

Smart Dupline® Outdoor/Indoor PIR Sensor Type BSP-PIR90x-U

CARLO GAVAZZI



- Passive infrared detector (PIR)
- 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 BSP-PIR90x-U is a 90° PIR sensor to detect presence and/or movement in indoor installations. 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 Sx tool.

Ordering Key

B SP PIR 90 x U

Wall mounting _____
PIR sensor _____
Detection angle _____
Degree of protection _____
Smart Dupline® _____

Type Selection

Housing	Degree of protection	LED	Supply by bus
67 x 52 x 34 mm 67x52x34 mm	IP54, outdoor version IP20, indoor version	1 blue 1 blue	BSP-PIR90-U BSP-PIR90A-U

Input Specifications

Inputs	PIR
Lens	Dual detecting zones
Angle	90°
Operating Distance	≤13m

Dupline® Output Specifications

Voltage	8.2 V
Maximum dupline® voltage	10 V
Minimum dupline® voltage	5.5 V
Maximum dupline® current	4.3 mA

Output Specifications

Output	
LED output	blue LED

Supply Specifications

Power supply	Supplied by bus
---------------------	-----------------

General Specifications

Channel coding / Address assignment	If it is used with the Sx2WEB24 the address assignment is automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the Sx tool. If it used with the BH8-CTRLX-230, the channels have to be programmed by the BGP-COD-BAT	Connection Screw terminals D+ D- Material Housing Colour Lens	0.2 to 1.5 mm ² Signal GND White Polyethylene
Environment Degree of protection Pollution degree Operating temperature Storage temperature	IP 54 outdoor version IP 20 indoor version 3 -20° to +50°C (+4° to +122°F) -30° to +70°C (-22° to +158°F)	Dimensions (WxHxD) Weight Approvals CE Marking	67 x 52 x 34 mm Approx. 110 g cULus according to UL60950 (only BSP-PIR90A-U) UL notes: Max ambient temperature: 40°C Yes

General Specifications (cont.)

EMC Immunity - Electrostatic discharge - Radiated radiofrequency - Burst immunity - Surge - Conducted radio frequency - Power frequency magnetic fields	EN 61000-6-2 EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-8	- Voltage dips, variations, interruptions Emission - Conducted and radiated emissions - Conducted emissions - Radiated emissions	EN 61000-4-11 EN 61000-6-3 CISPR 22 (EN55022), cl. B CISPR 16-2-1 (EN55016-2-1) 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 if the sensor is controlled by a master unit Sx2WEB24 or by using the programmer BGP-

COD-BAT if the sensor is connected to a BH8-CTRLX-230.

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.

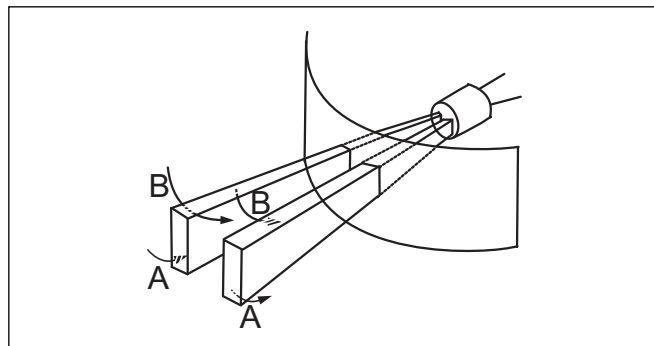
4) Time window

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°

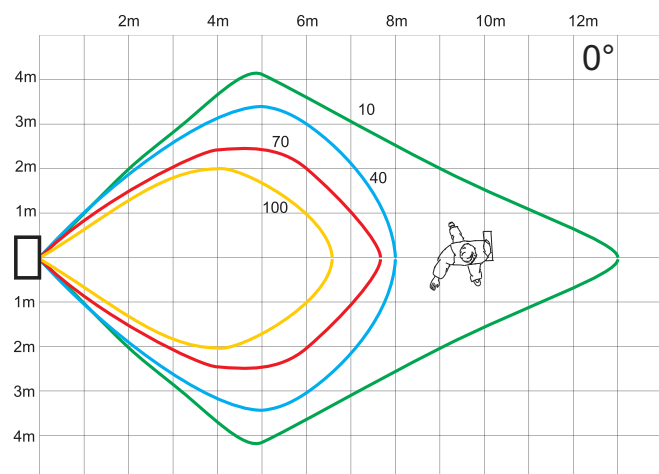
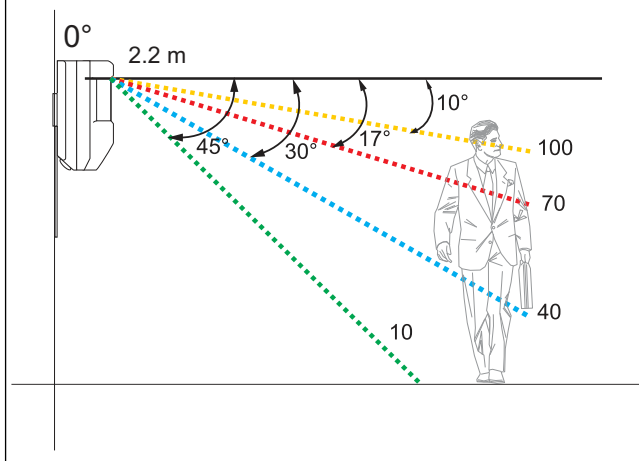


