

MATRIX VI

LASER/VISION

Matrix VI

AR+VI+LASER



AR



VI



Laser survey



IMU



IP67



64GB



Measuring as sharp as eyes

MatrixVI, a survey-grade GNSS receiver merges Visual Positioning technology, built-in core algorithms of photogrammetry, offering productive solutions for professional or amateur surveyors to measure points which previously could not be measured with a regular GNSS RTK easily.

The surveyors can quickly capture the site with a set of images or a video, and measure the points coordinate from them, no matter in the field or later in office.



It is also an assistant for laser measurement

The side camera is not just for photogrammetry, it is also an assistant for laser measurement. When using laser measurement, the laser spot cannot be clearly seen whether it is on the measured point in the strong light conditions. The camera, as the eye of the instrument, it can provide real-time images to determine whether the laser spot has been aimed at the measured point or object.

Safer measurement

With the laser measurement, Matrix VI is able to minimize the risks or avoid dangers during surveying along the side or central areas on the road with heavy traffic, high voltage tower and transformer, with the laser aiming at the measured point and maintain a certain safe distance from these dangerous locations.

Right to the point with AR real-scene stakeout

When the stakeout points are marked directly on the ground, surveyors can easily find the exact location of the stakeout points, by following the arrows on the real-life map, they can stake out point in one go, without having to move the pole back and forth, making the stakeout work more accurate and efficient.



5MP HD Camera



Precise Positioning



Fast Stakeout



Intuitive Guidance



Laser surveying opens a new mode of measurement

The world's exclusive patented laser coordinate measurement quick calibration technology can easily achieve centimeter-level measurement accuracy, making measurement more accurate and user-friendly, besides the camera used in the equipment overcome the difficulty of aiming under sunlight, making field measurement operations faster and more efficient.



Goes with powerful GNSS performance

Empowered by powerful signals tracking algorithm, and with the 1408 channels of GNSS engine, Matrix VI is able to track enormous signals of all running satellite constellations, which improves the fixed rate and speed, so that you don't need to wait for a long time to get fixed solution as used to be.

With the built-in proprietary narrowband interference mitigation technology, that is more than enough to let you easily navigate in complex environments, such as in the thick forest or besides the high buildings, the accuracy can be ensured.





MATRIX VI

Super IMU, say goodbye to repeated initialization

Based on a fast initialization, calibration free and immune to magnetic interference IMU sensor, measuring with Matrix VI, surveyors can flexibly capture points coordinate no matter leveling the receiver or inclining the pole, they can gain reliable results, in this way, each measurement will be faster and more efficient, moreover, the tilt angle can be up to 120°.

Worry-free storage

Built-in 64GB memory, which can meet most needs of field work, and the feature of cyclic storage helps receiver to automatically remove the previous observation data while there is not enough space in the memory, that data storage can last almost 4 years based on 5s sampling interval, and the design of embedded memory chip can ensure the safety of observation data.



GNSS Performance	
Signals tracking	GPS: L1C/A, L2C, L2P, L5
	GLONASS: L1, L2
	BDS: B1, B1C, B2, B2a, B2b, B3
	GALILEO: E1, E5a, E5b, E6
	QZSS: L1, L2, L5, L6
	SBAS: WAAS, EGNOS, MSAS, GAGAN, SDCM
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 3DRMS
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
Laser measurement	±1cm + 5mm/m
Sensor	
IMU	Supported, 4D IMU initialization in 3 seconds
Update rate	400Hz
Accuracy	<2.5cm within 120°
Tilt compensation	0 ~ 120°
Camera	
Visual camera	Global shutter with 2MP
AR camera	5MP
FOV	84°
Physical	
Materials	Magnesium alloy
Dimensions	129mm×129mm×99mm
Weight	<0.8kg
Operating temperature	-40℃ ~ +75℃
Storage temperature	-55℃ ~ +85℃
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-7.4V Li-ion battery
Battery life	Rover mode: 12hours Base mode: 7hours Static mode: 15hours
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
Protocols	Trimtalk450S, Alphatalk15, South, Satel, PCC-EOT
Cellular network	Full frequency multi-band 4G modem, supports TDD-LTE /FDD-LTE
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
Date storage	
Memory	64GB, 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 1* Power indicator
Indicators	1* Bluetooth indicator 1* Satellite indicator 1* Data link indicator
Voice	Intelligent voice prompts
Web UI	Supports Web UI configuration

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¹*Precision and reliability may be subject to anomalies due to multipath, obstruction, satellite geometry, and atmospheric conditions. the specification stated recommend the use of stable months in an open sky view, EMI and multipath clean environment, optimal GNSS constellation configurations. Baselines longer than 30km require ephemeris and occupations up to 24 hours may be required to achieve the high precision static specification.

²*Depends on SBAS system performance.

³*Network RTK ppm values are referenced to the closest physical base station and depends on network performance.

Where Precision Meets Innovation

FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.