



## **Guardian 2 - The Vision Sensor for Doors**

# **Sensors**

# GUARDIAN 2

## The vision sensor for doors

Guardian 2 is a unique and innovative stand alone vision sensor which includes both motion and presence detection and provides maximum safety and protection in pedestrian door systems. It has been developed to adjust to straight as well as to curved sliding doors. Equipped with the latest digital video camera technology, Guardian 2 watches over the entrance and exit area safeguarding people within, while at the same time controlling the doors.

Guardian 2 is able to ignore cross traffic and it has a brilliant capability of self-adjusting to changes in the environment and weather conditions.

Combining door automation and safety, Guardian 2 is the most advanced stand alone door sensor on the market today.



### Advanced technology yet simple adjustment

#### **Motion and presence detector in one**

Guardian 2 operates with a large motion zone where only moving objects are detected and a presence zone dedicated to both moving and static objects.

#### **Curved and straight sliding doors**

Guardian 2 adapts to the shape of curved as well as straight sliding doors.

#### **Clearly defined detection area**

Guardian 2 has a large and well-defined detection zone. In addition, its motion zone can easily be reduced (blanked) in three directions in order to obtain the ideal detection zone.

#### **Easy and quick to set up**

Adjustment can be done using merely a screwdriver and the sensor is fine-tuned by the press of a button.

The presence zone is easily set up by means of test targets and a simple teach procedure.

#### **Digital video camera technology - no crosstalk**

Due to its vision-based detection principle, Guardian 2 is a passive unit. Therefore, it is immune to crosstalk from infrared or radar devices, just as it will not interfere with sensitive devices in the environment.

#### **Safety first**

Guardian 2 offers an advanced self-diagnostic system that checks for internal faults and faults coming from the surroundings. For instance, in case of malfunction, the sensor will keep the doors open and warn about the fault condition using the built-in LEDs.

#### **Approvals**

TÜV-certified according to DIN 18650-1 (prEN 16005).

UL-certified according to UL325



## Applications

### Pedestrian door systems

Guardian 2 is the ideal choice for any automatic door application that requires a high level of security and straightforward mounting and adjustment facilities.

The sensor is particularly suitable for installations with complex challenges such as hospitals with sensitive equipment or stores with special demands on a flexible motion zone.



Curved sliding doors



Straight sliding doors

## Features and benefits

### Camera - VGA 480 x 600 pixels

Guardian 2 is the first stand alone sensor based on passive CMOS (complementary metal-oxide semiconductor) camera technology.

Detection is determined by means of an advanced image processing unit. Its 1/4" lens involves a wide angle ensuring a large detection area.

### DIP-switches for initial settings

To match the door controller, the six DIP-switches provide the following settings:

Test input high or low.

Safe output - normally open or closed.

Motion output - normally open or closed.

Uni- or bi-directional selection.

Accordance with DIN 18650.

### Presence time settings

The presence time defines the duration of time in which the door is kept open when an object is present and not moving in the presence zone. If there has been no movement when the presence time expires, the object will be stored as part of the background. The presence time can be set on the rotary switch for 10 seconds, 30 seconds, 1 minute or 5 minutes.

### No interference

Since no electronic signals are emitted from the sensor, no mutual disturbance will occur between sensors placed close to or next to each other.

The sensor does not disturb sensitive devices in its surroundings such as medical equipment, alarm systems etc.



### Teach-in

The presence zone is set up within seconds by means of a simple "Teach" procedure. The zone adapts to the shape of the curved or straight sliding door.

### Environmental adaptation

Guardian 2 automatically adjusts itself to changes in the environment - such as store displays placed in the presence zone, sunrise and seasonal changes, such as leaves, snow etc.

### Motion zone

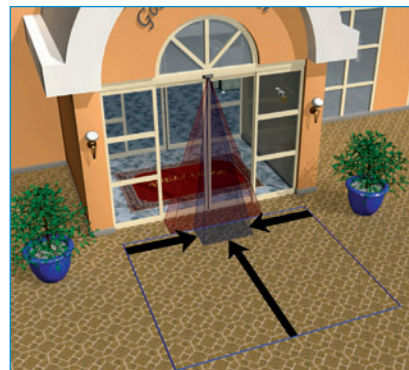
The motion zone is easily reduced - "blanked" - in three directions (left, right and front) using the 7 step rotary switches "Left", "Center" or "Right".



