SAYKAL

Blind Spot Information System

Sensor Technologies

Short / Medium Range Radar Sensor

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Hardware Features

- 7V - 30V DC
- Reverse Connection Protection-Automotive
- ASIL- B Functional Safety Level
- RS485
- CAN / FDCAN
- Temperature Sensing
- 2 x Output & 4 x Input
- Power consumption: <4 W
- Range Resolution 0.293 m
- Angular accuracy (Azimuth accuracy): ±3°
- Min Azimuth Resolution 35 degrees
- Min Doppler Resolution 0.102m/s

Software Features

- Firmware Update with CAN Bus
  - OTA optional
- UDS Enabled
- SAE J1939 Support
- Detections at 50-100ms Interval
- Object Detection and Tracking
  - Vulnerable Road Users
    - *30m Rear Side Radar*
    - *30m Front Side Radar*
- Configurable Azimuth FOV up to 180°
- Configurable Elevation FOV up to 120°
- Configurable Sensor position and Tilt
- Detection of Position
  - Relative Speed
  - Direction of Motion
  - Ground Speed
  - Static Objects

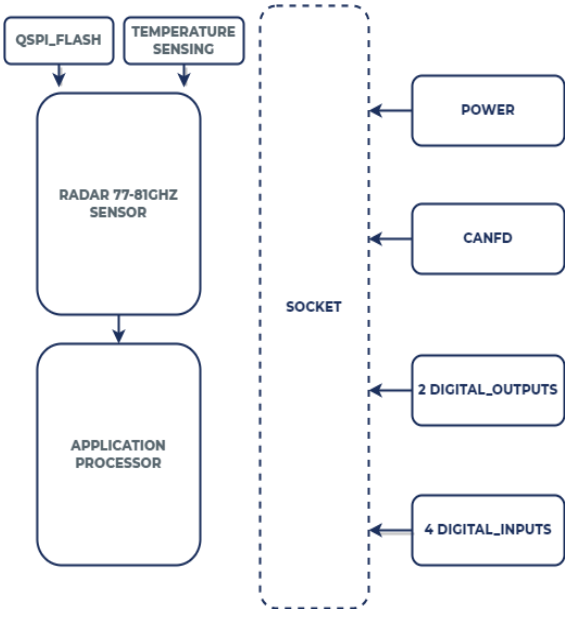
Product Overview

SAYKAL Radar Sensor; It is an innovative, robust, and reliable electronic sensing unit developed for the automotive industry and containing new-generation technologies. It is customized for out-of-cabin applications. AP003 is a high-performance short-range radar sensor operating in the 76 to 77 GHz and 77 to 81 GHz band for various premium backward & forward-looking applications. Blind Spot Information System supports drivers in passing and lane change maneuvers to help avoid side collisions. When BSIS detects moving objects in the blind spot zone, the driver is cautioned with a visual and audible warning.

Application

- Blind Spot Detection – BSD
- Rear Pre-Crash – RPC
- Frontal Collision Warning System - FCWS
- Automated Parking Assist - ADA
- Rear – Auto Emergency Braking Sensors
- Rear Cross Traffic Alert – RCTA
- Pedestrian Bike Detection
- Safe Exit Assistant – SEA
- Automated Guided Vehicle Sensor

Functional Block Diagram



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Typical Application Features

- The BSIS can be easily calibrated through the configuration interface.
- Detects dynamic and static objects.
- Classifies, and tracks detected objects according to radar cross-sectional areas.
- PC GUI connection
    - User configuration
- Fault diagnostic
- The system powers up when the ignition is cycled on
- Optional Input-Output controller; blind spot detection alerts (visual and/or audible)
- Capability of CAN-Bus features

Application Examples on Vehicles

BSIS Blind-Spot Coverage (180°) and Zone Functions (ECE R151)

This illustration shows the BSIS detection coverage with a 180° field of view and the corresponding detection zones defined in line with **ECE R151** requirements for VRU (Vulnerable Road Users) analysis (e.g., pedestrians, cyclists, e-scooter users).

