Technical Specifications

Functional principle	Microwave module
Detection speed	Min. 0.1 m/s
Marking	CE
Inclination angle	±90°, in 15° increments
Tilt angle	±18°
Detection range	6500 x 9000 mm (WxD) at installation height of 5000 mm and inclination angle of 45° 5500 x 10000 mm (WxD) at installation height of 7000 mm and inclination angle of 45°
Operating frequency	24.000 GHz–24.250 GHz K band, EC-compliant, excluding UK **FCC (NA version):** 24.075 GHz–24.175 GHz K band **UK version:** 24.150 GHz–24.250 GHz K band
Operating mode	Radar motion sensor
Function indicator	Red/green LED
Operating elements	2 programming buttons (left: MENU, right: VALUE)
Operating voltage	12–36 VDC/12–28 VAC
No-load current	< 50 mA at 24 VDC
Power consumption	< 1 W
Switching mode	Active/passive
Signal output	2 relay outputs, NO/NC
Switching voltage	Max. 48 VAC / 48 VDC
Nominal power	Max. 0.5 AAC/1 ADC
Max. switching current	1 A
Switching power	Max. 24 W/60 VA
Relay hold time	0.5 s–300 s, adjustable
Ambient temperature	-30 °C ... 60 °C / 243 K ... 333 K **NA/UK version:** -20 °C ... 60 °C / 253 K ... 333 K
Relative humidity	Max. 90 %, not condensing
Mounting height	Max. 7000 mm
Degree of protection	IP67
Connection	2-pin and 4-pin plug-in screw terminals, 8 m connection cable
Housing material	Polycarbonate (PC)
Weight	320 g (without cable) 650 g (with cable)
Transmitting power	< 20 dBm
Dimensions excluding securing parts	Without mounting bracket: 131 mm (W) x 73 mm (H) x 98 mm (D) With mounting bracket (180°): 131 mm (W) x 73 mm (H) x 136 mm (D)

Troubleshooting

Fault	Corrective action
Door is detected.	Reduce the sensitivity. Adjust the tilt angle. Increase the responsiveness. Step up the human-presence detection properties.
LED not lit up.	No power supply, device not functioning.
Remote control does not respond.	Device is locked. Switch the operating voltage off and on again. The sensor can now be configured without a code for 30 minutes. Check the remote control battery.
Person is mistaken for a vehicle.	Heighten the vehicle detection properties. Increase the responsiveness. If only vehicles are to be detected, reduce the sensitivity.
Vehicle is mistaken for a person.	Lower the vehicle detection properties. Increase the responsiveness.
Object is detected too late.	Reduce the responsiveness. Increase the sensitivity.
Object detection is too sensitive.	Increase the responsiveness. Reduce the sensitivity.
Transverse movement of people ignored.	Step up the human-presence detection properties.
False detections occurring due to interfering influences (rain, vibration, etc.).	Increase the responsiveness. Step up the human-presence detection properties. Reduce the sensitivity.

Conformities

Scope of Delivery

1	RAVE-D, incl. connection cable
2	Screws for installation
1	Mounting instructions

Accessories

RMS remote control	Remote control

DOCT-4912A
04/2016

## Radar motion sensor for detecting objects at automatic doors

Safety Information
To meet the safety requirements of EN60950-1 and UL508, the sensor must be operated from an SELV supply that is reliably limited to an output of 100 W.
The output can be limited using a T2.5 A fuse.
werden.
This device must be installed and maintained only by qualified, trained personnel.

Installation
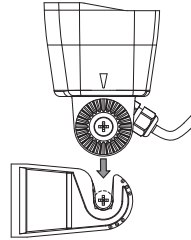
Mounting the Mounting Bracket
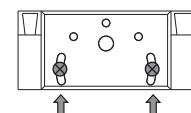
Pepperl+Fuchs recommends mounting the mounting bracket without the sensor attached. It is also possible to mount the mounting bracket with the sensor secured in place. To do this, before attaching the mounting bracket, swivel the sensor up or down by 90°.

