On/Off Control HF Sensor

HC009SKDVFC/I
Detached Version with Photocell Advance™

HYTRONIK®

Applications

Occupancy detector with on/off control suitable for indoor use.

Suitable for building into the fixture:

- Office / Commercial Lighting
- Meeting room
- Classroom

Use for new luminaire designs and installations

Features

- VFC: Volt-free Contact/Dry Contact
  - 24VDC@2A
  - 300VAC@3.6A
- Special photocell to measure and differentiate natural light from LED light from behind the fixture cover
- Loop-in and loop-out terminal for efficient installation
- 5 Year warranty

Technical Data

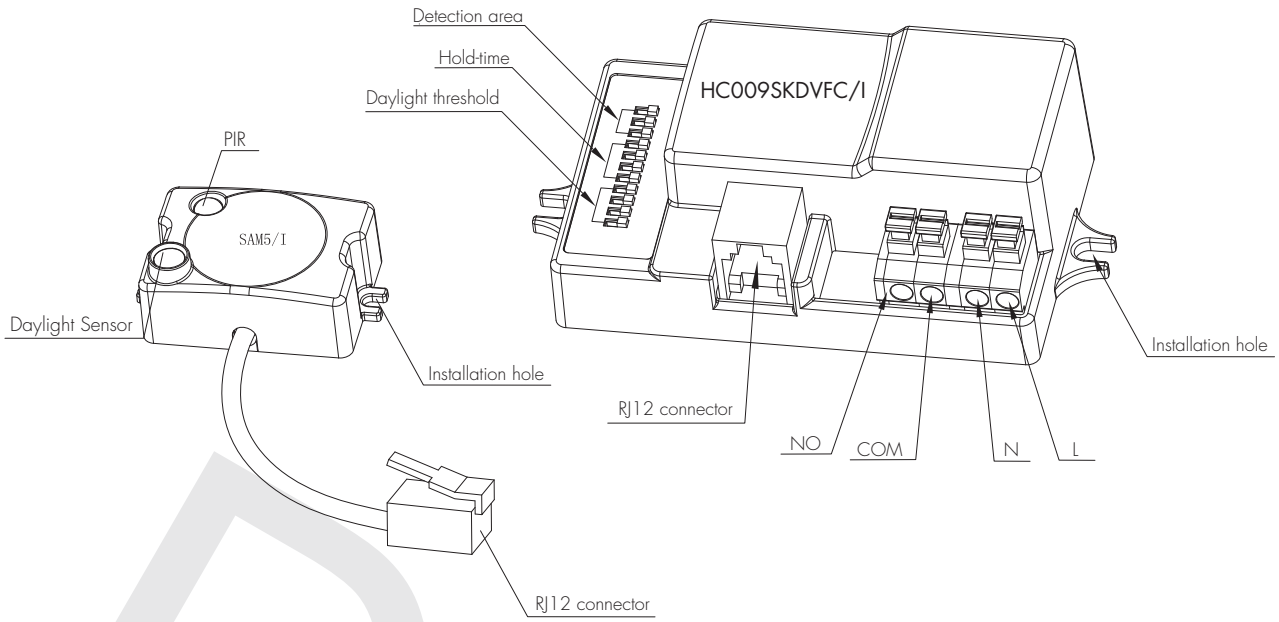
Input & Output Characteristics	
Mains voltage	220~240VAC 50/60Hz
Stand-by power	<1W
Output (Max.)	≤300VAC(≤3.6A) ≤24VDC(≤2A)
Warming-up	20s

Safety and EMC	
EMC standard (EMC)	EN55015, EN61000-3-2/-3-3 EN61547
Safety standard (LVD)	EN60669-1/-2-1
Certification	CE , EMC, RED, RCM
RED	EN300 400, EN301489-1/-3