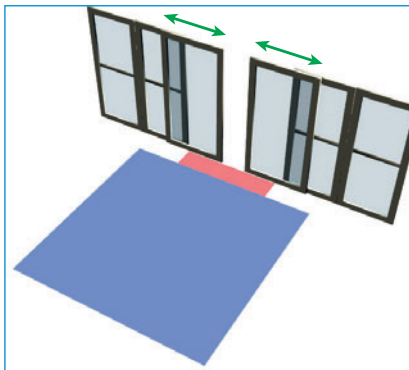
## Features and benefits

### Flexible motion zone

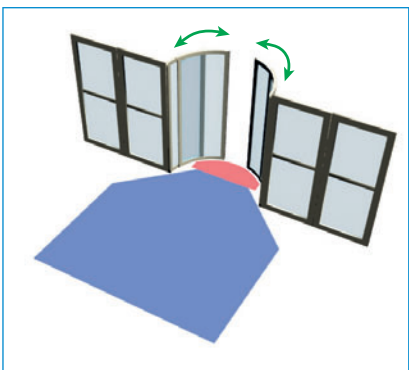
Guardian 2 offers a large motion area covering up to 3x3 m. When circumstances so require, the motion zone can be reduced to its ideal size to meet challenges in the immediate surroundings.



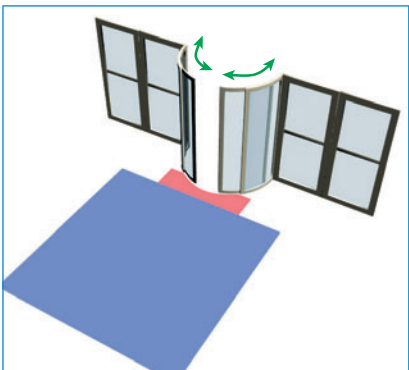
### Type of door



Straight sliding doors



Curved sliding doors - inside



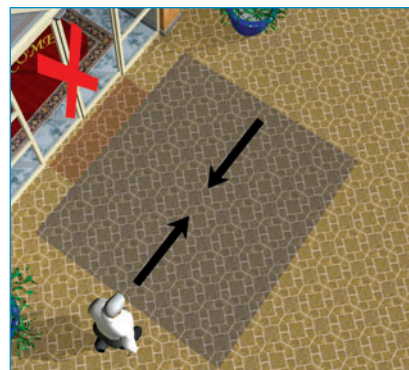
Curved sliding doors - outside

### Presence zone: Bi- and uni-directional operating modes

Guardian 2 features two operating modes:

**Bi-direction:** any movement in the motion or presence zone will open the door.

**Smart uni-direction with cross-walk prevention:** the sensor recognizes movement and will open the door only when registering traffic towards it. Cross-traffic passing the door is ignored. This feature minimizes unnecessary door activity, reducing costs and energy consumption.





## Technical specifications

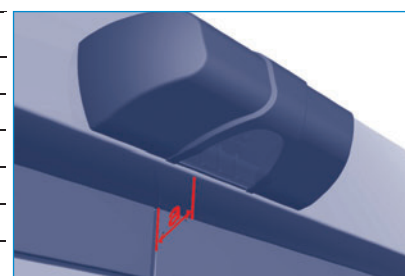
Rated operational voltage	12-24 V AC/DC		
No load supply current	Typical 192 mA 146 mA 103 mA 65 mA	Max. 230 mA 170 mA 120 mA 80 mA	@12 V AC @ 12V DC @ 24V AC @ 24V DC
Technology	Digital video camera technology		
Power ON delay	5 seconds		
Output function	Safety and Motion Zone Common relay data Operations minimum Operations minimum	Relay – SPST 1A DC 30VDC 600,000 @ 0.5A, 50 VAC/30 VDC 100,000 @ 1A, 30 VDC	
Test input	Max. input Tech Active low ON < 6 VAC/VDC OFF > 9 VAC/VDC		
Sensitivity	Adjustment 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	
Motion zone reaction time	Reaction time Fall time	1.2 s (20% contrast, object speed 1 m/s, test body CA (DIN18650-1)) 500 ms	
Presence time	(Background relearn time) In accordance with DIN18650 Not in accordance with DIN18650	7 step rotary switch 1 min, 5 min 10 sec, 30 sec	
Ambient temperature range	Operating Store	-25° to +55°C (-13° to +131°F) -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		
Mounting height	1.8 m to 3.0 m		
Material	Housing and cover Front glass	ABS Black Clear transparent polycarbonate	

