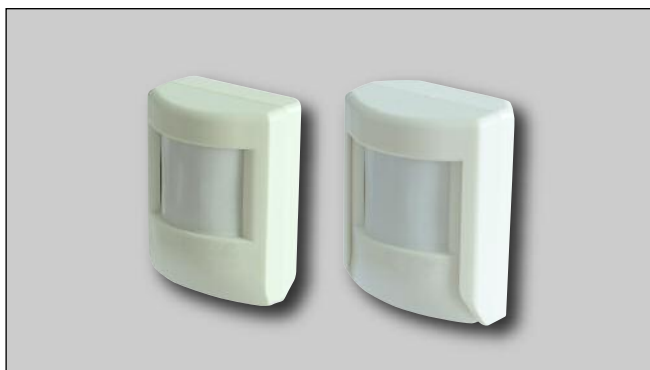


# Smart Dupline® Outdoor/Indoor PIR Sensor and Luxmeter Type SHSPP90Lx

CARLO GAVAZZI



- Passive infrared presence/movement detector with built-in luxmeter
- Light measuring range: 0 to 20 klux
- For outdoor and indoor applications (see type selection)
- Detects movement and presence
- Smart-house output
- Operating distance: 13 m
- Operating angle: 90°
- LED indication
- Supplied by bus

## Product Description

The SHSPP90Lx is a 90° PIR sensor to detect presence and/or movement in indoor installations with built-in luxmeter, combining two products in one. It is part of the smart-house concept and can be used to control lights, rollerblinds,

air-conditioning, intruder alarms and all the other functions supported by the smart-house system, in an automatic way depending on people-presence. This sensor is completely programmable via the SH tool.

## Ordering Key

**SH SP P 90 L A**

smart-house \_\_\_\_\_  
Wall mounting \_\_\_\_\_  
PIR sensor \_\_\_\_\_  
Detection angle \_\_\_\_\_  
Luxmeter \_\_\_\_\_  
Degree of protection \_\_\_\_\_

## Type Selection

Housing	Degree of protection	LED	Supply by bus
67 x 52 x 34 mm	IP64, outdoor version	1 blue	SHSPP90L
67 x 52 x 34 mm	IP20, indoor version	1 blue	SHSPP90LA

## Input Specifications

<b>Inputs</b>	PIR
Lens	Dual detecting zones
Angle	90°
<b>Operating Distance</b>	<13m
<b>Luxmeter</b>	
Characteristic deviation	-3% to +3%
Response time	It depends on the number of variables in the system
Sensor range	0 to 20 kLux
Output accuracy over temperature	0° to 40°C ± 10% -30° to 0°C ± 15% 40° to 60°C ± 20%

## Dupline® Output Specifications

<b>Voltage</b>	8.2 V
<b>Maximum Dupline® voltage</b>	10 V
<b>Minimum Dupline® voltage</b>	5.5 V
<b>Maximum Dupline® current</b>	6 mA

## Output Specifications

<b>Output</b>	
LED output	Blue LED

## Supply Specifications

<b>Power supply</b>	Supplied by bus
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## General Specifications

<b>Address assignment</b>	Automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the SH tool.	<b>Connection</b>	
		Screw terminal	0.2 to 1.5 mm <sup>2</sup>
		D+	Signal
		D-	GND
<b>Environment</b>		<b>Housing material</b>	
Degree of protection	IP 54 outdoor version IP 20 indoor version	Colour	White
Operating temperature	-20° to +50°C (+4° to +122°F)	Lens	Polyethylene
Storage temperature	-30° to +70°C (-22° to +158°F)	<b>Dimensions (WxHxD)</b>	67 x 52 x 34 mm
Humidity (non-condensing)	20 to 80 %	<b>Weight</b>	Approx. 110 g
		<b>Cable connection</b>	2 x 1.5 mm <sup>2</sup>
		<b>CE Marking</b>	Yes



General Specifications

<b>EMC</b>			
Immunity			
	- Electrostatic discharge	EN 61000-6-2	
	- Radiated radiofrequency	EN 61000-4-2	
	- Burst immunity	EN 61000-4-3	
	- Surge	EN 61000-4-4	
	- Conducted radio frequency	EN 61000-4-5	
- Power frequency magnetic fields		EN 61000-4-6	
		EN 61000-4-8	
	- Voltage dips, variations, interruptions		EN 61000-4-11
Emission			EN 61000-6-3
- Conducted and radiated emissions			CISPR 22 (EN55022), cl. B
- Conducted emissions			CISPR 16-2-1 (EN55016-2-1)
- Radiated emissions			CISPR 16-2-3 (EN55016-2-3)

Mode of Operation

This PIR sensor responds to any fluctuation in infrared heat radiation, so any object or human presence changes the thermal image detected by the sensor when entering its field of vision.

