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The heart of Raveon's Real-time Tracking Solution is the M7 GX GPS transponder—a 5 watt wireless modem with built-in GPS, NMEA input/output, and radio modem. A "weatherproof" (IP65 rated) enclosure is also available.

The RavTrack™ Transponder lets you quickly locate: your co-workers, your trucks that break-down, your rented watercraft, 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 or VHF radio channels without service fees or monthly charges, and it works virtually anywhere.



PRODUCT OVERVIEW

Public Safety	Know where your first-responders and officers are, and who is closest to the scene. See the tactical situation in real-time, so you can respond instead of reacting.
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.
Mining	Watch your machinery at work, monitoring for improper speed, location, and usage.
Off-road Racing	Quickly know where your chase truck and race-car are. Find it 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.
Construction	Know where all your equipment is, and how it is being used. Quickly locate anyone, as soon as you drive onto the site.

Features

Long-Range Operation

Operating in the UHF or VHF frequency bands with narrowband and wide-band options, the M7 GX Transponder can communicate as far as 50 miles (depending upon terrain). All M7 GX Transponders can also be set to 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 programmable intervals, when it has moved a certain distance, 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, deserts and foreign countries.

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 "weatherproof" (IP65-rated) connections and enclosure. Like all M7 models this transponder features protection against damage from over-temperature, high voltage, 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 an alert, as well as signal an output circuit whenever it is in proximity of another M7 GX. Used for collision avoidance or theft security.

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 4-10-times that speed using CPFSK2/4 modulation for data rates as high as 19.2K over the air.
TDMA Channel Access	TDMA (Time-Division Multiple Access) 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 – and do this with less air-time than most radios use to simply transmit their location.
Fast Switching	The M7 transceiver has a fast-lock PLL with a lock-time of only 1mS, and a T-R turn-around time of less than 3mS. This enables the radio to make true real-time transmissions in TDMA or conventional modes.

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.

General Specifications

Model: RV-M7-xx-GX (x=band)

Frequency Bands:

UHF	A	403-434MHz (Non-US)
	B	419-440MHz (Non-US)
	C	450-480MHz (for US channels)
	D	470-512MHz (Non-US)

VHF	A	136-155MHz (not US/Commercial)
	B	150-174MHz

Size: 4.60" X 2.60" X .956 (11.7cm X 6.6cm X 2.43cm)

Weight: 6 oz

Input Voltage: 9.5 – 16 VDC

Current draw: GPS tracking, 2min updates: <25mA
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)

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, 14.4k, 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)

Addressing

Individual address: 65,536

Options:

Waterproof Enclosure -WX option

Transmitter Specifications

RF Power Output	500mW – 5.0 W programmable
Maximum Duty Cycle	100% @ 2W to 40C, 25% @5W (100% w/ optional heat sink)

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, GGA, WPT

User Configurable Parameters (overview)

Set odometer reading at install for tracking
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) 3
Digital Outputs 1
Store-and-forward Repeating configuration
Encryption: 128 bit AES
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)