| Power consumption | < 0.5W |
| Detection angle | 360° |
| Detection area (DxH) | 12 x 6m (Maximum) |
| Detection range | 10% / 50% / 75% / 100% |
| Hold time | 2s / 30s / 1min / 5min / 10min / 15min / 20min / 30min |
| Stand-by time | 0s / 10s / 1min / 5min / 10min / 30min / 1h / +∞ |
| Stand-by dimming level | 10% / 20% / 30% / 50% |
| Daylight threshold | 2 ~ 500Lux, Disable |
| Warmming up time | 20s |
| Operating temperature | -20°C ~ +60°C |

## 3. Rotary Switch Settings

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




Rotary switch preset (Please see the location in 2. Installation)

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

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

## 4. Functions

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

Hytronik builds this function inside the motion sensor to achieve tri-level control, for some areas require a light change notice before switch-off.
It 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.

### 4.2 Lux Off Function

The built-in daylight sensor can read ambient natural light and switch off the fixture automatically whenever artificial light is unneeded (natural light lux level exceeds daylight threshold).
Note: if the stand-by time is preset at "+∞", the fixture never switches off even when natural light is sufficient.

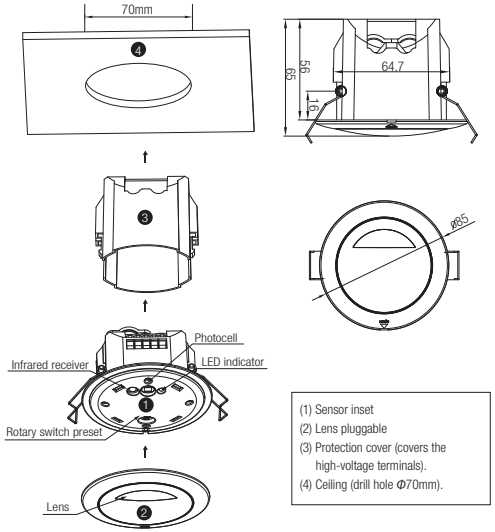
### 4.3 Semi-auto Function (Absence Detection)

The motion sensor is employed, but only activated on the manual press of the push switch, light keeps on in the presence, and dims down in the absence, and eventually switches off automatically in the long absence.

## 2. Installation

⚠ **Warnings:**

1. Installation of the sensor involves connecting it to the mains supply. This work must be carried out by a specialist in accordance with electrotechnical regulations.
2. Disconnect power supply before installing.




(1) Sensor inset
(2) Lens pluggable
(3) Protection cover (covers the high-voltage terminals).
(4) Ceiling (drill hole Φ70mm).

Note:We recommend the mounting distance between sensor to sensor should be more than 2m to prevent sensors from false-triggering.

### 4.4 Ambient Daylight Threshold

Switch the power supply to the sensor two times within 2 seconds, the ambient lux level is sampled and set as the new daylight threshold. Both the settings on rotary switch and the ambient lux level sampled can overwrite each other. This feature enables the daylight sensor to be commissioned to the environment in which it is installed. The last adjustment remains in memory.

### 4.5 8H Manual ON Mode For LED Lamp

Turn off/on the power supply three times within 3 seconds, the light will be turned on for 8 hours, even there is no motion detected, then go back to sensor mode automatically.
Note: this 8H manual on mode can be cancelled by turning off/on the power supply one time within 1 second.

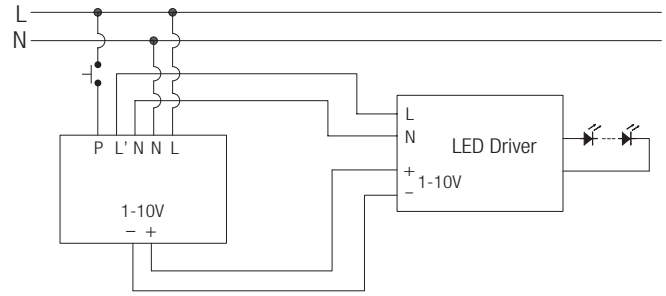
### 4.6 Manual Override

With the help of push-switch, this sensor maybe over-ridden by the end-users to switch on/off the lights manually, or adjust the light brightness during motion hold-time. This makes the product more user-friendly and offers more options to fit for extra-ordinary demands.
* Short push (<1s): on/off function;
ON → OFF: the light turns off immediately and cannot be lighten for a certain time (equals to hold time preset) even there is movement is detected. After this period, the sensor goes back to auto sensor mode.
OFF → ON: the light turns on 100% and goes to auto sensor mode, even when ambient Lux level exceeds the daylight threshold.
* Long push (>1s): adjust the maximum brightness (between 10% and 100%) during hold-time. Both the settings on DIP switch and manual override can overwrite each other, the last adjustment remains in memory.