Fig. 2: sensitive area 25°

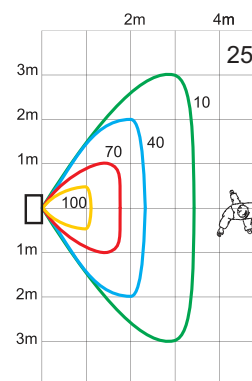
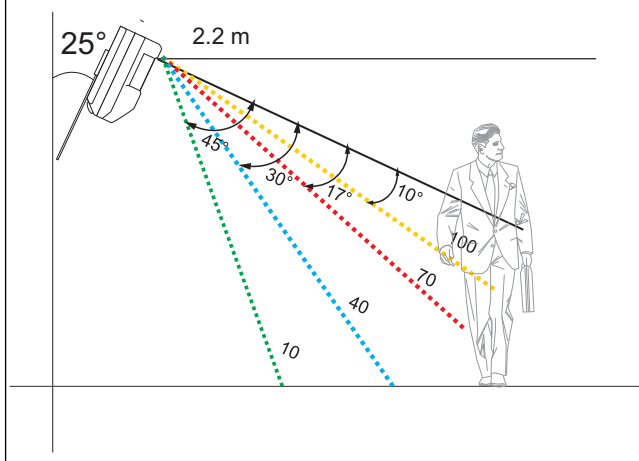
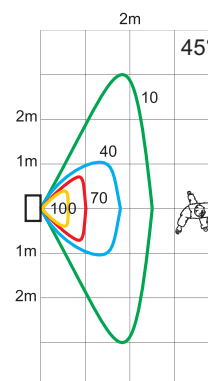
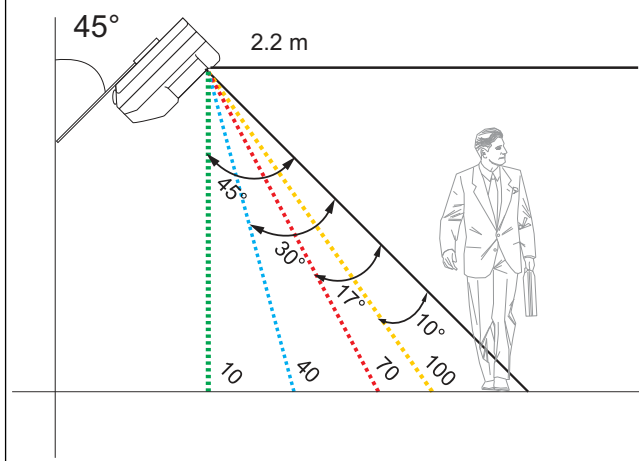


Fig. 3: sensitive area 45°





Mode of Operation (cont.)

BSP-PIR90x-U connected to the Sx2WEB24

If the PIR sensor is connected to the Sx2WEB24, the number of pulses for presence and movement detection, the interval period, the sensitivity as well as the LED functions are programmed with a very user friendly interface in the tool (see Sx tool manual). The detection speed (number of pulses in a time interval) and the sensitivity have to be defined as described above.

LED programming

There is one configurable LED (blue) on board the BSP-PIR90x-U to be programmed.

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

- 1.LED always OFF
- 2.LED ON when a presence is detected
- 3.LED ON when a movement is detected

If the blue LED is not programmed, it is always OFF.

Coding/Addressing

If the input module is connected to the Sx2WEB24 controller, 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.

BSP-PIR90x-U connected to the BH8-CTRLX-230 - Coding/Addressing

If the input module is connected to the BH8-CTRLX-230 controller, the user has to program the Dupline® channels using the BGP-COD-BAT. In this case, the sensor will detect movement but not presence.

The module has the following channels:

- I/O 1: PIR input
- I/O 2: Not used
- I/O 3: Not used
- I/O 4: Sensitivity

Sensitivity	
I/O 4	Dimension of the detected object
N1	96
N2	80
N3	64
N4	48
N5	32
N6	16

If no channels are programmed, the default value is 3 metres.

I/O 5: Blue Led output
I/O 7: Movement pulses detection

Number of pulses	
I/O 7	Pulses
O1	1
O2	2
O3	3
O4	4
O5	5
O6	6
O7	7
O8	8

If no channels are pro-

grammed, the default value is 3 pulses.

I/O 8: Time interval

Time Interval	
I/O 8	Seconds
P1	0.8
P2	1.6
P3	2.4
P4	3.2
P5	4.0
P6	4.8
P7	5.6
P8	6.4

If no channels are programmed, the default value is 2.4 seconds.

Mounting

The PIR detector is designed for wall mounting. As the BSP-PIR90x-U is a passive device, several detectors can be placed in the same room without interfering with each other. The module should not be

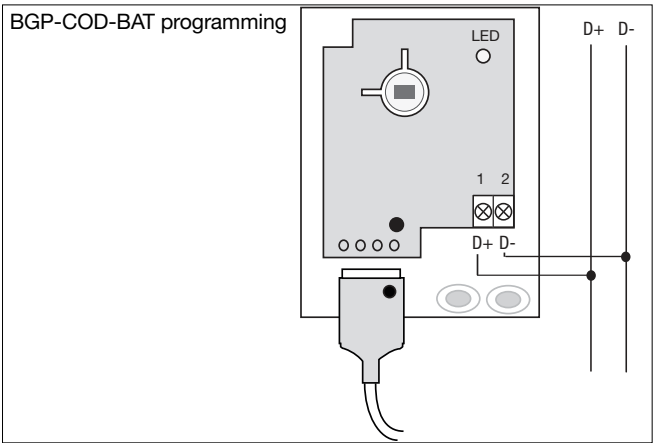
installed as follows:

- 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.

Note: If the sensor is to detect presence, please be careful to mount it so that the area where presence has to be detected is completely covered by the sensitive area of the sensor. See figures 1, 2 and 3.

Wiring Diagram



Dimensions (mm)

