

# Motion Radar Sensor RAD Series

CARLO GAVAZZI



- K-Band radar sensor compatible with all types of automatic doors.
- 3-D adjustable sensor position offers precise orientation of the activation pattern.
- Microprocessor technology filters out possible weather condition interferences
- IR remote controller can be added for easy adjustment
- UL325 approved

## Product Description

Motion Radar Sensor is a digital uni or bidirectional motion sensor for trouble-free opening of all types of automatic doors (sliding, swinging, folding, revolving, speed-doors, overhead doors, etc...), for pedestrian and civil applications. It can be adapted to every application without further accessories and can be controlled by an infrared

remote controller. Mounting height up to 4m (13.12ft) also available in uni- or bidirectional mode to detect motion towards or away from the device. Like most of other microwave detectors, equipped with planar flat antenna, Carlo Gavazzi Radar activates automatic doors utilizing doppler shift effect for detecting movements.

## Ordering Key

**RAD 01**

Type

Detection mode

## Approvals

CE0682 FCC CULUS

Trade Name: **Carlo Gavazzi Logistics S.p.A.**  
via Milano 13, I-20020 Lainate (MI)

Model No: RAD01 / RAD01N

FCC ID: U7PRAD01  
IC: 7118A-RAD01

Model No: RAD02 / RAD02N

FCC ID: U7PRAD02  
IC: 7118A-RAD02



This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions. (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## Type Selection

### Detection Mode

Bidirectional\*

Uni&Bi-directional\*

01

02

\* Bidirectional: to detect motion towards and away from the sensor

Uni&Bidirectional: to detect motion towards and/or away from the sensor.

## Environmental Data

Temperature range	-20°C to +70°C (-4°F to +158°F)
Humidity	from 0% to 90%RH
Immunity	R&TTE 1999/5/EC EMC 89/336/EEC
Max. mounting height	4m (13.12ft)
Protection degree	IP54

## Electrical Data

Frequency emitted	(K-Band) 24.125GHz
Radiated power	<16dBm EIRP
Rated supply voltage	12 – 24VAC ±10% 12 – 24VDC +30% / -10%
Main frequency	50 to 60HZ
Power consumption	< 1W (VA)
Output Relay SPDT	
Rated Voltage	30VAC/DC
Max switching current	1A (resistive load)
Max switching power	30W (resistive load)
Hold time	0.5 – 9s (adjustable)

## Mechanical Data

Housing Material	Polycarbonate
Dimensions WxHxD	118 x 80 x 53mm (4.645 x 3.149 x 2.086inch.)
Weight	150g (5.29oz)
Cable length	2.5m (8.20ft)
Colour	Glossy/Translucid Black

## General Data

<b>Sensing field orientation</b>	double mechanical adjustment, lateral and vertical
<b>Detection angle</b> Vertical Lateral	0° to 90° in 15° increments +/- 30° in 7.5° increments
<b>Sensing field shape</b> bidirectional model	By Sensor module orientation
<b>Detecting area</b>  Wide sensing field  Narrow sensing field	(mounting height 2.2m (h = 7.22ft)) 4m (W) x 2m (D) (13.12ft (W) x 6.56ft (D)) 2m (W) x 2.5m (D) (6.56ft (W) x 8.20ft (D))
<b>Detection mode</b> Only bidirectional  Uni & bidirectional	to detect motions towards and away from sensor to detect motions towards or/and away from sensor
<b>Motion detecting speed</b>	0.05 - 1m/s (0.164 - 3.28fps) (measured in the sensor axis)

