

GM-2 Series

User's Manual



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GM-2 Series

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1. Introduction

GM-2 series is a cabled GPS solution with 55 x 63 x 16 mm in size. Equipped with antenna, backup battery, GPS engine and onboard memory. GM-2 employs powerful GPS solution. It provides marvelous navigation performance under dynamic conditions in areas with limited sky view like urban canyons. High sensitivity upto **-165dBm** for weak signal operation without compromising accuracy. GM-2 is your best choice for cabled GPS applications.

2. Key Feature

- Receiver / Logger version available
- Lead-Free - RoHS/WEEE compliant
- Tracks 66-Channel of satellites
- Fast Position Fix
- Low power consumption
- USB / UART / TTL interface
- LED indication for GPS status
- Build-in re-chargeable backup battery
- Up to 125,000 way points (Logger version)
- Support Smart log function (Logger version)
- IPX7 waterproof

3. Application

- Automotive and Marine Navigation
 - Automotive Navigator Tracking
 - Emergency Locator
 - Geographic Survey
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4. Installation

Step I : Check your GM-2 package

The standard package of GM-2 contains:

- GM-2 Receiver
- CD ROM

Please contact local distributor immediately if any item is missing or damaged.

Step II : Connect GM-2 to PC/Lap top or handheld device

- For PS2 type: No USB Driver Installation is needed.
- For USB type: please follow the instruction as below. Before the USB connector plugs into your PC/Lap top, please have your USB Driver Installed.

Step III : Check if the LED is on.

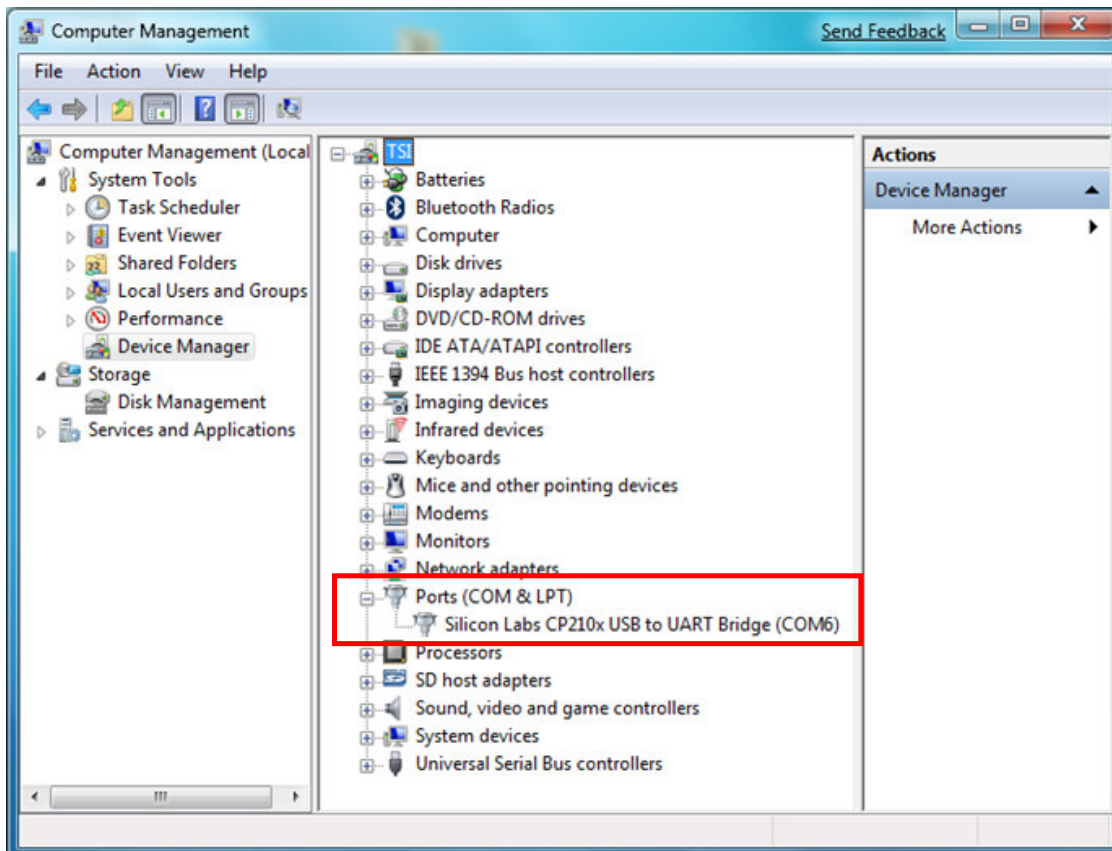
Once connect your GM-2 to PC/Lap top or handheld device, Orange LED will start flashing once power is applied.

