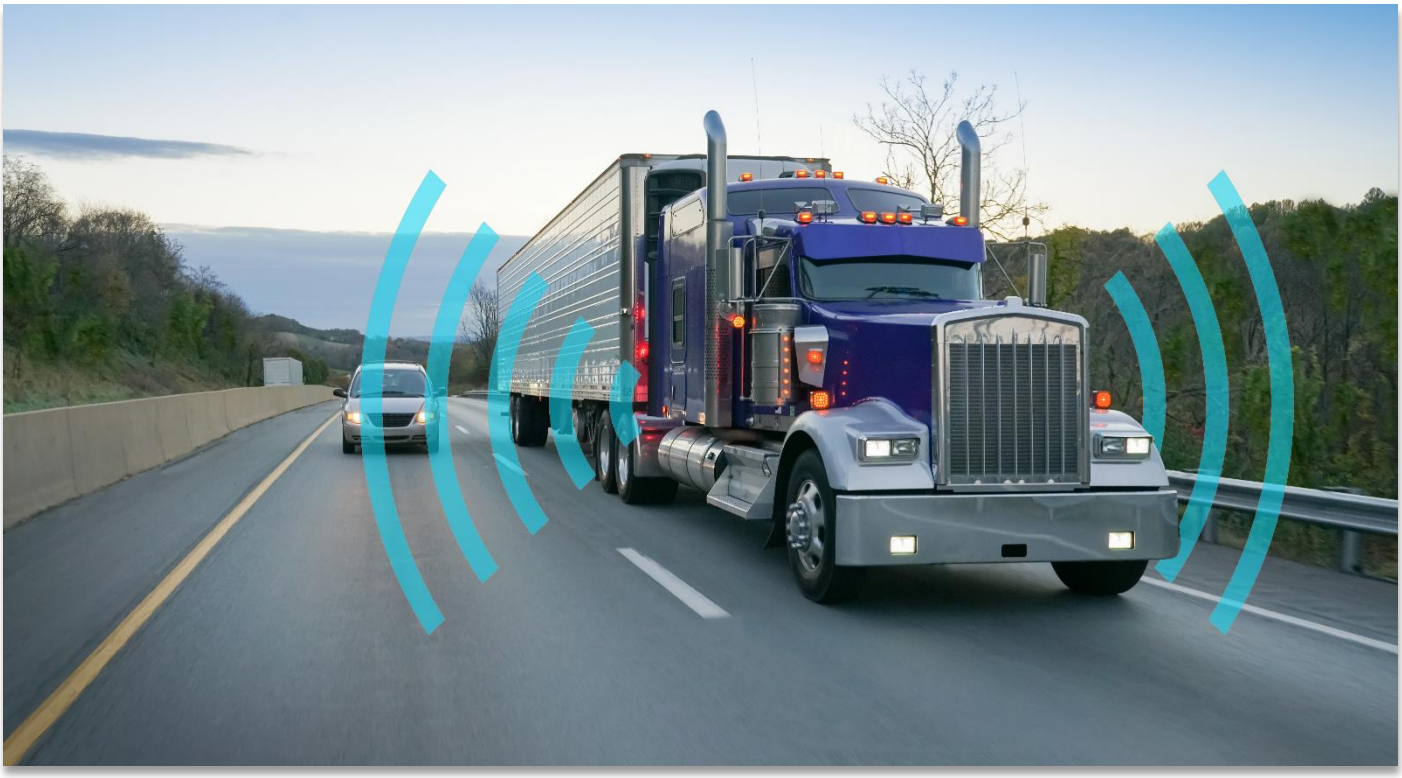
BLIND SPOT SENTINEL

See the Unseen

INSTALLATION-USER MANUAL



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General Information

Symbols used in this document

⚠DANGER

Description of an immediate situation which will result in irreversible injury or death if the warning is ignored.

⚠WARNING

Description of a possible situation which may result in irreversible injury or death if the warning is ignored.

