Smart Dupline®
PIR Sensor for Ceiling
Type BSB-PIR90-U

CARLO GAVAZZI

- Passive infrared detector (PIR)
- Detects movement and presence
- Indoor applications
- Smart-house output
- Operating distance: max. 8 m
- Operating angle: 90°
- LED indication
- Supplied by bus
- Mounting in LK ceilingbox PL52 or PL55

Product Description

The BSB-PIR90-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 SH tool.

Ordering Key

B SB PIR 90 U

Ceiling mounting
Pir sensor
Detection angle
Smart-Dupline®

Type Selection

Housing	Colour	LED	Supply by bus
Ø 76 x 25 mm	White	1 blue	**BSB-PIR90-U**

Input Specifications

Inputs	PIR
Lens	Dual detecting zones
Angle	90°
Operating Distance	≤ 8 m

Dupline® Output Specifications

Voltage	8.2 V
Maximum dupline® voltage	10 V
Minimum dupline® voltage	5.5 V
Maximum dupline® current	4.6 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 SH2WEB24 the address assignment is automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the SH tool. If it used with the BH8-CTRLX-230, the channels have to be programmed by the BGP-COD-BAT
Enclosure	LK PL-box Mechanics

Environment	
Degree of protection	IP 20
Pollution degree	3 (IEC 60664)
Operating temperature	0° to +50°C (+32° to +122°F)
Storage temperature	-20° to +70°C (-4° to + 158°F)
Humidity (non-condensing)	20-80 %
Connection	
Screw terminal	0.2 to 1.5 mm²
D+	Signal
D-	GND
Dimensions	Ø 76 x 25 mm
Weight	25 g

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General Specifications (cont.)

Approvals	cULus, according to UL60950 **UL notes:** Max ambient temperature: 40°C
CE Marking	Yes
EMC	
Immunity	EN 61000-6-2
- Electrostatic discharge	EN 61000-4-2
- Radiated radiofrequency	EN 61000-4-3
- Burst immunity	EN 61000-4-4
- Surge	EN 61000-4-5

- Conducted radio frequency	EN 61000-4-6
- Power frequency magnetic fields	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 "Horizontal and Vertical sensitive area"). 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 SH tool if the sensor is controlled by a master unit SH2WEB24 or by using the programmer BGP-COD-BAT if the sensor is connected to a BH8-CTR-LX-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 figure "Horizontal and Vertical sensitive area", 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.
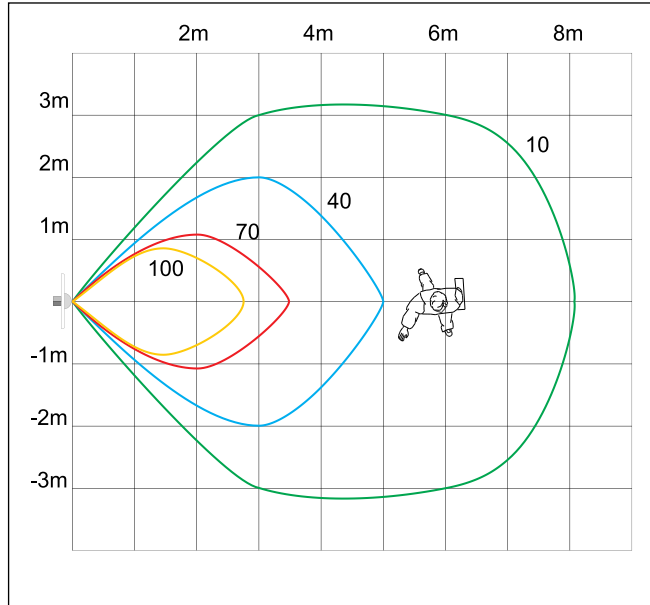
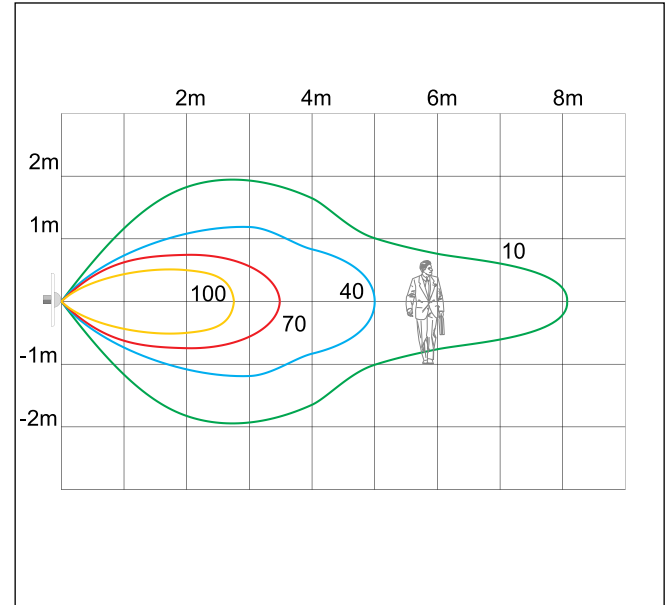|	Presence	Movement (light fx)	Movement (alarm fx)
Mode of detection	A	A	B
Sensitivity	10..30	30..70	50..100
Number of pulses	1	1	3
Time window	10	2	10

