Combined Motion and Presence Detector for Automatic Curved and Straight Sliding Doors GUARDIAN 2

CARLO GAVAZZI

- Overhead sensor for curved and straight sliding doors
- Motion and presence detection in one unit
- Digital Video Camera Technology
- Easy teach of presence zone
- Environmental adaptation
- No Crosstalk between sensors
- Separate motion and presence output
- 2 x SPST relay outputs
- Supply voltage: 12 to 24 VAC/DC
- LED indication for: Power, Motion and Presence
- CE, UL325 and TÜV approved

CE TÜV NORD Baumuster geprüft c UL us

Product Description

The GUARDIAN 2 is an overhead sensor for pedestrian sliding doors. The sensor has combined motion and presence (safe) detection zones. The sensor is based on CMOS camera technology and detection on image processing. The motion zone reacts only to movement whereas the presence zone reacts to both movement and presence. The motion zone can be blanked in 3 directions (front, left and right) in order to avoid detection of unwanted objects. The presence zone is taught into the sensor by recognition of standard test targets in the setup phase - it will adapt to the shape of a curved or straight sliding door. The presence zone also adapts to the surroundings to work in different weather conditions. The sensor has separate outputs for the motion and presence zones as well as a test input to test the sensor function for each door cycle.

Ordering Key

GUARDIAN 2

Type Selection

Housing size	Ordering no.
210 x 77 x 58 mm	GUARDIAN 2

Specifications

Rated operational voltage (U_e)	12 - 24 VAC (12 - 24 VCA) RMS incl. ripple 50-60 Hz, ±15% tolerance 12 - 24 VDC (12 - 24 VCC) ±15% tolerance		Test input* Active high: Active low:	Max. input current 5 mA ON > 9 VAC/VDC OFF < 6 VAC/VDC ON < 6 VAC/VDC OFF > 9 VAC/VDC
No load supply current (I_e)	**Typical** 192 mA 146 mA 103 mA 65 mA	**Max.** 230 mA @ 12V AC 170 mA @ 12V DC 120 mA @ 24V AC 80 mA @ 24V DC	Sensitivity	Adjusting in 7 steps
			Presence zone reaction time Reaction time: Fall time:	210 ms (20% contrast, object speed 1 m/s, test body CA (DIN18650-1)) 500 ms
Technology	Digital video camera technology		Motion zone reaction time Reaction time:	1,2 s (20% contrast, object speed 1 m/s, test body CA (DIN18650-1))
Power ON delay	5 seconds			
Output function* Safety and Motion Zone Common relay data: Operations minimum Operations minimum	Relay – SPST 1A DC 30VDC 600.000 @ 0,5A, 50 VAC/ 30 VDC 100.000 @ 1A, 30 VDC		Fall time:	500 ms

* UL connected to supply class 2

CARLO GAVAZZI

Specifications (cont.)

Presence time (Background relearn time)	7 step rotary switch
In accordance with DIN18650	1 min, 5 min.
Not in accordance with DIN18650	10 sec, 30 sec.
Vibration	10 to 150 Hz 0.5 mm/7.5g (IEC 60068-2-6)
Shock	2 x 1 m and 100 x 0.5 m (IEC 60068-2-32)
Ambient temperature range**	
Operating	-25° to +55°C (-13° to +131°F)
Store	-25° to +80°C (-13° to +176°F)
Ambient light	10 lux - 50.000 lux
	40 lux - 50.000 lux, TÜV approved, measured at the sensor surface
Contrast	Min. 20% contrast between the floor and object
Material	
Housing and cover	ABS Black
Front glass	Clear transparent, polycarbonate.
Connection cable	3 m 8 x 0,14 mm² LIYY grey Max. cable length: 10 m.
Environment protection	IP64 (EN 60529, 60947-1)
Installation category	III (IEC 60664 / 60664A / EN 60947-1)
Pollution degree	3 (IEC 60664 / 60664A / EN 60947-1)
Humidity	0 % to 90 % relative, non condensing

