SV100 INS SERIES GNSS RECEIVERS

Version 14-04-2025

SATELLITES TRACKING

Channels	1408
BDS	B1I, B2I, B3I, B1C, B2a, B2b
GPS	L1C/A, L1C, L2C, L2P(Y), L5
GLONASS	G1, G2, G3
Galileo	E1, E5a, E5b, E6
QZSS	L1C/A, L1C, L2C, L5
NavIC	L5
SBAS	WAAS, EGNOS, SDCM, BDSBAS, GAGAN
L-Band	Support
Cold start	<30s
RTK Initialization Time	<5s(typical)
RTK initialization reliability	>99.9%
Re-acquisition	<1s

ACCURACY

Standalone	1.5m Horizontally 2.5m Vertically
DGPS	0.4m Horizontally 0.8m Vertically
RTK	8mm+1ppm Horizontally 15mm+1ppm Vertically
PPP	5cm Horizontally 10cm Vertically
SBAS	< 1.0 m 3D RMS
Velocity accuracy	0.03m/s
Heading Accuracy	(0.2/R)° [1]
Time Accuracy	20ns

COMMUNICATION

4G modem	FDD-LTE B1/B3/B5/B7/B8 TDD-LTE B38/B39/B40/B41 TDSCDMA B34/B39 WCDMA B1/B2/B5/B8 GSM B2/B3/B5/B8 CDMA1x/CDMA2000 BC0/BC1
UHF modem	Optional
Bluetooth	BT4.0 dual mode
WiFi	802.11 a/b/g/n/ac
FTP	Support FTP download
NAT-DDNS	Support
Interface	- 1 10-pin connector, including 1 RS232, 1 PPS output, 1 USB and power supply - 1 RJ45 for Ethernet - 1 TNC connector for primary GNSS antenna - 1 TNC connector for secondary GNSS antenna (SV100 INS-D model only) - 1 TNC connector for UHF antenna - 1 SMA connector for 4G antenna - 1 SIM card slot

PHYSICAL

Size	162×142×65 mm, including connectors
Weight	1.05 kg without battery
Housing material	Aluminum alloy

INS PERFORMANCE

IMU Type	MEMS
Gyroscope	- Bias Repeatability: 0.4°/h - Range: ±350°/s - Bias Instability: 1.6°/h (XY), 1.3°/h (Z) - Angle Random Walk: 0.08°/√h (XY), 0.08°/√h (Z)
Accelerometer	- Range: ±8g - Bias Repeatability: 15 mg - Bias Instability: 16 μg - Velocity Random Walk: 35 mm/s/√h
IMU data update rate	100Hz

DATA FORMAT

Data output format	- NMEA-0183 - Binary format *.xyz
Data update rate	1～200Hz selectable
Correction data format	RTCM v3.3/3.2/3.1/3.0
Network protocol	TCP, MQTT[2], Ntrip Server, Ntrip Caster

USER INTERACTION

LED indicators	4 LEDs indicating battery, satellite tracking, RTK status and network
WebUI	- Accessible via Wi-Fi, Ethernet - Support configuration, status checking, data transfer, data storage and system upgrade
Power switch	Power switch on 10-pin cable

ELECTRICAL

Power consumption	3.5W
Input voltage	- Without battery: 9 - 28V DC - With internal battery: 9 - 22V
Battery (optional)	6600 mAh, support up to 13 hours working time.
MTBF	> 20000 hours

DATA RECORDING

Storage	8 GB[3], support loop recording
Storage format	RINEX 3.02/3.04, Binary format *.xyz

ENVIRONMENTAL

Working temperature	-40 ℃ to + 75 ℃
Storage temperature	-55 ℃ to + 85 ℃
Humidity	95% non-condensing
Waterproof & dustproof	IP67
Drop	Designed to survive a 1m drop onto concrete
Vibration	MIL-STD-810

1. R (unit: meter) is the distance of the baseline, for SV100 INS-D model.
2. The MQTT protocol is customizable.
3. Storage can be expanded to 32GB according to user demands.

All specifications are subject to change without notice.

+86-21-60835489
+86-21-60835497
singularxyz@singularxyz.com
www.singularxyz.com

SingularXYZ ®
SingularXYZ Intelligent Technology Ltd.
Floor 2, Building A, No. 599 Gaojing Road, 201702 Shanghai, China

SV100 INS SERIES

GNSS RECEIVERS

GNSS+INS, Stay Precise When Signals Loss

In order to combat satellite signal obstruction in urban canyons, forests, and multipath interference, SingularXYZ has integrated INS navigation into SV100 Series GNSS receiver, delivering precise position, attitude, speed data in challenging environments, even when GNSS signal outages.

GNSS+INS Fusion

Tightly coupling full-constellation GNSS and a six-axis IMU (INS) to overcome signal obstructions, achieving reliable performance in challenging environments.

Dual Models Selection

The SV100 INS Series provides both single-antenna model – SV100 INS and dual-antenna model – SV100 INS-D for diverse user needs.