Wall/ceiling mounting:
1. Drill the holes as per the dimensional drawing.
2. Attach the mounting bracket using the screws provided.

Use a Pozidriv screwdriver for mounting. Using other screwdrivers may damage the screws supplied.
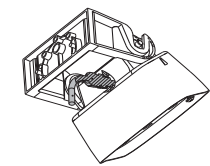
Securing the Sensor

1. Loosen the long screw on the sensor. It is not necessary to remove the long screw completely.
2. Insert the sensor.
3. Set the inclination angle.
4. Tighten the long screw.
5. Connect the cable.

To mount the device on a ceiling, position the mounting bracket at an angle of 180°.
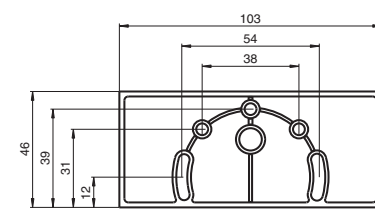
Connecting the Customer's Cable

When using a separate connection cable:
1. Open the device: Loosen the screws on the front of the device and on the front plate and remove by pulling on the loosened screws.
2. Remove the original cable: Release the cable from the terminal block, loosen the PG cable gland, and pull the cable out of the housing.
3. Guide the separate cable through the PG cable gland into the housing and connect the cable (for terminal assignment, see the adjacent diagram). Tighten the PG cable gland.
4. Close the device: Reposition the front plate and tighten the screws.

Power supply/Vehicle-presence Relay

① AC/DC supply (brown)
② AC/DC supply (green)
③ Vehicle-presence relay (white)
③ Vehicle-presence relay (yellow)

Human-presence Relay

① Human-presence relay (gray)
② Human-presence relay (pink)

Mounting Bracket Dimensions

103
54
38
46
39
31
12

For RAVE-D-NA:
In order to meet UL508 requirements, a 2.5-A slow-blow fuse should be used between the device and the power supply.
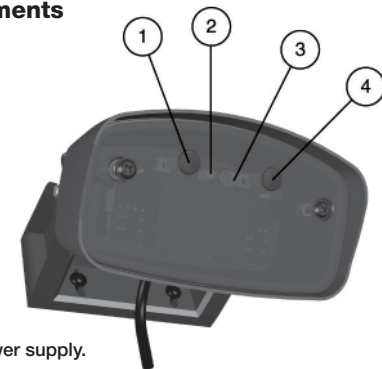
Commissioning

Before switching on the device, remove all objects from the door area that do not normally belong there.

After applying the operating voltage, the hardware and software is initialized. This process takes approx. 10 seconds. The LED flashes red/green.
Once this process is complete, configure the radar. Check the settings by walking within range of the sensor.

Operating and Display Elements

1. "MENU" control button
2. Green status indicator LED
3. Red status indicator LED
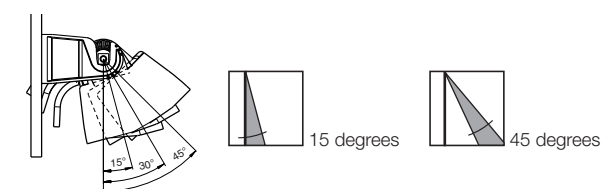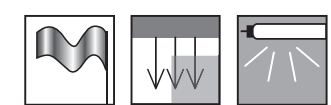4. "VALUE" control button


Detection Field Settings

Installation Information

- Avoid placing moving objects in the detection field (fans, plants, trees, flags).
- Do not cover the radar. Mechanically-operated drive components may affect the radar.
- Avoid fluorescent lights in the detection field.

Inclination Angle

15 degrees   45 degrees

Snap-in positions are provided every 15 degrees to allow the sensor to be tilted depending on requirements.
To adjust the tilt angle, loosen the long screw, move the sensor into the required position (the sensor will snap into place) and tighten the long screw again.

