GM-A013, SiRFstarV

Ultra-High Performance

GNSS Smart Antenna Module

RoHS Compliant



Overview

GM-A013 is an easy to use, ultra-high performance, low power GNSS smart antenna module with patch antenna for various positioning applications. It supports positioning by GPS/QZSS/GLONASS/SBAS multi-satellite systems.

The built-in flash allows firmware enhancement or working parameters update without hardware change.

Based on our experienced design and SiRFstarV chip, GM-A013 provides not only excellent GNSS performance but also high quality and delivery assurance.

Applications

- Automatic vehicle location
- Personal navigation devices
- Fleet management
- Digital camera
- GPS timing
- High air balloon

Features

- Based on SiRFstarV low power single chip
- High performance: -165dBm tracking sensitivity
- Low power: 33mA at continuous tracking
- A-GNSS ready
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- SiRFInstantFix™ extended ephemeris aiding
- Flies up to 99.99km for high air version.
- Backup battery support for faster position fix
- Blue LED for position fix indication
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃
- Easy to use: built-in patch antenna & 6-pin wire to board connector w/ pitch of 1.0mm

Technical Specifications

Receiver Performance Data+

Receiver Type	52-channel, GPS/QZSS: L1 1575.42MHz GLONASS L1OF 1598.0625 ~ 1605.375 MHz
Horizontal Position Accuracy	< 2.5m (Autonomous) (50% 24hr static, -130dBm)
Velocity Accuracy	<0.01 m/s (speed) <0.01° (heading) (50%@30m/s)
Time To First Fix Hot start Warm start Cold start	Autonomous <1sec <30sec <35sec (50% -130dBm)
Sensitivity (Autonomous)	Acquisition: -146dBm (GPS) Tracking: -165dBm (GPS), -163dBm(GLONASS) Navigation: -163dBm (GPS), -159dBm(GLONASS)
Update Rate	Default: 1Hz; Max. 5Hz
Datum	WGS-84 (default)
Max. Altitude	<18,000 m (normal version)

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	99.99 km (high air version)
Max. Velocity	<1,852 km/hr
Protocol Support	UART: N81; NMEA V4.00: 9600/19200/38400/115200 bps GGA, GSA, GSV, RMC, VTG OSP: 115200bps N,8,1;
SBAS Support	WAAS, EGNOS, MSAS, GAGAN
Dynamics	<4g

+ Note. According to IC Spec

Electrical Data

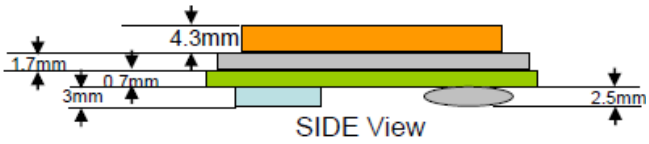
Power Supply (VCC)	3.3 ~ 5.5 VDC
Power Consumption average tracking	33 mA (GM-A013T) 35 mA (GM-A013R)
Backup Power (V_BAT)	3.2 ~ 3.6 VDC
TTL I/O V_{IO} = 3.3V, w/ battery V_{IO} = V_BAT, w/o battery	V_{IH}: 0.7 x V_{IO} ~ 3.6V V_{IL}: 0~0.4V V_{OH}: ≧ 0.75 x V_{IO}, V_{OL}: ≦ 0.4V

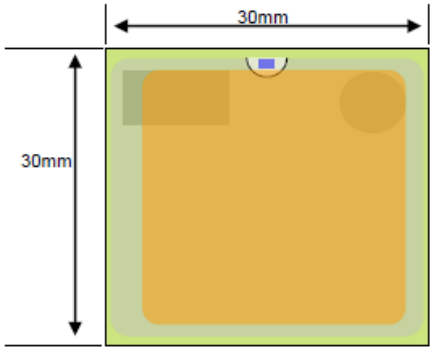
Environmental Data

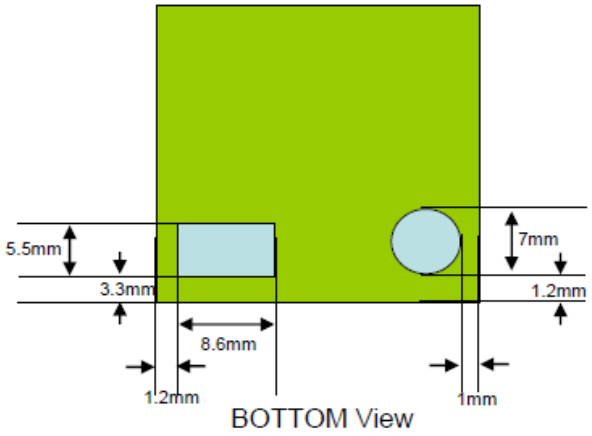
Operating temperature	-40 ~ 85℃ without battery -20 ~ 60℃ with battery
Storage temperature	-40 ~ 85℃ without battery -40 ~ 60℃ with battery
Vibration	5Hz to 500Hz, 5g
Shock	Half sine 30g/11ms

Mechanical Data

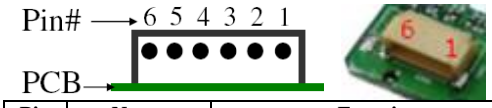
30x30x9.7 (mm)







6-pin Interface, pitch 1.0mm



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

Options of 1PPS, external backup power available

Ordering Information

GM-A013X

Options of patch antenna, backup battery, TTL/RS232, 1PPS, power control pin, output baud rate, NMEA sentences are available based on MOQ.

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Pin	M	N	P	Q	R	T
1	GND	GND	GND	GND	GND	GND
2	VCC	VCC	VCC	VCC	VCC	VCC
3	V_BAT	V_BAT	1PPS	1PPS	TXD	TXD
4	RX	RXD	RX	RXD	RX	-
5	TX	TXD	TX	TXD	TX	-
6	PWR_CTL	PWR_CTL	PWR_CTL	PWR_CTL	RXD	RXD

Note. **RS-232:** TX/RX, **TTL:** TXD/RXD

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

*This document is subject to change without notice.