## Straight and curved sliding doors

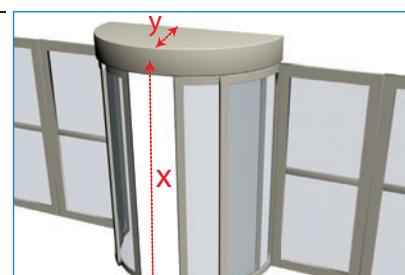
Motion zone sensing area (W x D)		Presence zone sensing area	
Height 180 cm	246 x 204 cm	Height 220 cm	42 cm x door width, max 246 cm
Height 220 cm	300 x 249 cm	Height 220 cm	51 cm x door width, max 300 cm
Height 300 cm	410 x 340 cm	Height 300 cm	70 cm x door width, max 410 cm

## Curved sliding doors

Sensor distance from curved door (a) as a function of curved door radius			
Radius 80 cm	Distance 8.2 cm	Radius 150 cm	Distance 23.4 cm
Radius 90 cm	Distance 10.2 cm	Radius 160 cm	Distance 25.8 cm
Radius 100 cm	Distance 12.2 cm	Radius 170 cm	Distance 28.3 cm
Radius 110 cm	Distance 14.3 cm	Radius 180 cm	Distance 30.8 cm
Radius 120 cm	Distance 16.7 cm	Radius 190 cm	Distance 33.3 cm
Radius 130 cm	Distance 18.7 cm	Radius 200 cm	Distance 35.9 cm
Radius 140 cm	Distance 21 cm		



Door radius size (y) as a function of mounting height (x)	
Height 200 cm	Radius 130 cm
Height 250 cm	Radius 170 cm
Height 300 cm	Radius 200 cm



## OUR SALES NETWORK IN EUROPE

### AUSTRIA

Carlo Gavazzi GmbH  
Ketzergasse 374,  
A-1230 Wien  
Tel: +43 1 888 4112  
Fax: +43 1 889 10 53  
office@carlogavazzi.at

### BELGIUM

Carlo Gavazzi NV/SA  
Mechelsesteenweg 311,  
B-1800 Vilvoorde  
Tel: +32 2 257 4120  
Fax: +32 2 257 41 25  
sales@carlogavazzi.be

### DENMARK

Carlo Gavazzi Handel A/S  
Over Hadstenvej 40,  
DK-8370 Hadsten  
Tel: +45 89 60 6100  
Fax: +45 86 98 15 30  
handel@gavazzi.dk

### FINLAND

Carlo Gavazzi OY AB  
Petaksentie 2-4,  
FI-00661 Helsinki  
Tel: +358 9 756 2000  
Fax: +358 9 756 20010  
myynti@gavazzi.fi

### FRANCE

Carlo Gavazzi Sarl  
Zac de Paris Nord II, 69, rue de la Belle Etoile,  
F-95956 Roissy CDG Cedex  
Tel: +33 1 49 38 98 60  
Fax: +33 1 48 63 27 43  
french.team@carlogavazzi.fr

### GERMANY

Carlo Gavazzi GmbH  
Pfnorstr. 10-14  
D-64293 Darmstadt  
Tel: +49 6151 81000  
Fax: +49 6151 81 00 40  
info@gavazzi.de

### GREAT BRITAIN

Carlo Gavazzi UK Ltd  
4.4 Frimley Business Park,  
Frimley, Camberley, Surrey GU16 7SG  
Tel: +44 1 276 854 110  
Fax: +44 1 276 682 140  
sales@carlogavazzi.co.uk

### ITALY

Carlo Gavazzi SpA  
Via Milano 13,  
I-20020 Lainate  
Tel: +39 02 931 761  
Fax: +39 02 931 763 01  
info@gavazziacbu.it

### NETHERLANDS

Carlo Gavazzi BV  
Wijkmeeweg 23,  
NL-1948 NT Beverwijk  
Tel: +31 251 22 9345  
Fax: +31 251 22 60 55  
info@carlogavazzi.nl

### NORWAY

Carlo Gavazzi AS  
Melkeveien 13,  
N-3919 Porsgrunn  
Tel: +47 35 93 0800  
Fax: +47 35 93 08 01  
post@gavazzi.no