- **Red area** (Warning Zone): Critical zone where a detected VRU triggers a driver warning.
- **Yellow area** (Information Zone): Zone used to inform the driver about VRU presence and increase situational awareness.
- **Safe Exit Application**
  The second illustration demonstrates the Safe Exit use case: when a road user (especially a cyclist) approaches from the side/rear while the vehicle is stationary, the system provides an alert before door opening to help prevent dooring incidents and support safer vehicle exit.

Image 1

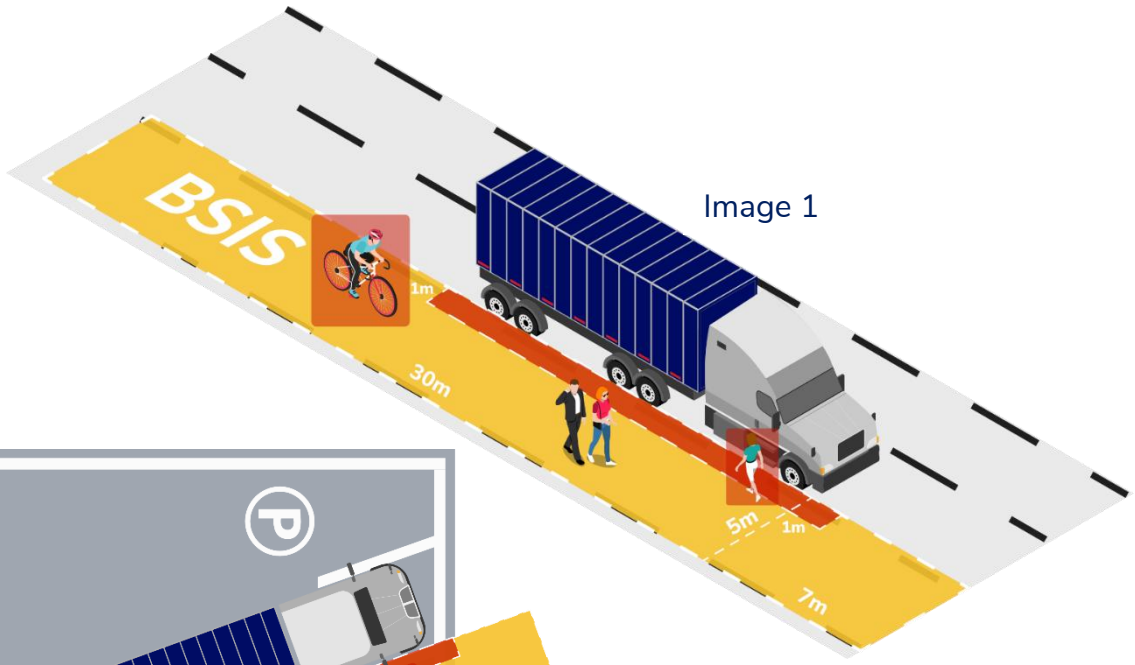
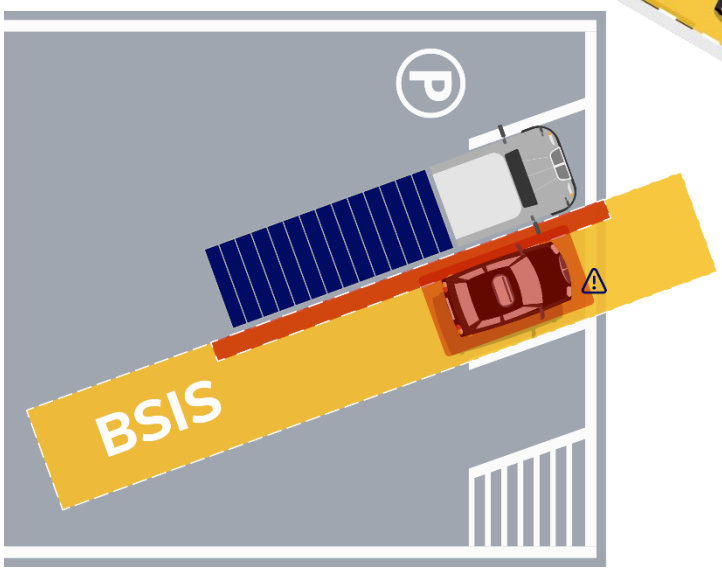