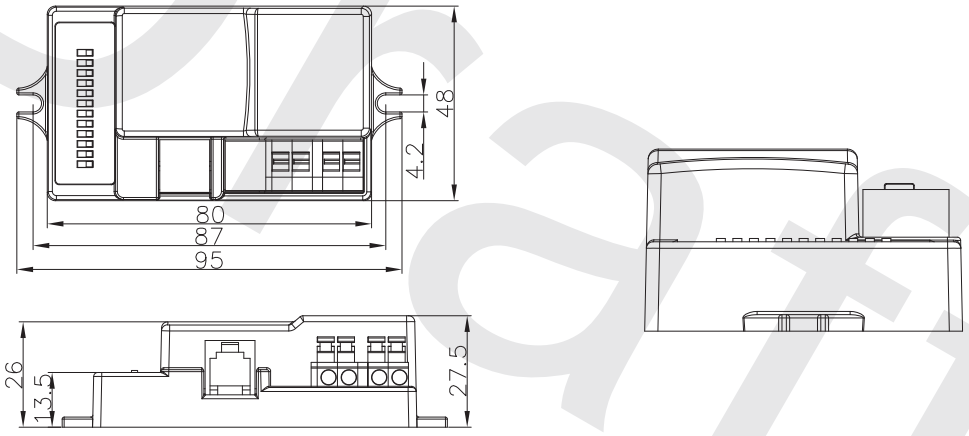
Sensor Data	
Sensor principle	High Frequency (microwave)
Operation frequency	5.8GHz +/- 75MHz
Transmission power	<0.2mW
Detection range	Max. (Ø x H) 12m x 8m
Detection angle	30° ~ 150°
Setting adjustments:	
Sensitivity	10% / 25% / 50% / 75%/ 100%
Hold-time	10s ~ 30min (selectable)
Daylight threshold	5 ~ 50 lux, disabled

Environment	
Operation temperature	Ta: -20°C ~ +50°C
Storage temperature	Ta: -40°C ~ +70°C
Relative humidity	10 ~ 90%
IP rating	IP20

