RV-M50 Secure Wireless Modem

RV-M50 902-928MHz
OEM Radio Modem

The RV-M50 OEM radio modem is a small, very low-power radio modem for use in the license-free USA 902-928MHz ISM band and EU 868MHz. Having the longest communication range in its class (with an unprecedented 1W max output), it is ideal for GPS tracking, meter reading, telemetry, SCADA and network extension.

Preliminary Product Overview

Long-Range Operation

The M50 radio modem communicates over 1 to 10 km, depending upon terrain, with an unprecedented RX sensitivity 50X better than most radio modems in its class.

LoRa – Dart

The M50 works in various modes, either as a peer-to-peer modem or as an end node on a larger network managed by base stations.

Peer-to-peer: In peer-to-peer mode, the M50 communicates with other M50 modems.

LoRaWAN: Using this ubiquitous protocol allows connection to hundreds of other networks and devices using this same standard.

Dart: Raveon's networking standard which automatically manages messages and routing.

Embedded Radio Modem

The M50 is a radio transceiver and radio modem in one small module (Enclosures are available). Dozens of options and features in the modem may be user-configured to optimize for communication range, bandwidth, data rates, and security.

Efficient Power Consumption

The M50 can operate off DC input from 5V, or 7-30V with the optional DC regulator. While receiving, the M50 draws less than 250mW of power!

High Speed and High Efficiency

The RV-M50 operates with user-selectable over-the air data rates of 1750 to 21,870bps (21.8kb/s). Faster rates for higher efficiency or lower-speed for increased communication range.

Secure Data

When secure data is enabled, the M50 will encrypt transmissions using AES128 encryption. When properly managed, your wireless network using M50 radio modems will be secure and hacker-proof.

GPS Option

The optional internal GPS allows the M50 to be a powerful Automatic Vehicle Locating (AVL) system or Time Space Position Information (TSPI) reporting device.

Internet of Things (IoT) Modem

The M50 is the perfect solution to connect your smart device to the Internet of Things. It was designed with IoT in mind and optimized for low power, low cost and long range.

Tech Series I/O Options

The M50 may be installed in a Raveon Tech Series enclosure with these I/O options. The following interface boards may be attached or changed at any time:

- RS-232 [S]
- USB [U]
- RS-485 [T]
- RS-422 [F]
- GPIO [G]
- Bluetooth [B]

Real-time diagnostics and statistics

Channel performance, RSSI, RF power, packet counters, and radio configuration are easily accessed via the serial port or remotely over-the-air

Flexible Addressing and Error Correction

The M50 uses a dynamic addressing scheme with a network mask, allowing for an unlimited number of devices to be co-located without receiving each other.

Part Numbering

RV-M50-AA-B-CC

- CC: GPS/Ext
- B: Power Supply
- AA: Band

Band Options:
- EC: 902-928 MHz (North/South America)
- ED: 868 MHz (Europe)

Power Supply Options:
- A: 5V Input
- B: 7-30V Input

GPS/Ext Options:
- [Blank]: None
- GX: GPS and Accelerometer

General Specifications

Size:
- 61mm X 37mm

Weight:
- 1.5 oz

Input Voltage:
- (A) 4.7-5.5 VDC full-spec standard
  - (3.3V reduced spec)
- (B) 7-30 VDC optional

Power Consumption:
- Receiving data: <250mW (50mA @5V)
- Transmitting data: < 3000mW (600mA@5.0V)
- Sleep (<50uA)

Over-the-air baud rates (programmable)
- 9 rates from 980b/s to 21.87kb/s

Full Spec Operating Temperature range
- -30°C to +60°C

TX-RX and RX-TX turn-around time
- <5mS

RF I/O Connector
- MMCX (Female)

Regulatory Compliance

(Assuming 3dBi gain antenna)

FCC ..... Rule Part: *15C*
- FCC ID:..... *SRS-M50-EC*
- Power Density .....7.5dBm (8.0dBm FCC limit)

Security

Encryption Method..... *AES128*

Electronic Serial Number..... Silicon ESN

Transmitter Specifications

RF Power Output ..... *Up to 1 Watt (highest in its class!)*
(automatically selected to comply with regulations)

Maximum Duty Cycle ..... *100% to 40C, 20% to 60C*

Receiver Specifications

RX sensitivity

1.17kb/s .....< -129dBm

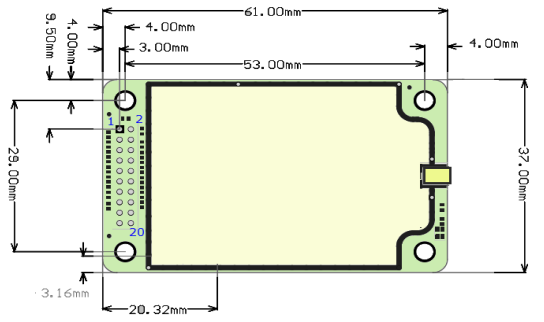
37.5kb/s .....< -115dBm

Input/Output Connection Functions

20-Pin Interface Port

1	GND	Ground
2	VCC	DC Input
3	CD	Carrier Detect Out.
4	TX On	Pin is High when module is transmitting. Low when off, receiving, or sleeping.
5	Data In (TXD)	Transmit data input.
6	Data Out (RXD)	Receive data output.
7	Enable	Low to shutdown the module. High to enable it.
8	Sleep	CPU Sleep input. Put in low-power fast-startup mode.
9	CTS	Clear to send output. Indicates state of internal buffers.
10	RTS	RTS input for serial flow control.
11	AUDOUT	Audio Output (Option)
12	VDIG	3.3V output
13	IOA	IO port A, USB DP
14	IOB	IO port B, USB port, DM
15	IOC	IO port C
16	STAT1	Status IO 1
17	AUDIN	Audio input (option)
18	STAT2	Status LED out
19	GND	Ground
20	V-BACK	Backup Battery In

Mechanical Specifications



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