The sensor is equipped with a segmented lens that divides the field of vision into active and passive zones (zones not visible to the sensor, see figures 1, 2 and 3. When a heat source crosses these zones, the sensor detects the change in infrared radiation and presence and/or movement are recognised.

How sensitive and fast the sensor has to be to detect presence and/or movement can be programmed by means of four parameters, by means of the Sx tool.

The four parameters are: mode of detecting the

crossing of active zones, sensitivity, the number of pulses and the time window in which these pulses have to be detected. These four parameters have to be set for both presence and movement recognition.

Movement is used by the system in the intruder alarm function and to switch the light on, while presence is used in the light function to reload the energy-save timer (i.e. each time presence is detected, the energy-save timer starts counting from the beginning).

**1) Mode of detection**

A: one border between the active and the passive zone has to be crossed to give a pulse signal. This option has to be selected for presence detection and movement and turns the light on as

soon as a person moves from an active to a passive area or vice versa (very quick response).

B: two borders have to be crossed to give a pulse signal. The person has to move from an active area to another active area, passing through a passive one or vice versa.

This option is recommended for sensors used in the intruder alarm function, in order to avoid false alarms.

**2) Sensitivity**

A number can be set from 3 to 100: the smaller this value is, the longer the detection distance, but the higher the sensitivity to heating sources.

In the figures 1, 2 and 3, three examples of different sensitivity can be seen.

**3) Number of pulses**

The number of pulses is calculated according to mode A or B before sending a people detection message to the controller. This can be set from 1 to 8.

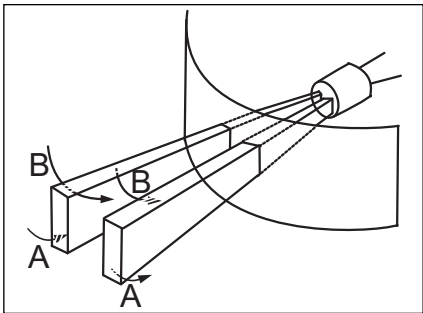
**4) Time window**

This is the time interval within which the predefined number of pulses is detected. It can be set from 1 to 10 seconds.

In the table below is an example of settings which, of course, might depend on environmental conditions, application and type of installation.

	Presence	Movement (light fx)	Movement (alarm fx)
Mode of detection	A	A	B
Sensitivity	10..30	30..70	50..100
Number of pulses	1	1	3
Time window	10	2	10