Image 2



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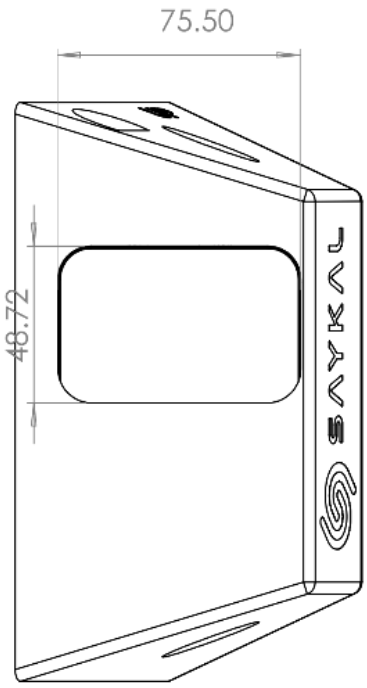
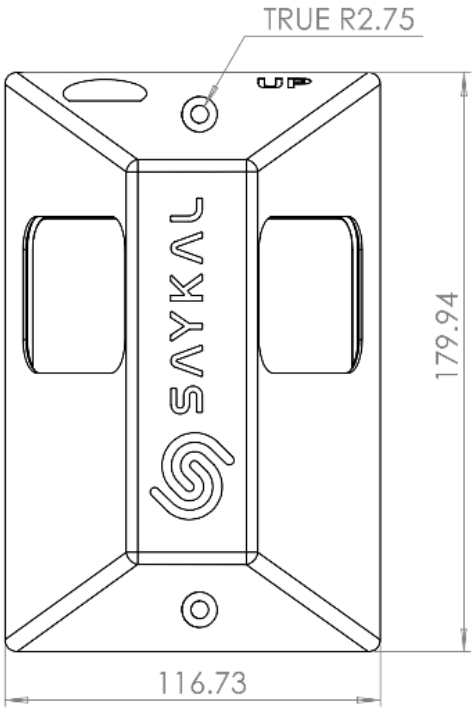
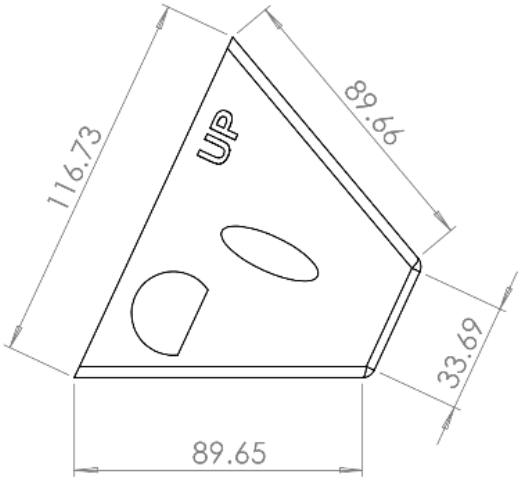
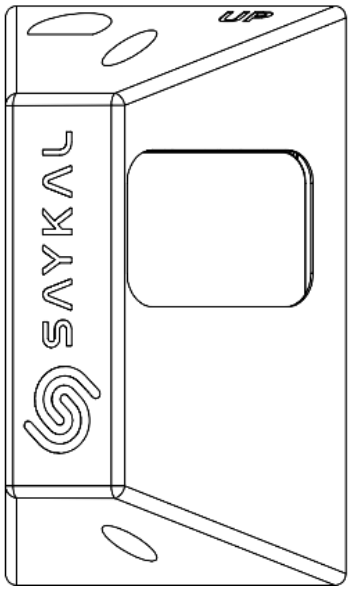
Technical Drawings









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