

RPS-Radar Parking Sensor

Type: RPS NB-IoT

Disclaimer



Detection Limit

- Sensors are designed for vehicle detection. Vehicles higher than cars such as trucks or buses can occupy more than one parking spot.
- In some cases when a motorcycle is parked above the sensor it might be detected as a car.
- Sensors are designed to detect car park/leave. If more than 1 car is moving slowly one after another over parking, for example as taxi cars on taxi parking, they might not be detected correctly.
- After sensors are installed and in a moment of activation of sensors with application, it is necessary to remove all metal or magnetic objects near sensors. This is crucial for correct and accurate sensor work so it is recommended not to put hammers, mobile phones, screwdrivers or any metal or magnetic objects at a distance of < 1 metre from sensor.
- During installation and activation no vehicle should

be parked on current parking spot

- Sensors will not detect cars which are not parked above sensor.
- Parking spot width should not be smaller than 2,5 metres because it will reduce accuracy of system.
- Cars with a very strong magnetic field can affect the parking of neighbouring cars. The detection ratio can be reduced if there is a large amount of such cars.
- In marked parking spaces, cars must be parked within the marked area in order to be detected, so it is necessary that the marking lines are clearly visible to drivers.
- Putting metal object on parking spots (like knives, bikes, signs) can influence on detection.
- If cars are not parked properly, system accuracy will decrease.
- To detect that a parking space is occupied, the car must be stationary - parked above the sensor for at least 5-10 seconds.
- Detection accuracy may drop to 95% if the sensor is heavily covered with water or snow.

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General

RPS Sensor works with 99 % detection accuracy.

Accuracy is calculated as the ratio between the number of detected cars and the number of total parked cars on the sensors.

This ratio may be higher if all requirements for this system are met or lower if not.

It is recommended to comply with all installation requirements.

The warranty on the sensor is 2 years (including battery *).

RPS sensor is protected inside a compact and extremely tough enclosure, and when properly installed can handle max. pressure of 1000 kg at the top cover.

Detailed instructions can be found in the Product Manual document.

Important

Please read Product Manual document and follow installation guide inside it.

Version 3.0
12.12.2022.

Network communication

- Sensor needs to be in area with NB-IoT coverage.
- SIM card needs to be activated and properly configured.
- Sensor must be able to connect to NB-IoT network.
- NB-IoT sensor requires good NB-IoT coverage which means that ECL level 0 is required for correct sensor work (level of coverage 0 is zone near GSM base station).
- In some cases, sensor can work in ECL level 1, but this affects the number of attempts to send packets due to a weak signal, so battery consumption may be higher, battery life may be shorter, and some packets may be lost during prolonged loss of communication.
- For ECL Level 2 there is no warranty regarding communication or battery lifetime.
- SIM card: 4FF Nano SIM, NB-IoT tariff – monthly traffic 1MB, PIN deactivated.

Technical and installation prerequisites

- Sensor must be installed to a depth of asphalt up to a maximum recess depth of the top cover of 1 cm.
- Sensor it must be protected between the cover and the substrate (along the edge) with a layer of bitumen to avoid the accumulation of dirt or water around the sensor cover.
- Sensor needs to be installed in the middle of parking spot.
- Only qualified and trained personnel can and must be involved into installation and activation of RPS sensors.
- Ensure that all national, provincial, and local safety regulations are observed when installing this equipment.
- Installation of the sensor must not be carried out if the ambient air temperature is lower than 10 °C .

IP protection

- RPS sensor is certified at IP68 protection, at water depth of 1200 mm for 60 minutes.
- If the RPS sensor is in operating conditions outside the certified parameters, the sensor warranty is not valid.

Battery

RPS sensor consist of 1 battery type Li-SOCl₂.

Battery capacity is 17Ah.

Battery voltage is 3,6 V.

Sensor consumption in sleep mode is between 40-50 µA.

If the sensor has a lot of daily changes (more than 50 parking's per day), the sensor will go into battery saving mode. Battery saving mode means that each parking "entry" event will be sent with a 60 second delay. Battery saving mode will be activated until less than 50 parking's per day are reached, or until this mode is manually switched off.

Sensor activity parameters

- Typical wakeups per day 300x, alarm over 350/per day
- Typical battery consumption per day 7mAh, alarm over 12mAh
- Total packets per day: alarm over 80 packets
- Typical total working per day is 50 minutes/day, alarm over 70 minutes per day
- RSSI network signal, alarm over -120 dBm

Network signal level and battery lifetime

Calculations are provided at battery temperature 22°C and at voltage 3,6V, but also at following network conditions:

ECL zone 0 (quality signal):

RSRP: -112 dBm, SINR: 9dB (downlink)

* The expected battery life is 5 years, with 15 to 30 parking per day, and 1 to 2 RPS network searches per week.

ECL zone 1 (weak signal):

RSRP: -122 dBm, SINR: 1dB (downlink)

There is no estimated battery life. It depends on the network registration time and the number of packet repetitions. Battery life can be reduced by 20 to 80%.

ECL zone 2 (very weak signal):

RSRP: -129 dBm, SINR: - 8 dB (downlink)

It is not recommended to install sensors in areas with this network coverage level.