

## Parking Dynamics PD1 Rear

\*Parking Dynamics PD1 Parking Sensor is strictly a driving assistance product and should not be used to substitute safe driving practices.

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[ParkingDynamics.co.uk/Installation](http://ParkingDynamics.co.uk/Installation) & [ParkingDynamics.co.uk/Technical](http://ParkingDynamics.co.uk/Technical)

\*If you have a tow bar fitted, spare wheel fixed to rear door or the antenna will be fitted within 3cm of the metal crash protection bar download the PDF 'Boosting PD1 Sensor Detection Range'.

### MOUNTING INSTRUCTIONS

#### 1. WHAT IS THE PD1 SENSOR & HOW DOES IT WORK?

Parking Dynamics PD1 Rear is a parking sensor device that uses a patent protected, low energy electromagnetic wave technology and is able to detect all objects within a set proximity of your vehicle. A unique design ensures No Holes need to be drilled in your bumper making the PD1 totally invisible when fitted!

Once activated by selecting reverse gear the PD1 generates a shielded area around the rear bumper (Fig.2) allowing you to park and reverse in total safety with complete confidence.

When an obstacle enters the zone of protection, a series of acoustic signals are given to alert the driver as to its proximity.

**a) Upon selecting reverse gear** a diagnostic check of the entire system is completed. If the electronic control unit (ECU) is fully operational, a signal of three tones in quick succession are emitted to confirm this.

**b) During the approach to an obstacle** the ECU unit activates the acoustic alert starting from a distance between bumper and obstacle (measured in the central zone of the bumper) of around 60-70 cm, with 3 types of signal.

#### ALERT SEQUENCE

**1) An increase in sequence of "BEEP" informs the driver that an obstacle is approaching** (alert signal).

**2) A continuous sound** when the obstacle is in proximity of the bumper at a variable distance between (15 to 30 cm) according to the type of obstacle. These values correspond to the central zone of the bumper while on the side edges of the bumper the distance is slightly less.

**3) A continuous sound at a different lower frequency** when an obstacle is very close to the bumper (10-15 cm) in order to alert you of possible contact.

#### 2. TECHNICAL SPECIFICATION

- Operation voltage from 10.5 to 18 V
- Average current absorbed: 50 ma
- Temperature of operation from - 20 to +90 °C
- Average distance of sensor activation: 60 cm

#### 3. MOUNTING THE ELECTRONIC CONTROL UNIT (ECU)

**a)** Ensure you have access to route the black twin aerial wire from the boot / trunk to the antenna, which will be located on the inside of the bumper. Look for any grommets or holes provided by the car manufacturer for the routing of this wire. If no hole is present, simply drill a small hole and use a grommet to protect the wire casing.

**b)** Secure the electronic control unit using the adhesive material included (using pressure to ensure a secure fit), inside of the boot / trunk of the vehicle, close to the reverse light cluster but leaving a gap of at least 2 cm to ensure no interference with the existing electrical components.

#### 4. ANTENNA MOUNTING NOTES

The adhesive aluminium antenna sensor must be installed on the inner side of the bumper and it is **of high importance** that the antenna is installed on **highest part from the ground** and on the greatest protrusion of the bumper from the car body. 40cm to 60cm from the ground with 50cm being optimum.

*The ECU must be mounted inside of the boot / trunk of the vehicle and the antenna sensor on the inside surface of the bumper following the procedure of the points 4a and 4b.*

**Note:** The system is only able to work optimally when the antenna sensor is run the full length of the bumper leaving a gap of at least 3 cm from the metal structure of the vehicle especially the metal crash protection bar found behind the bumper. But it *can run over a metal structure for a short length of 2/3 cm.*

#### MOUNTING THE ANTENNA

##### Pre-test:

Once you have measured and determined your desired heights for the 1 or 2 antennas, and before fixing the bumper back on permanently. Position the bumper back on your car using only the clips to hold it, and test with your hand to ensure you are satisfied with the detection range. Move antennas if required. Only use 2 antennas if required, see **Boosting Detection Range** notes.

\*When doing a Pre-Test only approach the vehicle once and then reset the system by disengaging reverse gear or false alerts from the system can be given during this test.

**a)** Remove the bumper and carefully clean the inner side surface using alcohol or other solvent (but NOT anti-adhesive detergent), where the antenna will be positioned.

**b)** Place the antenna connector so that it will be situated at the side of the bumper where the ECU is positioned. Also ensure that once the bumper is re-fitted there is a route for the wire into the vehicle. Run the antenna over the full length of the bumper onto the sides leaving a gap of 20cm from the wheels. Use strong pressure to secure the antenna appropriately and cut off any excess. If you accidentally break the antenna, simply rejoin by overlapping.

**c)** For maximum adhesion and optimum protection apply a piece of the included black adhesive material at either end of the antenna. Its recommended (but not essential) to cover the antenna with a black anti-rust protection paint that is applied to the underneath of a car chassis to protect from the elements or use a similar plastic protection primer.

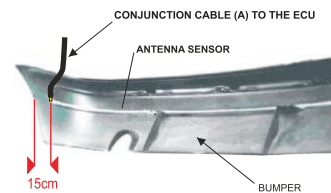


Fig. 1 Antenna assembled on bumper

#### 5. ELECTRICAL CONNECTIONS

##### 5.1 Connecting the Electronic Control Unit (ECU).

**a)** Connect the twin wire antenna connector to the ECU and route this wire out of the vehicle using an original rubber grommet on the car body or through the hole you have made for ease of access. \*Do NOT run the twin antenna wire through the Air Valve if present near your bumper.

