

GM-5209,

Ultra-High Performance

GPS Smart Antenna Module

Overview

GM-5209 is an easy to use, ultra-high performance, low power GPS smart antenna module. It is built with antenna, backup battery, LED, connector and allows plug and play. It acquires and tracks satellites even at indoor signal level, supports multi-GNSS (GPS, QZSS, SBAS ranging), and AGPS.

Our experienced design fully exhibits the excellent performance of MT3339 chip. It works in GPS signal difficult environment, provides fast acquisitions and excellent tracking performance.

Applications

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

Features

- High performance: -165dBm tracking sensitivity
- Low power: 29 mA at continuous tracking
- QZSS support
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- AGPS support with self-generated ephemeris for fast position-fix
- 12 multi-tone active interference cancellers
- Indoor/outdoor multi-path detection & compensation
- Up to 10Hz update rate¹
- Optional data logger¹
- High accuracy timing (duty cycle adjustable)

RoHS
Compliant



- Easy to use: built-in patch antenna & 6-pin wire to board connector w/ pitch of 1.0mm
- Backup battery support for faster position fix
- Optional V_BAT pin support if backup battery is not used for larger working temperature range.
- 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 ODM is welcome.

Technical Specifications

Receiver Performance Data

Receiver Type	GPS Chipset: MT3339 Frequency: L1, 1575.42MHz C/A code: 1.023 MHz chip rate Channels: (up to 210 PRN channels) Tracking: 22 /acquisition: 66
Horizontal Position Accuracy	< 3.0m (Autonomous) < 2.5m (SBAS) (50% 24hr static, -130dBm)
Velocity Accuracy	<0.1 m/s (speed, w/o SBAS) <0.05 m/s (speed w/ SBAS) (50%@30m/s)
Timing Accuracy	±10ns RMS (1PPS output)
Time To First Fix	Autonomous

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Hot start	<1sec, average
Warm start	<35sec, average
Cold start	<35sec, average
Reacquisition	(50% -130dBm)
Sensitivity	-148dBm (acquisition)
(Autonomous)	-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 V3.01, MTK proprietary 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 ranging	WAAS, EGNOS, MSAS, GAGAN
Dynamics	<4g

⁺Please contact Navisys for any customization demand.

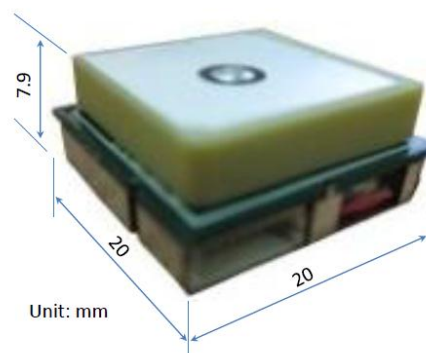
Electrical Data

Power Supply	2.8 ~ 4.3 V (w/o battery) 2.8 ~ 3.3 V (w/ battery)
Power Consumption	29mA/average tracking
Backup Battery	Nominal voltage: 3.0 V Power consumption: 15uA
TTL I/O	V _{IH} : 2~3.6V, V _{IL} : -0.3~0.8V V _{OH} : 2.4~3.1V, V _{OL} : -0.3~0.4V
Protocols	NMEA, MTK proprietary NMEA

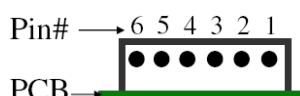
Environmental Data

Operating temperature	-40 ~ 85°C except battery: -20~60°C
Storage temperature	-40 ~ 85°C except battery: -40~60°C
Vibration	5Hz to 500Hz, 5g
Shock	Half sine 30g/11ms

Mechanical Data: 20 x 20 x 7.9 (mm)



6-pin Interface, pitch 1.0mm



GM-5209A

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

GM-5209B:

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	NC	No connection	-

GM-5209C:

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	PWR_CTL	Power control; floating or high: ON Low : OFF	Input

Ordering Information

GM-5209X (X=A,B,C etc.)

Feature \ Model	A	B	C
Backup Battery	-	Y	Y
Power Control	-	-	Y

*This document is subject to change without notice.