



GPS Tracking with Garmin Oregon

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Overview

The M7 GX series of GPS transponders may be directly connected to a **Garmin Oregon 450**. When connected, the Garmin display map will show the location of the vehicle it is in PLUS the location of all other M7 transponders within radio range. This unique feature allows one to quickly, easily, and inexpensively, make a mobile AVL system for tracking cars, trucks, racecars, construction equipment, or any thing Raveon's M7 GX transponder may be installed on.

The Garmin Oregon 450 has built-in interfaces for a "NMEA 0183" devices, which is another way of saying that they can connect to other devices using a serial cable. The NMEA 0183 is an RS232 serial connection that typically operates at 4800 baud. It is used to exchange waypoint and other information between displays, GPS devices, and transponders.

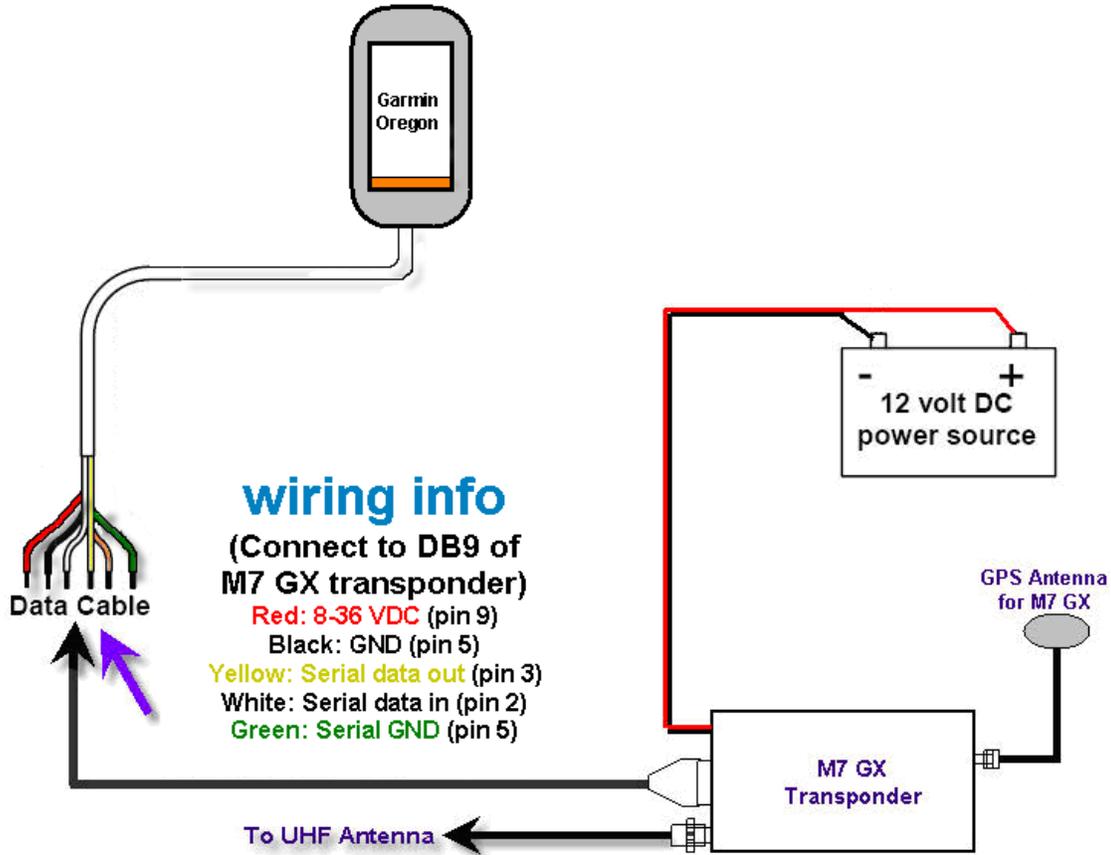
When Raveon's M7 GX transponder is connected to the Oregon using the NMEA 0183 connection, the M7 transponder can put icons on the screen of the Garmin display. As the transponder received updated positions from other vehicles, it updates the position of the icons on the Garmin display.

How NMEA 0183 works

NMEA 0183 is a standard communications format for marine electronic equipment. For example, an autopilot can connect to the NMEA interface of a GPS and receive positioning information. The GPS can exchange information with any device that transmits or receives NMEA 0183 data. See the following diagram for general wiring connections. Read your product's owner's manual for specific wiring information.