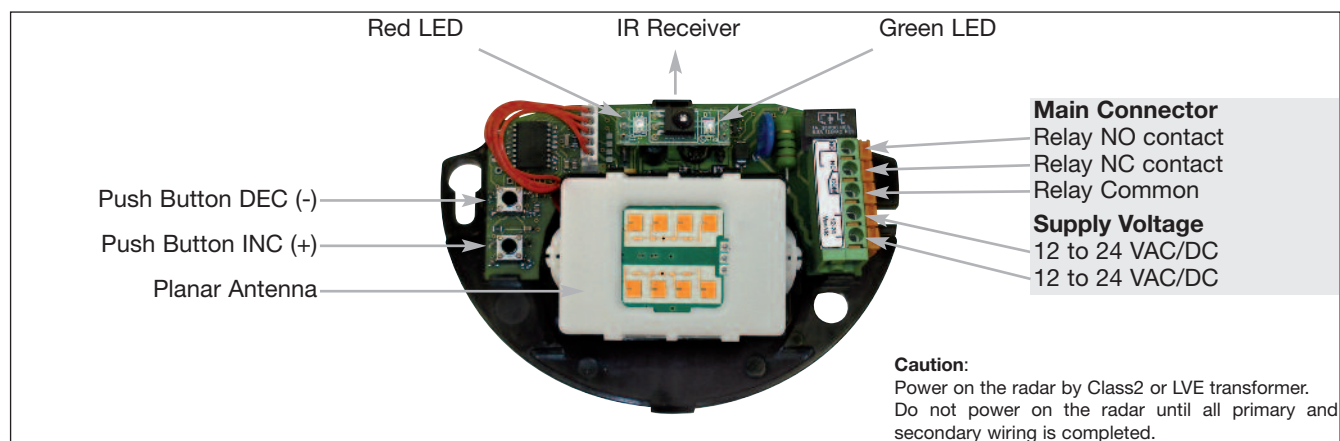
## Adjustments and Settings

<b>Manual Setting Device</b>	By two buttons on main PCB board.
<b>Remote Setting Device</b>	IR remote controller (optional)
<b>Reset to factory set Value</b> (only by PCB buttons)	1 - Restore PIN security code 2 - Restore all factory values
<b>Sensitivity</b>	10 levels (1 to 10) It allows increment or decrement of detection field.
<b>Relay hold time</b>	10 levels (0.5 to 9s) It fixes the maintenance's time of the relay status.
<b>Uni-bidirectional mode</b>	It sets direction mode detection (only for uni-bidirectional device).
<b>Immunity detection</b>	"Quasi-presence", Normal mode, Increased Immunity (Implemented by a digital filter) It prevents some external noise as objects carried by wind, strong rain, etc.
<b>Relay status</b> Active, Passive,  Automatic mode/ Permanently Open/Close.	(only by PCB buttons) It permits to fix the relay status: normally open or close. (only by IR remote controller) It permits to enable or disable normal sensor detection and set ON or OFF permanently relay output. AUTO / OPEN / CLOSE
<b>Security code</b> (only by IR remote controller)	4-digit PIN access code It permits to lock or unlock optional remote controller keyboard setting.

## Factory Default Value

The device is set up in factory at the following default values:	
<b>1. Sensitivity</b>	10 (max level)
<b>2. Relay hold time</b>	1 (min: 0.5 sec)
<b>3. Uni-Bidirectional Detection Mode</b>	Bi-directional (Uni-directional mode is available only for RAD 02)
<b>4. Immunity detection</b>	Immunity: OFF
<b>5. Relay Status:</b>	Passive
<b>6. PIN security:</b>	0000 - block disabled (only for remote controller)
At the first start up, the device loads the default values.	

## Electrical Connections



## RAD 01



### Lateral View



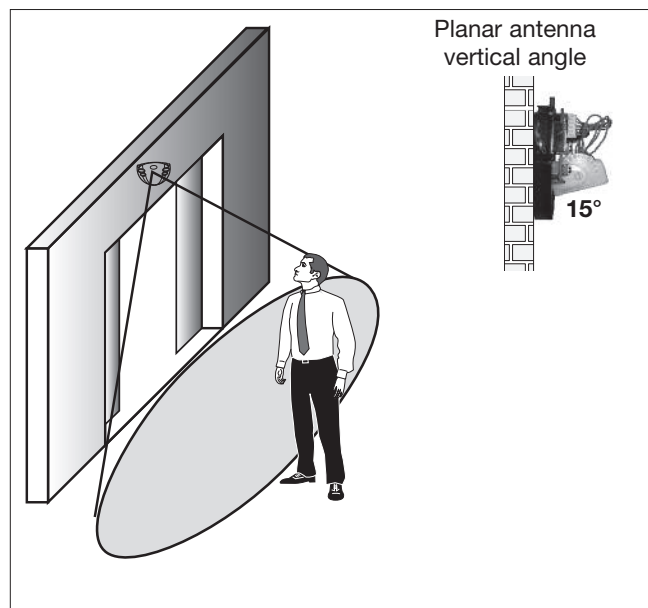
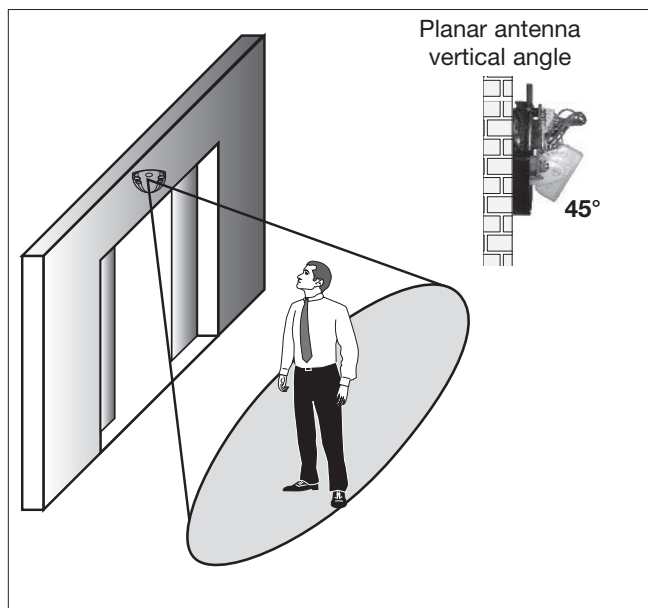
## RAD 00 RC

