MATRIX X

Move the Laser. Not the Workflow.

The Industry's First Automatic
Laser GNSS Receiver

Automatic Laser

5MP
Auxiliary Camera

120°

120° Calibration
-Free Super IMU

AR

AR Intelligent
Stakeout Function

32
GB

Cyclic Storage

1.47" HD
On-Board Display

1408-Channel

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BREAK FIXED ANGLES

Field targets are not fixed. Why should your laser be? Matrix X brings automatic laser adjustment to GNSS measurement. Adjust the laser up or down from the controller, keep the receiver in place, capture ground points, wall points, and high or low targets without breaking your workflow.

THE RIGHT ANGLE FOR EVERY POINT

75° Automatic Laser Tilt Range

When the target changes, conventional laser measurement often forces surveyors to move the pole or tilt it excessively.
Matrix X lets the laser move instead. With a 75° automatic laser tilt range, users can adjust the laser angle while keeping the receiver and pole in place—making point collection smoother, steadier, and more controlled.

Collect Points Continuously

Move from ground points to wall points and roofline targets without physically approaching every point.

Balance Ease and Accuracy

Adjust the laser to a suitable angle, helping keep the pole stable, the sky view open, and the laser distance under control.

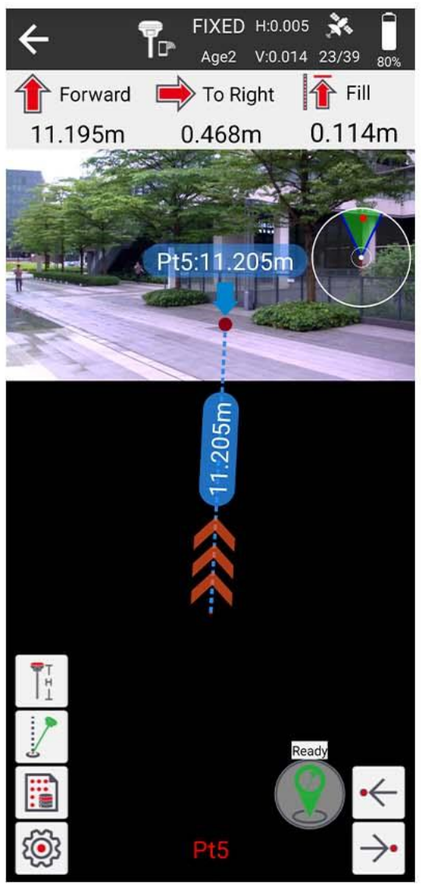
Control from the Controller

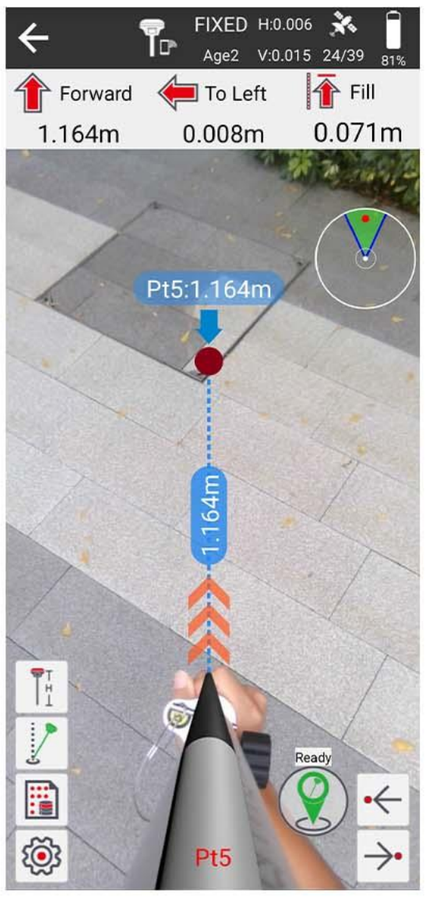
Set the angle or drag the control bar directly in the field software, with the 5MP camera assisting target aiming on screen.

A Smoother Workflow from Measure to Stakeout —AR Stakeout

AR Intelligent Stakeout Function

It overlays design points on real scenes for quick target positioning, eliminating repeated pole adjustments to deliver intuitive, efficient stakeout.





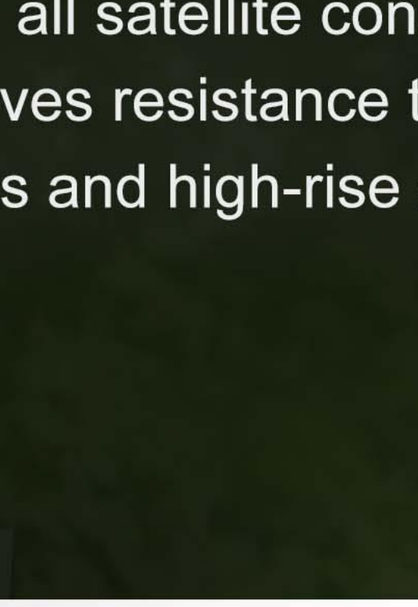
1.47" HD On-Board Display

1.47" HD built-in screen stays readable in bright sunlight without external controllers, showing satellite and device status in real time for easy on-site inspection.