Active and passive zones
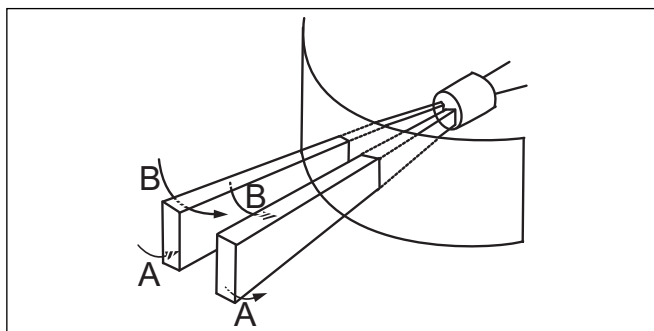
Mode of Operation (cont.)

Horizontal sensitive area

Vertical sensitive area

BSB-PIR90-U connected to the SH2WEB24
If the PIR sensor is connected to the SH2WEB24, 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 SH 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 BSB-PIR90-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 SH2WEB24 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 SH tool when creating the system configuration.
Used channel: 2 input channels, 1 output channel.

BSB-PIR90-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: Blue LED
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: Not used
I/O 6: Not used
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 programmed, 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.

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Mounting

The PIR detector is designed for ceiling mounting. As the BSB-PIR90-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:
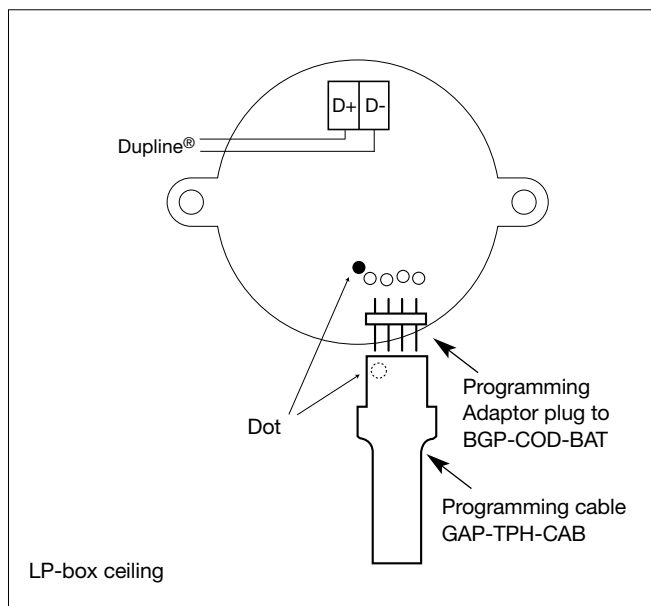
a) Outdoors.
b) In places exposed either to sunlight or to motor vehicle headlights pointing directly at the sensor.
c) In places exposed to direct air flow from a heater or air conditioner.
d) In places where rapid temperature changes occur.
e) In places exposed to severe vibration.
f) Close to glass 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 "Horizontal and Vertical sensitive area"

Wiring Diagram

D+ D-

Dupline®

Dot

Programming Adaptor plug to BGP-COD-BAT

Programming cable GAP-TPH-CAB

LP-box ceiling

Dimensions

76 mm

55 mm

25 mm

Specifications are subject to change without notice (25.09.15)