** UL approved temperature range -25° to +40°C (-13° to +104°F)

Type of ESPE Type 2	The sensing functions have to be tested for each door cycle by applying a test signal to the terminals 2+3. See test input.
LED indications	
Green LED	Power ON
Yellow LED	Motion detected
Red LED	Presence detected For special LED functions see page 3
Rated Insulation voltage	50 VDC
Weight	460 g
Electromagnetic compatibility	In acc. with EMC directive 2004/108/EG Immunity in acc. with EN61326-1 and EN61326-3-1
Marking	CE
TÜV-Approval	In acc. with machinery directive 2006/42/EC, annex I DIN 18650-1 § 5.7.4, edition 2005 (prEN16005), EN13241-1, EN 12978, edition 2003, EN61508, edition 2001, ENISO13849-1: 2008 cat.2 pl. c for presence detection
UL-Approval cᴿᵁus	UL325, CSA-C22.2 No.247

Specifications straight sliding door

Motion zone sensing area	(W x D)
Height 180 cm	246 x 204 cm
Height 220 cm	300 x 249 cm
Height 300 cm	410 x 340 cm The motion area can be blanked from left, right and front in 7 steps on three rotary switches
Presence zone sensing area	(W x D)
Height 180 cm	42 cm x door width
Height 220 cm	51 cm x door width
Height 300 cm	70 cm x door width
Mounting height	1.8 m to 3.0 m
Placement of sensor	
Horisontal distance from door	max 50 cm in front of the door. The sensor must be able to see the door opening.
Vertical distance from door	10 cm from the top of the door opening

Specifications curved sliding door

Door radius size as a function of mounting height	
Height 200 cm	Radius 130 cm
Height 250 cm	Radius 170 cm
Height 300 cm	Radius 200 cm
Sensor distance from curved door (a) as a function of curved door radius (Fig. 1)	
Radius 80 cm	Distance 8.2 cm
Radius 90 cm	Distance 10.2 cm
Radius 100 cm	Distance 12.2 cm
Radius 110 cm	Distance 14.3 cm
Radius 120 cm	Distance 16.7 cm
Radius 130 cm	Distance 18.7 cm
Radius 140 cm	Distance 21.0 cm
Radius 150 cm	Distance 23.4 cm
Radius 160 cm	Distance 25.8 cm
Radius 170 cm	Distance 28.3 cm
Radius 180 cm	Distance 30.8 cm
Radius 190 cm	Distance 33.3 cm
Radius 200 cm	Distance 35.9 cm
Mounting height	1.8 m to 3.0 m

CARLO GAVAZZI

Operation Diagram

Power supply	
Motion detected	
Output motion NO	
Output motion NC	Tv.
Presence detected	
Test activated HIGH	
Test activated LOW	
Output safe NO	t_1 t_2 **FAULT**
Output safe NC	Tv. t_1 t_2 Tv. t_1 t_2 **FAULT**