⚠CAUTION

Description of a possible situation which may result in irreversible injury if the warning is ignored.

NOTICE

Description of a possible situation which may result in material damage if the warning is ignored.

Important information, notes and/or tips

Reference to information on the internet

Safety Information

- Only trained and qualified auto technicians and automotive mechanics should carry out work on the vehicle.
- Read this publication carefully.
- Follow all warnings, notices and instructions to avoid personal injury and property damage.
- Always abide by the vehicle manufacturer's specifications and instructions.
- Observe all accident regulations of the respective company as well as state and national regulations.
- The workplace should be dry, sufficiently lit and ventilated.
- The BSS Radar sensors must not cause the overall width of the vehicle to exceed 2.5m.
- Use personal protective equipment if required (safety shoes, protective goggles, gloves and ear protectors).

Read and observe all Danger, Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

⚠WARNING

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip or fall over. Serious personal injury and damage to components can result.

Warnings, Cautions and Operating Guidelines

Driver Related Information

WARNING

The BSS system is only a driver's assist tool and does not actively engage in any driving situations or traffic, weather or road conditions.
The driver always bears ultimate responsibility for ensuring that the vehicle is driven safely and that applicable laws and road traffic regulations are followed. Failure to do so can result in serious personal injury or death and/or severe property damage.
The driver is responsible for understanding the operation and limitations of the BSS system before operating the vehicle. Failure to do so can result in serious personal injury or death and/or severe property damage.

WARNING

The BSS system was designed, manufactured and installed as an operator assistant. This system is not intended to replace good attentive driving behaviours and practices which may change based upon traffic and road conditions. Use of the BSS system cannot compensate for a driver that is tired, distracted, inattentive or impaired by fatigue, drugs or alcohol. As always, it is the driver's responsibility to:

- Use safe driving techniques.
- Exercise proper judgement for the traffic, road and weather conditions.
- Maintain a safe distance between vehicles and respect speed limits.
- React to road conditions to maintain control of the vehicle.

Failure to do so can result in serious personal injury or death and/or severe property damage.

WARNING

The BSS system is designed as a warning system and thus, will not actively intervene to prevent contact with other vehicles, persons or objects. The system is not intended as a substitute for proper lane change procedures. Alerted by a BSS warning, the driver must take corrective measures to avoid an imminent side collision.

Drivers must remain aware of their surroundings by using all available mirrors before changing lanes. Never rely solely on the system. BSS is a radar-based system and has a defined detection zone. Vehicles outside of the detection zone will not be detected by the system. In some situations, not every vehicle or object will be detected by the radar even within the detection zone.

By design, the BSS system will not warn of the following:

- Any stationary object, such as parked cars, trees, walls, etc.
- Vehicles moving in the opposite direction.
- Smaller objects, such as bollards, posts etc.

Environmental Related Information

WARNING

The BSS radar sensor performance may be degraded or completely disabled under these conditions:

- Damaged fascia.
- Poor weather conditions such as heavy snow, ice, heavy rain or road spray.
- Dirt, mud or insect build-up.

If the system is not functioning correctly or as expected, have the BSS system inspected to correct the issue. Whether or not the system is working correctly, it is the driver's responsibility to react to changing road conditions to maintain vehicle control. Failure to do so can result in serious personal injury or death and/or severe property damage.

