

GM-428, SiRFstarIV, TTL Compatible,

Ultra-High Performance GPS Module

w/ MCX External Antenna Connector

RoHS
Compliant



Overview

GM-428 is built-in with **patch antenna**, **backup battery**, **power control pin**, and **MCX external RF connector**. The integrated design allows **easily connect and use**. The built-in SiRFstarIV chip and our experienced design provide fast acquisitions and excellent tracking performance. This self-contained ultra-high performance, low power GPS smart antenna module makes it an ideal solution for devices demanding both high performance and small dimension.

Applications

- Driving recorder, digital camera
- Automatic vehicle location
- Trackers

Features

- TTL compatible output
- Compact (24x28x7; mm)
- Easy to use with built-in patch antenna, backup battery, and MCX external antenna connector
- External backup power option available
- Excellent EMI protection and minimum RF efforts
- Based on SiRF's GSD4e low power single chip
- High performance: -163dBm tracking sensitivity
- Low power: 32mA, tracking (3.3V, 8 SVs, -130dBm)
- SBAS (WAAS, EGNOS, MSAS, QZSS, GAGAN)
- Multi-mode AGPS support (optional)
- Fully EMI shielded
- Local ephemeris prediction

- Removes in-band jammers up to 80 dB-Hz
- Industrial operating temperature range: -40 ~ 85°C

Technical Specifications

Receiver Performance Data

Receiver Type	48-channel, L1 frequency, C/A code
Horizontal Position Accuracy	< 2.5m (Autonomous) < 2.0m (WAAS) (50% 24hr static, -130dBm)
Velocity Accuracy	<0.1 m/s (speed) <0.01° (heading) (50%@30m/s)
Time To First Fix	Autonomous
Hot start	<1sec
Warm start	<35sec
Cold start	<35sec (50% -130dBm)
Sensitivity (Autonomous)	-147dBm (acquisition) -163dBm (tracking)
Max. Update Rate	5Hz
Max. Altitude	<18,000 m or 60,000 ft
Max. Velocity	<1,852 km/hr or 1,000 knots
Protocol Support	NMEA v3.00, OSP Default: NMEA 4800bps N,8,1; GGA,GSA,RMC@1Hz, GSV@1/5Hz
SBAS Support	WAAS, EGNOS, MSAS, QZSS, GAGAN
Dynamics	<4g

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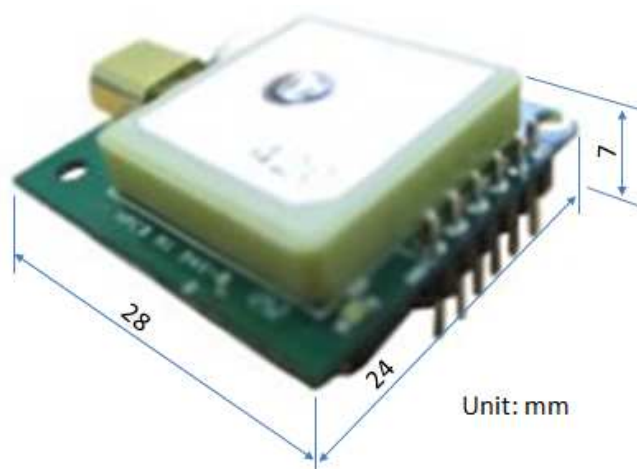
Electrical Data

Power Supply; VCC	3.0~5.5V w/ built-in battery 2.5~5.5V w/o built-in battery
Power Consumption	32mA/average tracking
Backup Power; VBAT	Nominal voltage: 2.5~5.5 V
TTL I/O	V _{IH} : 1.4~3.6V, V _{IL} : 0~0.45V V _{OH} : $\geq$ VCC-0.1V, V _{OL} : $\leq$ 0.4V
Protocols	NMEA, OSP

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 (excluding DIP)



6-pin Interface

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD-TTL	TTL level serial data output	Output
4	RXD-TTL	TTL level serial data input	Input
5	PPS	Pulse Per Second signal	Output
6	PWR_CTRL (VBAT, option)	Power control high/floating: ON, low: OFF External backup power	Input (Input)

Application

1. Place GM-428 in device with antenna side facing sky for better signal reception.
2. Solder it to main board via DIP connector.

Ordering Information

GM-428X

Feature \ Model	A	B	C	D
RF connector	MCX	-	MCX	-
Patch antenna	18x18x4	18x18x4	18x18x4	18x18x4
Battery/PWR_CTRL	Y	Y	-	-

*This document is subject to change without notice.