



## HC419V/I

## Fixture Built-in Microwave Sensor

## Photocell Advance



### Introduction

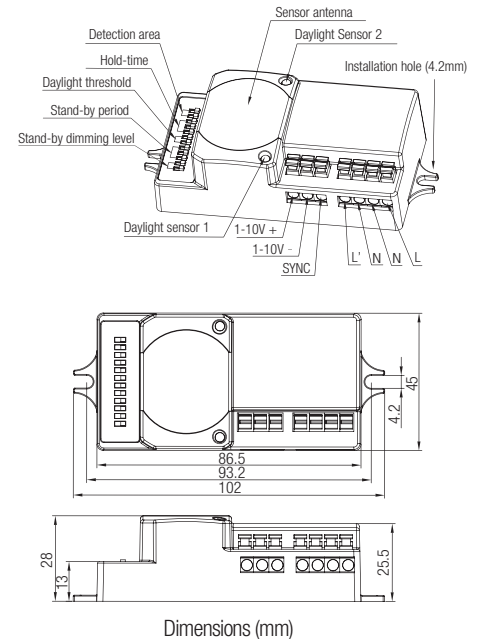
This product utilises photocell advance technology to realise occupancy and true automatic photocell functions in one product. The patented technology allows luminaire design to be simplified as the luminaire body no longer needs to be drilled to accept a photocell for assessing the daylight condition. Ideal for applications such as communal and stairwell areas on social housing projects; this product is designed to be enclosed within the luminaire so naturally offers security against vandalism and degradation which can be unwanted factors when using external lighting control components.

The light will be switched off eventually if ambient daylight is sufficient, no matter it is during hold-time or stand-by time, with or without motion.

### Technical Specifications

Product type	Built-in microwave motion sensor (photocell advance)
Operating voltage	120~277VAC 50/60Hz
Switched power	120VAC, 3.4A / 277VAC, 3.7A (Fluorescent / LED) 120VAC, 5.8A / 277VAC, 5.8A (Incandescent lamp)
Stand-by power	< 1W
Detection settings	10% / 50% / 75% / 100%
Hold time	5s / 30s / 1min / 5min / 10min / 20min / 30min
Stand-by time	0s / 10s / 1min / 5min / 10min / 30min / 1h / +∞
Stand-by dimming level	10% / 20% / 30% / 50%
Daylight threshold	2 ~ 50Lux, Disable
Detection area (DxH)	12 x 6 m
Microwave frequency	5.8 GHz +/- 75Mhz
Microwave power	0.2 mW
Warming-up time	20s
Operating temperature	-35°C ~ +70°C

Note: high voltage-disconnect power supply before servicing. Use copper wire only.



### Installation

Please read this manual carefully before installing the microwave sensor and siting the luminaire.

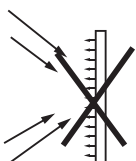
Both the microwave sensor (antenna) and the photocell elements of the product must be in front of any metal work and have full line of sight to the cover/diffusing element of the fixture for trouble-free operation.

After installing the sensor, it is highly recommended that the luminaire is tested for compatibility and correct operation of all components.

Note: If testing under laboratory conditions, the unique nature of this product requires full bandwidth of the visible and invisible parts of the electromagnetic spectrum, therefore it is not recommended to attempt daylight simulation with artificial light sources.