Introduction

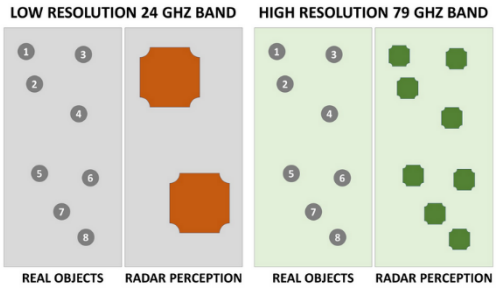
BSS Introduction

System Description

BSS (Blind Spot Sentinel) is an advanced driver assistance system that supports drivers in overtaking, turning corners and lane change manoeuvres to help avoid side collisions. The BSS system is passive, there is no switch or button to turn the system on or off. The system powers up when the ignition is cycled on, at this time the BSS system will perform a bulb check and flash the BSS LED indicators before activating the blind spot detection alerts (visual and/or audible) and the system activates once the vehicle is doing 3 km/h or more. Once active, the system constantly monitors the vehicle's passenger and driver side blind spots and warns of moving vehicles appearing in the vehicle's side blind spots. The BSS 79GHZ microwave sensor system is equipped with high speed aerial computing and is placed on the sides of the vehicle. Any moving object that is closer to the blind spot than 3 meters from the right and left sides and 20 meters behind the device will be detected by the sensors. The computer will then calculate the speed of the object, the speed differences and the distance to the vehicle. A LED indicator will then indicate that there´s an object in this blind spot area, or signify that an object is moving fast from behind the vehicle and about to enter the blind area (Level 1 warning). The LED indicator will remain lit as long as the object remains in the blind spot, warning the vehicle driver of the current condition.

Features

- Utilises advanced 79GHz RFCMOS radio frequency technology. Due to the width of available frequencies, a move from 24GHz to 79GHz achieves 20x better performance in range resolution and accuracy. The range resolution of a 79GHz system is 4cm versus 75cm for 24GHz radar, allowing better detection of multiple objects that are close together. This increased performance provides the ability to accurately detect smaller objects such as bicycles and pedestrians.



- Uses powerful signal processing algorithms and computing platforms, which have been highly tuned to identify and categorise moving objects from static objects and accurately track them while in range of the sensors.
- Suitable for all 12 - 36 volt (DC) vehicles.

