

LR9

High-Performance
GNSS Reference Receiver





ALPHAGEO LR9, a cutting-edge split-design GNSS reference receiver featuring next-generation low-power, high-performance GNSS chipset, supporting multi-frequency, multi-constellation satellite signal reception. Utilizing carrier-phase differential positioning technology (RTK/PPK), the LR9 achieves millimeter-level static positioning accuracy and centimeter-level dynamic positioning accuracy. Engineered for critical applications such as CORS deployment, geohazard monitoring, and structural health monitoring.

All Signals, All Systems, Zero Compromise

LR9 utilizes an advanced all-constellation, all-frequency signal tracking architecture, fully supporting global navigation satellite systems including **GPS, GLONASS, Galileo, BeiDou, QZSS**. It delivers exceptional multi-frequency signal acquisition and tracking performance for maximum positioning reliability.

By incorporating innovative multi-frequency anti-jamming technology, the receiver effectively mitigates complex environmental disturbances such as ionospheric delay and multipath effects. This ensures high stability and centimeter-level positioning accuracy even in challenging conditions.

Linux at the Core – Precision Engineered for GNSS Excellence

The LR9 GNSS receiver adopts a deeply customized embedded Linux operating system, establishing an intelligent foundational platform for professional-grade GNSS applications.



See Beyond Precision – The OLED That Never Blinks

The LR9 integrates a 2.42-inch industrial-grade OLED display (128×64 pixels), offering the professional features:

- Exceptional Display Performance.
- Intelligent Information Presentation.
- Enhanced Environmental Adaptability.



Store Smarter, Not Harder

The device features industrial-grade 32GB storage system which can continuously record raw observation data for up to 180 days (at 1Hz sampling rate), Circular buffering functionality with FIFO management.



Multi-Protocol Communication Interface Design

The LR9 adopts a modular communication architecture, integrating various industrial-grade data transmission interfaces like Rj45, Rs232, SIM card slot/USB3.0, etc.



High-Reliability Power System

Equipped with a high-energy-density industrial-grade battery pack, LR9 enhances power reliability for continuous GNSS operation with a typical operational power consumption of $\leq 2.5W$ and milliwatt-level power usage in sleep mode.

Specifications

GNSS Performance	
Signal tracking	GPS: L 1 C/A, L2C, L2P, L5
	GLONASS: G1, G2, G3
	BDS: B1, B1 C, B2, B2a, B2b, B3
	GALILEO: E1, E5a, E5b, E6
	QZSS: L 1, L2, L5
	SBAS: L1 C/A
Channels	1408
Cold start	< 60s
Hot start	< 15s
Positioning output rate	1-20Hz
Signal reacquisition	< 2s
Efficient Fixed	up to 300+KM/h
RTK initialization	< 10s (Baseline < 10 km)
Accuracy	
Static GNSS surveying	Horizontal: $\pm(2.5+0.5\times10^{-6}\times D)$ mm Vertical: $\pm(5+0.5\times10^{-6}\times D)$ mm
RTK surveying	Horizontal: $\pm(8+1\times10^{-6}\times D)$ mm Vertical: $\pm(15+1\times10^{-6}\times D)$ mm
Communications	
I/O interface	1×Power supply interface
	1×LEMO-5 RS232 interface
	1×GNSS antenna interface
	1×Wireless interface
	1×4G antenna interface
	1×PPS interface
	1×RJ45 network interface
Communication protocol	TCP/IP, NTRIP
WiFi	802.11 b/g
Cellular network	Full frequency multi-band 4G GSM module
Differential format	RTCM3.x
Data output format	RTCM3.x
Data Storage	
Memory	32GB
Storage format	RAW
Sampling rate	1Hz
Electrical	
Power supply	DC 9 ~ 36 V
Battery	20000 mAh
Consumption	≤ 2.5 W
Physical	
Dimensions	196mm×145mm×62mm
Weight	≤ 1.5 kg
Operating temperature	-40℃ ~ +75℃
Storage temperature	-55℃ ~ +85℃
Waterproof/Dustproof	IP67
Humidity	100% non-condensing
User Interaction	
Operating system	Linux OS
Buttons	Power button/Esc/OK/Navigations
Indicators	Power/WiFi/Data/Satellite