

GeoS-5M GNSS module

Standard precision



14.3x13.7x2.6mm

Key Features

- Concurrent processing of 4 GNSS (GLONASS, GPS, GALILEO, QZSS)
- Support SBAS (WAAS, EGNOS, MSAS, GAGAN, SDCM)
- Standalone and code-differential (RTCM SC104 v2.3) modes
- 1PPS output for precise timing applications
- Positioning update rate up to 10 Hz
- Backward compatible with GeoS-3M GNSS module
- 3 options for different fields of application

Module options

GeoS-5M	Basic model, standard accuracy
GeoS-5MR	Full carrier phase measurements output
GeoS-5MP	GeoPath® enabled

Product description

The GeoS-5M is based on the high performance G5 GNSS engine designed by our company.

The GeoS-5M module is capable of tracking and processing of four GNSS (GLONASS, GPS, GALILEO, QZSS) and SBAS (WAAS, EGNOS, MSAS, GAGAN, SDCM) signals concurrently, which is especially beneficial in difficult environments such as urban canyons or under tree canopy.

GeoPath is a technology that features integrating pseudorange, doppler and carrier phase measurements in PDP filter to get better smoothed trajectory.

PDP (Pseudorange / Delta-Phase) filter uses increments of phase measurements to smooth pseudorange by reducing the noise of code measurements.

Filter initialization time is around 5 min. GeoPath works only in open sky conditions (agriculture fields). Pass-to-pass accuracy is 20-40 cm for 15 minutes time interval.

The Communication with the module is accomplished through a dual serial interface (DUART) that supports NMEA 0183 v4.10 and GSN binary data protocols. 1PPS output enables the use of the module in precise timing applications. Modules are offered in 14.3x13.7 mm 24-pad LCC package.

Performance data

Type	44-channel G5 engine GLONASS L1 C/A, GPS L1 C/A, GALILEO E1 ⁽¹⁾ , QZSS L1, SBAS L1	
Update rate	1, 2, 5, 10 Hz	
Position accuracy	Standalone	2.5 m CEP
	SBAS	2.0 m CEP
TTFF ⁽²⁾	Cold start	27 s
	Cold start ⁽³⁾	36 s
	Warm start	25 s
	Hot start	2 s
Sensitivity	Cold start	-147 dBm
	Hot start	-155 dBm
	Tracking	-163 dBm
Carrier phase	GeoS-5MR GNSS module	
GeoPath	GeoS-5MP GNSS module	

Electrical data

Main supply	1.8 V	
IO supply	1.7 – 3.6 V	
Backup supply	1.6 – 3.7 V	
Power consumption	Acquisition	<150mW@1.8V
	Tracking	<70mW@1.8V

Interfaces

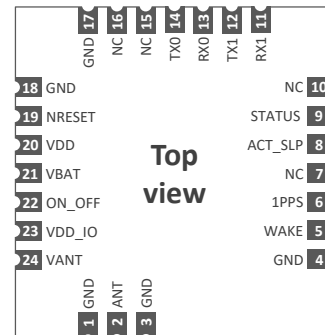
Serial interfaces	2 UARTs	
Protocols	NMEA v4.10, GSN binary, RTCM v2.3	
1PPS output	Programmable duration and polarity	
EVENT output	Status Flag	

Dynamics

Velocity	Standard	up to 515 m/s
Acceleration	Standard	up to 4g
Altitude	up to 18 000 m	

Package

24-pad LLC: 14.3x13.7x2.6 mm



Environmental data

Operating temp.	-40° C to +85° C
Storage temp.	-40° C to +85° C
RoHS compliant (lead-free)	

Evaluation tools

GeoS-5M Evaluation Kit & GeoSDemo Software.

The evaluation tools help the user evaluate GNSS solutions and reduce user's engineering efforts.

Notes

- ⁽¹⁾ GALILEO ready
- ⁽²⁾ All signals -130dBm
- ⁽³⁾ All signals -140dBm