



# **eleven-X SPS-X Smart Parking Solution Stall Sensor**

User Manual

Model PRK001001

version 1.0 (2020-11-04)



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Version	Date	Description
1.0	2020-11-04	Initial Document Creation



## Introduction

The eleven smart parking sensor is an innovative patent-pending LoRaWAN®-based device that utilizes multiple technologies including magnetic sensing, radar, Bluetooth® wireless technology and AI that provides:

- Real-time stall occupancy status and monitoring
- Industry leading accuracy based on multiple sensing technologies backed by advanced AI
- Designed and engineered for maximum reliability and robustness
- Leverages standards-based low power wireless technology
- Ultra-long battery life

The rugged sensor is designed to function in all conditions. It can be installed on the parking surface or below the surface. Surface installation is done using a combination of high strength adhesive and screws. Inground installation is achieved by coring a hole in the parking surface, inserting the sensors and filling with road grade epoxy. For details see the eleven-x installation guide.



The sensor sends parking events over LoRaWAN to the eleven-x SPS analytics platform where the data provides key analytics and insight to help parking manager understand the usage of the parking assets. Bluetooth technology provides easy installation, configuration, and maintenance of the sensor.

## LoRaWAN Overview

LoRaWAN™ [which stands for long range wide area network], is the undisputed leader in open standard LPWA [low power wide area] networks with deployments globally. The technology is backed by the LoRa Alliance™, which is a global organization comprised of over 500 organizations with the goal of moving IoT forward.

Some of the key features of LoRaWAN™ include:



1. **LOW POWER CONSUMPTION:** Wireless, battery-powered devices operate up to 10 years on standard batteries.
2. **LOW TOTAL COST OF OWNERSHIP:** Low-cost battery-powered devices combined with low connectivity and installation fees and little-to-zero maintenance keep overall program costs down.
3. **OPEN STANDARD:** LoRaWAN™ is based on open architecture which enables open data environments.
4. **LONG RANGE:** Reliable connectivity in urban and indoor environments with connectivity extending up to approximately 48 km [30 miles].
5. **SECURITY:** LoRaWAN™ utilizes 128-bit AES encryption.

For more information, refer to the LoRaWAN™ specification.

## **Bluetooth Low Energy**

BLE is a variation of the Bluetooth wireless standard designed for low power consumption. It is an industry leading standard for power efficient communication between devices. Bluetooth Low Energy uses the same 2.4 GHz radio frequencies as classic Bluetooth. BLE is supported by most modern cell phones and tablets.

BLE is used by the parking sensor for installation, configuration, and maintenance. The sensor can only connect with the eleven-x Android phone application. The phone application connects in the eleven-x platform using the phones internet connection and provides seamless installation.



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eleven-x Testing Job

Find Sensor by DevEUI (SN) 

Scan Sensor's QR Code 

Find Nearby Sensors 

Choose Sensor by Stall 

Choose Unassigned Sensor



## Sensor Usage

The parking sensor is for use in outdoor parking lots, street parking and in parking structures. It is to be installed as described in the above section and the installation manual.

The sensor should not be opened or modified in anyway.

## Regulatory Information

To comply with FCC and Industry Canada RF radiation exposure limits for general population, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and all persons at all times and must not be co-located or operating in conjunction with any other antenna or transmitter

### 47 CFR Part 15 Regulation Class B Devices

Per FCC 47 CFR 15.105, this equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



## FCC Interference Notice

Per FCC 47 CFR 15.19(a)(3) and (a)(4), this device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

## Modifications

As per FCC 47 CFR 15.21 and ISED Canada, changes or modifications not expressly approved by eleven-x could void the user's authority to operate the equipment.



## Industry Canada Notice

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicable aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## Contact Information

Please contact your local sales representative or our support team for further assistance.

Web: <https://eleven-x.com/>

Email: [support@eleven-x.com](mailto:support@eleven-x.com)

Phone: 1-226-887-0011





## Legal Notices

The eleven-x products are not designed, manufactured or intended for use, and should not be used, or sold or re-sold for use, in connection with applications requiring fail-safe performance or in applications where the failure of the products would reasonably be expected to result in personal injury or death, significant property damage, or serious physical or environmental damage. Examples of such use include life support machines or other life preserving medical devices or systems, air traffic control or aircraft navigation or communications systems, control equipment for nuclear facilities, or missile, nuclear, biological or chemical weapons or other military applications (“Restricted Applications”). Use of the products in such Restricted Applications is at the user’s sole risk and liability.

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