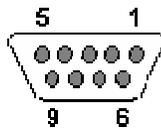
Wiring the Oregon to the M7 GPS Transponder

The Garmin Oregon 450 uses the yellow wire to transmit, the white wire to receive and the Black and green wire for ground.



The M7 DB9 Serial Connector

The 9-pin serial I/O connector on the M7 is a female 9-p D-subminiature connector having the following pins configuration.



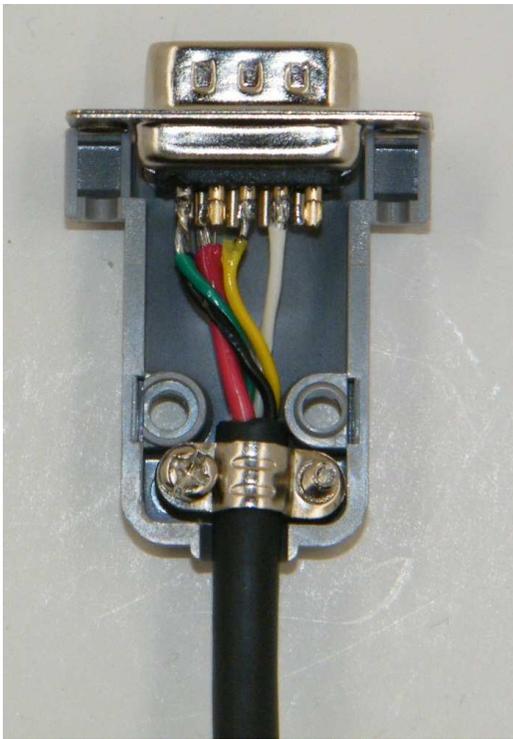
Front-view of DB-9 connector on modem (female)

Pin #	Name	Dir	Function	Level / Specification
1	CD	out	Carrier detect	
2	RxD	out	Receive data	Data out of the modem.
3	TxD	in	Transmit data	Data into the modem.
4	DTR	in	Data terminal ready	Normally ignored by the <i>FireLine</i> modem.
5	GND		Ground	Signal and power ground

			connection	
6	DSR	out	Data Set Ready	
7	RTS	in	Request to send	
8	CTS	out	Clear to send	
9	Power	In/out	DC power (not Ring signal)	User may supply the DC power to the modem on this pin.

Wiring the DB9

The Oregon's "Data Cable" must be connected to the M7 transponder. This connection will allow the M7 to put icons on the screen of the Oregon display, showing the location of other tracked vehicles. The Raveon M7 GPS transponder uses a 9-pin "DB9" connector to connect to the Oregon. Solder the Oregon data cable wires onto a DB9 connector and plug the DB9 into the M7 transponder as shown below:



The **white wire** goes to pin two of the DB9, the **yellow wire** to pin 3, the **black and green wires** get twisted together and both go to pin 5, and the **red wire** goes to pin 9 of the DB9. It is recommended that you keep the fuse on the red wire when setting up the DB9 connector.

Configuring the M7 GX Transponder

Raveon has designed the M7 GX transponder to work with Garmin Oregon Display or any other NMEA 0183 display that can accept the "\$GPWPL" NMEA message. The \$GPWPL is an industry standard message that the Garmin displays and many other GPS displays interpret as a waypoint command. The M7 GX outputs this \$GPWPL message to put icons on the screen of the Garmin, and to move the icons around on its screen.

To configure the M7 transponder to output the \$GPWPL message, set the M7 GX to GPS mode 2. To do this, put it into the configuration mode by sending the +++ into the serial port. The M7 will respond with an OK. Type GPS 4 and press enter to put it into GPS 4 mode. GPS 4 is the mode that causes the M7 GX to output \$GPWPL messages whenever it receives a status/position message over the air.

Configuring the Oregon for External NEMA Data

Be sure to configure the Oregon to accept NMEA data into its serial port, at 4800 baud.

On the Oregon, touch **System > Setup > Interface > NMEA In/Out** to configure the NEMA options. Enable NEMA input at 4800 baud. The M7 will send the NMEA WPL sentence to the Oregon to track the vehicles in your system.

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