

GEOMATE

High-Tech Precision. High-Touch Service.



GEOMATE SG5

SMART GNSS IMU-RTK RECEIVER



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The GeoMate GNSS SG5 is the latest premium GNSS geodetic receiver designed in Singapore. Designed to meet the highest standards, the SG5 is a high-performance 1608-channel IMU-RTK GNSS receiver that delivers the performance and reliability you need to survey your work sites with confidence. The SG5 has built-in connection modules including Wi-Fi, Bluetooth, NFC, UHF modem to support a variety of application scenarios, such as urban surveying and mapping, road infrastructure construction, urban utility development, housing construction and more.

TECHNICAL SPECIFICATIONS

GNSS Performance ⁽¹⁾

Channels	1608 channels
GPS	L1C/A, L2C, L5
GLONASS	L1, L2, L3*
Galileo	E1, E5a, E5b, E6*
BeiDou	B1I, B2I, B3I, B1C, B2a, B2b*
QZSS	L1C/A, L1C, L2C, L5
NavIC/ IRNSS	L5
PPP	B2b-PPP, E6B-HAS
SBAS	EGNOS (L1, L5*)

GNSS Accuracies ⁽²⁾

Real time kinematics (RTK)	Horizontal: 8 mm + 1 ppm RMS Vertical: 15 mm + 1 ppm RMS Initialization time: < 10 s Initialization reliability: > 99.9%
Post-processing kinematics (PPK)	Horizontal: 3 mm + 1 ppm RMS Vertical: 5 mm + 1 ppm RMS
PPP	Support PPP-B2b, E6B-HAS H: 10cm V: 20cm
Post-processing static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS
Code differential	Horizontal: 0.4 m RMS Vertical: 0.8 m RMS
Autonomous	Horizontal: 1.5 m RMS Vertical: 2.5 m RMS
Positioning rate ⁽³⁾	1 Hz, 5 Hz and 10 Hz
Time to first fix ⁽⁴⁾	Cold start: < 45 s Hot start: < 10 s Signal re-acquisition: < 1 s
IMU update rate	200 Hz
Tilt angle	0-60°
RTK tilt-compensated	Additional horizontal pole-tilt uncertainty typically less than 8 mm + 0.7 mm/° tilt

Hardware

Size (L x W x H)	Φ119 mm x 85 mm (Φ4.69 in x 3.35 in)
Weight	0.73kg (1.61 lb)
Front panel	4 LED, 2 physical buttons
Environment	Operating: -40°C to +65°C (-40°F to +149°F) Storage: -40°C to +85°C (-40°F to +185°F)
Humidity	100% non-condensation
Ingress protection	IP67 ⁽⁵⁾
Shock	Survive a 2-meter pole drop
Tilt sensor	Calibration-free IMU, E-Bubble leveling

Communication

Wi-Fi	802.11 b/g/n, access point mode
Bluetooth®	V4.2
Ports	1 x USB Type-C port (external power, data download, firmware update) 1 x UHF antenna port (TNC female)
UHF radio	Standard Internal Rx/Tx: 410 - 470 MHz Transmit Power: 0.5 W, 1 W Protocol: Transparent, TT450, Satel ⁽⁶⁾ Link rate: 9600 bps to 19200 bps Range: Typical 3 km, up to 8 km with optimal conditions
Data formats	RTCM 2.x, RTCM 3.x, CMR input / output RINEX 2.11, 3.02 NMEA 0183 output NTRIP Client, NTRIP Caster
Data storage	8 GB internal memory

Electrical

Power consumption	Typical 2.2 W (depending on user settings)
Li-ion battery capacity	Built-in non-removable battery 6,600 mAh, 7.2 V
Operating time on internal battery ⁽⁷⁾	UHF RTK Rover: up to 24 h UHF RTK Base: up to 10.5 h Static: up to 25 h



*All specifications are subject to change without notice.

(1) Compliant, but subject to availability of BDS ICD, GLONASS, Galileo, QZSS and IRNSS commercial service definition. GLONASS L3, Galileo E6, Galileo E6 High Accuracy Service (HAS), BDS B2b and SBAS L5 will be provided through future firmware upgrade.

(2) Accuracy and reliability are determined under open sky, free of multipaths, optimal GNSS geometry and atmospheric condition. Performances assume minimum of 5 satellites, follow up of recommended general GPS practices.

(3) Compliant and 10 Hz to be provided through future firmware upgrade.

(4) Typical observed values.

(5) Splash, water, and dust resistant and were tested under controlled laboratory conditions with a rating of IP67 under IEC standard 60529.

(6) Compliant and Satel protocol to be provided through future firmware upgrade.

(7) Battery life is subject to operating temperature.

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