GM-5153 / GM-5154,

Ultra-High Performance

GNSS Smart Antenna Module

RoHS Compliant



Overview

GM-5153/GM-5154 is a thin, compact, easy to use, high performance low power GNSS smart antenna module with patch antenna for various location and timing applications. GM-5153/GM-5154 support multiple satellite positioning systems – GPS, GLONASS, Beidou, QZSS and SBAS.

Based on our experienced design, GM-5153/GM-5154 fully exhibits the excellent performance of MT3333 chip. It works in GNSS signal difficult environment, provides fast acquisitions and excellent tracking performance.

Applications

- Driving recorder
- Automatic vehicle location
- Vehicle navigation device
- Marine GPS plotters
- Timing (GPS clock, FEMTO cell, traffic lights etc.)

Features

- Multi- satellite positioning systems support
  - GPS/QZSS/**GLONASS** (**GM-5153**)
  - GPS/QZSS/**Beidou** (**GM-5154**)
- Compact and thin – 15 x 15 x 6.5 (mm)
- High performance: -165dBm tracking sensitivity
- Low power: 26 mA at continuous tracking
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- Up to 3-day self-generated orbit predictions
- AGPS – up to 30-day orbit predictions from server
- 12 multi-tone active interference cancellers
- Indoor/outdoor multi-path detection & compensation
- Up to 10Hz update rate[1]
- Optional data logger[1]
- High accuracy 1PPS timing
- Easy to use: built-in patch antenna & 6-pin wire to board connector
- V_BAT pin support for faster position fix
- Green LED for position fix indication
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃

Notes

1. Some features need special firmware or command programmed by customer
2. MOQ-based customization is welcome.

Technical Specifications

Receiver Performance Data

Receiver Type	GNSS Chipset: MT3333 GPS, QZSS: L1 1575.42MHz, GLONASS (GM-5153): L1OF 1598.0625 ~ 1605.375 MHz BEIDOU (GM-5154): B1 1561.098 MHz Channels: Tracking: 33 /acquisition: 99
Horizontal Position Accuracy	< 3.0m (Autonomous) < 2.5m (WAAS) (50% 24hr static, -130dBm)
Velocity	<0.1 m/s (speed, w/o SBAS)

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Accuracy	<0.05 m/s (speed w/ SBAS) (50%@30m/s)
Timing Accuracy	±10ns RMS (1PPS output)
Time To First Fix Hot start Warm start Cold start Reacquisition	Autonomous <1sec, average 24sec, average 28sec, average (50% -130dBm)
Sensitivity (Autonomous)	-148dBm (acquisition) -165dBm (tracking)
Update Rate+	Up to 10Hz, default 1Hz
Max. Altitude+	<18,000 m
Max. Velocity	<1,852 km/hr
Datum+	WGS-84(default)
Protocol Support+	NMEA 0183 V4.1, MTK NMEA 4800/9600(default)/38400/115200bps N,8,1(No parity, 8 data bits, 1 stop bit); Default: GGA, GSA, RMC, VTG@1Hz, GSV@1/5Hz, GLL, ZDA@0Hz
SBAS Support	WAAS, EGNOS, MSAS, GAGAN
Dynamics	<4g

+Please contact Navisys for any customization demand.

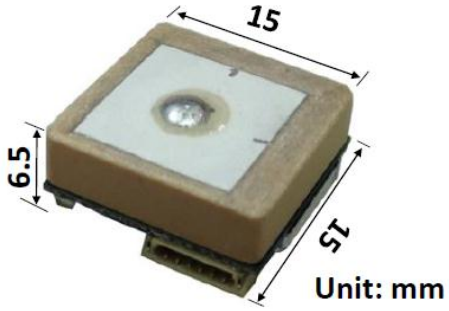
Electrical Data

Power Supply	2.8 ~ 4.3 V
Power Consumption	26mA/average tracking
Backup Power (V_BAT)	2.1 ~ 4.2 V Power consumption: 15.5uA
TTL I/O	V_{IH}: 2.1~3.1V, V_{IL}: 0~0.7V V_{OH}: ≧2.38V, V_{OL}≦0.42V
Protocols	NMEA, MTK NMEA

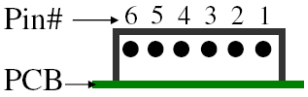
Environmental Data

Operating temperature	-40 ~ 85℃
Storage temperature	-40 ~ 85℃
Vibration	5Hz to 500Hz, 5g
Shock	Half sine 30g/11ms

Mechanical Data: 15 x 15 x 6.5 (mm)



6-pin Interface, pitch 0.8mm



GM-5153A, GM-5154A

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD	TTL level serial data output (from GPS)	Output
4	RXD	TTL level serial data input (to GPS)	Input
5	1PPS	Time Pulse Per Second	Output
6	V_BAT	Backup power	Input

Ordering Information

GM-5153X, GM-5154X

X=A	9600bps, GGA, GSA, RMC, VTG@1Hz, GSV@1/5Hz

*This document is subject to change without notice.

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