LoRaWAN® Geomagnetic Parking Sensor

ParkNode Gen 1

MACNMAN

Introduction

The ParkNode Gen 1 is an industrial-grade LoRaWAN® Geomagnetic Parking Sensor designed for real-time vehicle presence detection across smart parking deployments, commercial parking facilities, municipal parking infrastructure, campuses, industrial sites, malls, airports, and smart city applications. Using advanced geomagnetic vehicle detection technology, the sensor accurately detects parking occupancy while enabling long-range wireless communication through LoRaWAN® networks.

Built for harsh outdoor environments, the ParkNode Gen 1 combines ultra-low power architecture, rugged IP-rated construction, intelligent vehicle detection algorithms, and event-based uplink reporting to deliver scalable smart parking infrastructure with minimal maintenance requirements.

Features

- Real-Time Parking Occupancy Detection
- Advanced Geomagnetic Vehicle Detection Technology
- High-Accuracy Vehicle Presence Detection
- Event-Based Vehicle Detection & Reporting
- Instant Parking Occupancy Status Updates
- Tamper Detection Support
- Rugged Waterproof IP-Rated Enclosure
- Compatible with Public & Private LoRaWAN® Networks & Macnman MacTalk Protocol

Key Advantages

- Improves Driver Experience and Parking Availability Visibility
- Improves Driver Experience & Parking Convenience
- Reduces Parking Infrastructure Deployment Costs
- Supports Centralized Multi-Site Parking Management
- Enables Predictive Parking Utilization Analysis

Sensor Measurement Specifications

Detection Method	**3-Axis Geomagnetic Field Sensing**
Magnetic Sensitivity	**±200 to ±1000 µT Dynamic Range**
Detection Accuracy	**> 96 % Vehicle Presence Detection Accuracy***
Detection Latency	**< 30 Seconds - 2 Minuts (Arrival / Departure)**
Self-Calibration	**Automatic Baseline Calibration & Drift Compensation**
Tilt Tamper Detection	**Detects Sensor Tilt, Movement & Unauthorized Tampering**
Installation Type	**Surface Mount on Asphalt / Concrete**

Wireless Specifications

Wireless Protocols	LoRaWAN® (v1.0.4), Macnman MacTalk Protocol
Antenna	Internal high-efficiency antenna
Supported Bands	IN865 / RU864 / EU868 / US915 / AU915
Tx Power	23 dBm @ 865 MHz
Sensitivity	-137 dBm @ 300 bps
LoRaWAN® Class	Class A (Default), Configurable to Class C via Maya
Device Activation	OTAA
Supported LNS	Private LNS , ChirpStack ,The Things Network , MQTT, Orbiwise

Device Management

Configuration Method	Factory Pre-Configured
Local Configuration	NA
Remote Configuration	Over-the-Air Configuration (Downlink Commands)
Status LED	NA

Device Configuration Parameters

Data Reporting Mode	Event-Based
Transmission Interval	Independent uplink interval for optimized power consumption
Tamper Alerts	Detects Device Tilt, Physical Movement, and Unauthorized Tampering
Periodic Transmission	Yes Supported (Heartbeat - Message Type)

Battery Performance

Power Supply	Integrated Battery - 6,000 mAh
Battery Type	Lithium Thionyl Chloride (Li-$SOCl_2$)
Estimated Battery Life at 25 °C	
50 Events / Day	~7 Years
100 Events / Day	~3.5 Years
250 Events / Day	~1 Year

Physical & Environmental Specifications

Enclosure & Mechanical	
Material	Glass Filled Nylon
Protection Rating	IP68
Dimensions	202 mm X 33 mm
Weight	~290 g
Mounting & Installation	
Surface - Mounted Installation	Supported , With Fasteners
Stack - Parking Installation	NA
Environmental Conditions	
Operating Temperature	-40°C to +80°C
Operating Humidity	0% to 95% RH (Non-Condensing)

Regulatory Certifications & Compliance

Wireless Certification	WPC
Environmental	RoHS Compliant

What's in the Box?

