

RV-M7-U-GX

M7 GX Transponder UHF Tracking Radio/Modem

The heart of Raveon's Real-time Tracking Solution is the M7 GX GPS transponder—a 1/2-5 watt UHF wireless modem with built in GPS, NMEA input/output, and radio modem. An optional IP65 weatherproof enclosure is also available. For use in AVL and asset tracking applications, see www.ravtrack.com for a complete list of Raveon's GPS enabled products.



Preliminary Product Overview



The RaveTrack™ Transponder lets you quickly locate: your co-workers, your trucks that break-down, your rented-boats, your stolen vehicle, a drowsy driver, nearest help, lost people, and slow-moving golfers.

It is the fastest real-time GPS tracking transponder available. It uses commercial UHF radio channels with no service fees, no monthly charges, and it works virtually anywhere.

Applications

- Construction:** Know where all your equipment is, and how it is being used. Quickly locate anyone, as soon as you drive onto the site.
- Public Safety:** Know where your officers and first-responders are, and who's closest to the scene. See the tactical situation in real-time, so you can respond instead of reacting.
- Mining:** Watch your machinery at work, monitoring for improper speed, location, and usage.
- Vehicle Monitor:** Track vehicles in real-time, monitor speed, door sensors, voltage, and operator behavior. Use the M7 GX for tracking, emergency location, and theft recovery.
- Off-road Racing:** Quickly know where your chase truck and race-car are. Find them fast if it breaks or is stolen.
- Parks and Golf:** Easily locate all other vehicles in the park or golf-course. The location display may be in any vehicle, at the ranger-station, or even with a hand-held GPS.
- Marine:** Track all the vessels in your rental fleet, and ensure they are not abused, stolen, or misplaced. RADAR display can be used to display M7 position AND status.

Features

Long-Range Operation

Operating in the UHF 450-470MHz frequency band, the *M7 GX Transponder* can communicate as far as 50 miles (depending upon terrain). All *M7 GX Transponders* also can store-and-forward repeat for wide-area coverage.

Real-time.

Position and status updates are available as quickly as every second. No other tracking system has as fast an update rate as RavTrack.

Complete.

Everything needed to track a vehicle or asset is provided. No secondary services like Internet, cell-service, GPRS, Edge, SMS, or satellite service is needed. Raveon is your one-stop-shop for a complete Tracking system.

Flexible Reporting

The *M7 GX* may be configured to transmit position and status reports at pre-set time intervals(programmable), when it has moved a certain distance(programmable), when an I/O changes, or a combination of these.

No monthly charges.

Because no external services are required, there are no recurring costs for a RavTrack system.

Works Everywhere.

RavTrack does not rely upon public wireless services, so RavTrack systems work in rural areas, mines, mountains, foreign countries, and deserts.

Simple to Interface

The *M7 GX Transponder* is very simple to use and works with a multitude of other software, plotters, and GPS displays including:

- *Lowrance GPS displays and navigation*
- *Garmin hand-held GPSs*
- *Any GPS with an RS-232 NMEA interface*
- *RavTrack PC software by Raveon*
- *Marine Radar Displays*
- *Your own custom application.*

Over-The-Air Diagnostics

The configuration and operation of a *M7 GX* may be remotely tested using over-the-air commands from any other *M7* in the system.

Secure

All position reports are 128-bit AES encrypted for secure communications. No other radio modem, Raveon's or otherwise, will be able to listen in or monitor positions without knowing the security key.

Very Low Power Consumption

The *M7 GX Transponder* has some of the lowest power-consumption numbers in the industry. A remotely controlled sleep mode allows it to be active and consume almost no power at all and an external "Ignition Sense" input is provided to remotely turn on/off the product and not lose GPS ephemeral data.

Rugged and Weather Proof

Available with optional IP65 rated weatherproof connections and enclosure. (-WX option), all models include protection against damage from over-temperature, high VSWR, and reverse voltage.



High Speed and High Efficiency

The *M7 GX Transponder* operates with fast over the air data rates of 4800 to 19200bps. Its fast-switching radio enables it to send up to 20 position-transmissions per second.

Proximity Alerts

Each *M7 GX* may be configured to transmit and alert, as well as signal an output circuit whenever it is in proximity of another *M7 GX*. Used for collision avoidance or theft security.

For More Information

For more information about this or any other Raveon product, call in the U.S.A. 1-760-727-8004 or visit us at www.raveontech.com.

For details on all of Raveon's AVL and Tracking products, please visit our RavTrack web site at www.ravtrack.com.

Raveon Technologies Corporation

2780 La Mirada Drive, Suite C
Vista, CA 92081
Phone: +1-760-727-8004
Fax: +1-760-598-8004

Email: sales@raveontech.com

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How It Works

Fastest real-time location updates in the industry.

The *M7 GX Transponder* has many technological advantages over conventional tracking radios. These include:

- Advanced modulation:*** Most tracking radios operate at 1200 or 2400 baud over the air. The M7 series operate at 4-8X that speed using CPFSK2/4 modulation for data rates as high as 19.2K over the air.
- TDMA Channel Access:*** TDMA (Time-Division Multiplexing) is built in every M7 GX radio modem. With TDMA, 100 vehicles may be tracked with 10-second updates, and no RF interference. Even when using a repeater!
- Data Compression:*** All location transmissions are compressed, allowing not only location to be sent, but also voltage, temperature, input status, speed, direction, and time to be sent – and still take less air-time than most radios use to transmit their position.

