

GNSS Features	
Channels	1698
GPS	L1, L1C, L2C, L2P, L5
GLONASS	G1, G2, G3
BDS	BDS-2: B1I, B2I, B3I BDS-3: B1I, B3I, B1C, B2a, B2b*
GALILEO	E1, E5A, E5B, E6C, AltBOC*
SBAS	L1*
IRNSS	L5*
QZSS	L1, L2C, L5*
MSS L-Band*	Reserve
Positioning output rate	1Hz~20Hz
Initialization time	< 10s
Initialization reliability	>99.99%

Positioning Precision	
Code Differential Positioning	Horizontal: 0.25 m + 1 ppm RMS Vertical: 0.50 m + 1 ppm RMS
GNSS Static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS
Static (long observation)	Horizontal: 2.5 mm + 0.1 ppm RMS Vertical: 3 mm + 0.4 ppm RMS
Rapid Static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS
PPK	Horizontal: 3 mm + 1 ppm RMS Vertical: 5 mm + 1 ppm RMS
RTK(UHF)	Horizontal: 8 mm + 1 ppm RMS Vertical: 15 mm + 1 ppm RMS
RTK(NTRIP)	Horizontal: 8 mm + 0.5 ppm RMS Vertical: 15 mm + 0.5 ppm RMS
SBAS positioning	Typically<5m 3DRMS
RTK initialization time	2~8s
IMU tilt angle	0°~60°

Hardware performance	
Dimension	134mm(φ)×79.1mm(H)
Weight	860g (battery included)
Material	Magnesium aluminum alloy shell
Operating temperature	-25°C~+65°C
Storage temperature	-35°C~+80°C
Humidity	100% Non-condensing
Waterproof/Dustproof of	IP68 standard, protected from long time immersion to depth of 1m IP68 standard, fully protected against blowing dust
Shock/Vibration	Withstand 2 meters pole drop onto the cement ground naturally
Power supply	6-28V DC, overvoltage protection
Battery	Inbuilt 6800mAh rechargeable Lithium-ion battery
Battery life	Single battery: 16h (static mode) 10h (internal UHF base mode) 12h (rover mode)

FIELD SOFTWARE



Communications	
I/O Port	5-PIN LEMO interface (external power port + RS232) Type-C interface (charge+OTG+Ethernet) UHF antenna interface SIM card slot (Micro SIM)
Internal UHF	Radio receiver and transmitter
Frequency range	410-470MHz
Communication protocol	Farlink, Trintalk, SOUTH, HUACE, Hi-target, Satel
Communication range	Typically 8km with Farlink protocol
Cellular mobile network	4G
Bluetooth	Bluetooth 3.0/4.1 standard, Bluetooth 2.1 + EDR
NFC	Support
Communication Modem	802.11 b/g/n standard

Data Storage/Transmission	
Storage	16GB SSD internal storage Automatic cycling storage Support external USB storage (OTG) The customizable sample interval is up to 20Hz
Data Transmission	Plug and play mode of USB data transmission Supports FTP/HTTP data download Static data format: STH, Rinex2.01, Rinex3.02 and etc. Differential data format: RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2
Data Format	GPS output data format: NMEA 0183, PJK plane coordinate, Binary code, Trimble GSOF Network model support: VRS, FKP, MAC, fully support NTRIP protocol

Sensors	
IMU	Built-in IMU module, calibration-free
Camera	Visual positioning camera: 8MP (can be used in AR stakeout) AR stakeout camera: 2MP Controller software can display electronic bubble, checking leveling status of the carbon pole in real-time
Electronic bubble	Built-in thermometer sensor, adopting intelligent temperature control technology, monitoring and adjusting the receiver temperature
Thermometer	

User Interaction	
Operating system	Linux
Buttons	Single button
Indicators	Satellites, data and power indicators With access to Web UI via WiFi or USB connection, users can monitor the receiver status and change the configurations
Web interaction	Chinese/English/Korean/Spanish/Portuguese/Russian/Turkish/French/Italian Provides secondary development package, and opens the OpenSIC observation data format and interaction interface definition
Voice guidance	The powerful cloud platform provides online services like remote management, firmware updates, online registers, etc.
Secondary development	
Cloud service	



- Visual Positioning & Stakeout
- 3D Modeling
- 3 Ways of Processing
- 1698 Channels
- Farlink 2.0
- 4th Generation IMU

*Reserve for future upgrade.

Remarks: Measurement accuracy and operation range might vary due to atmospheric conditions, signal multipath, obstructions, observation time, temperature, signal geometry and number of tracked satellites. Specifications subject to change without prior notice



Beyond the Productivity
of Traditional RTK

More **Efficient** than Traditional RTK

K50 can process a set of photos or a video, acquiring coordinates for hundreds of points within minutes. It boasts a wider working range and fewer blind spots through remote measurements with the camera. Locations that were once challenging, such as spaces under rooftops and areas with obstacles, are now easily measurable.

More **Versatile** than Traditional RTK

Utilizing visual positioning, surveyors can collect field data in a short time. The data can preserve safely in the device and is reusable at any time. These capabilities are particularly well-suited for distinctive GNSS measurement tasks, including documenting accident scenes and excavation sites for urban public facilities.

More **User-friendly** than Traditional RTK

K50 visual positioning enables surveyors to measure points remotely, reaching distances of up to 10 meters or more (under ideal conditions), thereby eliminating the necessity to physically approach each point. This approach decreases the physical effort required during fieldwork.

Safer than Traditional RTK

Leveraging visual positioning aids users in minimizing risks during surveys conducted in hazardous areas, such as busy roads and lakes, ensuring the safety of surveyors. Adopting a secure working approach is not only a personal need but also essential for the well-being of your family.

