GM-5019,

Ultra-High Performance

GPS Smart Antenna Module

RoHS Compliant





Overview

GM-5019 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), RTCM, and AGPS.

Our experienced design and support make this product an ideal choice for your positioning demand.

Applications

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

Features

- High performance: -165dBm tracking sensitivity
- Low power (RS232): 30 mA at continuous tracking
- QZSS support to boost the GPS accuracy in Japan
- 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 rate[1]
- High accuracy timing (±10ns, duty cycle adjustable)
- Optional data logger
- 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[1]
- Optional support of I-PEX RF connector if patch antenna removed
- 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℃

Notes

1. Some features need special firmware or command programmed by customer

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 Hot start	Autonomous <1sec, average

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Warm start Cold start Reacquisition	<35sec, average <35sec, 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 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
DGPS	RTCM 104
Dynamics	<4g

+Please contact Navisys for any customization demand.

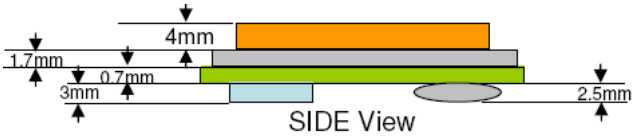
Electrical Data

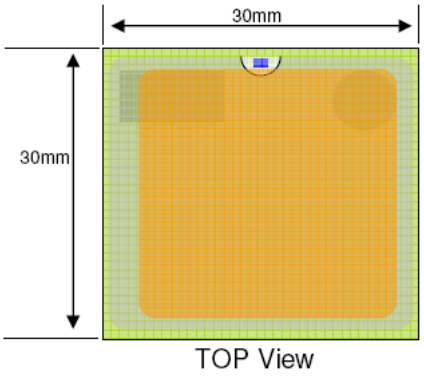
Power Supply	3.3 ~ 5.5 V
Power Consumption	30mA/average tracking, RS232
Backup Battery	Nominal voltage: 3.0 V Power consumption: 15uA
TTL I/O	V_{IH}: ≧ 2.0V, V_{IL}: ≦ 0.8V V_{OH} ≧ 2.4V, V_{OL} ≦ 0.4V
Protocols	NMEA, MTK proprietary NMEA

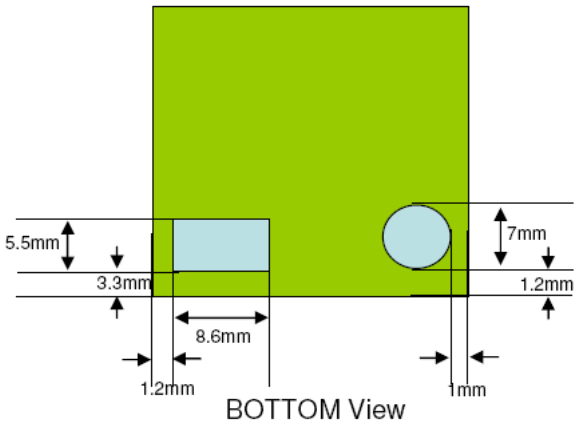
Environmental Data

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

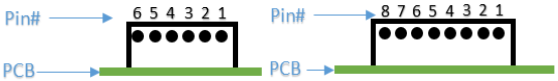
Mechanical Data







6/8-pin Interface, pitch 1.0mm



GM-5019R

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

GM-5019P:

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

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GM-5019E - DGPS/RTCM support:

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	1PPS	Time Pulse Per Second	Output
4	RXD0-TTL	TTL level serial data input, port 0	Input
5	TXD0-TTL	TTL level serial data output, port 0	Output
6	PWR_CTL	Power control; floating or high: ON Low : OFF	Input
7	RXD1-TTL	TTL level serial data input, port 1	Input
8	TXD1-TTL	TTL level serial data output, port 1	Output

Ordering Information

GM-5019X

X=R	standard - patch: 25x25x4, 9600bps, N-8-1, GGA, GSA, RMC, VTG@1Hz, GSV@1/5Hz

*This document is subject to change without notice.

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