GM-401, SiRFstarIV

Ultra-High Performance

GPS Smart Antenna Module

RoHS Compliant



Overview

GM-401 is an easy to use, ultra-high performance, low power GPS smart antenna module with patch antenna for vehicle/handheld applications.

Based on our experienced design and SiRFstarIV chip, this module provides not only excellent tracking performance but also high quality and delivery assurance.

Applications

- High altitude balloon (by demand)
- Automatic vehicle location
- Personal navigation devices
- Driving recorder
- GPS clock and digital camera
- High air balloon

Features

- Based on SiRF's GSD4e low power single chip
- High performance: -163dBm tracking sensitivity
- Low power: 30mA at continuous tracking
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- GPS, QZSS support
- Multi-mode AGPS support (optional)
- Local ephemeris prediction
- Active Jammer Remover
- Flies up to 80km for high air version.
- 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 to replace backup battery for wider temperature range demand
- LED for working indication
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃

Technical Specifications

Receiver Performance Data+

Receiver Type	48-channel, L1 frequency, C/A code
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 <35sec <35sec (50% -130dBm)
Sensitivity (Autonomous)	-147dBm (acquisition) -163dBm (tracking)
Update Rate	Default 1Hz, Max. 5Hz
Max. Altitude	<18,000 m (normal version) 80 km (high air version)
Max. Velocity	<1,852 km/hr or 1,000 knots
Protocol Support	NMEA v3.00 (default), OSP 4800bps N,8,1; GGA, GSA, GSV, RMC

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SBAS Support	WAAS, EGNOS, MSAS, GAGAN
GNSS support	GPS, QZSS,
Dynamics	<4g

+ Note. According to IC Spec

Electrical Data

Power Supply	3.3 ~ 5.5 V
Power Consumption	30mA/average tracking
Backup Battery (V_BAT)	3.2~5.5V; 47uA
TTL I/O	V_{IH}: ≧ 2.0V, V_{IL}: ≦ 0.8V V_{OH} ≧ 2.4V, V_{OL} ≦ 0.4V
Protocols	NMEA, OSP

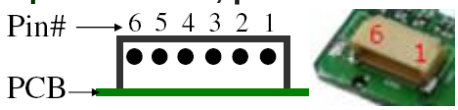
Environmental Data

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

Mechanical Data (mm)

30x30x7.8 (w/ 25x25x4 patch antenna)

6-pin Interface, pitch 1.0mm



GM-401X, X=M…T

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

Note. TX/RX: RS232; TX**D**/RX**D**: **TTL**

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD/ 1PPS	TTL level serial data output/ Time Pulse Per Second	Output/ Output
4	RX/ RXD	RS232 level serial data input/ TTL level serial data input	Input/ Input
5	TX/ TXD	RS232 level serial data output/ TTL level serial data output	Output/ Output
6	RXD/ V_BAT/ -	TTL level serial data input/ Backup power/ No connection	Input/ Input/ -

*MOQ-based customization of H/W, F/W are welcome.

*This document is subject to change without notice.

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