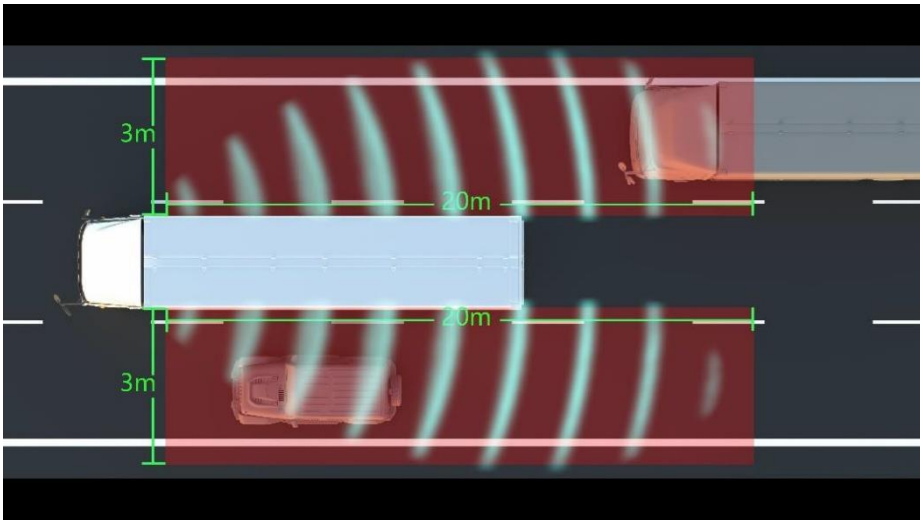
BSS Functionality

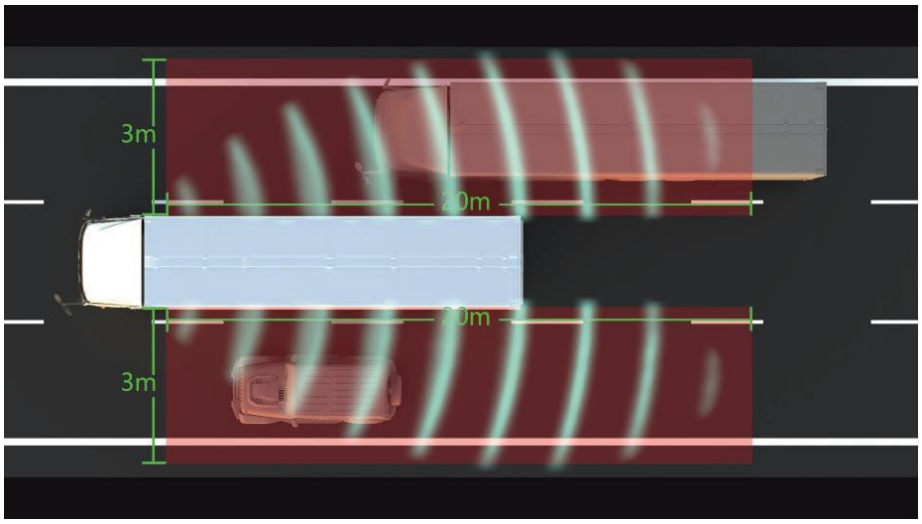
The Blind Spot Sentinel system delivers a number of key safety functions;

- Blind Spot Detection (BSD)
- Lane Change Assistance (LCA)
- Corner Navigation Assistance (CNA)
- Rear Cross Traffic Alert (RCTA)

Blind Spot Detection

The BSS system utilizes a 79 GHz short-range radar sensor mounted on the sides of the truck cabin to constantly monitor the vehicle's blind spot zones. The radar continuously detects a wide variety of stationary and moving objects in the vehicle's blind spot, while the algorithm filters out the stationary objects. This allows the system to warn the driver only of moving objects (objects traveling in the same direction) and only in the adjoining lanes.