Active and passive zones



## Mode of Operation (cont.)

Fig. 1: sensitive area 0°

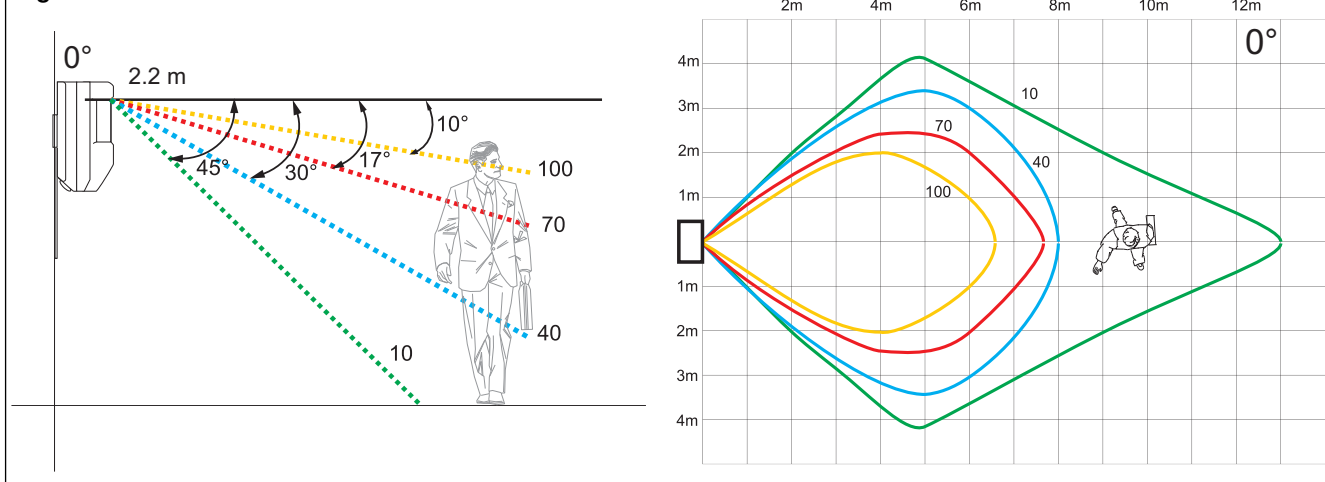


Fig. 2: sensitive area 25°

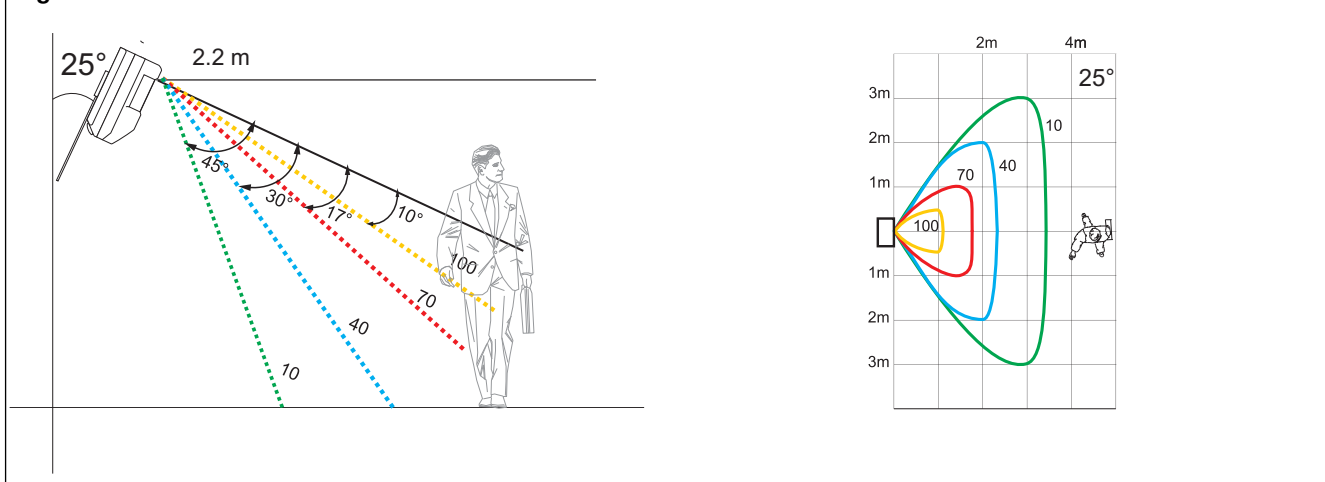
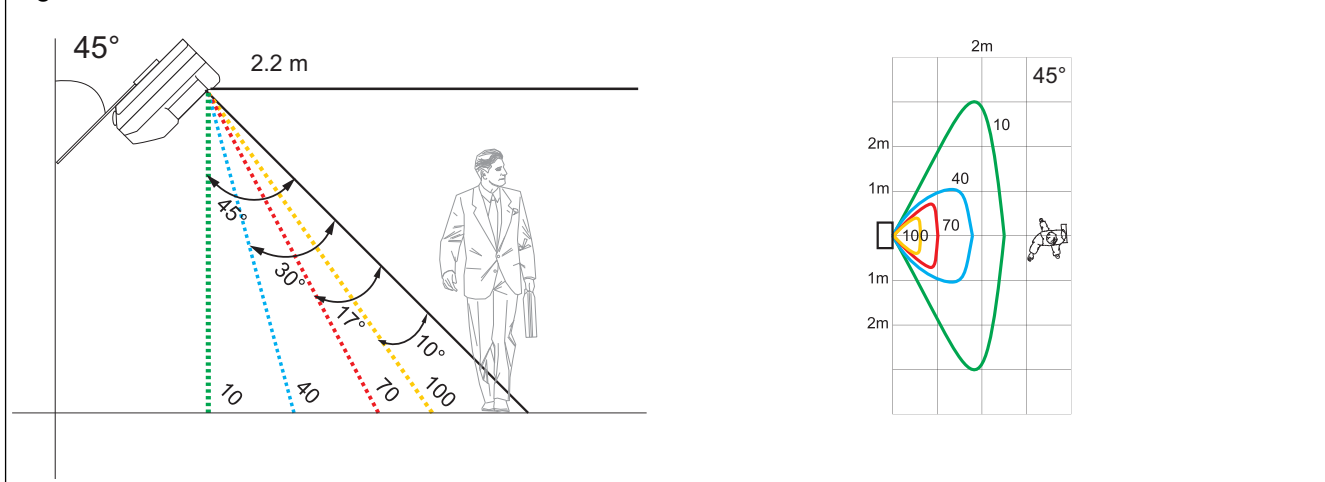


Fig. 3: sensitive area 45°



## Mode of Operation (cont.)

### LED programming

There is one configurable LED (blue) on board the SHSPP90Lx to be programmed.

