

GEOMATE

Premium Surveying. Trusted Solutions



GEOMATE SG7

SMART GNSS IMU-RTK RECEIVER



GEOMATE SG7

The GeoMate GNSS SG7 is the latest premium GNSS geodetic receiver made in Singapore. Designed to meet the highest standards, the SG7 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 SG7 has built-in connection modules including Wi-Fi, Bluetooth, NFC, UHF modem and 4G 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	L1 C/A, L2E, L2C, L5
GLONASS	L1C/A, L1P, L2 C/A, L2P, L3 CDMA
Galileo	E1, E5a, E5b, E5AltBOC, E6
BeiDou	B1, B2, B3
SBAS	L1C/A, L5 (QZSS, WAAS, MSAS, GAGAN)
QZSS	L1 C/A, L1 SAIF, L2 C, L5, LEX
IRNSS	L5
L Band	Support, RTX optional

GNSS Accuracies ⁽²⁾

Real time kinematics (RTK)	H: 8 mm + 1 ppm RMS V: 15 mm + 1 ppm RMS H: 8 mm + 0.5 ppm RMS (Network RTK) V: 15 mm + 0.5 ppm RMS (Network RTK) Initialization time: < 8 s Initialization reliability: > 99.9%
L-Band Accuracy	H: Less than 3 cm V: Less than 5 cm
Long Observation Static Accuracy	H : 3 mm + 0.1 ppm V: 3.5 mm + 0.4 ppm
Post-processing static	H: 2.5 mm + 0.5 ppm RMS V: 5 mm + 0.5 ppm RMS
Code differential	H: 0.25 m RMS, V: 0.50 m RMS
Autonomous	Horizontal: 1 m RMS Vertical: 1.5 m RMS
Positioning rate	Up to 50 Hz
Time to first fix ⁽³⁾	Cold start: < 45 s Hot start: < 8 s Signal re-acquisition: < 1 s
Tilt angle	0~60°
RTK tilt-compensated	8 mm + 0.3 mm/° tilt Standard IMU 5 mm + 0.5 mm/° tilt Advanced IMU ⁽⁵⁾

Hardware

Size (L x W x H)	Φ152 mm x 78 mm (Φ5.98 in x 3.07 in)
Weight	1.15 kg (2.54 lb)
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

Communication

SIM card type	Nano-SIM card
Network modem	Integrated 4G modem:TDD-LTE, FDD-LTE(B3,B5,B8,B20,B28), WCDMA(B1,B8), GSM(900,1800)
Wi-Fi	802.11 b/g/n, access point mode
Bluetooth®	V4.2
Ports	1 x 7-pin LEMO port (RS-232) 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 to 1W, 2W (Optional) Protocol: CHC, Transparent, TT450 Channel Spacing: 12.5 KHz Link rate: 9600 bps to 19200 bps Range: Typical 3 km to 5 km
Data formats	RTCM 2.x, RTCM 3.x, CMR, CMR+, RTCM MSM input and output RINEX 2.11, 3.02 NMEA 0183 output NTRIP Client, NTRIP Caster
Data storage	8 GB internal memory, support external storage USB OTG

Electrical

Power consumption	Typical 4.5 W (depending on user settings)
Li-ion battery capacity	Built-in battery 9,600 mAh, 7.4 V
Operating time on internal battery ⁽⁴⁾	UHF/ 4G RTK Rover: up to 18h UHF RTK Base: up to 9.5 h Static: up to 18 h
External power input	9 V DC to 28 V DC

Certifications

CE Mark; FCC Part 15 Subpart B Class B;
NGS Antenna Calibration; NCC; WPC ETA; MIL-STD 810G/F/H



*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) Typical observed values.

(4) Battery life is subject to operating temperature.

(5) customised advanced IMU

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