



Is ADAS calibration on your radar?

Advanced driver assist systems (ADAS) might sound futuristic, but safety features including adaptive/automatic cruise control (ACC), autonomous emergency braking (AEB), automatic parking assist (APA), lane departure warning (LDW) and blind spot detection are already common features on many of today's vehicles.

Using combinations of radar, cameras, lasers and/or infra-red and ultra-sonic sensors, ADAS systems monitor the vehicle's environment, assessing speed and proximity to other road users and structures. Intelligent computing then interacts with the vehicle's braking and steering systems, providing greater control and making for safer roads. At slow speeds, they also provide invaluable driver assistance for parking and manoeuvring.

Understanding ADAS technology and the components can be daunting and often confusing. This article will focus on the front mounted, long range radar, which is largely used for ACC and AEB and will provide guidance on when a calibration is required as well as general information on radar sensors.

When is it necessary to re-adjust or re-calibrate a radar sensor?

It's always essential to refer to the vehicle manufacturer's instructions but, as a guide, here are a few common scenarios when radar sensor calibration or adjustment is necessary.

- After radar sensor replacement or dismantling/installation
- After post-accident repairs to the body geometry
- After changes to the vehicle level at the front or rear axle
- After a suspected impact on the sensor
- If the ECU detects exceeded tolerance levels for the measuring field
- After the impact carrier has been dismantled.

What's the difference between "adjustment" and "calibration"?

Adjustment of many radar sensors can be done vertically and horizontally

using two screws, similar to headlamp adjustments. This is purely a manual adjustment. However, the electronic control unit needs to be taught the new adjusted position, which automatically calibrates the ADAS.

Other generations of radar sensors are not equipped with mechanical adjustment features. If the system detects an error, or after any of the above-mentioned repairs/changes, the measuring field must be calculated again, and a compensation value configured in the electronic control unit. In this case, calibration via the vehicle's software and diagnostic tool takes place.



How can you detect a radar sensor?

Some radar sensors do not have a visible curve. Depending on the supplier, the sensor often appears to just be a black, rectangular plastic housing. The mega macs diagnostic tool from Hella Gutmann Solutions can assist in locating the radar sensor's position in the vehicle.

Are there different types of operating principles?

Radar signals are used to measure distance to an object. Depending on the defined measuring distance, carrier signals with different frequencies are used as a "means of transmission". Medium-range radar systems, up to approx. 60m generally operate at 24 GHz (new generation 77 GHz), while long-range radar systems, up to approx. 250m use 76 to 77 GHz.

Why do some radar adjustments require a laser attachment?

In these systems, the electronic control unit does not initiate measuring field detection via its own radar signal. Instead, this is determined by the vehicle manufacturer and the programming of the system controller. To establish the measuring field, the laser attachment is magnetically fixed to the angle adjustment plate of the calibration tool and the laser beam is aimed at the mirror, which is integrated into the radar sensor. The mirror reflects the beam back to the scaling system of the laser attachment. The radar sensor is adjusted using screws so that the laser dot hits a pre-determined area on the scaling system that has been specified by the mega macs. There are quite a few vehicles that require radar sensor adjustment via laser, including many models from VAG and Mercedes.

What kind of equipment is needed for the adjustment/calibration process?

Requirements include a diagnostic device whose software supports the radar-based ADAS in the respective vehicle, and a calibration tool (hardware) with supplementary radar sensor adjustment equipment to support radar variants.

Hella has been developing and manufacturing radar sensors since the early 2000s and is now into their 5th generation of sensor technology. Supplying many European and Asian OEMs, Hella is considered a leader in radar technology and continues to push the boundaries to further evolve vehicle safety systems.

Being wholly owned by Hella, Hella Gutmann Solutions has the necessary knowhow and an award-winning, user-friendly, modular camera and radar calibration tool, compatible with most ADAS-equipped vehicle models.

For a no obligation discussion with one of our ADAS calibration specialists, call 1800 061 729 or email hgcustomersupport@hella.com



Is ADAS calibration on your radar?

If you're trying to keep pace with changes in today's vehicle technology, then you're not alone.

With the majority of new vehicles featuring Advanced Driver Assist Systems (ADAS), the chance of encountering this technology during a repair is accelerating.

Understanding ADAS, the components behind the technology and when an ADAS calibration is required, is vital knowledge for today's technicians, with calibration of critical Advanced Driver Assist Systems such as Autonomous Emergency Braking (AEB) and Lane Departure Warning (LDW) being an essential procedure to restore a vehicle to the manufacturer's specifications after repair. So, knowing where to find the expertise and support can give peace of mind.

Being wholly owned by HELLA, a global leader in vehicle electronics, HELLA GUTMANN SOLUTIONS has the necessary know how and an award-winning, user-friendly, modular camera and radar calibration tool, compatible with most ADAS-equipped vehicle models.

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