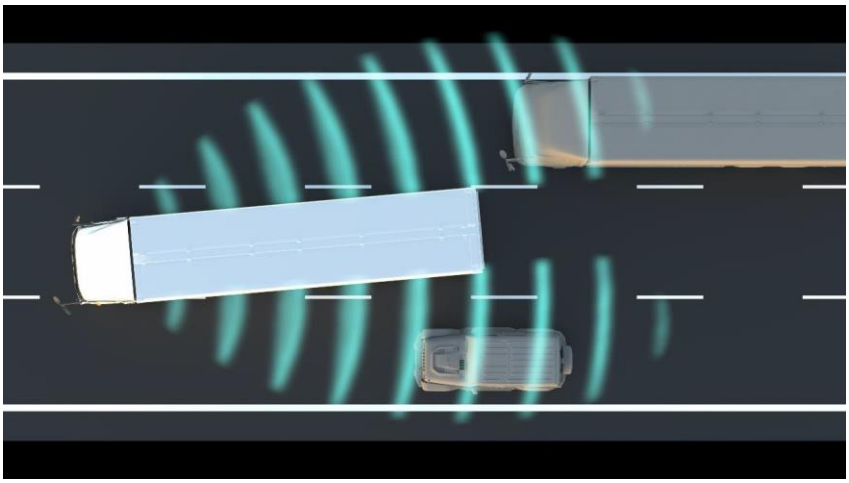




BSS Functionality

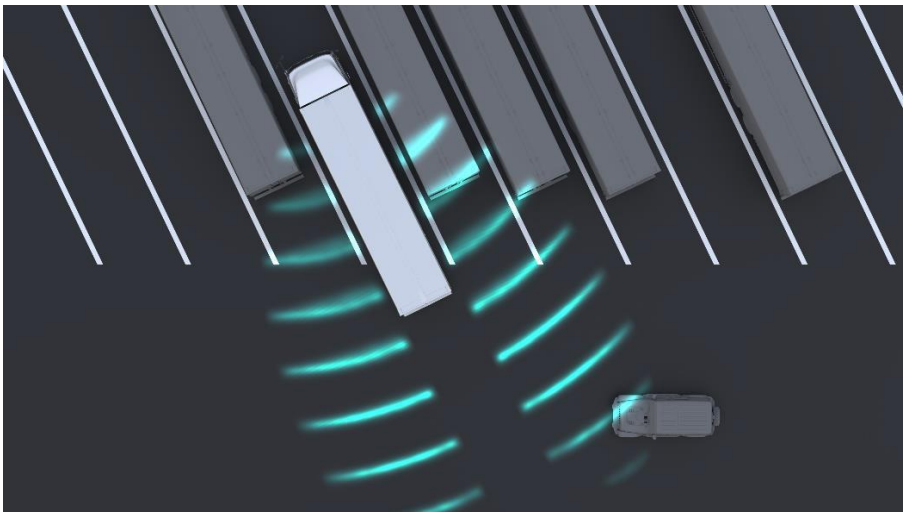
Lane Change Assistance

If the driver indicates a lane change to a lane that contains a moving object in the blind spot, turning on the indicators will create a Level 2 warning buzzer along with appropriate side LED indicator lighting up to alert the driver to the current situation.



Rear Cross Traffic Alert

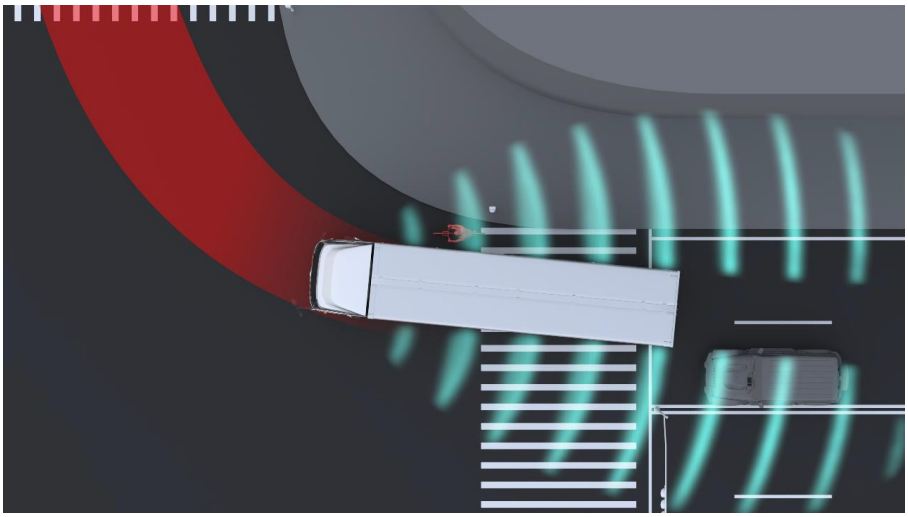
If reverse is engaged, the radar system mode will automatically change to prioritize the area directly behind the reversing vehicle to ensure there is no moving cross traffic obstructing the direction of the trucks motion. If a vehicle is detected, it will create a Level 2 warning buzzer along with both LED indicator lighting up to alert the driver.



BSS Functionality

Corner Navigation Assistance

If the truck's indicator is lit and the truck starts to turn, the inside position closest to the curb will be surveyed by the radar sensor. In this mode the radar signature will detect any moving pedestrians, motorcycles and bicycles and the driver of the vehicle will be alerted by the buzzer and LED indicator.

