



SAYKAL

4in1 Radar Sensor

Park Assist + Kick + Rear Pre-Crash + Blindspot
Radar Sensor

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Product Overview

The SAYKAL 4in1 Radar Sensor is an innovative, robust, and reliable electronic sensing unit developed for the automotive industry, featuring new-generation technologies. Customized for out-of-cabin applications, this high-performance short-range radar sensor operates in the 76-81 GHz band and integrates multiple premium features for passenger cars. It provides precise Reversing Detection to enhance safety during reverse maneuvers, a convenient Radar Kick Sensor for hands-free trunk opening, Blindspot Monitoring to prevent accidents by detecting vehicles in the driver's blind spots, and a Rear Pre-Crash Warning system that alerts drivers to potential rear-end collisions. This versatile sensor significantly boosts vehicle safety and user convenience via 4 solutions in one sensor.



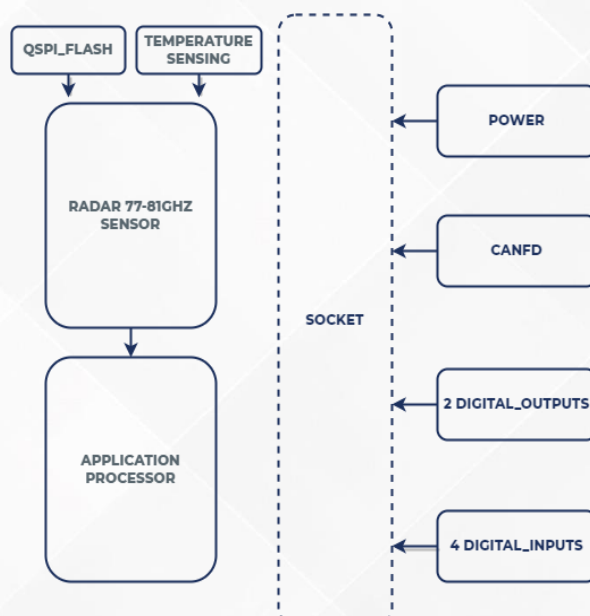
All Applications in 1 Sensor

- Blind Spot Detection – BSD
- Reversing Detection System – RDS
- Rear Park Assist Radar Sensor
- Rear Collision Warning (With Auto Brake)
- Rear Pre-Crash Warning System– RPCW
- Radar Kick Sensor

Hardware Features

- 7V – 30V DC
- Reverse Connection Protection
- AUTOMOTIVE
- 16 Megabit extended storage / 64k FRAM
- Optimal Reliability
- CAN / FDCAN
- Temperature Sensing
- 2 x Output & 4 x Input
- ASIL-B Safety Level

Functional Block Diagram



Software Features

- Firmware Update with CAN Bus
- High Precision
- Object Detection and Tracking
- Configurable Azimuth FOV up to 160°
- Configurable radar scanning zone up to 30m
- Configurable Sensor position and tilt
- Detection of Position, Relative Speed, Direction of Motion, Ground Speed



Application Features – S-4in1 Radar

Reversing Detection:

**Fully complies with UN Regulation No. 158 - Devices for means of rear visibility or detection.

The SAYKAL 4in1 Radar Sensor provides high-precision detection capabilities to ensure safe reversing. It accurately detects obstacles and alerts the driver to potential hazards, significantly enhancing overall safety during reverse maneuvers. Furthermore, it complies with **ECE R158** regulation requirements, ensuring adherence to the latest safety standards.

Radar Kick Sensor:

The Radar Kick Sensor function enables convenient hands-free opening and closing of the trunk. By simply kicking under the rear bumper, the sensor detects the motion and activates the automatic trunk mechanism, adding a layer of convenience for the user. Utilizing machine learning algorithms, the sensor features gesture detection, ensuring that the trunk only responds to predefined gestures for enhanced security and functionality.

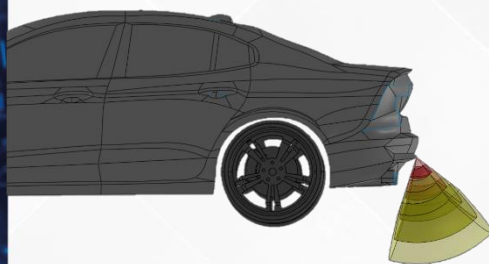
Blindspot Monitoring:

The Blindspot Monitoring feature uses the radar sensor to detect vehicles or objects in the driver's blind spots. This functionality helps to prevent accidents by alerting the driver to the presence of other vehicles in areas that are not easily visible.

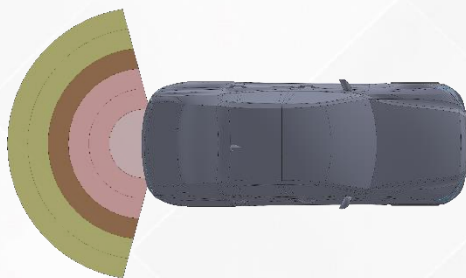
Rear Pre-Crash Warning System:

This feature enhances passenger safety by providing advanced warning of potential rear-end collisions. The radar sensor detects the speed and distance of approaching vehicles and alerts the driver to take preventive action, helping to reduce the risk of rear-end crashes. Additionally, it activates the flashers to warn the rapidly approaching vehicle and tightens the seat belts while closing the windows to increase pre-crash safety.

Application Examples on Vehicles – All in One Sensor



- Radar Kick Sensor



- Park Assist Radar Sensor



Pre-Crash
Warning

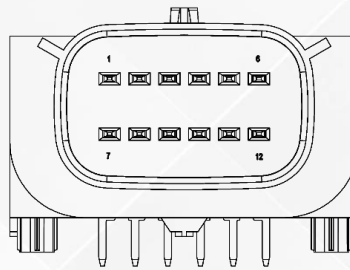


BSD



Pin Out / Pin Names and Descriptions

PIN	NAME	DESCRIPTION
1	DC_IN	Supply Voltage, 7V / 40V
2	IN1	9V / 36V DC Input
3	IN2	9V / 36V DC Input
4	IN3	9V / 36V DC Input
5	IN4	9V / 36V DC Input
6	CANFD High	Flexible Controller Area Network
7	CANFD Low	Flexible Controller Area Network
8	Reserved	Serial Communication
9	Reserved	Serial Communication
10	D_OUT2	Low Side Switch
11	D_OUT1	Low Side Switch
12	Chassis Ground	Chassis Ground



MX120



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