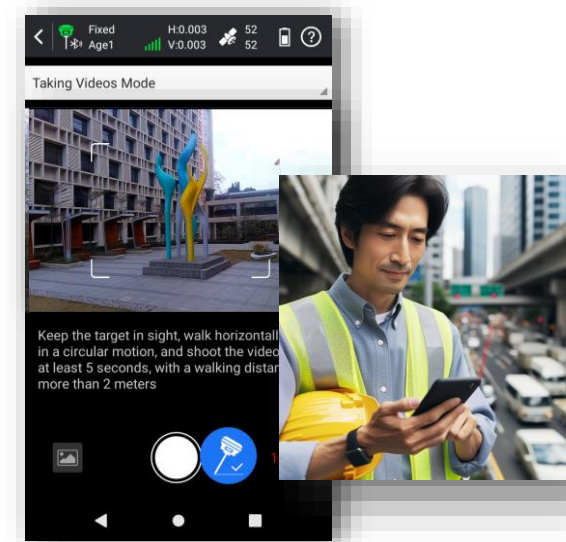
Three Approaches to Process

--Precision Crafted for Your Work Specifications

Designed for Urban Surveying

--Cloud Server Online Processing

Surveyors, with a strong internet connection in urban areas, can process image data online using network and cloud servers. INNO8 achieves 2cm accurate coordinate data for image measurements within minutes, balancing precision and speed.



Designed for Field Surveying

--Data Controller Offline Processing

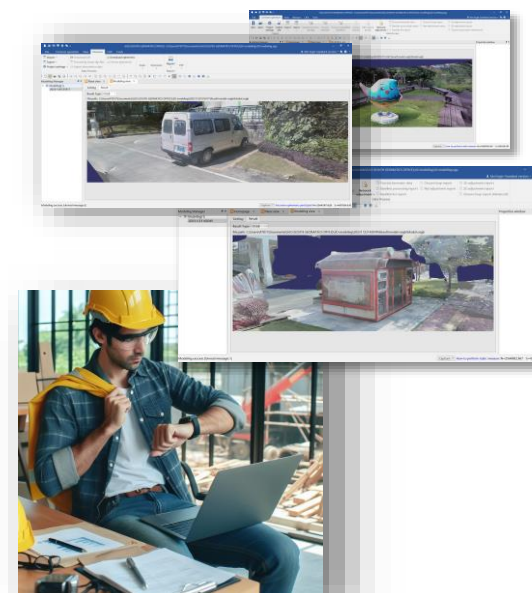
Without internet coverage, surveyors can perform offline image data processing using the data controller app. This mode offers the fastest processing speed, saving time on data uploads and delivering 4cm accuracy results within 30 seconds.



Designed for Users with Tight Fieldwork Schedules

--Desktop Software Processing

For time-sensitive fieldwork, surveyors can opt not to process data on-site. Instead, they can use desktop post-processing software back in the office for enhanced measurement and calculation functionalities. This mode allows outdoor focus on data collection, maximizing point acquisition speed and time efficiency.



3D Modeling—Broadening Your Working Power

Eyes on Now, Be Prepared for Future

K50 enables single-user 3D modeling, on the models visually displaying geographic information like coordinates, areas, and volumes. It supports transforming model data into different formats and customize coordinate parameters for diverse applications.



Ensuring a Smooth Journey for Your Success

K50 harnesses KOLIDA's 3D modeling tech, seamlessly integrating image measurements with UAV data, including DJI and other brands. Overcoming data gaps in UAV surveys, K50 supplements incomplete models by collecting ground image data, improving overall survey outcomes.



Work in Your Preferred Way

Surveyors can import K50 data into KOLIDA UAV and third-party modeling software for 3D modeling. Future updates to KGO (PC version) and KSurvey (Android App) will also include 3D modeling functions, allowing users to select the most suitable software for optimal work efficiency based on scenario and task requirements.



0.1mm

Left and Right Camera Deviation

The modular design ensures that the assembly flatness of the camera is within 0.15mm, with a left and right deviation of within 0.1mm, preventing camera misalignment and ensuring the accuracy of visual positioning.

Polycarbonate Top Cover

The top cover and ring utilize integral molding technology, ensuring strong integrity and resistance to damage. The polycarbonate material is corrosion-resistant, protecting internal precision components. It mitigates the impact of extreme environments on the mainframe and can be used in natural settings for over 5 years.

5 Years

110N

Impact Resistance

The anti-collision ring utilizes TPU material, effectively cushioning against an impact force of 110N (the impact force from a 2-meter drop is approximately 30N). Therefore, it safeguards your K50 from a 2-meter pole drop or other unexpected impacts.

10 Years

Protective Layer

The polyethylene coating can reach 100-300µm, preventing aging and rust of the shell, providing scratch resistance, and offering effective protection for over ten years.

The internal heating components are closely fitted to the shell, and passive air cooling is utilized for heat dissipation. With a thermal conductivity of 65W/(m-K), it can achieve heat dissipation without the need for additional cooling components, ensuring optimal operation under different temperature conditions.

Thermal Conductivity

65W/(m-k)

0.1µm^{minimum}

Micropore Diameter of the Waterproof Membrane

The diameter of drizzle (400µm) is 40-4000 times that of the E-PTFE membrane. Therefore, it can prevent rainwater from passing through the protective film.

The design with a contact angle of 135.6° prevents liquid water from wetting and capillary infiltration. At the same time, it allows for breathability, ensuring the normal operation of internal components of the instrument.

5°

Rotational Deviation

The bottom threaded interface maintains a rotational deviation of within 5° for the pole, allowing users to precisely install the pole with ease. This convenient installation process saves time for the fieldwork.