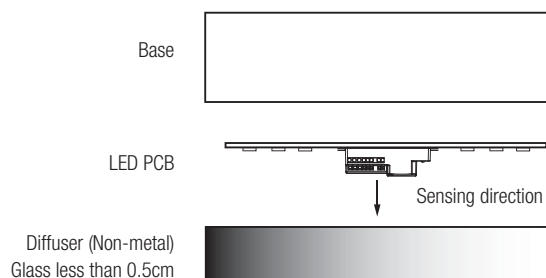


Not suitable for use with Incandescent or Halogen lamps

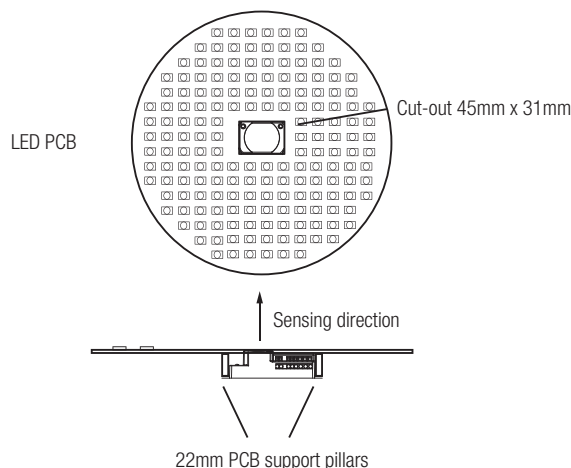


Not suitable for use in installations where glass is treated for reflection of infrared radiation

### Diagram 1. Typical layout - in front of LED PCB



### Diagram 2. Typical layout - behind LED PCB with cut-out



### Preparation of Luminaire

#### 1. Positioning

This microwave sensor is ideal for use with LED luminaires with the following considerations:

For simple mounting, the sensor may be placed on the LED side of the LED PCB. The microwave sensor will not be able to 'see' through any metal components of the fixture. (See diagram 1 opposite).

For shadow-free operation, it is recommended that the LED PCB is designed with a viewing window for the sensor so that it may fit flush (or slightly proud) of the LED PCB. (Please refer to diagram 2)

#### 2. Configure the luminaire

Referring to the wiring diagrams overleaf, it is best to consider terminations of the luminaires offered to the installer dependant on system or project design. If in any doubt, it is recommended that all 7 terminals of the sensor are made accessible to the installer so that all of the features may be used if required.

#### 3. Wiring

To assist with installation, Hytronik use push-wire style terminals. It is recommended that single core (1/0.8mm for example) is used for making the connections to the sensor.

The full specification for the wiring terminal is:

Wire preparation

16~18AWG □



16~18AWG

## Feature Operation

### 1. Detection Range

Setting these switches will determine the sensitivity of the occupancy sensor. During commissioning it is recommended to start at 10% to satisfy correct installation, before increasing the sensitivity to the environment for normal operation.

	1	2	
I	●	●	100%
II	●	○	75%
III	○	●	50%
IV	○	○	10%



### 2. Hold Time

Select the dip switch configuration for the full brightness on-time after presense detection. Please note that this function is disabled when the natural daylight exceeds the daylight threshold setting more than 5 minutes.

	1	2	3	
I	●	●	●	5s
II	●	●	○	30s
III	●	○	●	1min
IV	●	○	○	5min
V	○	●	●	10min
VI	○	●	○	20min
VII	○	○	○	30min



Note for commissioning: There is a 20 second "warm-up" period for the sensor upon power-on. This time must elapse before testing for presense detection.

### 3. Daylight Threshold

Set the level according to the fixture and environment. In Photocell Advance mode this level will determine at which point the fixture turns off and automatically turns back on again. Please note the levels refer to internal light reaching the sensor, and do not directly relate to lux levels outside of the fixture.

	1	2	
I	●	●	Disable
II	●	○	50 Lux
III	○	●	10 Lux
IV	○	○	2 Lux



Disabling the daylight sensor will put the sensor into occupancy detection only mode.

### 4. Stand-by period

This setting is used to select the mode of operation of the sensor:

Selecting Infinity '∞' will put the sensor into Photocell Advance mode. the stand-by period is effectively controlled by the daylight sensor (Automatic on/off operation based upon daylight)

Selecting one of the time periods will disable 'automatic on' operation and the photocell will be used only to turn off the fixture automatically. The selected time will determine the period before the fixture switches completely off from the stand-by dimming level in periods of absence.