Break free from fixed-angle laser constraints and reimagine your survey workflow

1408-Channel GNSS Positioning

Track all satellite constellations, improves resistance to interference in forests and high-rise areas, fast RTK fix.



32GB Cyclic Storage

Built-in 32GB local storage with cyclic overwriting. It stores nearly 4 years of data at 5s sampling interval, cutting frequent exports and manual maintenance to securely retain survey data.

Wide-Tilt Super IMU

Supports **120°** wide tilt, ultra-fast startup and calibration-free measurement. It maintains high precision with tilted poles, cutting repeated leveling and speeding up field work.

Specifications

GNSS Performance	
Signals tracking	GPS: L1C/A, L2C, L2P, L5 GLONASS: G1, G2, G3 BDS: B1, B1C, B2, B2a, B2b, B3 GALILEO: E1, E5a, E5b, E5AltBoC, E6 QZSS: L1, L2, L5, L6 NavIC (IRNSS): L5 SBAS: L1, L5
Channels	1408
Cold start	<60s
Hot start	<15s
Positioning output rate	1Hz~50Hz
Signal reacquisition	<1s
RTK initialization time	<5s
Initialization reliability	>99.99%
Time accuracy	20ns
Positioning accuracy[1]	
Code differential GNSS positioning	H: 0.25m + 1ppm RMS V: 0.50m + 1ppm RMS
SBAS differential positioning accuracy[2]	Typically < 5m 3D RMS
Static GNSS surveying	H: 2.5mm + 0.5ppm RMS V: 5mm + 0.5ppm RMS
RTK surveying (baseline<30km)	H: 8mm + 1ppm RMS V: 15mm + 1ppm RMS
Network RTK[3]	H: 8mm + 0.5ppm RMS V: 15mm + 0.5ppm RMS
AR stakeout	H: 8mm + 1ppm RMS V: 15mm + 1ppm RMS
Laser measurement	1cm+5mm/m
Laser distance	0.05m~120m (indoor), 0.05m~100m(outdoor overcast sky) 0.05m~40m(under strong light)
Laser tilt range	+30°~-45°
Sensor	
IMU	Supported, 4D IMU initialization in 3 seconds
Update rate	400Hz
Accuracy	<2.5cm within 120°
Tilt compensation	0~120°
Camera	
Laser assisted	5MP HD camera
FOV	73°
AR stakeout	5MP HD camera
FOV	73°
Physical	
Materials	Magnesium alloy
Dimensions	128mm × 128mm × 90mm
Weight	1kg
Operating temperature	-40°C~+75°C
Storage temperature	-55°C~+85°C
Waterproof/Dustproof	IP67 standard, protected from 30min immersion to depth of 1m
Shock	Survive a 2m pole drop onto concrete
Vibration	MIL-STD-810G
Humidity	100% non-condensing

Electrical	
Power supply	9~24V DC external power input to 5-pin LEMO port. Supports Type-C fast charging
Battery	Built-in 7000mAh-7.2V Li-ion battery
Battery life	Rover mode: 12 hours Base mode: 7 hours Static mode: 15 hours
Communications	
I/O interface	1*5-pin LEMO port, power supply, RS232, external radio communication port. 1* USB Type-C port, charging, data download. 1* SIM card slot, Nano SIM. 1* UHF antenna interface.
Internal UHF Frequency band	1.5W Tx & Rx 410MHz~470MHz, supports frequency modification
Protocols	Trimtalk450S, Alphatalk15, South, Satel, PCC-EOT
Cellular network	Full frequency multi-band 4G modem, supports TDD-LTE /FDD-LTE/WCDMA/CDMA2000
WiFi	802.11 b/g standard, access point & client mode, supports accessing to hotspot for correction transmission
Bluetooth	Bluetooth 5.2 classical/BLE proprietary dual-mode
Differential data format	RTCM2x, RTCM3x, CMR&CMR+, sCMRx
GPS output data format	RINEX, NMEA-0183
Data storage	
Memory	32GB, supports cyclic storage, with ability to collect almost 4 years raw observation based on 5s interval
User interaction	
Operating system	Linux OS
Buttons	Power key, 2 select keys
Display	1.47-inch LCD display, resolution: 320 × 172
Voice	Intelligent voice prompts
Web ul	Supports Web UI configurations

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1*Precision and reliability may be subject to anomalies due to multipath, obstruction, satellite geometry and atmospheric conditions. The stated specifications recommend working in open-sky areas free of EMI and multipath interference with optimal GNSS constellation configurations. For baselines over 30 km, ephemeris data and up to 24 hours of observation duration are required to meet high-precision static survey standards.

2*Performance subject to SBAS system conditions.

3*Network RTK ppm accuracy figures are based on the nearest physical base station and rely on network stability.

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