Mechanical Structure & Dimensions



a. Sensor Main body



b. Detached Sensor Antenna Module

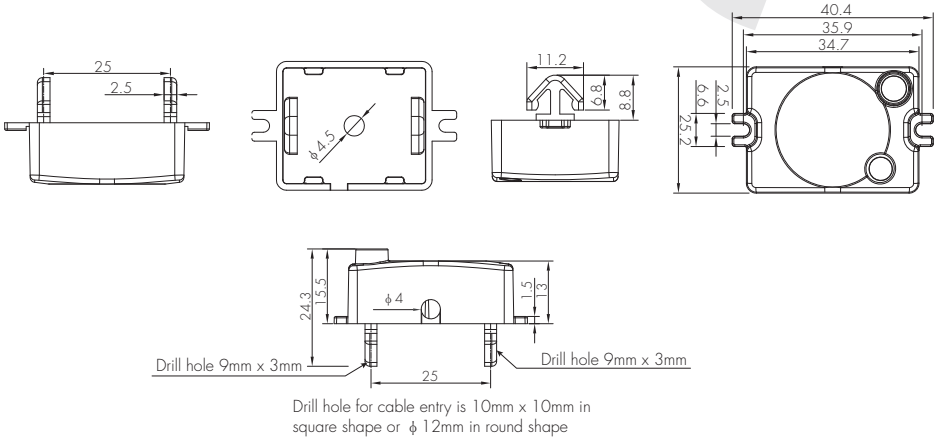
Model SAM5/I

HF sensor head

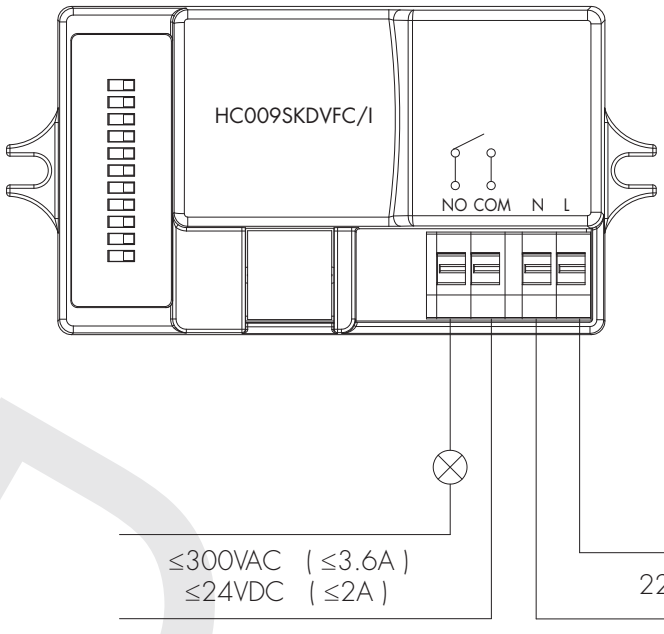
Tri-level Dimming

Photocell Advance™

The cable length is around 30cm.



Wiring Diagram



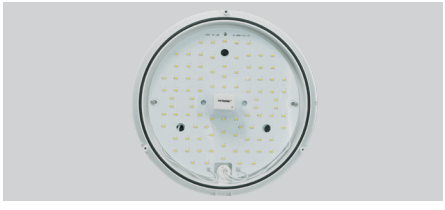
Typical applications:

1. Office light, most of which have aluminium lovres and is impossible for microwave sensors to go through.
2. LED bulkhead or low bay, which has limited space and ordinary sensor is too big or too thick to be built in, also easy to cast shadow in the shade.

For linear T5, T8, TC-L lamps

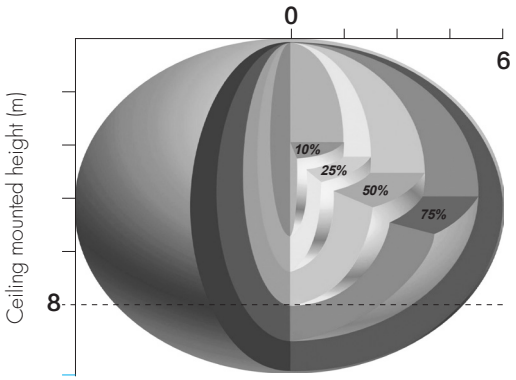
Most of the linear office lights have metal louvre, where microwave cannot penetrate through. An easy alternative solution is to use this detached sensor antenna head, grip on the T5 and T8 tube, and put the sensor main body behind the metal louvre, together with the ballast or driver.

For LED bulkhead



In such applications, only the detached small antenna is needed on the outer surface, while the sensor body and the driver/ballast can be hidden behind the panel. No shadow is cast in the shade.

Detection Pattern



Ceiling mounted detection pattern (m)

Height (m)	Sensitivity				
	100%	75%	50%	25%	10%
	Diameter (Ø:m)				
8	8	6	4	2	none
5	10	8	6	4	2
3	12	10	7	6	4

DIP Switch Settings

1 Detection Range

Sensor sensitivity can be adjusted by selecting the combination on the DIP switches to fit precisely for each specific application.

	1	2	3	
I	●	●	●	100%
II	●	○	●	75%
III	○	○	●	50%
IV	○	●	○	25%
V	●	○	○	10%

I – 100%
II – 75%
III – 50%
IV – 25%
V – 10%

2 Hold Time

Select the DIP switch configuration for the light on-time after presence detection. This function is disabled when natural light is sufficient.

	1	2	3	4	
I	●	●	●	●	30min
II	○	○	○	●	20min
III	○	○	●	○	6min
IV	○	●	○	○	90s
V	●	○	○	○	30s
VI	○	○	○	○	10s

I – 30 min
II – 20 min
III – 6 min
IV – 90s
V – 30s
VI – 10s

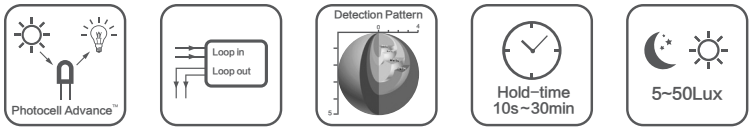
3 Daylight Threshold

Set the level according to the fixture and environment. The light will not turn on if ambient lux level exceeds the daylight threshold preset. In Photocell Advance™ mode this level will determine at which point the light turns off.
Please note that the ambient lux level refers to internal light reaching the sensor.