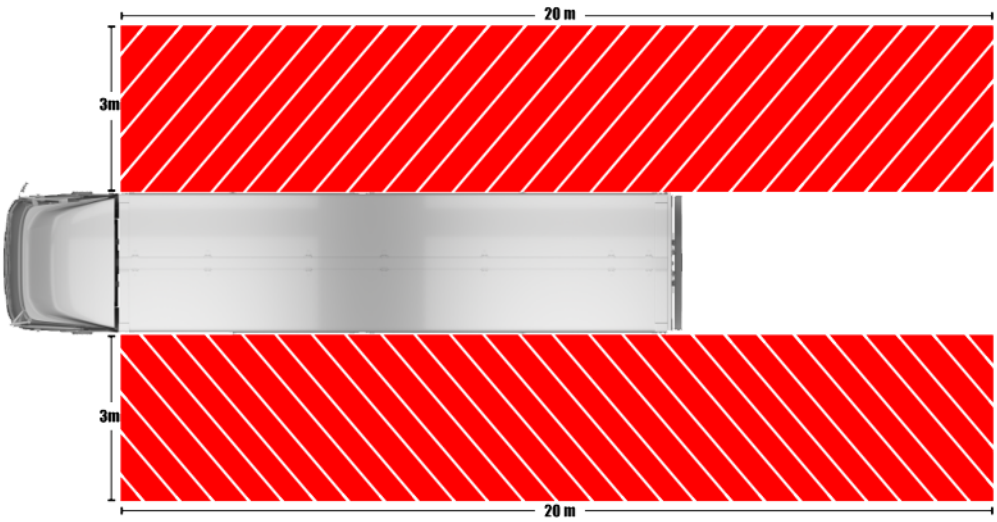


What's in the box

		Right and left radar sensors including adhesive rubber mounting pads, screws and plugs.
		Right and left extension connector cables for the radar sensors.
		Visual warning indicators (LED) for right and left hand radar sensors. To be mounted on the respective A pillars in the cabin
		Right and left connection cables for the visual warning indicators.
		Audible warning beeper
		Main cable harness Control module.

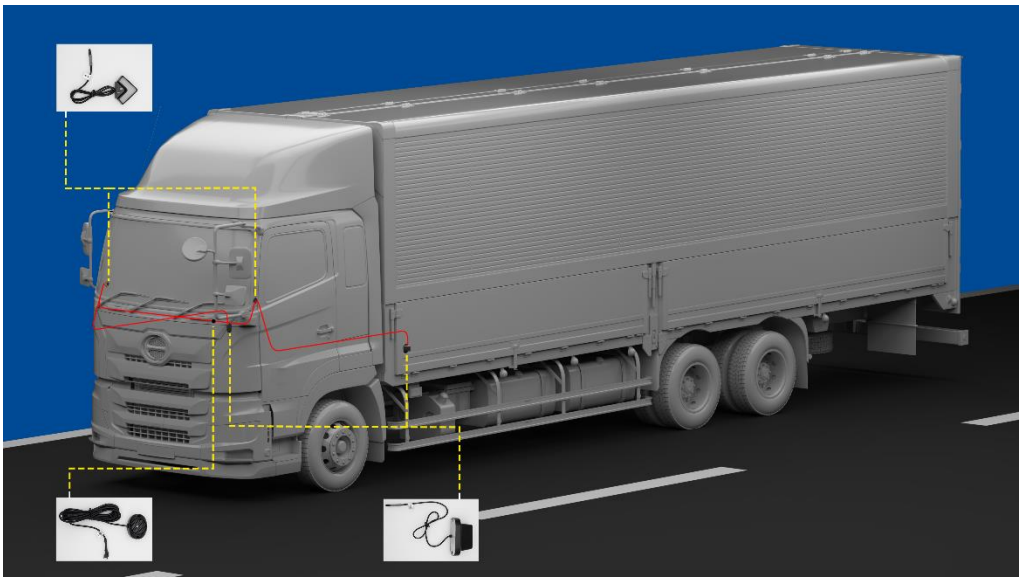
The radar sensors are waterproof and dustproof and have been independently certified and rated with an International Rating of IP67. All components are covered by a 3-year warranty against product defects.

Position of sensors – detection area



The position of the radar sensors needs to be determined individually for each vehicle depending on the design and construction. The following points should be noted:

- The detection area of the radar is behind the sensors, so the mounting position should be as far forward as possible on the vehicle.
- The sensors must be mounted at a height between 60 cm (24”) and 100 cm (40”) above the road.
- The sensors are mounted vertically to the vehicle, the contact surface must be aligned vertically and parallel to the vehicle with the inclined surface facing towards the rear.
- The inclined surface of the sensor must have a clear "view" to the rear of the vehicle which is where the radar scanning occurs.
- Metallic objects between the sensor and the detection area of the sensors shield the signals leading to error detection situations.
- The sensors are pre-marked both in colour and with text: Yellow - right side, Red - left side.