**b)** Insert the connector that houses the power, earth and speaker connector.

**c)** Provisionally replace the bumper on the car.

**d) Twin Black Antenna Wire:** Twist the 2 wires together and crimp on the supplied male connector. Now connect to the female connector on the antenna positioned on the bumper. This twin antenna wire can be extended up to 20cm if required.

**Note:** This twin antenna wire must be fastened securely to the antenna using the included connector or solder if required. Fix the twin wire securely when routing from ECU to antenna, using as much mastic as you need to avoid any movement or oscillation. This will prevent false alarms.

## 5.2 Electrical Connections

- a) **Red Wire (12V when reverse is engaged):** Connect to reverse light wire.
- b) **Black wire:** Connect to Earth picked up from the body of the vehicle. Typically a small bolt can be found close to the light cluster at rear of vehicle, attach earth wire here or to earth wire.
- c) **Speaker:** Connect using the appropriate connector.

## 6. MOUNTING THE SPEAKER

Mount the speaker in an appropriate position so it can easily be heard, under the side trim in the boot / trunk and connect to the ECU. This wire can be extended if required and run to your desired location.

## 7. FINAL SET-UP & TEST PROCEDURE

Switch on the ignition and select reverse gear. Do Not start the engine.

a) **Upon selecting reverse gear** a diagnostic check of the entire system is completed. If the electronic control unit is fully operational, a signal is emitted (three tones in rapid succession) to confirm this. Once the signal is obtained the system is operational.

**ATTENTION:** If the speaker doesn't give this or any other signal check all connections especially check that the chosen earth (black wire) is secure.

b) Starting from about 1 meter away from the centre of the bumper, walk slowly to simulate the reverse motion of the car. Only approach the vehicle once and then reset the system by disengaging reverse gear or false alerts from the system can be given during this test.

At a distance of around 60/70 cm the first acoustic signal will emit a (Beep... Beep...). The frequency and repetition will increase as the distance from the object decreases and will eventually become a continuous sound at around 20-30 centimetres. A second continuous sound (third signal indicating imminent contact) **will emit only a few centimetres from the bumper.**

**Note:** The **Parking Dynamics PD1 – Rear** alerts you to obstacles that are approaching with more frequent beeps. The alert is only given by moving towards and approaching obstacles and not fixed or stationary obstacles.

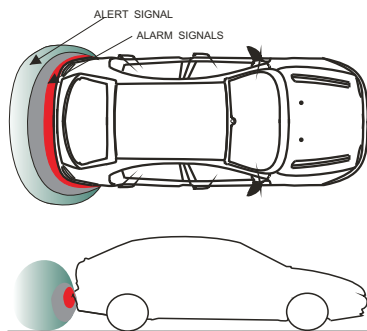


Fig. 2 Protection area

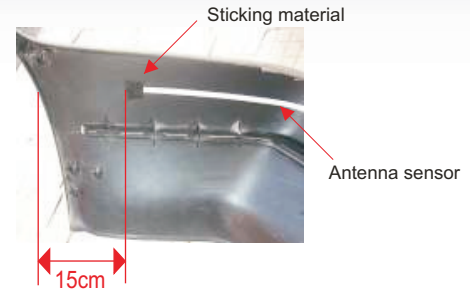


Fig. 3 Run antenna onto sides of bumper

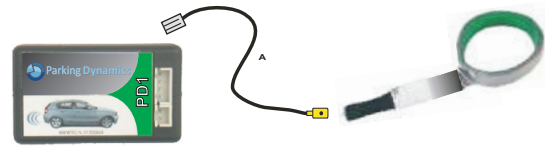


Fig.4 Electronic control unit, antenna connecting cable and antenna

## ALERTS & WARNINGS

- 1) As soon as the system is activated the surrounding area of the bumper (antenna sensor) is monitored.
- 2) **It is very important** during the set-up and testing, not to switch on the system while you are very close to the electronic control unit and antenna sensor as this could result in false information on the working dynamics of the system.
- 3) Due to the operating principle of the Parking Dynamics PD1 Rear sensor and depending on the mounting position of the antenna sensor, the unit can at times give alert signals in error as the vehicle reverses. This is due to detection of the road surface and **is completely normal.**
- 4) Operation in Heavy Rain conditions: \*When heavy rain is present the PD1 parking sensor system automatically reduces its sensitivity in order to eliminate false alarms that can be given by the movement of water on the bumper. False signals in heavy rain conditions are highly affected by specific designs of vehicles and their bumpers. Some bumper designs have a higher chance of false alarms in heavy rain conditions.

False signals are given as a result of water flowing between the car body and the bumper. Parking Dynamics have reduced this as much as possible with good results within the PD1 software for optimum usage.

However once the software does recognise that water is present during a reversing manoeuvre the first and second zones are eliminated to prevent continuous false signals and the next alert zones are utilised until the system is reset and water eliminated.

This is intelligent in itself and \*surpasses ultrasonic's\* in such scenarios ensuring a safe and secure parking and reversing manoeuvre.

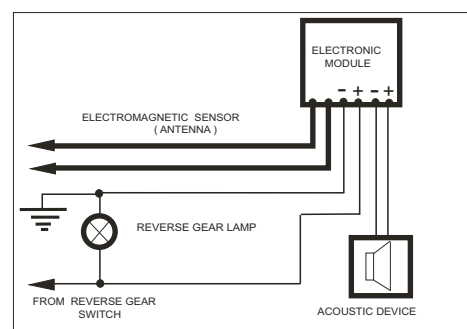


Fig. 5 Electric schematic of connections