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

	1	2	3	4	
I	●	●	●	●	Disabled
II	○	○	●	○	50 lux
III	○	●	○	○	30 lux
IV	●	○	○	○	10 lux
V	○	○	○	○	5 lux

I – Disabled
II – 50 Lux
III – 30 Lux
IV – 10 Lux
V – 5 Lux



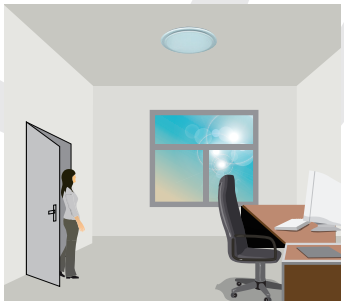
1 On/off Control with Photocell Advance™ Function

This sensor is a motion switch, which turns on the light upon detection of motion, and turns off after a pre-selected hold-time when there is no movement.
Furthermore, a Hytronik specially designed photocell is also built in to switch on/off the light based upon ambient natural light lux level. It's well known that LED lights have a totally different spectrum from natural light. Hytronik uses this principle and comes up with this special photocell and sophisticated software algorithm to measure and differentiate natural light from LED light from behind the fixture cover, so that this photocell can ignore internal LED light and only respond to the natural light outside.
Our technology has no infringement to the existing patents in the market.

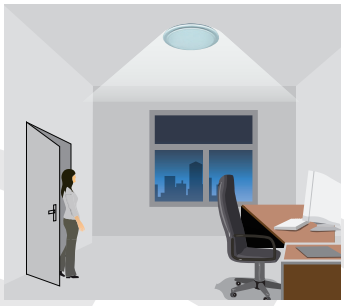
Settings on this demonstration:

Hold-time: 30min Daylight threshold: 50lux

Insufficient natural light and motion detection: ***light ON***



With sufficient natural light, the light does not switch on when presence is detected.



With insufficient natural light, the sensor switches on the light when presence is detected.

Sufficient natural light or no motion after hold-time: ***light OFF***

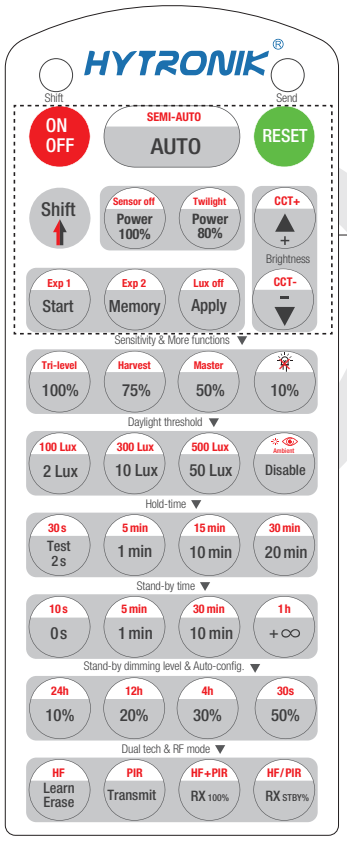
The sensor switches off the light whenever natural light exceeds pre-set daylight threshold, even with presence.

OR

The sensor switches off the light after the hold-time when there is no motion detected.

2 Loop-in and Loop-out Terminal

Double L N terminal makes it easy for wire loop-in and loop-out, and saves the cost of terminal block and assembly time.



