RV-V50 Miniature Tracker

Battery Powered
GPS/GLONASS

The RV-V50 Miniature Tracker is a small, very low-power GPS/GLONASS transponder for use in the license-free ISM or cellular bands. Having the longest communication range in its class, it can locate and monitor assets such as automobiles, trucks, racers, rental equipment and more. Its built-in rechargeable battery has extremely long battery life.

Preliminary Product Overview

Long-Range Operation

With the ISM option, 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 incredible range.

Embedded Radio Modem

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

Efficient Power Consumption

The V50 is powered by a 4.5-14VDC input. Average power consumption is dependent on GPS reporting and communication rate but the device conserves power by utilizing various sleep states when not transmitting/receiving. An internal motion sensor saves additional power by slowing report rate based on motion.

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 — 5 hours
- Constant 60 second rate — 2 days
- Constant. 10 minute rate — 1 week
- Constant once daily rate — 1 month
- 10 second rate, motion detect — 1 - 100 days
- 1 minute rate, motion detect — 2 - 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.

Cellular Option

The V50 can also be ordered with a cellular modem in place of the ISM radio. This cellular model also includes the rechargeable battery pack, SMA port for an external antenna and power/communications connector.

Applications

Raveon offers various software solutions based on your application and industry. To learn more about our targeted solutions, please visit iot.raveon.com.

General Specifications

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

Frequency Bands:
- EC 902-928MHz (US)
- ED 863-870 MHz (EU)
- EF 779-787 MHz (Asia)
- CE Cellular

Power Options:
- A 500mAh Li-Ion battery (4.5-14V input)
- B No battery, 5VDC input
- C No battery, 7-30VDC input

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

Operating Temperature range:
- -20°C to +60°C

Inputs / Outputs:
- 2 digital inputs, 0-30V
- 1 digital output, open collector 250mA max
- 1 Analog input (0-50V)

Weight: 3.5 oz

Individual ID addresses: 4,398,046,000

Security

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

Transmitter Specifications

RF Power Output…100mW – 500mW (programmable)
Maximum Duty Cycle…….100% to 40C, 20% to 60C
TX Spurious outputs……< -70dBc
Occupied Bandwidth……...Per FCC
Frequency Stability…… ±5ppm

Receiver Specifications

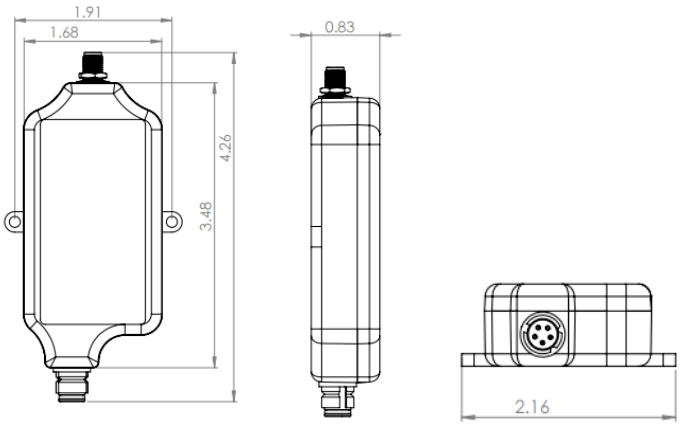
RX sensitivity (.1% BER) 9600bps..... < -125dBm
4800bps..... < -128dBm
1200bps..... < -130dBm
512bps..... < -132dBm
Blocking and spurious rejection..... -75dB
RX intermodulation rejection..... -75dB

Input/Output Connection Functions

8-Pin Interface Port

1	GND	Ground
2	VCC	DC Input
3	TX	UART MOSI (V50 is master)
4	RX	UART MISO (V50 is master)
5	DIN1	Digital Input 1
6	DIN2	Digital Input 2
7	AIN1	Analog Input 1
8	OUT1	Output 1, open drain, 250mA max load.

Mechanical Specifications



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. The higher the antenna above average terrain, the better the range. Some typical ranges:

In open terrain, 3m antenna	5-30km
Wooded environment outdoors	1-5km
Urban, 1-3m antenna	1-5k
Urban, roof-top antenna	3-7km
Golf Course, 10m antenna	3-8km

Internal GPS transponder

The V50 utilizes Raveon's M50 or Z50 GPS transponder. This is also available to OEMs in a module form factor.

Raveon Technologies Corporation
2320 Cousteau Court
Vista, CA 92081 - USA
Phone: +1-760-444-5995
Fax: +1-760-444-5997
Email: sales@raveon.com