**Blue LED:** the user can select one of the following options:

1. LED always OFF
  2. LED flashes shortly every seconds if a presence/movement is detected
  3. LED flashes shortly every seconds if it is used as feedback of a function status
- If the blue LED is not programmed, it is always OFF.

### Coding/Addressing

No addressing is needed since the module is provided with a specific identification number (SIN): the user has only to insert the SIN number in the Sx tool when creating the system configuration.

Used channel: 3 input channels, 1 output channel.

## Mounting

The PIR detector is designed for wall mounting. As the SHSPP90Lx is a passive device, several detectors can be placed in the same room without interfering with each other. The module should not be installed as follows:

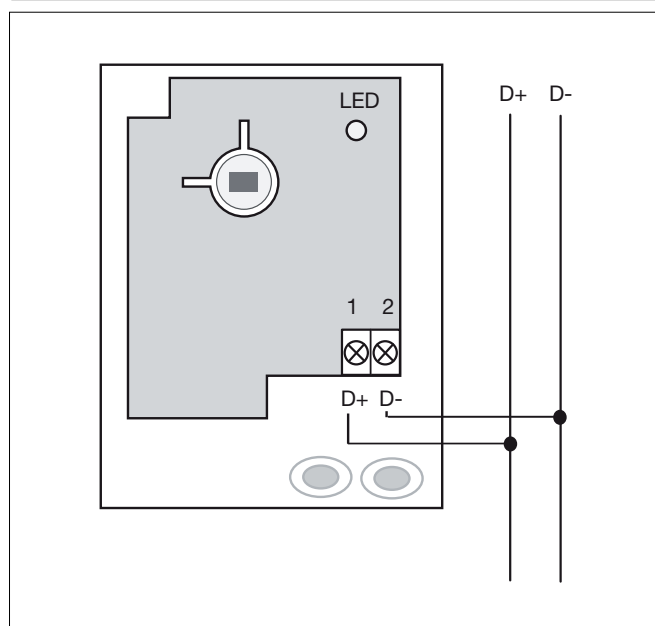
- a) In places exposed either to sunlight or to motor vehicle headlights pointing directly at the sensor.
- b) In places exposed to direct air flow from a heater or air conditioner.
- c) In places where rapid temperature changes occur.

- d) In places exposed to severe vibration.
- e) Close to glass or other objects which might reflect the infrared radiation.

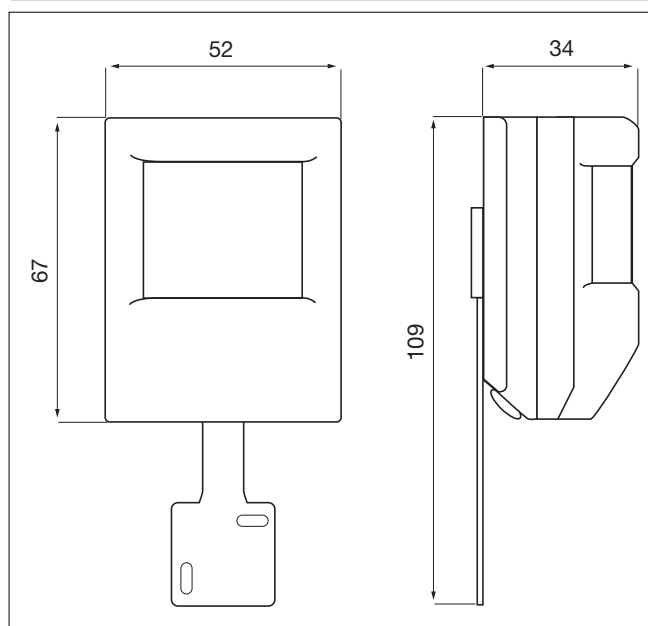
the area where presence has to be detected is completely covered by the sensitive area of the sensor. See figures 1, 2 and 3.

**Note:** If the sensor is to detect presence, please be careful to mount it so that

## Wiring Diagram



## Dimensions



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