### PORTUGAL

Carlo Gavazzi Lda  
Rua dos Jerónimos 38-B,  
P-1400-212 Lisboa  
Tel: +351 21 361 7060  
Fax: +351 21 362 13 73  
carlogavazzi@carlogavazzi.pt

### SPAIN

Carlo Gavazzi SA  
Avda. Iparraguirre, 80-82,  
E-48940 Leioa (Bizkaia)  
Tel: +34 94 480 4037  
Fax: +34 94 431 6081  
gavazzi@gavazzi.es

### SWEDEN

Carlo Gavazzi AB  
V:a Kyrkogatan 1,  
S-652 24 Karlstad  
Tel: +46 54 85 1125  
Fax: +46 54 85 11 77  
info@carlogavazzi.se

### SWITZERLAND

Carlo Gavazzi AG  
Verkauf Schweiz/Vente Suisse  
Sumpfstrasse 3,  
CH-6312 Steinhausen  
Tel: +41 41 747 4535  
Fax: +41 41 740 45 40  
info@carlogavazzi.ch

## OUR SALES NETWORK IN THE AMERICAS

### USA

Carlo Gavazzi Inc.  
750 Hastings Lane,  
Buffalo Grove, IL 60089, USA  
Tel: +1 847 465 6100  
Fax: +1 847 465 7373  
sales@carlogavazzi.com

### CANADA

Carlo Gavazzi Inc.  
2660 Meadowvale Boulevard,  
Mississauga, ON L5N 6M6, Canada  
Tel: +1 905 542 0979  
Fax: +1 905 542 22 48  
gavazzi@carlogavazzi.com

### MEXICO

Carlo Gavazzi Mexico S.A. de C.V.  
Calle La Montaña no. 28, Fracc. Los Pastores  
Naucalpan de Juárez, EDOMEX CP 53340  
Tel & Fax: +52.55.5373.7042  
mexicosales@carlogavazzi.com

### BRAZIL

Carlo Gavazzi Automação Ltda.Av.  
Francisco Matarazzo, 1752  
Conj 2108 - Barra Funda - São Paulo/SP  
Tel: +55 11 3052 0832  
Fax: +55 11 3057 1753  
info@carlogavazzi.com.br

## OUR SALES NETWORK IN ASIA AND PACIFIC

### SINGAPORE

Carlo Gavazzi Automation Singapore Pte. Ltd.  
61 Tai Seng Avenue  
#05-06 UE Print Media Hub  
Singapore 534167  
Tel: +65 67 466 990  
Fax: +65 67 461 980  
info@carlogavazzi.com.sg

### MALAYSIA

Carlo Gavazzi Automation (M) SDN. BHD.  
D12-06-G, Block D12,  
Pusat Perdagangan Dana 1,  
Jalan PJU 1A/46, 47301 Petaling Jaya,  
Selangor, Malaysia.  
Tel: +60 3 7842 7299  
Fax: +60 3 7842 7399  
sales@gavazzi-asia.com

### CHINA

Carlo Gavazzi Automation  
(China) Co. Ltd.  
Unit 2308, 23/F.,  
News Building, Block 1, 1002  
Middle Shennan Zhong Road,  
Shenzhen, China  
Tel: +86 755 83699500  
Fax: +86 755 83699300  
sales@carlogavazzi.cn

### HONG KONG

Carlo Gavazzi Automation  
Hong Kong Ltd.  
Unit 3 12/F Crown Industrial Bldg.,  
106 How Ming St., Kwun Tong,  
Kowloon, Hong Kong  
Tel: +852 23041228  
Fax: +852 23443689

## OUR COMPETENCE CENTRES AND PRODUCTION SITES

### DENMARK

Carlo Gavazzi Industri A/S  
Hadsten

### MALTA

Carlo Gavazzi Ltd  
Zejtun

### ITALY

Carlo Gavazzi Controls SpA  
Belluno

### LITHUANIA

Uab Carlo Gavazzi Industri Kaunas  
Kaunas

### CHINA

Carlo Gavazzi Automation (Kunshan) Co., Ltd.  
Kunshan

## HEADQUARTERS

Carlo Gavazzi Automation SpA  
Via Milano, 13  
I-20020 - Lainate (MI) - ITALY  
Tel: +39 02 931 761  
info@gavazziautomation.com



**CARLO GAVAZZI**  
Automation Components

*Energy to Components!*

[www.gavazziautomation.com](http://www.gavazziautomation.com)

