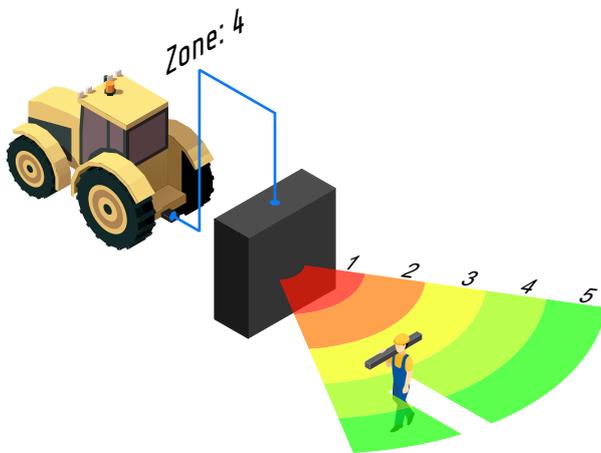


Attingimus Radar Sensors

- Collision Avoidance -

Basics of Collision Avoidance

Collision Avoidance Radars are distance measurement sensors using Radar waves to probe their field of view with the ability to trigger a warning if an object is detected at a specified distance or within a predefined distance-zone.



Specifying Targets

The common Collision Avoidance Radar is designed to detect a single obstacle closest to the Radar sensor.

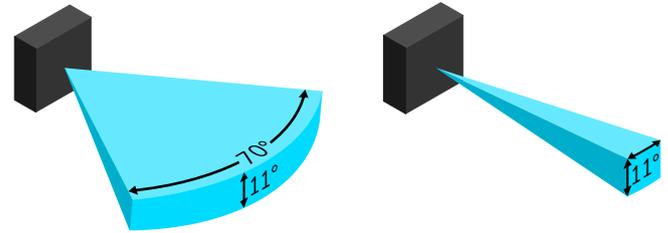
Among other features our Collision Avoidance Radars can be programmed to trigger warning messages at specific distant-zones for easier processing and a quick and clear overview of the situation.

For most Collision Avoidance applications it is important to see any obstacle too close to the sensor, to avoid a collision. In some cases, however, objects such as small plants can be safely ignored. For this reason, the sensitivity of our Radars can be optimally adapted to your application.

Choosing the right field of view

We offer a variety of different fields of view for our Radar sensors, depending on your needs. The field of view of a single Radar sensor can be visualized by a cone with a fixed vertical and horizontal opening angle (elevation and azimuth).

Common configurations of vertical x horizontal opening angles include: 7°x7°, 11°x11°, 11°x70° and 40°x150°.



Examples of 11°x70° and 11°x11° Radar cones

Due to the modular design of our products we are able to offer sensors with a wide range of different detection zones in terms of size and shape.

We can provide a wide horizontal angle of up to 180°, as well as provide a well-defined rectangular detection area by combining multiple Radar sensors in a single system.



The minimum detection distance from our sensors starts at 1 m for static objects, for moving targets even at several centimeters. The maximum range for detecting human sized objects is up to 40 m. For bigger objects like trucks, the detection range is up to 200 m.

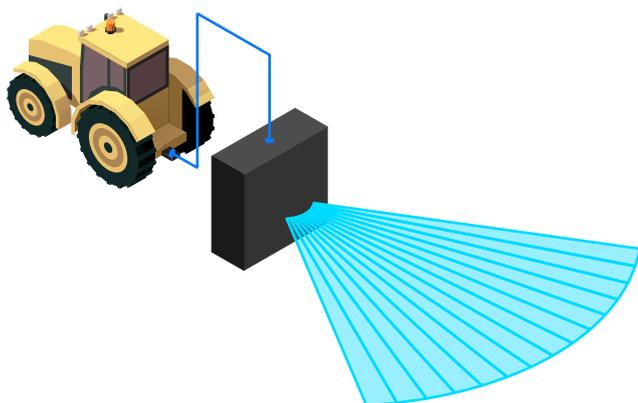
The right combination of measuring range and angular field of view will be set to suit the individual application.

Attingimus Radar Sensors

- Collision Avoidance -

Angular Resolution

Our basic Collision Avoidance Radars will provide information in terms of its speed and distance about the closest object.



If required we also provide sensors with additional angle information. Our products start from a simple indication of direction (left, middle right) to Radars with 2 degree accuracy in angular resolution and multi target ability.

Output Interface

Our Radars come with a stainless steel M12 connector for power supply and data transmission. There are currently 3 interface options available for data transfer:

1. Serial Interface

Using RS-422 / RS-485, our Radar can easily be connected to your system or personal computer. The communication takes place through sending and receiving the appropriate message telegrams, as specified in the Radars data sheet. This is the most simple way to communicate with the Radar.

2. CAN bus interface

If there is already a Controller Area Network available, only the CAN ID needs to be adjusted for the Radar and connected to the existing network. Our Radars are fully compliant with CAN 2.0B specification, allowing for an easy integration in existing systems. It is also possible to connect multiple Radars in a bus system.

3. Open collector

If a simple high / low signal is required for previously defined situations, we offer systems with multiple open collector interfaces. This method can be used to trigger visual or audible signals, based on different zone detections. An additional serial interface for configuration is provided.

Digital Output

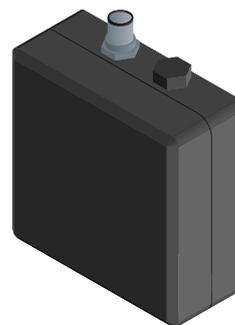
The Radar transmits data in the form of a telegram. A telegram is sent up to every 10 milliseconds. It contains, besides technical information, the measured values such as distance, speed or angle in metric values. The data format is an 8 or 16 bit integer. The quick reaction time provides real-time information about the monitored area.

Sample Telegram:

Byte Nr.	Data	
0	0x18	Header bytes
1	0xFF	
2	0x02	
3	0x0B	
4	status byte	Data bytes
5	distance in dm	
6	angle indicator	
8	distance zone	
9	sensor type	

Housing Properties

All our Radars have an IP67 / IP69k certified housing, made of POM and anodized aluminum alloy. It is designed for best performance while providing maximum protection and staying as compact as possible.



Due to our focus on durability our Radars are in use for more than 10 years under the most difficult conditions, such as in harbor areas or construction sites.