5. How to configure your GM-2?

The GpsView program only supports the Microsoft Windows XP, Vista and Win 7 OS.

5.1. Driver Installation

Connect GM-2 to PC and then click “CP210xVCPInstaller.exe” to start the installation process. The device manager will assign a COM port for GM-2 after USB driver has been successfully installed.



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5.2. GpsView software

Open GpsView software and select correct COM port and Baud Rate and then click “On” button to establish the communication between GM-2 and PC. If the connection is successful, the NMEA stream will keep showing.

Default baud rate of GM-2 receiver is 9600bps, if you bought GM-2 logger, please choose 115200bps

The screenshot shows the GpsView software interface with several key components highlighted by red boxes and arrows:

- Setup Panel:** A red box highlights the 'Please choose:' section where the baud rate is set to 9600 and the COM port is Com6. An arrow points to this section with the text: "Default baud rate of GM-2 receiver is 9600bps, if you bought GM-2 logger, please choose 115200bps".
- NMEA Stream:** A red box highlights the NMEA sentences being received, such as \$GPGSA, \$GPGSV, \$GPRMC, etc. An arrow points to this area with the label "NMEA sentence".
- Satellite Status:** A red box highlights the satellite status panel on the right, which includes buttons for 'hot', 'warm', and 'cold'. An arrow points to these buttons with the text: "Cold, warm and hot start test button".
- Satellite Reception:** A red box highlights a bar chart showing satellite reception levels for various satellites. An arrow points to this chart with the text: "Satellite reception".
- Satellite Numbers:** A red box highlights the satellite numbers (e.g., 03, 06, 07, 08, 11, 13, 16, 17, 19, 20, 24, 28, 32, 50) at the bottom of the bar chart. An arrow points to these numbers with the text: "Satellite No.".

5.3. Configuration

In Setup Page, Output frequency of each NMEA can be changed from 1second to 5 seconds and Fix update-Rate can be changed from 1 time to 5 times per second. DGPS like WASS, EGNOS, MSAS can be enable or disable. Here also allow users to update the AGPS and record the NMEA sentence.

The screenshot shows the GpsView software Setup page with several configuration sections highlighted by red boxes and arrows:

- NMEA Output-Setting:** A red box highlights the NMEA Output-Setting panel, which includes dropdown menus for GLL, RMC, VTG, GGA, GSA, GSV, ZDA, and MCHN. It also shows the Data-bandwidth set to 1 Hz and 49.4%. An arrow points to this section with the label "NMEA output setting".
- Fix Update-Rate:** A red box highlights the Fix Update-Rate panel, which has a dropdown menu set to 1 and buttons for Query and Set. An arrow points to this section with the label "Update rate setting".
- DGPS:** A red box highlights the DGPS panel, which includes radio buttons for Current Status (Enable/Disable) and Setting (Enable/Disable), along with Query and Set buttons. An arrow points to this section with the label "SBAS setting".
- AGPS:** A red box highlights the AGPS panel, which includes Query, Update, and Reset buttons.
- LOG:** A red box highlights the LOG panel, which includes StartLog and StopLog buttons. An arrow points to this section with the label "Record NMEA sentence".
- Firmware Version:** A red box highlights the Firmware Version panel, which shows the current version (AXN_1.30,5406,TSL_GM-2R,1.0) and a Query button. An arrow points to this section with the label "Firmware version & name".

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For example:

NMEA output setting	+	Fix update-rate	=	Real NMEA output
GGA(1), GSA(1), GSV(1), RMC(1)	+	1	=	GGA(1), GSA(1), GSV(1), RMC(1)
GGA(1), GSA(1), GSV(1), RMC(1)	+	2	=	GGA(1/2), GSA(1/2), GSV(1/2), RMC(1/2)
GGA(1), GSA(1), GSV(1), RMC(1)	+	3	=	GGA(1/3), GSA(1/3), GSV(1/3), RMC(1/3)
GGA(1), GSA(1), GSV(1), RMC(1)	+	4	=	GGA(1/3), GSA(1/3), GSV(1/3), RMC(1/3)
GGA(1), GSA(1), GSV(1), RMC(1)	+	5	=	GGA(1/5), GSA(1/5), GSV(1/5), RMC(1/5)

Note: 1. GGA(1) means GGA sentence output every 1 second, GGA(2) output every 2 seconds.
2. GGA(1/2) means GGA sentence output 2 times per second, (1/5) output 5 times per second.

