

**GEOMATE**  
Premium Surveying. Trusted Solutions



# GEOMATE SG5

## SMART GNSS IMU-RTK RECEIVER



## GEOMATE SG5

The GeoMate GNSS SG5 is the latest premium GNSS geodetic receiver made 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 <sup>(1)</sup>		Communication
Channels	1608 channels	Wi-Fi 802.11 b/g/n, access point mode
GPS	L1 C/A, L2C, L2P(Y), L5	Bluetooth® V4.2
GLONASS	L1, L2	1 x USB Type-C port (external power, data download, firmware update)
Galileo	E1, E5a, E5b, E6*	1 x UHF antenna port (TNC female)
BeiDou	B1I, B2I, B3I, B1C, B2a, B2b	Standard Internal Rx/Tx: 410 - 470 MHz
SBAS	L1, L5	Transmit Power: 0.5 W to 1 W
QZSS	L1, L2, L5, L6*	Protocol: Transparent, TT450, Satel
PPP	B2b-PPP	Link rate: 9600 bps to 19200 bps
GNSS Accuracies <sup>(2)</sup>		Range: Typical 3 km, up to 8km with optimal conditions
Real time kinematics (RTK)	Horizontal: 8 mm + 1 ppm RMS Vertical: 15 mm + 1 ppm RMS Initialization time: < 10 s Initialization reliability: > 99.9%	RTCM 2.x, RTCM 3.x, CMR input / output RINEX 2.11, 3.02 NMEA 0183 output NTRIP Client, NTRIP Caster
Post-processing kinematics (PPK)	Horizontal: 3 mm + 1 ppm RMS Vertical: 5 mm + 1 ppm RMS	Data storage 8 GB internal memory
Post-processing static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS	Electrical
Code differential	Horizontal: 0.4 m RMS Vertical: 0.8 m RMS	Power consumption Typical 2.2 W (depending on user settings)
Autonomous	Horizontal: 1.5 m RMS Vertical: 2.5 m RMS	Li-ion battery capacity Built-in non-removable battery 6,800 mAh, 7.4 V
Positioning rate <sup>(3)</sup>	1 Hz, 5 Hz and 10 Hz	Operating time on internal battery <sup>(5)</sup> UHF RTK Rover: up to 24h UHF RTK Base: up to 10.5 h Static: up to 25 h
Time to first fix <sup>(4)</sup>	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	Typically less than 10 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% condensation	
Ingress protection	IP67	
Shock	Survive a 2-meter pole drop	
Tilt sensor	Calibration-free IMU, E-Bubble leveling	



\*All specifications are subject to change without notice.

(1) Compliant, but subject to availability of BDS ICD, Galileo and QZSS commercial service definition. BDS B2b, Galileo E6 and QZSS L6 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) Battery life is subject to operating temperature.

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## **FCC Warning:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device has been evaluated to meet general RF exposure requirement.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.