OEM/OES parking assistance systems

0490 – Platform/06x “intelligent” sensors

Vodafone
Power to you

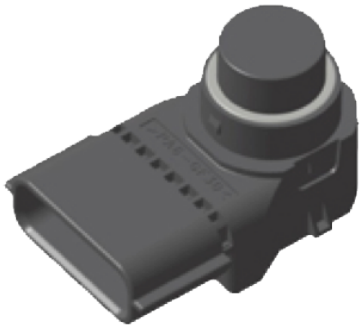
Parking assistance systems (PAS) provide effective aid during low-speed manoeuvres as they alert the driver to unseen obstacles behind or in front of the vehicle, preventing collisions with objects or persons and the consequential damage.

Vodafone Automotive’s special focus on road safety issues has led to intense research and development activities in this field. The result is a significant enhancement of performance, reliability and design aesthetics.

The innovative architecture of this PAS platform makes it ideal for OEM and OES applications. The “intelligence” of the system has been moved from the engine control unit (ECU) into the ultrasonic sensors, whose digital electronics can manage the entire processing of the ultrasonic echo signal. The information is then forwarded to the ECU via a LIN bus (2.0) connection and subsequently reported to the driver by means of audible signals and/or graphic representations. Depending on the technical characteristics of the destination vehicle, the ECU and the audible/visual interfaces can come with the sensors as a comprehensive kit (platform 0490) or be substituted by OE mechatronics and infotainment parts (body control module [BCM], onboard human machine interface devices).

Description

A parking assistance system that senses the presence of obstacles behind or in front of the vehicle during low-speed manoevres and warns the user with audible signals and/or graphic representations.



Key features

- **“Intelligent” bumper sensors:** The integrated electronics can manage the measurement of the echo time, the assessment of the warning zone, the evaluation of the obstacle’s relative speed, and the filtering of environmental noises.
- **Versatile and waterproof sensor housing**: The same sensors are suitable for both flush-mount and clip-on mount and can be equipped with 90° or 180° automotive waterproof connectors.
- **Single-wire connection between the sensors and the ECU**: Data exchange takes place via LIN bus 2.0.

Benefits

- **Easier and quicker wire connection:** The use of LIN bus communication between the ECU and the sensors (one wire for the whole set of four or eight sensors) makes the wiring harness considerably lighter.
- **Fine adjustment facility:** Through specific LIN messages, it is possible to “read out” what each sensor sees in real time. This allows for individual tuning of the sensitivity and shaping of the detection cone, so that the best possible performance is guaranteed on every vehicle model.
- **Easy, cost-effective integration with the vehicle’s driver information system/infotainment system (DIS/IS):** The “intelligent” sensors can be driven directly by the original BCM (up to a max of four rear plus four front units) with no hardware change and minimal software modification. Similarly, the information provided by the system can be transferred to the driver by means of in-vehicle audio/video equipment, so that a high-performance combination of acoustic and visual assistance is possible while minimising costs.
- **Full technical support:** A team of experienced professionals is available for the development of make/model-specific solutions and for the evaluation of the best performing setup parameters.
- **Installation is quick and error-proof:** There is no need to tune the equipment.

Kit components

- One ECU (front or rear parking assistance) or two ECUs (front and rear parking assistance), which may be replaced by the vehicle's BCM.
- Four sensors (front or rear parking assistance) or eight sensors (front and rear parking assistance).
- Loudspeaker, which may be replaced by an in-vehicle audio device.
- Push-button with integrated LED (for manual activation and deactivation of detection).
- Wiring harness.
- Make/model-specific user and installation manuals.

Operation

Front parking assistance

Detects obstacles in front of the vehicle within a range of 60cm down to 10cm and warns the user with audible signals. The frequency of the signals increases as the vehicle gets closer to the obstacle. When the obstacle is in the maximum alert zone (30cm to 10 cm from the vehicle) the bleeps turn into a constant tone. The range is adjustable.

Audio warning is complemented by visual indications if the relevant output is interfaced with an in-vehicle graphic display.

Detection is enabled when the vehicle's speed is lower than 20 km/h and disables itself automatically as this speed is exceeded (speed signal read from the vehicle odometer sensor).

Manual activation/deactivation is possible by means of a push-button switch.

As an additional option, front detection may be enabled jointly with rear detection when the reverse gear is engaged and disabled after a pre-set time-delay.

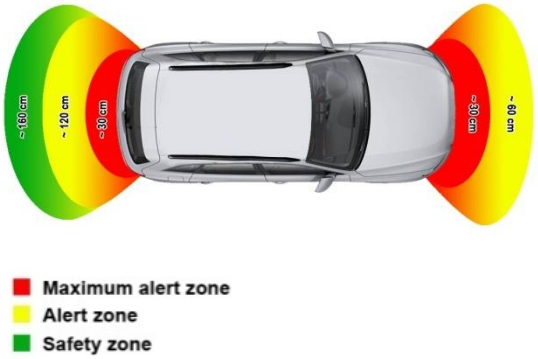
Rear parking assistance

Detects obstacles behind the vehicle within a range of 200cm down to 10cm and warns the user with audible signals.

The frequency of the signals increases as the vehicle gets closer to the obstacle. When the obstacle is in the maximum alert zone (30cm to 10cm from the vehicle) the bleeps turn into a constant tone. The range is adjustable.

Audio warning is complemented by visual indications if the relevant output is interfaced with an in-vehicle graphic display.

Detection is activated automatically when reverse gear is engaged. Manual deactivation is possible by means of a push-button switch.



Product data

Nominal operating voltage (VDC):	12
Operating voltage range (VDC):	9 to16
Control unit operating temperature (°C):	-40 to +85
Control unit dimensions (mm):	67 x 60 x 23
Sensor case dimensions (mm):	43 x 29 x 22
Transducer diameter	Ø 14

Homologations

ECE-R-10 equivalent to 2006/28/EC Automotive EMC Directive.

Standard compliance

ISO 17386 Second Edition (MALSO).