Sensor Installation

Installation will vary due to different vehicle fairing designs on each truck model.

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- The sensors can be mounted directly onto vertical side surfaces of the vehicle with the supplied adhesive rubber underlay, taking into account the specifications for the installation position. Screws and plugs for installation are also included.
- If there are no suitable installation positions on the vehicle for structural reasons, suitable mounting plates may need to be added.
- A 6 mm (.25”) hole is required in order to pass the sensor cables through the mounting surface. Use the supplied connection cables in order to bring the cables into the driver’s cabin.

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- The inclined surface of the sensor must have a clear "view" to the rear of the vehicle which is where the radar scanning occurs.

LED Warning Indicators

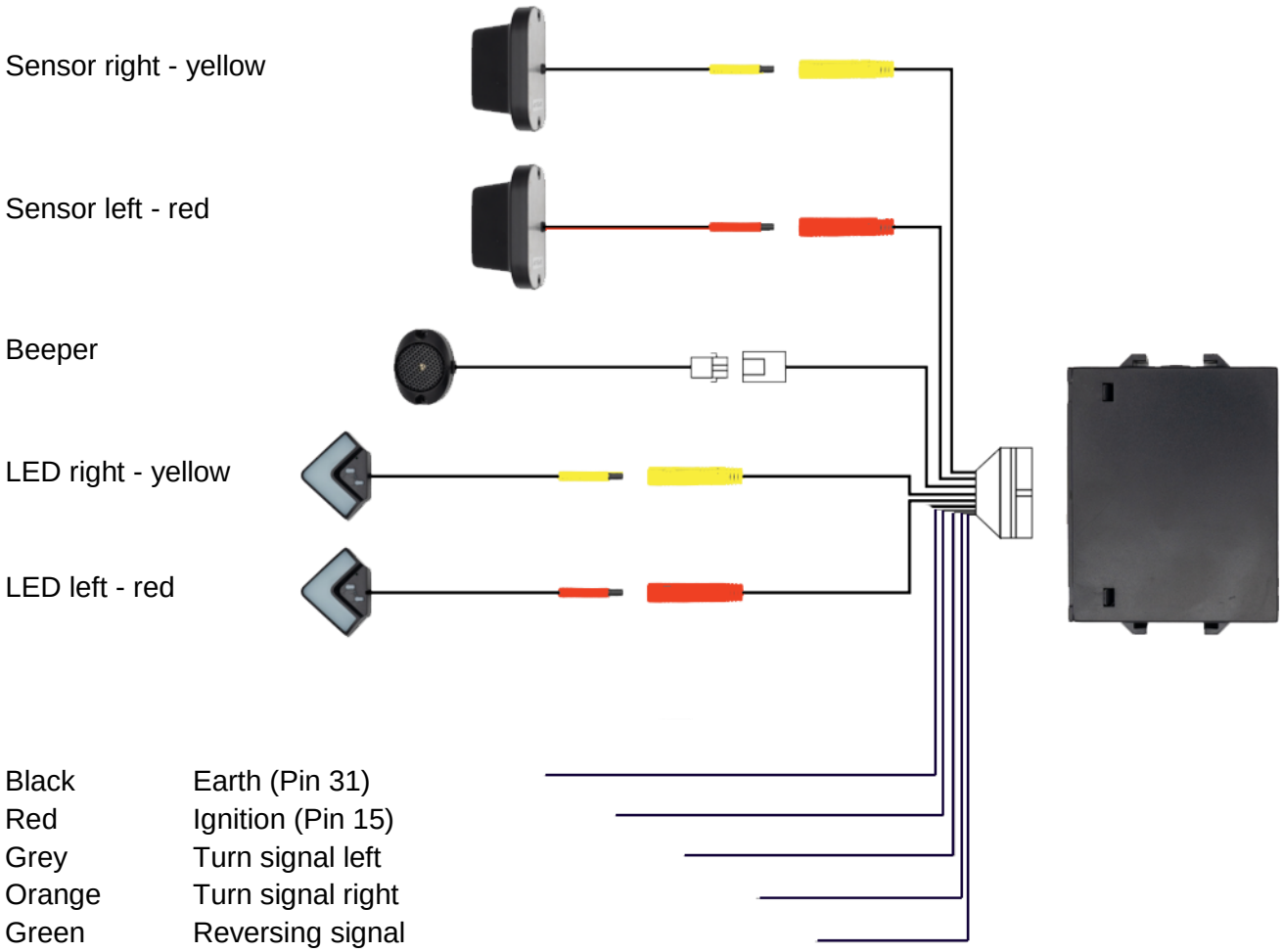
- Mount the LED indicators on both A-pillars in the driver's field of vision. The displays are self-adhesive.
- The supply cables can either be routed through a 6 mm (.25”) hole behind the cladding or laid in a rebate or edge.
- Guide the cables to the control unit with the supplied extension. (see "Installation control unit")