- ParkNode Gen 1 Sensor
- Mounting Clip*
- User Manual
- Warranty Card
- Fasteners *
- Mounting Screws *
- Base Rubber Sheet *

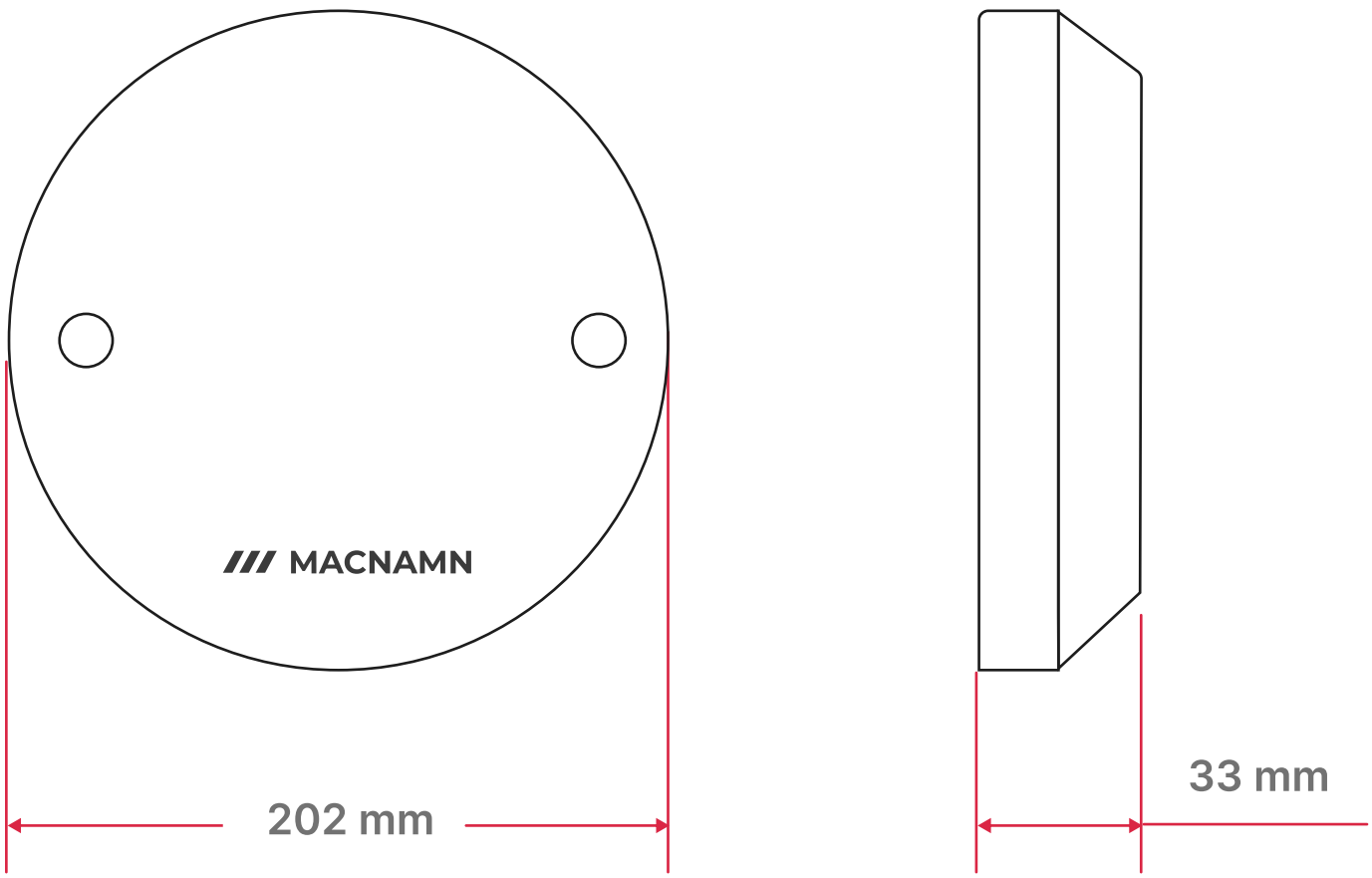
Models & Ordering Information

Variant Name	Power Source	SKU
ParkNode Gen 1	Integrated Battery - 6,000 mAh	844

Notes

- (*) Marked accessories must be purchased separately

Device Dimensions



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Say Hello 👋

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