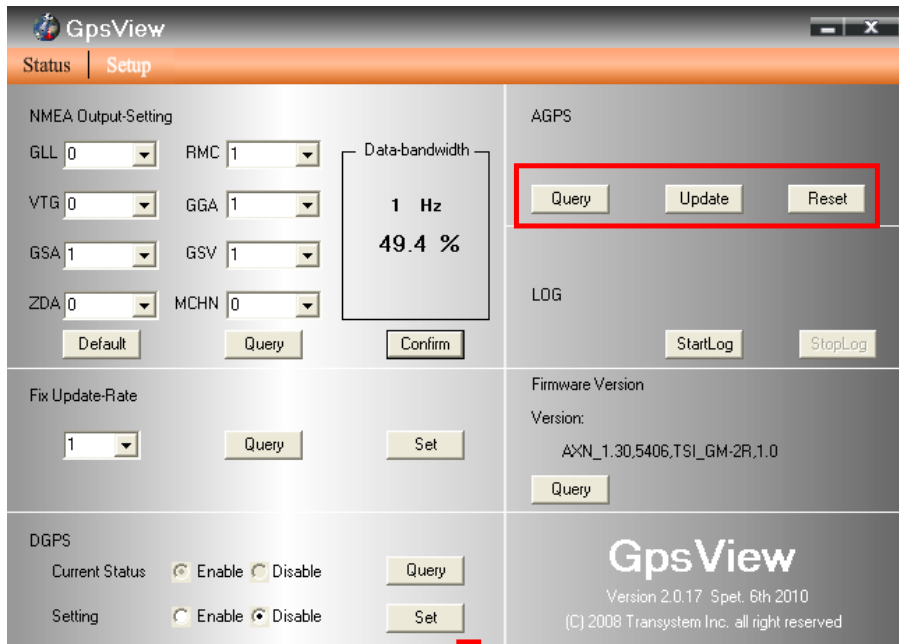
5.4. Update AGPS

Step1. Make sure you have network available for accessing the internet.

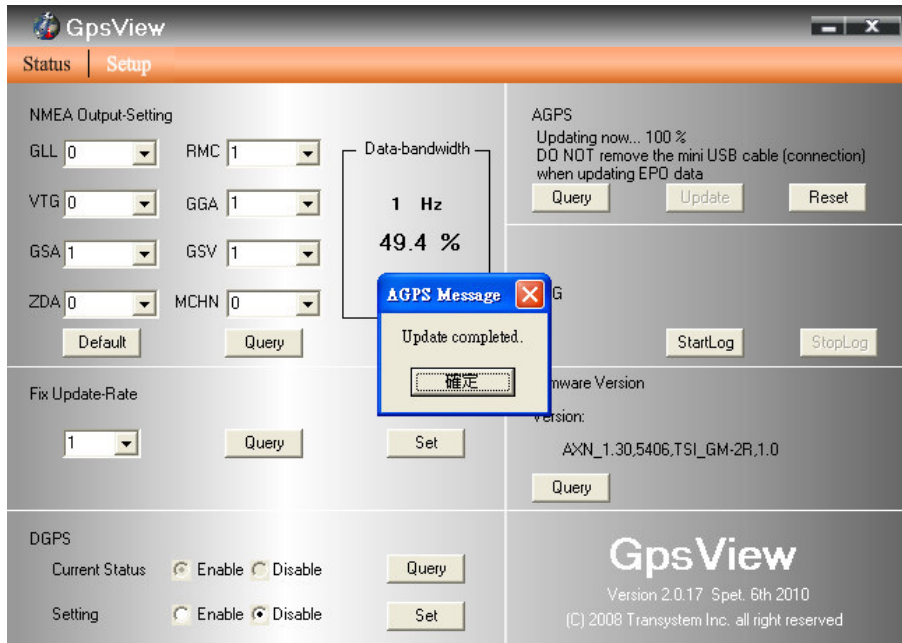
Step2. Connect GM-2 to PC and then open GpsView to establish the communication.