Inclined Detection Field (Tilt Angle)

Mounting the fixing bracket on an incline has the following effects on the detection field:
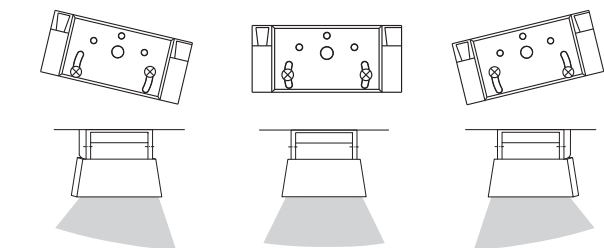
Vehicle Detection

The sensor distinguishes between vehicles and people. This distinction is dependent on the settings of the "Vehicle detection", "Human-presence detection", and "Responsiveness" parameters.

Relay Function

The "Vehicle-presence relay" parameter defines which function activates the vehicle-presence relay.
The vehicle-presence relay is set ex works to activate whenever a vehicle moves toward the sensor.

The "Human-presence relay" parameter defines which function activates the human-presence relay.
The human-presence relay is set ex works to activate whenever a person moves toward the sensor.

Application examples 2 and 3

Example 2: Door with vehicle recognition and separate entrance for people
Door control with two switching inputs (vehicle-presence relay and human-presence relay).
Output function for "Vehicle forward" vehicle-presence relay. Output function for "Person forward" human-presence relay. Relay configuration as per factory settings.*

Example 3: Door with vehicle recognition without separate entrance for people
Door control with two switching inputs (vehicle-presence relay and human-presence relay).
Output function for "Vehicle forward" vehicle-presence relay. Output function for "Person forward" human-presence relay. Relay configuration as per factory settings.*

Person approaches:
Vehicle-presence relay is not activated.
Door remains closed.
Human-presence relay is activated.
Entrance for people opens.
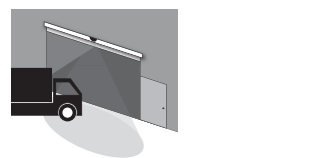
Vehicle approaches:
Vehicle-presence relay is activated.
Door opens.
Human-presence relay is not activated.
Entrance for people remains closed.

Person approaches:
Vehicle-presence relay is not activated.
No action.
Human-presence relay is activated.
Door opens halfway.

Vehicle approaches:
Vehicle-presence relay is activated.
Door opens fully.
Human-presence relay is not activated.
No action.

*) Vehicles crossing the detection range of the sensor may cause the human-presence relay to be activated unexpectedly.

Programming Mode

Program the sensor using the MENU and VALUE buttons. When one of these buttons is pressed, the flash code is interrupted. The set value is output in accordance with the below table. Once the final menu item has been reached, the next press of a button calls up the first menu item again.
Each time a button is pressed, the setting is automatically stored.
Programming mode is exited automatically if no setting is made within ten minutes. The set values are stored.

Starting Programming

| MENU | 2 s | Press and hold the MENU button for approximately two seconds. Programming mode is activated. |

The LED indicates the settings by flashing: Red flashing indicates the function
Green flashing indicates the setting (value)
No flashing indicates that the function is switched off

Setting the Function and Value

| MENU | 1x | Press the MENU button once. The next function is selected. |
| VALUE | 1x | Press the VALUE button once. The value is increased by 1. |

Stopping Programming

| MENU | 2 s | Press and hold the MENU button for approximately two seconds. Programming mode is exited. The settings are stored. |

LED Status Display

LED	Status
Flashing red/green	Sensor initialization in progress
Green	Sensor ready for operation, no detection
Flashing green 3x	Command received from remote control
Flashing red in quick succession	Vehicle-presence relay active
Flashing green in quick succession	Human-presence relay active
Flashing red/green in quick succession	Vehicle-presence relay and human-presence relay both active

Application Example 1

Example 1: Vehicle recognition at a door
Door control with one switching input.
Output function for "Vehicle forward" vehicle-presence relay.