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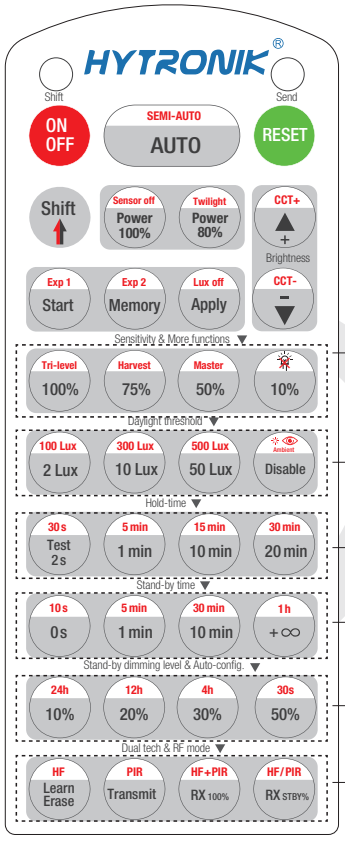
ON OFF	Press button "ON/OFF" to select permanent ON or permanent OFF mode. * Press button "AUTO"/ "RESET" to exit this mode.
RESET	Press button "RESET", all settings go back to default. The default settings are: Auton mode; Hold-time 5min; Daylight sensor disable; Stand-by time: 10min; *Note: If there have changes to the DIP Switch/Rotary Switch, the "Reset" button function may not match the default settings above.*
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 starts to flash. 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". *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 Twilight	This key is not appliable on this product.
	This key is not appliable on this product.
CCT+ CCT-	This key is not appliable on this product.
Start Memory Apply	1. Press button "Start" to program. 2. Select the buttons in "Detection range", "Daylight threshold", "Hold-time", "Stand-by time", "Stand-by dimming level" to set all parameters. 3. Press button "Memory" to save all the settings programmed in the remote control. 4. Press button "Apply" to set the settings to each sensor unit(s). *For example, to set detection range 100%, daylight threshold Disable, hold-time 5min, stand-by time +∞, stand-by dimming level 30%, the steps should be:* *Press button "Start", button "100%", "Disable", "Shift", "5min", "Shift", "+∞", "30%", "Memory". By pointing to the sensor unit(s) and pressing "Apply", all settings are passed on the sensor(s).*
Lux off	This key is not appliable on this product.
Exp 1 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% 50% 10%	This key is not appliable on this product.
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 10 Lux 300 Lux 50 Lux 500 Lux Disable	Press buttons in zone "Daylight threshold" to set daylight sensor at 2Lux/ 10Lux / 50Lux / 100Lux / 300Lux/500Lux / Disable. *Note: To set daylight sensor at 100Lux / 300Lux/500Lux , press "Shift" button first.*
Ambient	1. Press button "Shift", the red LED on. 2. Press button "Ambient", the surrounding lux level is sampled and set as daylight threshold / target Lux level.

Hold-time mode	
Test 2s 30s 1 min 5 min 10 min 15 min 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. *Note: 1. To set hold-time at 30s / 5min / 15min / 30min, press "Shift" button first.* *2. 2s is for testing purpose only, stand-by period and daylight sensor settings are disabled in this mode.* *To exit from Test mode, press button "RESET" or any button in "Hold-time".

Stand-by time mode	
0s 10s 1 min 5 min 10 min 30 min +∞ 1h	Press buttons in zone "stand-by time" to set the stand-by period at 0s / 10s / 1min / 5min / 10min / 30min / 1h / +∞. *Note: 1. To set stand-by-time at 10s/ 5min / 30min / 1h, press "Shift" button first.* *2. "0s" means on/off control;* *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% 30% 50%	This key is not appliable on this product.
24h 12h 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 PIR HF+PIR HF/PIR	This key is not appliable on this product.

Additional Information / Documents

1. Regarding precautions for microwave sensor installation and operation, please kindly refer to www.hytronik.com/download ->knowledge ->Microwave Sensors - Precautions for Product Installation and Operation

2. Regarding Hytronik standard guarantee policy, please refer to www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy