

RV-V50 GPS Tracker

License Free
Auto/Truck/Human Tracker

The RV-V50 secure GPS Tracker is a small, very low-power GPS transponder for use in the license-free USA 902-928MHz ISM band. Having the longest communication range of almost any radio modem available, it can locate and monitor assets such as automobiles, trucks, racers, and rental equipment. Using license-free frequencies, there are no recurring fees to use the V50. Its optional built-in rechargeable battery has very long battery life.



Preliminary Product Overview

Long-Range Operation

The unit communicates over 1 to 30 kilometers to a Wireless Hub. Range depends upon terrain, and is 50X better than most radio modems in its class. Additional wireless hubs can be added to extend coverage. Quality and elevated Hub antennas give a system awesome range.

Embedded Radio Modem

The V50 is a radio transceiver and radio modem in one small IP65 enclosure. (Enclosures are available). The V50 reports location, speed, heading, voltage, odometer, and many other parameters.

Efficient Power Consumption

The RV-V50 can operate off DC input from 7-50V DC. Average power consumption is dependent on GPS reporting and communication rate. An internal motion sensor saves power by slowing report rate based on motion. The RV-V50 version has a fixed attached 3m power cord. The C option adds a removable power cord with rugged sealed connection.

Built-In Battery Option

Connect the RV-V50 to an external DC power source, or use its rechargeable battery. Battery life depends upon reporting rate. Typical numbers:

- | | |
|---------------------------------|---------------|
| • Constant 10 second rate | 1 day |
| • Constant 60 second rate | 7 days |
| • Constant 10 minute rate | 1 month |
| • Constant once daily rate | 6 months |
| • 10 second rate, motion detect | 1 - 100 days |
| • 1 minute rate, motion detect | 14 - 100 days |

Scalable and Secure Data

The data encryption features encrypt transmissions using AES128 encryption. No one will be able to monitor your private wireless system. A single Wireless Hub can track thousands of assets in real-time. Add more hubs to expand the system to millions of devices.

Private Network

The V50 communicates with Raveon's unique Skyline system. The Skyline Wireless Hub is a private base station that collects the data and GPS information from the V50/51, decrypts it, and passes it on to the user's applications. Hubs are inexpensive and can be added to the system to extend range around multiple locations. You own them, so there are no recurring fees associated with them.



Applications

Raveon offers two different GPS tracking applications for the V50, and has an open API so customers may provide their own GPS tracking application.

1. *RavTrack PC*. A windows based asset tracking application. It is optimized for dispatch, industrial, buss, and mining vehicle tracking.
2. *Dart Gate*. A server application for asset management. With user-configurable fields, user can track items and view and sort through a database of information about each item,

General Specifications

Model:

RV-V50-BB-oo (oo = options) (BB= band)

Frequency Bands:

EC 902-928MHz
 ED 868 to 870 MHz
 EF Asia band

Power Options

B 500mAh LiIon batt, with internal charger
 C Detachable power cord, 3m, sealed connector.

Size:

90mm X51mm

Weight:

3.5 oz

Input Voltage:

7-50 VDC

Power Consumption:

Receiving data: <250mW (25mA @10V)
 Transmitting data: < 2000mW (200mA@10.0V)
 Sleep (<100uA)

Full Spec Operating Temperature range

-30°C to +60°C

Inputs / Outputs

3 digital inputs, 0-30V
 1 digital output, open collector 250mA max.

Addressing

Individual ID address: 4,398,046,000

Security

Encryption Method..... AES128
 Electronic Serial Number..... Silicon ESN
 Configuration Monitor..... Serialized on update

Transmitter Specifications

RF Power Output 100mW – 1W (programmable)
 Maximum Duty Cycle..... 100% to 40C, 20% to 60C
 TX Spurious outputs..... < -70dBc
 Occupied Bandwidth..... Per FCC
 Frequency Stability Better than ±5ppm

Receiver Specifications

RX sensitivity (.1% BER)9600bps < -125dBm
 4800bps..... < -128dBm
 1200..... < -130dBm

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512< -132dBm

Blocking and spurious rejection-75dB
 RX intermodulation rejection.....-75dB

Input/Output Connection Functions

6-Pin Interface Port

1	GND	Ground
2	VCC	DC Input
3	IN1	Input 1
4	IN2	Input 2
5	IN3	Input 3
6	OUT1	Output 1, open drain, 250mA max load.

Mechanical Specifications

Enclosure Size

Communication Range

The V50 incorporates LoRa technology, multiple RF filters, and a discrete low-noise receiver amplifier to boost its communication range beyond most all radios in its class.

Range is always limited by terrain and local RF noise. In line-of-site, this product will communicate 30-100km. In real-world environments, it is limited by terrain, buildings, and local RF noise. Compared to WiFi, it will have 100X the range. Compared to 4GLTE, it will have 2X the range. The higher the antenna above average terrain, the better the range.

Some typical ranges:

In desert terrain, 3m antenna	5-30km
Wooded environment outdoors	1-5km
Urban, 1-3m antenna	1-5k
Urban, roof-top antenna	3-7km
Aircraft/drone line-of-site	30-100km
Golf Course, 10m antenna	5-15km

Internal GPS transponder

The V50 utilizes Raveon's M50 GPS transponder. This is also available to OEMs.