Vehicle approaches:
Vehicle-presence relay is activated.
Door opens.

Person approaches:
Vehicle-presence relay is not activated.
Door remains closed.

Programming example: changing the relay fall time from 1.0 s to 3.0 s

Function/setting	Action	LED
MENU	2 s — Press and hold the MENU button for two seconds. Programming starts.	
LED flashes	The current value is read out, e.g.: 1x red for function: sensitivity 8x green for value: 8	R 1x G 8x
MENU	5x — Set function: Press the MENU button three times.	
LED flashes	6x red for function: fall time for output 2x green for value: 1.0 s	R 6x G 2x
VALUE	2x — Set value: Press the VALUE button two times.	
LED flashes	6x red for function: fall time for output 4x green for value: 3.0 s	R 6x G 4x
MENU	2 s — Press and hold the MENU button for two seconds. Programming is ended. The settings are saved.	

Overview of Adjustable Parameters

Check the settings by walking within range of the sensor. For more information on settings, see "Troubleshooting" on the last page.

Parameter	Settings		Remote	Information	Factory Setting
Sensitivity	1 … 10	Smallest detection field … Largest detection field	✓ Menu 1	✓	Suggested value based on angle and mounting height |	15°	30°	45°	>45°
7 m	8	4	2	1
5 m	6	6	3	1
3.5 m	6	5	4	1
2.5 m	4	4	4	1		6
Vehicle detection	1 2 3	Low Medium High	✓ Menu 2	✓	Suggested value based on angle and mounting height |	15°	30°	45°	>45°
7 m	1	2	2	1
5 m	1	2	2	2
3.5 m	1	2	2	3
2.5 m	1	2	2	3		2
Human-presence detection	1 … 7	Min. Max.	✓ Menu 3	✓	Suggested value based on angle and mounting height Detection without cross-traffic suppression |	15°	30°	45°	>45°
7 m	1	1	1	1
5 m	1	1	1	1
3.5 m	1	1	1	1
2.5 m	1	1	1	1 | Detection with cross-traffic suppression |	15°	30°	45°	>45°
7 m	4-7	2-7	2-7	2-7
5 m	4-7	4-7	4-7	4-7
3.5 m	4-7	4-7	6-7	6-7
2.5 m	4-7	6-7	6-7	6-7		1
Vehicle-presence relay	1 2 3 4 5 6	Vehicle forward Vehicle backward Vehicle forward/backward Person/vehicle forward Person/vehicle backward Person/vehicle forward/backward	✓ Menu 4	✓		1
Human-presence relay	1 2 3 4 5 6	Person forward Person backward Person forward/backward Vehicle forward Vehicle backward Vehicle forward/backward	✓ Menu 5	✓		1
Relay hold time	1 2 3 4 5 6 7 8 9 10 11 12 13	0.5 s 1 s 2 s 3 s 4 s 5 s 10 s 15 s 20 s 25 s 30 s 60 s 300 s	✓ Menu 6	✓		2
Relay contact	1 2	NO contact NC contact	✓ Menu 7	✓	Contact closed when movement detected Contact open when movement detected	1
Responsiveness	1 2 3	Fast Normal Slow	✓ Menu 8	✓		Behavior	Setting
More reliable detection of people	Fast (1)
Factory setting/reliable vehicle detection	Normal (2)
Reliable differentiation between vehicles and people	Slow (3)		2
Device address	1 2 … 15	Address 1 Address 2 … Address 15	✓ Menu 9	✗	If there are several sensors in the detection range of the remote control, these sensors must be set to different addresses.	1
Code		Access with code Disable access Access without code	✗	✓		Access without code
Disconnect		✗	✗	✓	Programming mode is exited	
Reset		Press the VALUE and MENU buttons together for approx. five seconds.	✓	✓	Reset to factory settings The LED flashes green/red alternately for approx. ten seconds	