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.

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

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.
**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](image1)

![Straight sliding doors](image2)

**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, front) using the 7 step rotary switches “Left”, “Center” or “Right”.

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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 crosswalk 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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operational voltage</td>
<td>12-24 V AC/DC</td>
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<tr>
<td>No load supply current</td>
<td>Typical  Max.</td>
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<tr>
<td></td>
<td>192 mA  230 mA @12 V AC</td>
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<tr>
<td></td>
<td>146 mA  170 mA @ 12V DC</td>
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<tr>
<td></td>
<td>103 mA  120 mA @ 24V AC</td>
</tr>
<tr>
<td></td>
<td>65 mA  80 mA @ 24V DC</td>
</tr>
<tr>
<td>Technology</td>
<td>Digital video camera technology</td>
</tr>
<tr>
<td>Power ON delay</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Output function</td>
<td>Safety and Motion Zone Relay – SPST</td>
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<tr>
<td></td>
<td>Common relay data 1A DC 30VDC</td>
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<tr>
<td></td>
<td>Operations minimum 600,000 @ 0.5A, 50 VAC/30 VDC</td>
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<tr>
<td></td>
<td>Operations minimum 100,000 @ 1A, 30 VDC</td>
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<tr>
<td>Test input</td>
<td>Max. input tech</td>
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<td></td>
<td>Active low ON &lt; 6 VAC/VDC</td>
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<tr>
<td></td>
<td>OFF &gt; 9 VAC/VDC</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>Adjust in 7 steps</td>
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<tr>
<td>Presence zone reaction time</td>
<td>Reaction time 210 ms (20% contrast, object speed 1 m/s, test body CA [DIN18650-1])</td>
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<tr>
<td></td>
<td>Fall time 500 ms</td>
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<tr>
<td>Motion zone reaction time</td>
<td>Reaction time 1.2 s (20% contrast, object speed 1 m/s, test body CA [DIN18650-1])</td>
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<tr>
<td></td>
<td>Fall time 500 ms</td>
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<tr>
<td>Presence time</td>
<td>(Background relearn time)</td>
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<tr>
<td></td>
<td>In accordance with DIN18650</td>
</tr>
<tr>
<td></td>
<td>1 min, 5 min</td>
</tr>
<tr>
<td></td>
<td>Not in accordance with DIN18650</td>
</tr>
<tr>
<td></td>
<td>10 sec, 30 sec</td>
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<tr>
<td>Ambient temperature range</td>
<td>Operating -25° to +55°C (13° to +131°F)</td>
</tr>
<tr>
<td></td>
<td>Store -25° to +80°C (13° to +176°F)</td>
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<tr>
<td>Ambient light</td>
<td>10 lux - 50,000 lux</td>
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<tr>
<td></td>
<td>40 lux - 50,000 lux, TÜV approved, measured at the sensor surface</td>
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<tr>
<td>Contrast</td>
<td>Min. 20% contrast between the floor and object</td>
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<tr>
<td>Mounting height</td>
<td>1.8 m to 3.0 m</td>
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<td>Material</td>
<td>Housing and cover ABS Black</td>
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<tr>
<td></td>
<td>Front glass Clear transparent polycarbonate</td>
</tr>
</tbody>
</table>

## Straight and curved sliding doors

### 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

### Presence zone sensing area

- **Height 220 cm**: 42 cm x door width, max 246 cm
- **Height 220 cm**: 51 cm x door width, max 300 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 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 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

Sensors

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