Diagram of the RAD-00-RC remote control interface. The interface includes a numeric keypad (0-9), function buttons (F, OPEN, CLOSE, AUTO, SENS, TIME, SEND, PIN, IMM, GP), and a large arrow button labeled 'GATED BEAMS'. Labels point to various features:

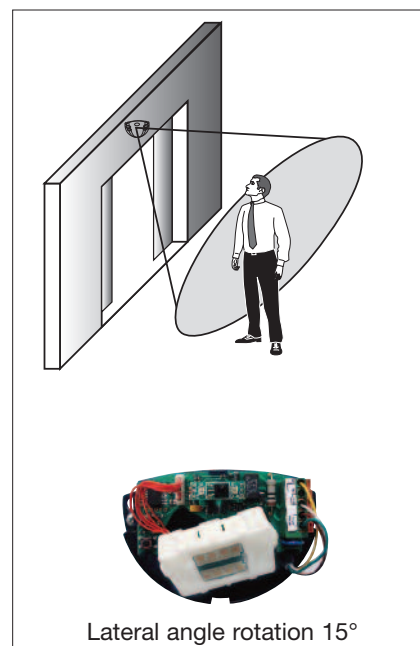
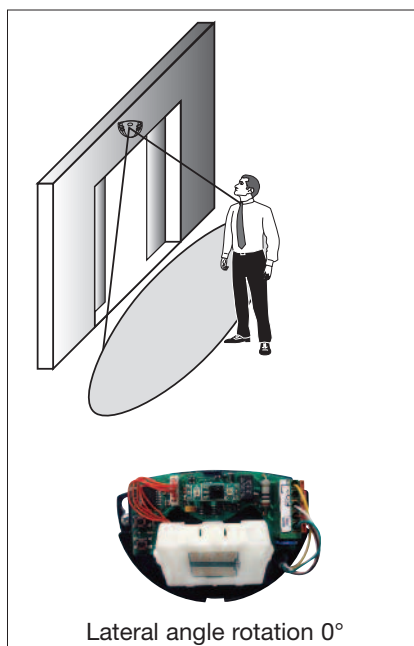
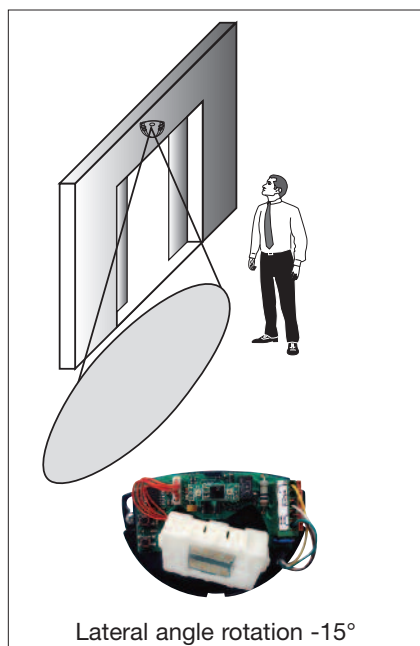
- Door Status: OPEN: Locked open, CLOSE: Locked closed, AUTO: automatic detection mode
- Numeric keys
- Hold time setting
- PIN Change
- Sensitivity setting
- Remote controller Lock
- Remote controller Unlock
- "Quasi Presence" selection
- Immunity selection
- Detection mode (only for RAD 02 model)

## Sensing field adjustments

### Mechanical sensor orientation



Adjust the vertical position to obtain the vertical sensing field close or far from the door.



