

Safe and Dynamic Driving towards Vision Zero

Sense.Plan.Act

Chassis & Safety

Continental 





Senses for safety.

Driver assistance systems help save lives.



BU Advanced Driver Assistance Systems

ARS410 Capacitor Issue

- confidential -



Advanced Radar Sensor 410

Product One Pager

Advanced Radar Sensor 410

ARS410 is a radar sensor for forward looking applications like ACC and, with focus on safety functions, EBA, compliant to world wide standards at best cost. It is designed for an installation behind a plastic cover in the vehicle front area (bumper, grill, etc.).

➤ Functionality:

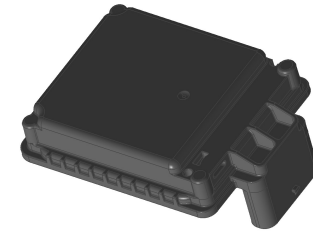
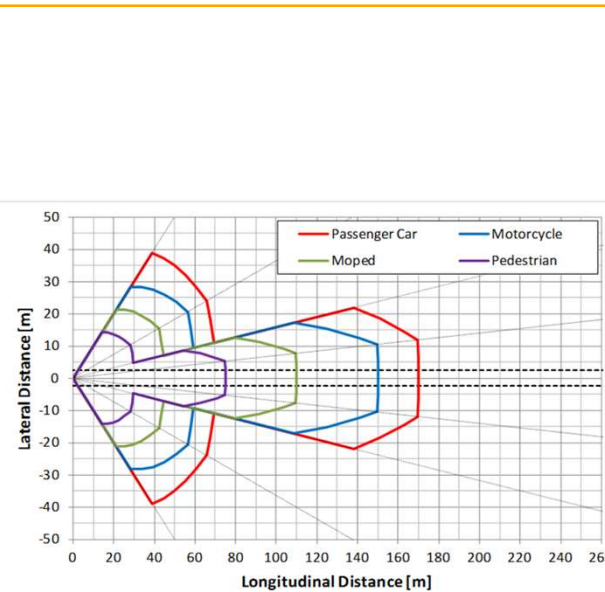
- Adaptive Cruise Control
- Emergency Brake Assist
- Traffic Continuation Indication
- False Drive-Off Prevention
- Traffic Jam Assist
- Elevation Measurement
- Road Detection
- Object List Output

➤ Features:

- Blockage detection
- Auto alignment

➤ Safety Integrity Level (ISO 26262):

- ASIL B



Example

Technical Data:

Generic data, applications may vary

Dimensions: 93 x 68 x 20 mm

Connector: 8-pin

Mass: approx. 120 g

Field of View: $\pm 45^\circ$

170 m range @ $\pm 4^\circ$
(RCS: 10 dBsm)

Update rate: 55 ms

Speed meas. acc. ± 0.1 kph

Temp. Range: -40° to $+85^\circ$

Power Dissip.: 4.5 W



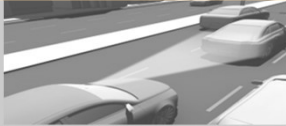
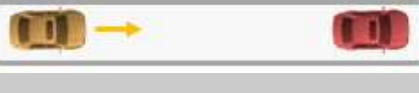






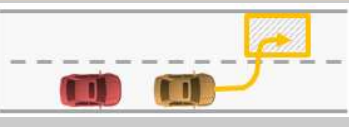
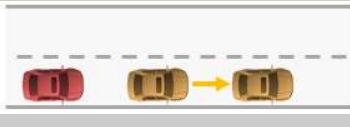

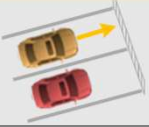

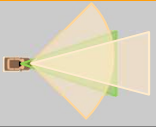


Supply Voltage: 12 V

Operation Freq.: 76...77 GHz

Advanced Radar Sensor 410

Vehicle Function Overview: Single Sensor / Fusion

Note: Generic, Applications may vary

| Function | Variants | | |
|--|---|---|--|
| Adaptive Cruise Control (ACC)  Radar / Camera (Fusion) | Follow to Stop  | Stop & Go  | Priori stationary objects  |
| Emergency Brake Assist (Gen. 4) (EBA)  Radar / Camera (Fusion) | Braking at vehicles  | Braking at pedestrians  | Braking at cyclist  |
| Traffic Continuation Indication (TCI)  Radar | Target Drives Forward  | Target Changes Line  | Retargeting  |
| False Drive-Off Prevention (FDP)  Radar | Drive forward in parking slot  | Drive forward in traffic  | |
| Traffic Jam Assist (TJA)  Camera (Fusion) | Partial automated vehicle control  | Auto Go  | |

Project ARS410

Capacitor Issue

| | | | | | | | | |
|-----------------------------|--------------------|---------------------|---|--------------------------|---------------------------------|---|-------------------|------------------------------|
| Production Plant: Karben | Project: ARS410 | Customer Various | Type & Quantity (Field,0km,internal) 0km and Field Returns | Clean Date 04.06.2018 | Prepared By Continental ADAS | LL yes <input checked="" type="checkbox"/> no <input type="checkbox"/> | 8D Status OPEN | Status Date December 2018 |
|-----------------------------|--------------------|---------------------|---|--------------------------|---------------------------------|---|-------------------|------------------------------|

| Problem / Situation / Risk | Causes / Technical Description, Picture |
|---|--|
| <p>Problem Definition:</p> <ul style="list-style-type: none"> - Hardware malfunction may lead to ARS410 sensor misdetection with warning - Affected production timeframe from 02/2018 to 06/2018 - Field situation: 500k sensors in field <p>Risk Assessment:</p> <ul style="list-style-type: none"> - ARS410 sensor performance may degrade with warning - Weibull analysis shows up to 2.25% occurrence rate | <p>Technical Description:</p> <ul style="list-style-type: none"> - ARS410 internal power supply may oscillate, impacting the radar detection performance <p>Root Cause:</p> <ul style="list-style-type: none"> - A certain capacitor vendor used in the power supply circuit may degrade ARS410 performance over time. |

| Action Plan | Problem Defined | Contained | Root Cause | Corrective Action | Prevention Reoccurrence | Date | Resp. | Open / Closed |
|---|-----------------|-----------|------------|-------------------|-------------------------|----------------------|----------------------------|---------------|
| <p>Containment:</p> <ul style="list-style-type: none"> - Blocked specific capacitor vendor - Provided suspect material information to OEM for containment <p>Corrective Action:</p> <ul style="list-style-type: none"> - Root Cause analysis and discussion with OEM regarding next steps <p>Prevention of Reoccurrence</p> <ul style="list-style-type: none"> - Update introduction & release process of capacitors | | | | | | 04.06.18 15.06.18 | Continental Continental | C C |
| | | | | | | From 2019 | Continental | O |
| | | | | | | 2019 | Continental | O |