Audible Beeper

- Position the beeper at the top of the dashboard, above the sun visors or behind an open grille so that it can be clearly heard by the driver.
- Connect the beeper to the control unit. (see "Installation control unit")

Control module and main cable set

- The control unit needs to be installed in a suitable dry area in or under the dashboard and fixed securely to avoid it moving while the vehicle is in motion.
- Connect the main cable set to the control unit and connect the cables according to the connection plan as follows.



Black	Earth (Pin 31)
Red	Ignition (Pin 15)
Grey	Turn signal left
Orange	Turn signal right
Green	Reversing signal

Note: All cables and plugs are labelled according to their function

BSS Specifications

Operating Voltage	12 - 36 V DC
Sensor Size Metric	87.5 x 67.5 x 49 mm
Sensor Size Imp	3.45 x 2.66 x 1.93
Operating Current	1A (max) at 12 V
Operating Temperature C	-40 C - 85 C
Operating Temperature F	- 40 F - 185 F
Operating Frequency	79 GHz microwave
System Activation Speed	3 km/h / 2 mph
Radar Sensor Angle	120 degrees
Radar Resolution	4 cm / 1.5 inches
Detecting Distance	0.3 m - 20 m (1 ft - 65 ft) for vehicles, 10 m (33 ft) for humans
Collision Warning	LED's and Buzzer alarm
Scanning Area	3 m x 20 m (9.5 ft - 65 ft)
Environmental	IP67 rated

Installation

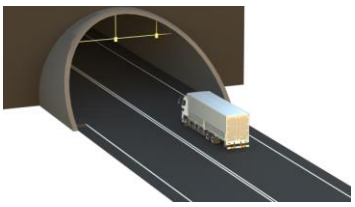
After Installation

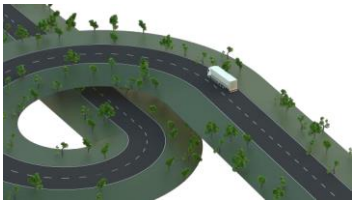
Once the system has been installed and wiring and connections verified, it should be checked for correct operation. This is done by turning the vehicle's ignition on which will cause both left and right indicator LED's to light up for 2 seconds and the buzzer to sound once. The system is now ready for operation. As a final test a person should walk alongside the vehicle whilst moving slowly to test the function (will require the indicators to be activated as well as reverse gear to be engaged in order to test all situations).

The vehicle will have to be moving slowly in order for the rear cross traffic alerts and corner assist functions to be active. Please ensure the driver is aware at all times of the location of the tester.

Note:

There may be some rare instances where false alerts may occur. These can be triggered where the nearby surroundings provide ambiguous signal returns such as when first entering a tunnel or driving in the lane closest to crash restraints such as Armco railings. Typically the system will ignore these signals within a couple of seconds.





E57

Operating Voltage
9 V – 36 V

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RoHS