Assistance and comfort systems

Networked intelligence: Night vision assistant and Porsche InnoDrive

The Panamera Turbo S E-Hybrid is equipped with numerous standard or optional assistance systems to make the driving experience not only more comfortable and convenient but also safer – including Porsche InnoDrive and Night Vision Assist. Night Vision Assist uses a thermal imaging camera to detect people and larger animals at distances of up to 300 metres, and provides corresponding coloured warnings in the cockpit. The new Porsche InnoDrive with adaptive cruise control is another ingenious feature: Based on three-dimensional, high-resolution navigation data, it calculates, and subsequently activates, the optimum acceleration and deceleration values as well as gear selections and coasting specifications for the next three kilometres. In doing so, this electronic copilot automatically takes corners, gradients and maximum speeds into account. Other vehicles and current speed limits are detected by the radar and video sensors and included in the control process.

Night View Assist can alleviate critical situations in advance

In Panamera cars equipped with Night Vision Assist, a thermal imaging camera at the front of the vehicle detects the infra-red radiation given off by all living things. A control unit determines the thermal differential image and feeds this information into the right-hand display (“Car & Info”) in the Porsche Advanced Cockpit. Initially, the image appears in black and white, As soon as the thermal imaging camera detects people or animals, they are clearly shown in yellow. The driver intuitively recognises these colour changes as an advance warning. If the situation is deemed hazardous, the image changes from yellow to red. At the same time, the “Speed & Assist” instrument (to the left of the tachometer) displays a “pedestrian” or “animal warning” symbol. The system is therefore able to distinguish between people and animals, which is important because wild animals in particular are unpredictable. The system also issues a sound warning. If equipped with Night Vision Assist, the Panamera is also fitted with optional LED Matrix headlights (PDLS Plus). These headlights rapidly flash three times if a pedestrian is located in the range of the high beam (Matrix beam function), making it easier for the driver to spot the pedestrian while braking or attempting an evasive manoeuvre. Unnoticeable to the driver, the brakes are also prepared in advance to decelerate the Porsche as fast as possible.

The Night View Assist is active up to a speed of 250 km/h. The “animal warning” is automatically deactivated in urban areas to prevent false warnings, which could be triggered by a dog walking by on a lead. Technical heat sources, such as the engine of a car that has just been parked, are not detected by the Night View Assist.

Porsche InnoDrive including adaptive cruise control anticipates the road

Porsche InnoDrive with adaptive cruise control is a particularly ingenious feature: Using the navigation data, it calculates the optimum acceleration and deceleration values for the next three kilometres, and activates them via the engine and the eight-speed PDK as well as the brake system. In doing so, the electronic co-pilot takes corners, gradients and maximum speeds into account. It detects the current traffic situation using a radar and video sensors and adjusts the control process accordingly. Porsche InnoDrive – an innovative system developed by in-house Porsche engineers – significantly improves the

efficiency of the Panamera Turbo S E-Hybrid, enabling vehicle functions such as coasting, trailing throttle fuel cutoff and braking interventions to be controlled more efficiently than ever before using predictive navigation data.

Porsche InnoDrive also offers clear benefits in terms of comfort and dynamics when using the adaptive cruise control system. The system even recognises roundabouts, and adjusts the vehicle speed to match the circumstances ahead. When “Sport” mode is activated, Porsche InnoDrive switches to a dynamic map. As with the classic distance regulator, the radar-video sensors also monitor the distance to the traffic ahead and permanently adjusts this distance accordingly.

The range of assistance systems has been expanded for those situations in which even the fun of being in a Porsche is limited: traffic jams. The traffic jam assist system supports the driver through integrated longitudinal and lateral control of the car in congested traffic situations at speeds of up to 60 km/h. It does this by following a detected tailback under ACC control and combining this with steering assistance via the electromechanical steering system, which can be easily overridden at any time.

Adaptive cruise control increases comfort and safety on the motorway

When the latest Panamera was launched in the middle of last year, the functions and performance of the adaptive cruise control system were vastly improved: Instead of just one radar sensor (normally integrated in the centre of the front section), two are now used in the second-generation Panamera; these are positioned to the left and right in the bumper. The adaptive cruise control system also uses information from the camera sensors. This system enhancement results in more reliable monitoring of the distance from vehicles in front. In addition, vehicles merging in from the side from the adjacent lane are detected significantly sooner. If necessary, the system brakes the vehicle until stationary. Thanks to a stop-and-go function, the Panamera also pulls off again automatically. If it is stopped for longer than three seconds, a short tap on the accelerator pedal or a restart via the control stalk is needed to move off again. The automatic distance control is active between the speeds of 30 and 210 km/h. Where possible, the system also makes use of the coasting function (engine in neutral, open clutch) to further reduce fuel consumption.

Lane Change Assist offers clear safety benefits

Lane Change Assist uses two radar sensors in the rear bumper to detect the distance to and speed of vehicles approaching from behind in the adjacent lane. If both values are deemed critical, a visual warning is shown in the relevant exterior mirror. significantly reducing the risk of the driver missing a car in his blind spot. The system detects vehicles at a distance of up to 70 metres and can be activated between speeds of 15 and 250 km/h. Below this speed range, the rear turn assist can alert the driver of vehicles approaching from the rear in turning situations.

Lane Keeping Assist including traffic sign recognition

Lane Keeping Assist is designed to reduce the risk of leaving the lane unintentionally – one of the most common causes of accidents on country roads. The system in the Panamera detects lane markings using a camera integrated into the windscreen, and works at speeds of 65 to 250 km/h. If the driver leaves his lane without indicating, the new electromechanical steering system automatically counter-steers against the manoeuvre. If required, an acoustic and visual warning in the instrument cluster can also be activated in

the PCM. Traffic sign recognition, which uses the same camera as Lane Keeping Assist, is part of the system. It displays the detected speed limit as well as overtaking restrictions and additional signs that are stored in the digital map and compared with the signs detected by the camera. In the new Panamera, traffic sign detection has been expanded to include a useful feature: cornering information, which gives the driver early notification of tight corners.