

## GN-5013 / GM-5014

### Ultra-High Performance

### GNSS Smart Antenna Module

#### Overview

GN-5013/GM-5014 is an easy to use, ultra-high performance, low power GNSS smart antenna module with patch antenna for vehicle/handheld applications. GN-5013/GM-5014 support multiple satellite positioning systems – GPS, GLONASS, Beidou, QZSS and SBAS.

Based on our experienced design, GN-5013/GM-5014 fully exhibits the excellent performance of MT3333 chip. It works in GNSS signal difficult environment, provides fast acquisitions and excellent tracking performance.

#### Applications

- Positioning
- Timing (GPS clock, FEMTO cell, traffic lights etc)
- DGPS (RTCM SC-104)

#### Features

- Multi-satellite positioning systems support
  - GPS/QZSS/GLONASS (GN-5013)
  - GPS/QZSS/Beidou (GM-5014)
- High performance: -165dBm tracking sensitivity
- Low power: 29 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<sup>1</sup>
- Optional high accuracy 1PPS timing

RoHS  
Compliant



- Easy to use: built-in patch antenna & 6-pin wire to board connector w/ pitch of 1.0mm
- Optional RTCM support with 8-pin connector
- Optional support of I-PEX RF connector and w/o patch antenna
- Backup battery support for faster position fix
- Optional V\_BAT pin support to replace backup battery
- Optional PWR\_CTRL pin to disable GPS module
- Green LED for position fix indication
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85°C

#### Notes

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

### Technical Specifications

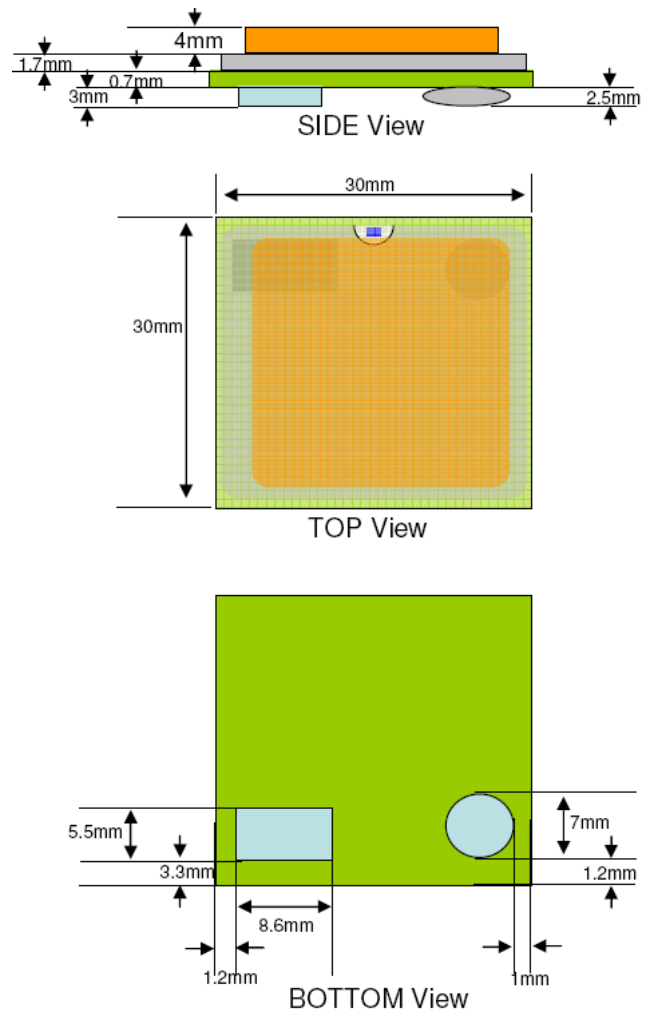
#### Receiver Performance Data

Receiver Type	GNSS Chipset: MT3333 GPS/QZSS: L1 1575.42MHz GLONASS (GN-5013): L1OF 1598.0625 ~ 1605.375 MHz BEIDOU (GM-5014): B1 1561.098 MHz Channels: Tracking: 33 /acquisition: 99
Horizontal Position	< 3.0m (Autonomous) < 2.5m (WAAS)

Accuracy	(50% 24hr static, -130dBm)
Velocity	<0.1 m/s (speed, w/o SBAS)
Accuracy	<0.05 m/s (speed w/ SBAS) (50%@30m/s)
Timing Accuracy	±10ns RMS (1PPS output)
Time To First Fix	Autonomous
Hot start	<1sec, average
Warm start	24sec, average
Cold start	28sec, average
Reacquisition	(50% -130dBm)
Sensitivity	-148dBm (acquisition)
(Autonomous)	-165dBm (tracking)
Update Rate <sup>+</sup>	Up to 10Hz, default 1Hz
Max. Altitude <sup>+</sup>	<18,000 m
Max. Velocity	<1,852 km/hr
Datum <sup>+</sup>	WGS-84(default)
Protocol	NMEA 0183 V4.1, MTK NMEA
Support <sup>+</sup>	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

Storage temperature	-40 ~ 85°C except battery: -40~60°C
Vibration	5Hz to 500Hz, 5g
Shock	Half sine 30g/11ms

**Mechanical Data**



\*Please contact Navisys for any customization demand.

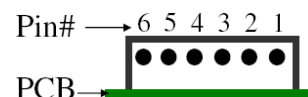
**Electrical Data**

Power Supply	3.3 ~ 5.5 V
Power Consumption	29mA/average tracking
Backup Battery	Nominal voltage: 3.0 V
TTL I/O	V <sub>IH</sub> : 2~3.15V, V <sub>IL</sub> : 0~0.8V V <sub>OH</sub> : >2.1V, V <sub>OL</sub> : 0.72V
Protocols	NMEA, MTK NMEA

**Environmental Data**

Operating temperature	-40 ~ 85°C except battery: -20~60°C
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**6-pin Interface, pitch 1.0mm**



GN-5013R, GM-5014R:

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD-TTL	TTL level serial data output	Output
4	RX-RS232	RS232 level serial data input	Input
5	TX-RS232	RS232 level serial data output	Output
6	RXD-TTL	TTL level serial data input	Input

GN-5013P, GM-5014P:

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Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	1PPS	Time Pulse Per Second	Output
4	RX-RS232	RS232 level serial data input	Input
5	TX-RS232	RS232 level serial data output	Output
6	PWR_CTL	Power control; floating or high: ON Low : OFF	Input

## Ordering Information

### GN-5013X, GM-5014X

X=R	standard - patch: 25x25x4, 9600bps, N-8-1, GGA, GSA, RMC, VTG@1Hz, GSV@1/5Hz
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\*This document is subject to change without notice.