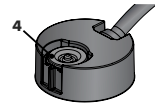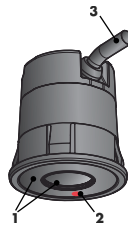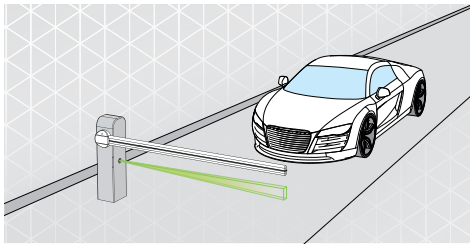# TOF/Spot-car detection    Installation guide

## Overview

The TOF/Spot-car detection has been specially developed to monitor the area directly beneath a car park barrier. This ensures that if a car remains under a raised barrier, the barrier cannot be lowered to damage the car.



| | |
|---|---|
| **1** | Optical window |
| **2** | Status LED |
| **3** | Connection cable |
| **4** | Teach-in button |

## Introduction

The TOF/Spot-car detection has an operating range of 3 m. The sensor measures the distance to an object. As soon as the object is detected within the threshold, the output is switched. The sensor is able to detect all types of car surfaces, independent of their colour or reflectivity.

## Installation

The installation has to be carried out according to the following steps:

1. Mark clearly that the modifying system is out of service and switch off main power.
2. Define ideal position (optical axis min. 150 mm to parallel surface).
3. Drill a hole at the required position or use a mounting bracket.
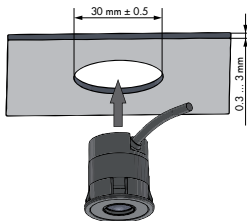


4. Snap the TOF/Spot-car detection into the hole or mounting bracket
5. Connect the sensor to the control unit.
6. Teach-in the desired range

## Electrical connection

Connect the TOF/Spot-car detection as follows to the control unit of the car park barrier.

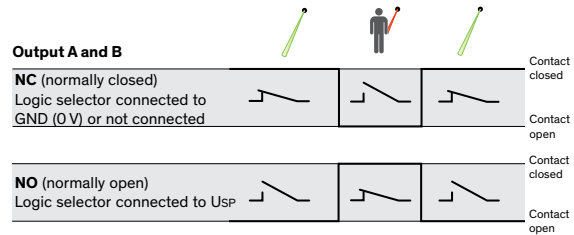| TOF/Spot | | | Controller |
|---|---|---|---|
| | Usp (10 ... 30 VDC) | brown | |
| | Output A | black | |
| | Output B | green | |
| | GND (0 V) | blue | |
| | Test input* | white | |
| | Logic selector | gray | |

**Important:**
▶ Output A and Output B are interchangeable
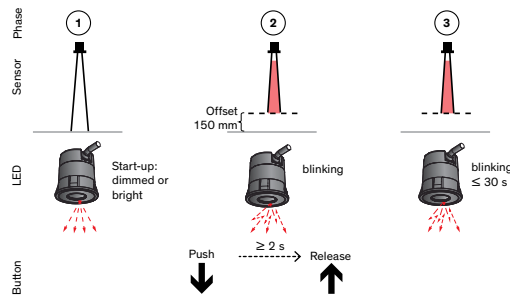▶ Any unconnected (n.c.) wires have to be separated and isolated

\* If test input not used -  connect with Usp or GND

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## Logic selector

Select the desired output logic for your control unit with the output selector (gray wire)



| Output A and B | | | | |
|---|---|---|---|---|
| NC (normally closed) Logic selector connected to GND (0 V) or not connected | | | | Contact closed / Contact open |
| NO (normally open) Logic selector connected to U_SP | | | | Contact closed / Contact open |

## Teach-in procedure (calibration)



1. Place an object at the desired threshold distance.
   **Attention:** An offset of 150 mm is required
2. Press the teach-in button on the rear side of the sensor for more than 2 seconds
3. The status LED starts to blink for approximately 30 seconds.
4. The threshold distance has been set as soon as the LED stops blinking and switches off.
5. Check functionality

## LED status

| LED status | Description |
|---|---|
| LED off | No power |
| LED dimmed red | No object detected |
| LED bright red | Object detected or test active |
| LED blinking | Distance setting active |

## Timing

| | Value [ms] |
|---|---|
| Start-up time test input | < 200 |
| Power-on time | 1,000 |
| Response time | ≤ 60 |
| Release time | ≤ 60 |
| Test response time | 5 |
| Test release time | ≤ 60 |
| Test time | > 60 |

## Application recommendations

Objects must interrupt the complete cross-section of the beam to be detected properly. If an object only partially interrupts the beam's cross-section, a correct distance evaluation cannot be guaranteed.

The enclosure rating of the sensor's housing is IP65. Additional protection for heavy rain is strongly recommended. An additional mounting bracket is available.

The sensor needs a background. If there is no background, it is possible that any object detected at a distance of 15 m or more may be considered to be a car.

## Information

The complete TOF/Spot operating manual is downloadable from the CEDES website www.cedes.com.

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