

STUDY OF OPERATION CONDITIONS PARKTRONIC

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Abstract. *The article presents the results of studies of the parking system. The object of the study is brand-parktronic. The air temperature during the study, 20 ° C, humidity 40%. We took into account the distance and angle of the object obstacle to parktronic. The paper found that when the distance to the obstacle detection signal increases obstacles. The height of the reception signal also varies with distance: the closer the obstacle to the sensor, the smaller the height of the operation of parking sensors.*

Keywords: *research, parktronic, safety, car.*

Every day, many new vehicles appear on the roads. This requires additional conditions of parking convenience and safety. Car Parking Technologies should be highly intelligent information systems.

Have been developed devices called parking radar or Parktronic. They help to detect an obstacle, to inform the driver about the distance to the obstacle, reduce the risk of damage to located next cars.

Parktronic consists of microcontroller, ultrasonic sensors and graphical indicator or sound escort. Ultrasonic sensors emit a pulse in the form of a cone and work on the principle of echolocation.

The main purpose of the sensors - to detect an obstacle or not an obstacle, as well as of time the echo of return at a known propagation velocity of sound allows us to estimate the distance to the object, and convert the information to the display or sound signals [1].

The ultrasonic parking aid system is usually mounted in the car's bumper. However, there are some points which do not provide full guarantee of proper operation of the parking sensors. For example, the various conditions the climatic environment. Adverse weather conditions may limit the operation of the ultrasonic waves. High or too low air temperature can also be a source of interference in the work of the appliance. Some items parktronic can not "see" on the way: for example, grass, small size pillar, the low curb will not be reflected in the field of parking sensors.

US Insurance Institute for Highway Safety conducted a study [3], in which the aim was to find out which of the electronic assistants: parking sensors and a video camera - effective when maneuvering in reverse.

It was found that neither the ultrasound sensor individually or use it with the camera does not provide the proper level of safety and not guarantee trouble-free movement Principle [3] includes:

- LCD display;
- Increased number of LEDs that reflect the points of approximation to interference;
- Increase sound accompaniment control of obstacles behind the vehicle;
- Compulsory to stop motor on a critical car position in relation to obstacles behind.

Accordingly, the aim of this work is to evaluate the operational error of the work car parking sensors and development of primary recommendations to improve the effectiveness of sensors arrangement in the car.

The work consists of several stages: description of the object, the conditions and methods of research; receiving, processing and analysis of experimental data, conclusions and recommendations.

As an object of research was taken parktronic brand "Sho-Me Y-2622.

Subject of research - the geometric conditions Parktronic sensor response with respect to the obstacles: the distance and the angle of.

A special laboratory installation has been developed for experimental studies. The general scheme of equipment for research is what put in vertically laboratory rack with 4 Parktronic, fixed on the horizontal bar. At a distance from the rack to parking sensors available the rack with obstacle-load whose size 10x4sm. The material from which made the load-barrier, presented in 3 versions: metal, wood and porous fabric [4]. During the experiment varied distance between racks and the height location of obstacles, thereby forming a different angles relative to parktronics [2].

During the analysis the obtained experimental data, it was found that with decreasing distance to the obstacle increases a detection signal obstacle. The height of the reception signal also varies with distance: the closer an obstacle to the sensor, the less the height of the operation of parking sensors, which is shown in Fig. 1.

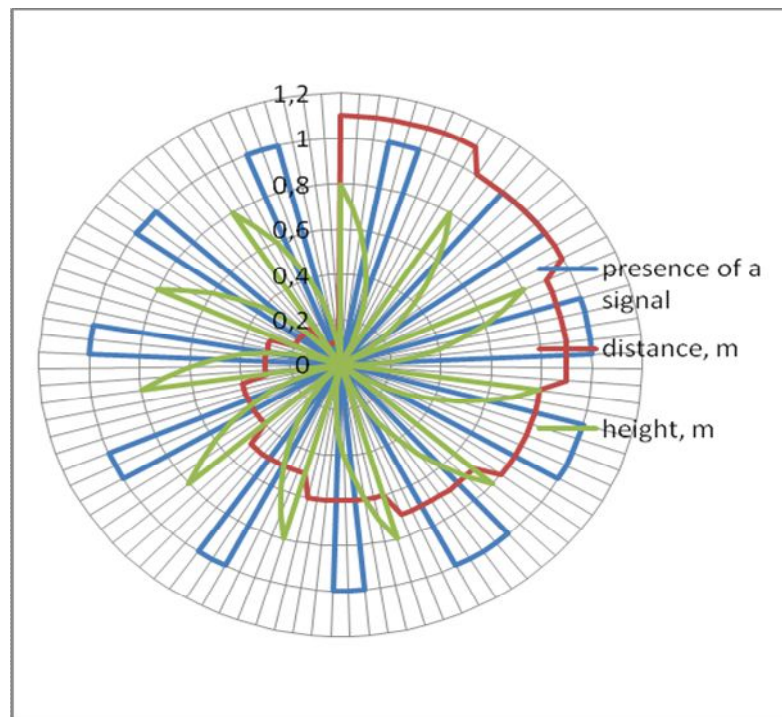


Figure 1 - Diagram of operation of parking sensors on the distance and location of the object height of the obstacle.

When using several sensors simultaneously installed at a distance of 40 cm from each other, there is a so-called "dead zone", which is located between the sensors at the beginning of the signal near the bumper. Also sensors installed at a height of 40 cm from the ground can not detect small objects located on the ground, because the signal is above the ground level and does not handle this surface.

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