Easy to use, and the M7 GX does it all.

The *M7 GX Transponder* may be user-configured for a variety of applications. One simple command is used to program it to work in any of these configurations:

- Transponder:*** The *M7 GX* will periodically transmit its location, along with voltage, temperature, input status, speed, direction, and UTC time. It powers-down the radio and GPS when not in use, reducing its average current draw to less than 30mA.
- GPS Display:*** The *M7 GX* will periodically transmit its location, along with voltage, temperature, input status, speed, direction, and UTC time. It will also receive the location of other *M7 GX* radios in its radio range for display on a GPS plotter or hand-held GPS connected to the *M7 GX*'s NMEA RS-232 interface.
- RavTrack PC:*** The *RV-M7* will periodically transmit its location. It will also output the location of other *RV-M7* radios in its radio range for display on the *RavTrack PC* software program.
- Plotter Display:*** If you already have a gps plotter, you may connect it to the *RV-M7* with the *-LX* option. This gives the unit all the features of the *-GX* version with the GPS, but uses your GPS NMEA data feed as the source for its GPS signal. It will output the location of other *M7 GX* radios in its radio range for display on a GPS plotter or hand-held GPS connected to the *RV-M7*'s NMEA RS-232 interface.
- Repeater:*** Any *M7 GX* may also be a store-and-forward repeater. With a 3mS attack time, the repeated signal has only milliseconds of latency, and coverage can be 10s of miles.

Raveon Technologies Corporation

2780 La Mirada Drive, Suite C
Vista, CA 92081
Phone: +1-760-727-8004
Fax: +1-760-598-8004

Email: sales@raveontech.com

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General Specifications

Model:
RV-M7-Ux-GX (x=band) (oo=options)

Size: 5.0 X 3.76W X 0.95H

Weight: 6 oz

Input Voltage: 9.5 – 16 VDC

Current draw:
GPS tracking, 1min updates: <30mA
GPS tracking, 10sec updates: <80mA
GPS and radio receiving data: <120mA
Transmitting data:
(2.7A @ 5w, 1.2A @ 2W typical)
Sleep (<25mA), Ignition off: (<10mA)

Frequency Bands:
A 403-434MHz (for export)
B 419-440MHz (for export)
C 450-480MHz (for US channels)
D 470-512MHz (for export)

Serial Port Baud Rates (programmable)
1.2k, 2.4k, 4.8k, 9.6k, 19.2k, 38.4k, 57.6k, 115.2k

Over-the-air baud rates (programmable)
-N 4.8k, 5142, 8K,9.6k
-W 4.8k, 8k, 9.6k, 19.2k

Operating Mode
Simplex or Half-duplex

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

TX-RX and RX-TX turn-around time
<3mS

Wake-up time
<500mS from OFF
<5mS from Sleep

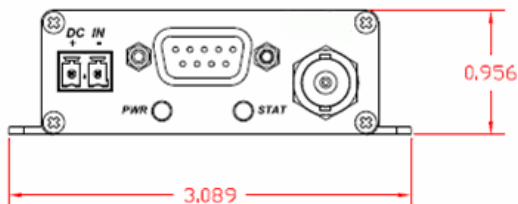
Front Panel LEDs
Power
Status (Carr Det, TX, mode...)

RF I/O Connector
BNC (Female) (TNC on -WX version)

Power Cable
Raveon P/N: 1C738-1

Addressing
Individual address: 65,536

Options:
Waterproof Enclosure -WX option



Transmitter Specifications

RF Power Output500mW – 5.0 W
programmable

Maximum Duty Cycle 100% @ 2W to 40C, 25%
@5W
(100% w/ optional
heat sink)

RF Bandwidth.....20MHz no-tune

TX Spurious outputs< -70dBc

Occupied Bandwidth.....Per FCC

FCC Emissions Designator.....11K0F1D (-N)

Frequency Stability.....Better than ±1.5ppm

Receiver Specifications

RX sensitivity (.1% BER).....9600bps < -
108dBm

4800bps < -
116dB

RF No-tune bandwidth.....20MHz

Alternate Channel Selectivity-65dB

Blocking and spurious rejection-75dB

Interface Specifications

Serial Interface Port

Connector Type	DB-9
IO Voltage Levels	RS-232
RX and TX data	Transparent Async
Word length	7 or 8 bits
Format	N, O, or E
Modem handshake signals	RTS, CTS, CD
NMEA messages:	TTL, GLL, WPT

User Configurable Parameters (overview)

Channel Number and Operating Frequency

Unit Address: 0001 thru 9999

Baud Rate, parity, stop bits

GPS Update Rate: 1 – 9999 Seconds

GPS report on movement: 0 – 9999 Meters

GPS report on digital in Enable/disable

Digital Inputs (Gen Purpose or alarm) 2

Digital Outputs 1

Store-and-forward Repeating configuration

Encryption keyphrase 128 bits

LEDs operation or disabled

Auto Status report on/off and interval.

Read DC voltage, current, forward RF power, VSWR

Remote PING

Serial Port Format: (NMEA, RavTrack PC, RADAR TLL,
or Lowrance
Plotter)

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