	1	2	3	
I	●	●	●	0s
II	●	●	○	10s
III	●	○	●	1min
IV	●	○	○	5min
V	○	●	●	10min
VI	○	●	○	30min
VII	○	○	●	1H
VIII	○	○	○	+∞



### 5. Stand-by Dimming Level

This setting is used to select the desired dimmed light level used in periods of absence for enhanced comfort and safety. In Photocell Advance mode, it is also the level the fixture will automatically come on at when the natural daylight falls below the daylight threshold setting.

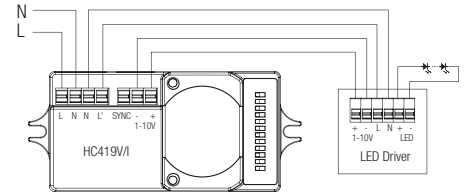
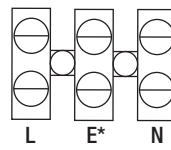
	1	2	
I	●	●	10%
II	●	○	20%
III	○	●	30%
IV	○	○	50%



## Terminations and wiring diagrams

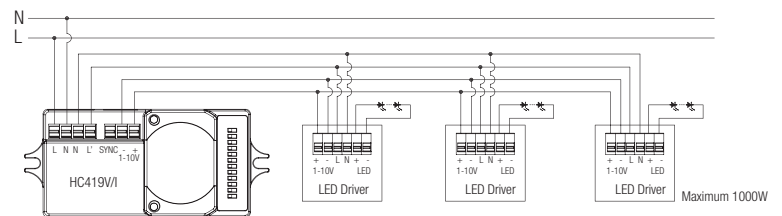
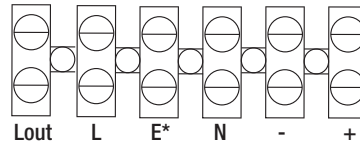
### Basic

Point-by-point basic end user installation



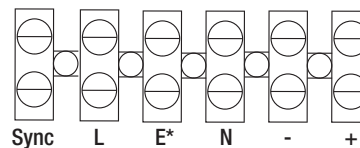
### Basic - 'Master'

Loop-out provision to other non-sensor luminaires (max. load 1000W)



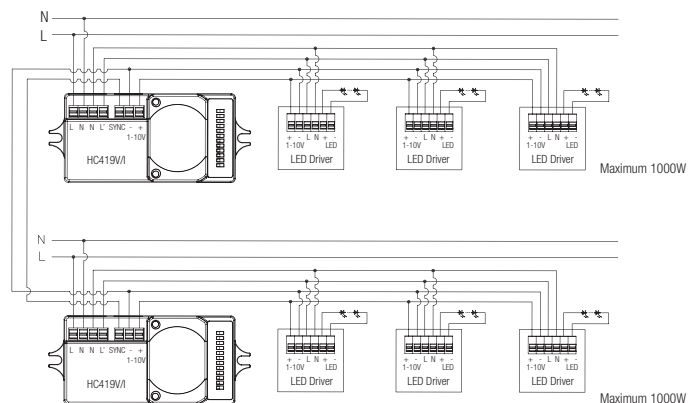
### Synchronised - 'Master'

Sync terminal to other sensor luminaires (max. load 1000W)  
1-10V circuit



By connecting the "SYNC" terminals in parallel (maximum 10pcs, see wiring diagram), no matter which sensor detects motion, all HC419V/I in the group will turn on the lights when surrounding natural light is below the daylight threshold. The sensor antennas are effectively 'shared' and the detection area is widely enlarged in this way. For maximum flexibility, the operational settings such as hold-time, stand-by period, stand-by dimming level and daylight threshold are programmable on each individual unit.

Note: To avoid fixtures turning on unnecessarily, daylight sensing takes priority on a point-by-point basis. Occupancy sensing (SYNC) is disabled on those units in which the ambient light exceeds the daylight threshold.



\*Earth if required - (no earth connection necessary on HC419V/I)