Tv = Power On Delay   T1 = 150 ms   T2 = 10 - 850 ms
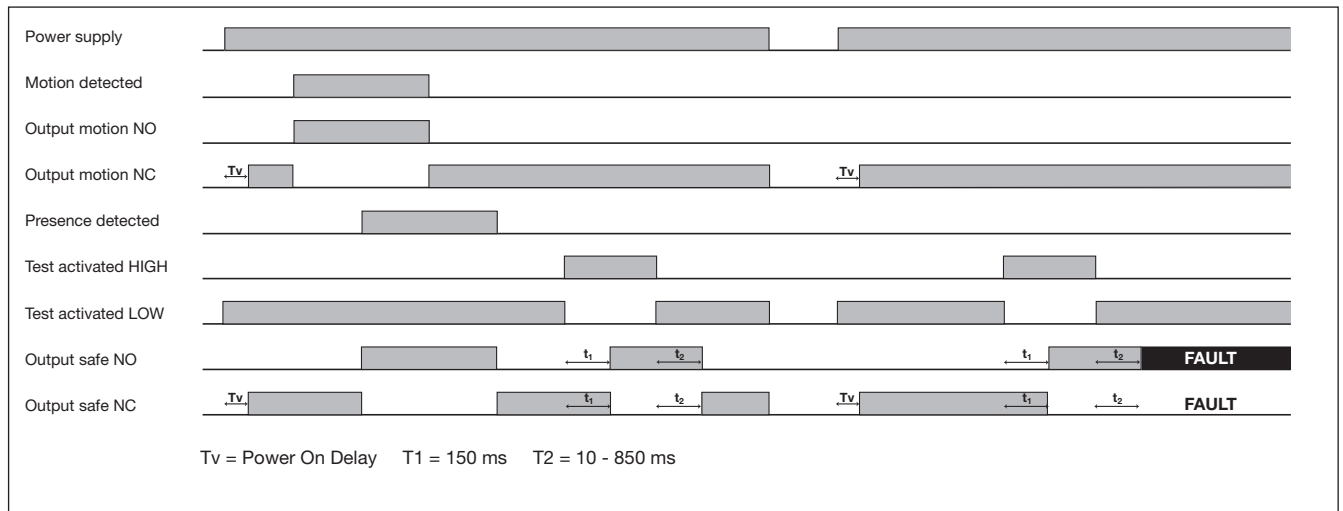
Fig. 1

Horizontal distance to door (a)

Component Guide

A   DIP-switches for initial settings
B   Presence time settings
C   Sensitivity
D   Connector
E   LED Indications
F   Motion area limitation switches
G   Camera
H   Teach button
I   Presence zone
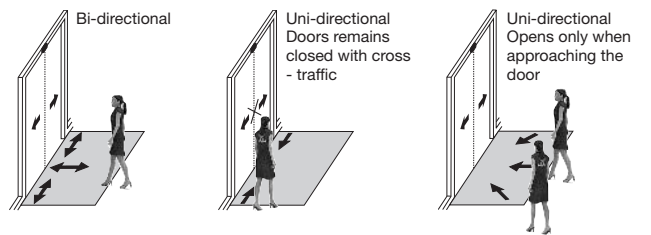J   Motion zone
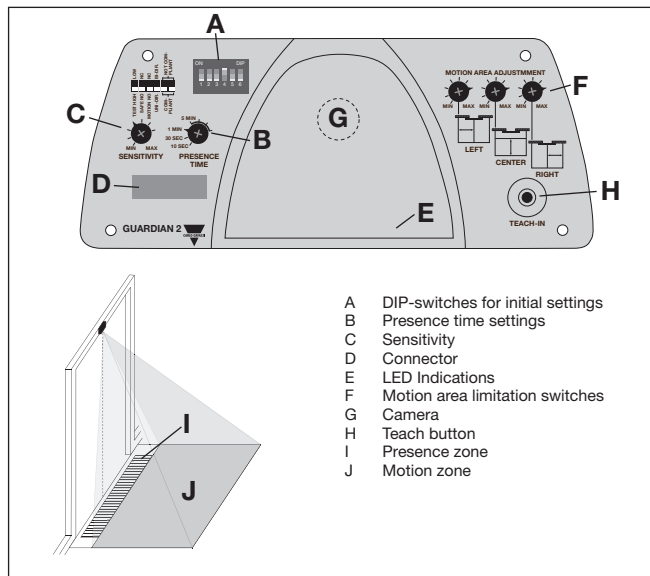
DIP-Switch Settings

Set up the DIP-switches to match the door controller.

DIP-switch 1 - Sensor test input
Test input Active Low
Test input Active High

DIP-switch 2 - Safety output
Normally closed (NC)
Normally open (NO)

DIP-switch 3 - Motion output
Normally closed (NC)
Normally open (NO)

DIP-switch 4 - Direction recognittion
Bi-directional mode
Uni-directional mode)

Bi-directional

Uni-directional Doors remains closed with cross - traffic

Uni-directional Opens only when approaching the door

DIP-switch 5 and 6
Not in accordance with DIN18650-1 (prEN16005)
In accordance with DIN18650-1 (prEN16005)
Not valid (red LED flashes and output relays is set in safe mode)