* If no end-user adjustment is desired, simply leave this terminal disconnected.

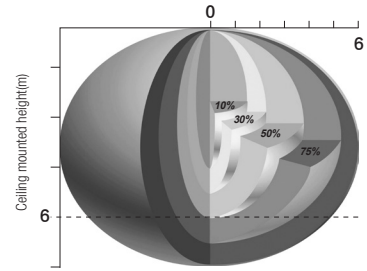


## 5. Wiring Diagram




*———This product should be installed by a qualified electrician.*

## 6. Detection Pattern

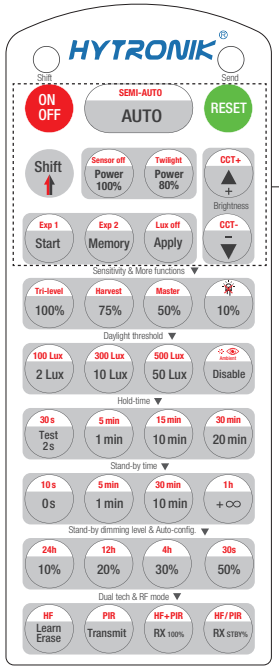



Ceiling mounted detection pattern (m)

## 8. Trouble Shooting

| MALFUNCTION CAUSE REMEDY | CAUSE | REMEDY |
|---|---|---|
| The fixture does not light up | Incorrect daylight threshold setting | Adjust daylight threshold setting |
| | Faulty fixture | Replace fixture |
| | No power supply | Check power to sensor |
| | Detection zone not targeted | Check detection area setting |
| The fixture is always on | Continued movement in the detection zone | Check detection area setting |
| The fixture is on when it should not | Sudden change in temperature due to weather (wind, rain, snow) or air expelled from fans, open windows | Adjust zone, change installation site |

## 7. Description of the Button Functions (remote control HRC-11)

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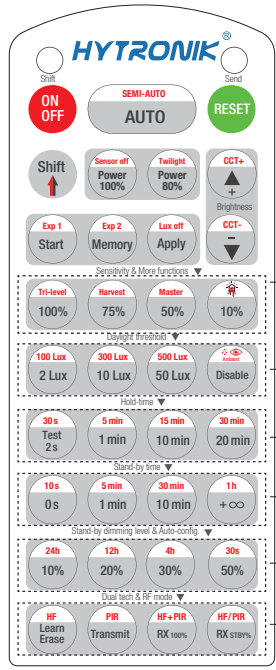
| | |
|---|---|
| ON OFF | Press button "ON/OFF" to select permanent ON or permanent OFF mode.<br>* Press button "AUTO"/ "RESET" to exit this mode. |
| RESET | Press button "RESET", perform DIP Switch/Rotary Switch settings.<br>*The default settings are: Detection range 100%; Hold-time 5min; Stand-by time +∞; Stand-by dimming level 10%; Daylight threshold 100lux. |
| Shift | Press button "Shift", the LED on the top left corner is on to indicate mode selection. 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 | 1. Press button "Shift" ,the red LED on.<br>2. Press button "SEMI-AUTO" to initiate Semi-auto mode. The sensor is only activated with the manual press of push switch. To exit this mode, simply press button "AUTO".<br>*For Sensor LED indicator references: Remains on 2s, initiate "Semi-auto" mode from "Auto" mode.* |
| 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>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- | This key is not appliable on this product. |
| 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>*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:*<br>*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).* |
| Lux off | This key is not appliable on this product. |
| Exp 1<br>Exp 2 | "Exp" refer to Expansion, these two buttons are reserved functions and pending future development. |

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| | |
|---|---|
| **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%. |
| Tri-level Harvest | This key is not appliable on this product. |
| Master | This key is not appliable on this product. |
| **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>*Note: To set daylight sensor at 100Lux / 300Lux/500Lux , press "Shift" button first.* |
| 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>1 min 5 min<br>10 min 15 min<br>20 min 30 min | 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>*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". |
| **Stand-by time mode** | |
| 0s 10 s<br>1 min 5 min<br>10 min 30 min<br>+∞ 1h | Press buttons in zone "stand-by time" to set the stand-by period at 0s / 10s / 1min / 5min / 10min / 30min / 1h / +∞.<br>*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.* |
| **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%. |
| 24h 12h<br>4h 30s | This key is not appliable on this product. |
| **Dual tech & RF mode** | |
| Learn Erase | This key is not appliable on this product. |
| Transmit | This key is not appliable on this product. |
| HF<br>PIR<br>HF+PIR<br>HF/PIR | This key is not appliable on this product. |



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