Accurate During GNSS Outages

By fusing GNSS, INS, and WSI, the system delivers continuous high-precision position, velocity, and attitude data even during GNSS outages.

Professional Web UI

Accessed via Ethernet/WiFi, users can monitor, configure and upgrade the SV100 INS Series on the web UI comprehensively and easily.

Linux OS

Equipped with Linux operating system, the SV100 INS series provides ultra-stable performance for long-term operation.

IP67

Rugged Housing

IP67 protection, aluminum alloy housing and MIL-STD-810 anti-vibration design for any work environments.

Large Storage

With default 8GB or up to 32GB customizable internal memory, loop recording capability for your GNSS raw data storage.

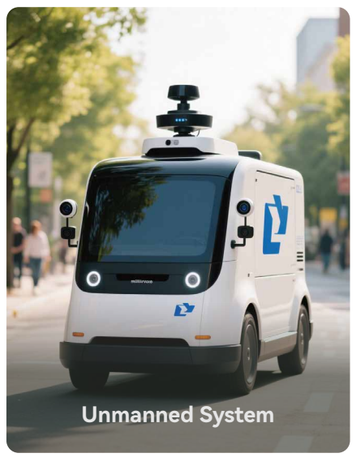
Versatile Communication

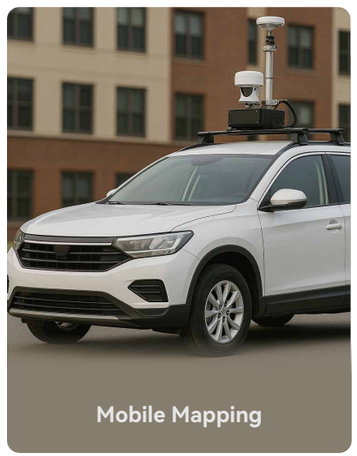
Support industry-standard protocols of TCP, Ntrip server, Ntrip caster, etc., and formats of NMEA-0183, RTCM v3.3/3.2/3.1/3.0, etc.

Flexible Work Management

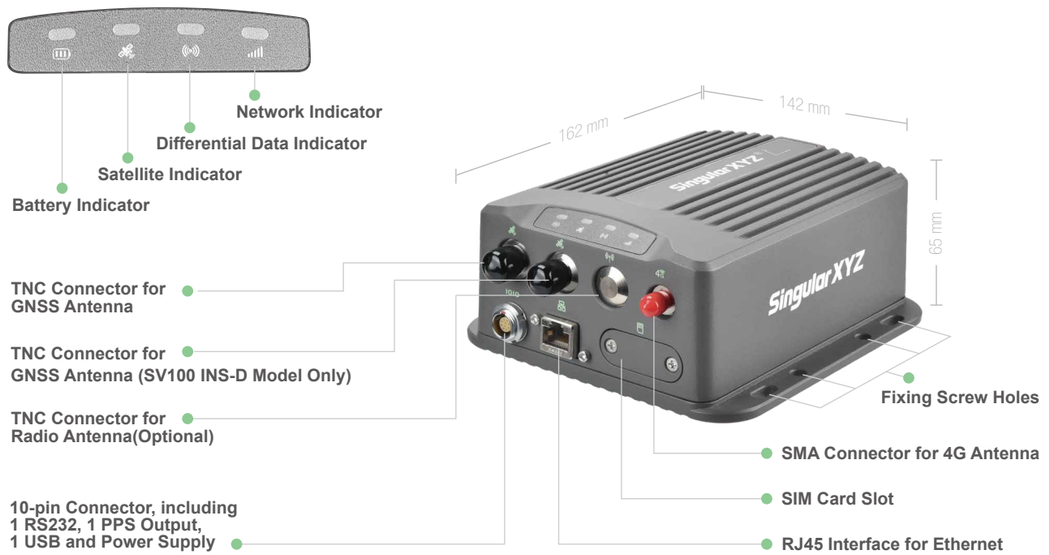
Support synchronously GNSS raw data logging and data transmission of COM port, TCP, Ntrip client, Ntrip server, Ntrip caster and radio*.

APPLICATIONS





SV100 INS SERIES INTERFACES



PERFORMANCE DURING GNSS OUTAGES

GNSS Outages (s)	Position mode	Position Accuracy(m)RMS		Velocity Accuracy(m/s)RMS		Attitude Accuracy (°) RMS		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Yaw
0	RTK	0.008	0.015	0.015	0.010	0.010	0.010	0.020
10	DR	0.550	0.300	0.060	0.040	0.025	0.030	0.060
60	DR	2.100	0.800	0.110	0.050	0.055	0.065	0.120

GNSS ANTENNA OPTIONS

SA102
GNSS ANTENNA

- Full-constellation support
- IP67 waterproof & dustproof
- Compact and lightweight
- Stable performance for vehicle use

SA150
ANTI-VIBRATION ANTENNA

- Full-constellation support
- IP67 waterproof & dustproof
- Anti-vibration structure
- Reliable in dynamic environments