α-GEO

# 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 <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 | 1Hz |
| Signal reacquisition | < 2s |
| 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 |

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