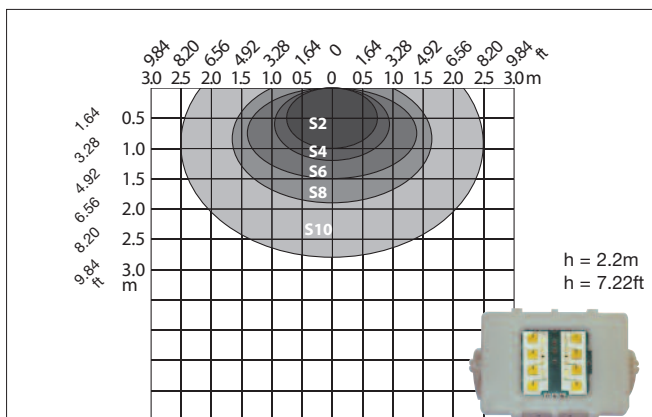
Adjust the lateral position to obtain the desired lateral angle sensing field.

## Sensing field adjustment according to Sensitivity setting and mounting Height

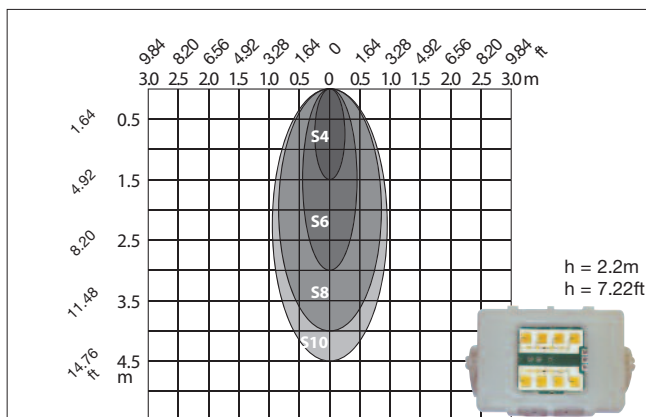
The sensing field area size (lobo) depends on the sensitivity parameter setting and the radar mounting height.

### RAD 01 Bidirectional Model

Detection area vs Sensitivity value (vertical angle 45°); vertical mount mode.

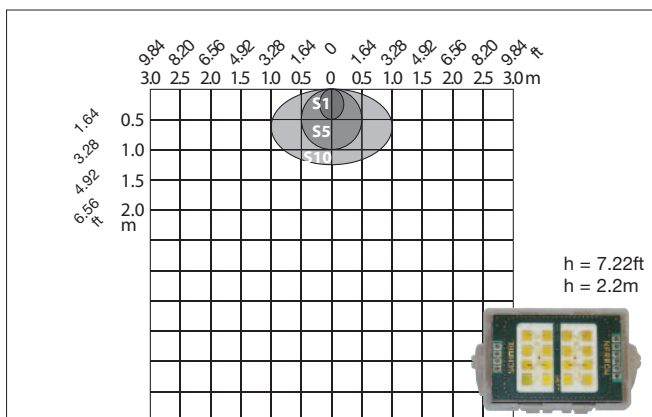


Detection area vs Sensitivity value (vertical angle 45°); horizontal mount mode.

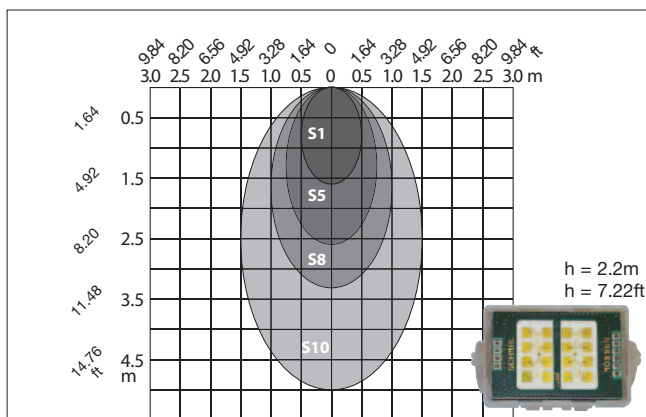


### RAD 02 Uni & Bidirectional Model

Detection area vs Sensitivity value (vertical angle 15°).



Detection area vs Sensitivity value (vertical angle 45°).



Note: S1...S10 sensitivity levels setting.