



### **Bosch calibration systems allow efficient and precise readjustment and recalibration**

#### **Integrated system for accurate calibration of driver assistance systems**

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- ▶ Optimized Bosch ADAS positioning software simplifies and speeds up the exact positioning of the calibration device
- ▶ New vehicle-specific calibration mats make it easier to calibrate surround and rear cameras with millimeter precision
- ▶ Special calibration target allows precise calibration of modern lidar sensors in conjunction with the Bosch DAS 3000 calibration device

Karlsruhe - With driver assistance systems becoming increasingly common in modern passenger cars and vans, car workshops are more and more frequently having to recalibrate these camera-based and sensor-assisted systems following servicing or repair work. For the professional readjustment and recalibration of sensors, Bosch offers workshops an integrated system comprising Esitronic 2.0 Online software, KTS-series diagnostic testing equipment, and a range of calibration fixtures from the DAS 3000 computer-controlled recalibration and readjustment device family. Bosch has now further improved its positioning software, making target positioning considerably faster. It now takes half as much time to precisely align the reference boards as when using a tape measure or laser measurement. The Bosch delivery scope for the calibration of driver assistance systems now also includes special floor mats for the calibration of rear and 360-degree surround cameras in Mercedes and Volkswagen passenger cars. And with a new board for the DAS 3000, workshops can now also precisely recalibrate lidar sensors.

#### **Extensive experience of sensor production**

In the automotive and consumer electronics field, Bosch is one of world's biggest sensor manufacturers. When developing recalibration systems for professional workshop use, therefore, Bosch can draw on extensive expertise and broad

general knowledge in the area of sensor technology and sensor interaction in modern driver assistance systems. Bosch calibration systems enable workshops to recalibrate the vehicle sensors of practically any passenger car and van in the market – precisely and very efficiently. The computer-controlled DAS 3000 calibration device, for example, can be set up for the calibration of driver assistance systems in less than ten minutes. This is roughly 50 percent faster than with a conventional laser-based system.

### **Set-up time for aligning the calibration device halved**

The rapid and uncomplicated set-up of the calibration device is due in great measure to Bosch's new ADAS positioning software. The most time-consuming part of the process of calibrating driver assistance systems is the exact, correct positioning of the target in front of the vehicle. Cameras integrated in the calibration device record the reference points and boards on and in front of the vehicle. With its image-processing algorithms and sensor-specific programming flows, the positioning software guides users, with graphic animations showing them exactly the target and actual positions of the calibration boards to the front, rear, and sides of the vehicle. In addition, it digitally visualizes values such as distance, yaw angle, and lateral displacement. As safety relevant components, sensors have to be readjusted with millimeter accuracy. Even the tiniest deviations can compromise the systems' roadworthiness. Digital, software-assisted alignment allows levels of precision to be achieved that satisfy the safety requirements for Level 3 automated vehicles. Compared with alignment using a tape measure or laser measurement, the time to set up the calibration device is halved.

The entire calibration process is controlled by Bosch Esitronic 2.0 Online workshop software. It walks users through the entire process step by step. A vehicle-specific database provides set-up advice on subjects such as the right type of calibration board and the distances required. Finally, a report is generated confirming that calibration has been performed correctly in accordance with the manufacturer's stipulations.

### **Calibration floor mats for VW and Mercedes surround and rear cameras**

Bosch now provides vehicle-specific calibration floor mats that allow workshops to extend their services to include the calibration of rear and 360-degree surround view cameras. The set for the readjustment of the surround-camera system in Volkswagen vehicles comprises two waves-free, wear-resistant floor mats. For recalibration, the calibration mats are rolled out alongside the vehicle, and manually brought into the correct position. The vehicle-specific floor mat for recalibrating the rear camera in Volkswagen and Mercedes passenger cars is

furnished with an L-shaped metal frame. This ensures correct alignment when positioning is done digitally using the Bosch DAS calibration device.

### **Special calibration board for the readjustment of lidar sensors**

In the near future, Bosch expects to see a significant increase in the number of lidar sensors installed in vehicles. Up to now, they have featured mainly in premium vehicles. A new UN regulation approving Level 3 automated driving from January 2021, together with similar national regulations in many countries, means that ultra-precise lidar sensors are gaining in importance. This makes it all the more important that lidar sensors be precisely readjusted following servicing and repair work. For this purpose, Bosch has developed a special calibration board that can easily be fixed to the DAS 3000 calibration device. Depending on where the lidar sensors are installed, the lidar board can be set at any height between 300 and 800 millimeters. The required height is set precisely using Bosch's proprietary GLM 120/150 laser measuring module. The module can also be used to correctly set the pitch and roll angle. Bosch Esitronic 2.0 Online workshop software walks users step by step through the process of aligning the lidar board, including distance measurement, lateral offset, and the calibration process itself.

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