Step3. Go to “Setup” page

Step4. Click “Update” button under AGPS to update the AGPS data. The program will connect to the AGPS server and download the data automatically. You can also check the valid time of AGPS by clicking **Query**. Clear AGPS data by clicking **Reset**.



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Note: AGPS has 6 day time limited.

6. Interface

6.1. USB interface

The pin assignment for USB interface is shown in Fig-1.

6.2. PS2 interface

There are two possible interface signal level with PS2 connector, RS-232 or TTL.

The pin assignment for RS-232 and TTL are shown respectively in Fig-1.

6.3. LED

There are two LED's with GM-2.

Orange LED will stays on when searching GPS signal. It will start flashing once GPS has position fix.

Optional yellow LED will start blinking once GM-2 start logging position.

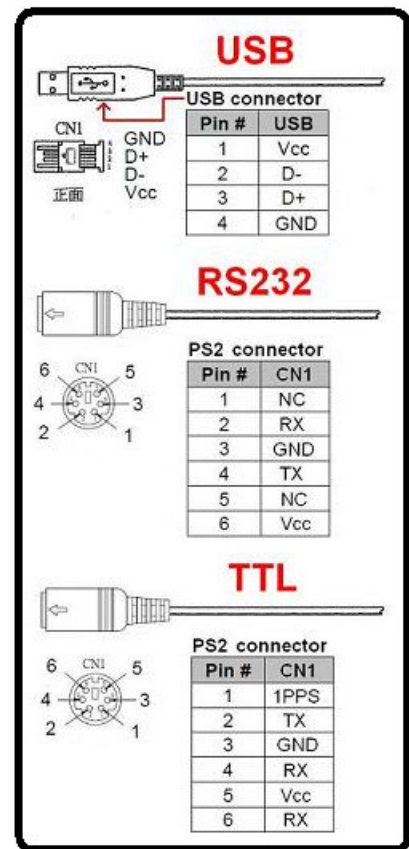


Fig-1

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7. Specifications

Specification	Description
General	L1 frequency, C/A code (SPS) 66 independent tracking channels
Sensitivity	-165dBm /Tracking
Update Rate	Up to 5Hz
Accuracy	<3m CEP, without aid DGPS (WAAS, EGNOS, MSAS, RTCM): 2.5m
Acquisition (open sky)	Cold Start: 35sec Warm Start: 34sec Hot Start: 1.5sec
Reacquisition	< 1sec
Dynamics	Altitude: 18000m (max.) Velocity: 515m/sec (max.) Vibration: 4G (max.)
Supply Voltage	DC 5V \pm 5%
Power Consumption	40mA max. @ 5.0V / Tracking
Backup Battery	Build-in
NMEA Message	NMEA0183 v3.1 baud rate 4800/9600/.../57600, Default: 9600 (GM-2 RU, GM-2 RP, GM-2 RT), 115200 (GM-2 LU, GM-2 LP, GM-2 LT) Selectable Output: GGA, GLL, GSA, GSV, RMC, and VTG Default Output: GGA, GSA, GSV, RMC
Datum	Default WGS-84
Antenna	Build-in patch antenna, right hand circular polarization, 50ohm
Log capability	Up to 125,000 way points, logger model only Default: Date/Time, Latitude, Longitude, Height, Speed
Smart log capability	Yes, logger model only
Mac support	Yes
Signal Level	USB, RS-232 or Low Voltage TTL
Connector	USB type A male or PS2 male
Operating Temperature	-30°C to 85°C
Waterproof	IPX7

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8. Troubleshooting

When your GM-2 could not operate, please follow below instructions for troubleshooting.

1. No LED light after plugged in

It means no power is applied to GM-2. Please check if the connector plugs in properly.

2. GM-2's LED is flashing, but the connection between GM-2 and the E-map can not be established. Please make sure the settings of COM Port Number and Baud rate are correct.

- Most of E-map provides scan function to search COM Port. Please scan it for the correct COM Port number that GM-2 is utilizing.
- The default Baud rate is 9600 (Receiver type only). Logger type is set at 115200bps. For COM port, please go to the MS Windows' device manager to check the correct COM port first.
- If a USB cable is used to connect to PC/Lap top, please make sure the UBS driver is installed successfully.