## Performance specification

| | |
|---|---|
| Satellite signals tracked simultaneously | GPS L1C/A, L1C, L2P(Y), L2C, L5<br>GLONASS L1, L2, L3<br>BEIDOU B1, B2, B3, B1C, B2a, B2b<br>GALILEO E1, E5a, E5b,E6<br>QZSS L1, L2, L5, L6<br>SBAS L1, L5<br>IRNSS L5 |
| Channels | 1408 tracking Channels |
| Cold start | <60 s |
| Hot start | <15 s |
| Positioning output rate | 1Hz - 20Hz |
| Signal Reacquisition | <1s |
| RTK Initialization time | <10s |
| Initialization Reliability | >99.99% |
| Time accuracy | 20 ns |

## Positioning

| | |
|---|---|
| Code differential GNSS positioning | Horizontal: 0.25 m + 1 ppm RMS<br>Vertical: 0.50 m + 1 ppm RMS |
| Static GNSS surveying | SBAS differential positioning accuracy2: Typically <5m 3DRMS<br>Horizontal: 2.5 mm + 0.5 ppm RMS<br>Vertical: 5 mm + 0.5 ppm RMS |
| **Real Time Kinematic Surveying** | |
| Single Baseline < 30 KM | Horizontal: 8 mm + 1 ppm RMS<br>Vertical: 15 mm + 1ppm RMS |
| Network RTK[3] | Horizontal: 8 mm + 0.5 ppm RMS<br>Vertical: 15 mm + 0.5 ppm RMS |
| Laser survey | ≤ 1cm + 5mm/m ( TilthHgt≤ less than 30°) |

## HARDWARE

| | |
|---|---|
| **PHYSICAL** | |
| Material | Magnesium alloy |
| Dimension | 154mm×154mm ( without bottom connector,35mm ) |
| weight | 0.78kg |
| Operating temperature | -40℃ to + 75℃ |
| Storage temperature | -55℃ to + 85℃ |
| Protection IP | IP67 dust proof, protected from 30min immersion to depth of 1m |
| Shock | Survive the pole drop onto concrete |
| Vibration | MIL-STD-810G |
| Humidity | 100%, condensing |

1- Precision and reliability may be subject to anomalies due to multipath, obstructions, satellite geometry, and atmospheric conditions. The specifications stated recommend the use of stable mounts in an open sky view, EMI and multipath clean environments and optimum satellite configurations.
Base lines longer than 30 km require precise 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 FIXed values are referenced to the closest physical base station and depends on network performances.

| | |
|---|---|
| **ELECTRICAL** | |
| Power | 9~24 V DC external power input on 5-pin LEMO port |
| Battery Life | Support USB Type-C fast charging<br>Internal 7000mAh 7.4V lithium-ion battery<br>Rover Mode: 12 hours<br>Base Mode: 7 hours<br>Static Mode: 15 hours |

## Communication & Data Storage

| | |
|---|---|
| **I/O Interface** | |
| LEMO port (5pin) | Supports power input, serial port control, and external radio communication |
| USB Type-C port | Data download / Charging |
| Sim card slot | Supports Nano SIM |
| Antenna port | SMP antenna interface |
| **Radio modem** | |
| Transmit power | 1/2.5w switchable |
| Frequency band | 410MHz-470MHz, supports to set the frequency |
| Protocols | TrimTalk450s, SOUTH, SatelLPCC EOT |
| **Cellular** | |
| Integrated full frequency multi band 4G modem, supports WCDMA/CDMA2000/TD-SCDMA/TD-LTE/FDD-LTE | |
| **WIFI** | |
| 802.11 b/g standard, access point & client mode, supports access to hotspot for connection transmission | |
| **Bluetooth** | |
| Bluetooth 5.2 Classic/BLE Proprietary, Double mode | |
| **Data format** | |
| RTCM2x, RTCM3x, CMR & CMR+, u-blox | |
| RINEX, NMEA outputs | |
| **Storage** | |
| 64GB internal memory, supports cyclic storage, with ability to collect over one year raw observation based on 5 seconds interval | |
| **Camera** | |
| AR | Front-facing 5million camera with large viewing angle and support for live scene rolling |
| Laser assisted | 5M high-definition camera, large viewing angle, auxiliary laser measurement and aiming |
| **Others** | |
| **System Integration** | |
| OS system | Intelligent LINUX operating system |
| Tilt Compensation | Tilt-free (up to 120°Calibration free) |
| Supported controllers | All android devices with supported software |
| **Design** | |
| button | Power key |
| Indicator | Power indicator, data link indicator, satellite indicator, Bluetooth indicator |
| Voice | Support voice prompts |
| WEB UI | Support WEBUI configuration |

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## AR

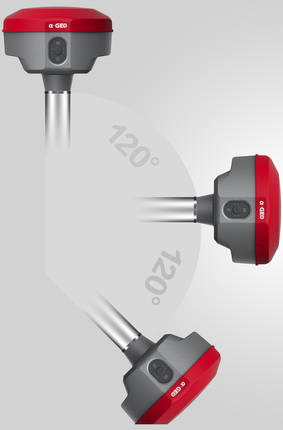
### Right to the point with AR real scene stakeout

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, you can stake out points in one go, without having to move the pole back and forth, making the stakeout work more accurate and efficient.

## LASER

### Laser survey 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 overcomes the difficulty of aiming under sunlight, making field measurement operations faster and more efficient.




## SUPER IMU

### Super IMU, say goodbye to repeated initialization

Matrix II is equipped with a fast initialization, calibration free and immune to magnetic interference inertial Measurement Unit (IMU). All users can use this technology to collect or stakeout topo points up to 120°

## MULTI CONSTELLATION

Matrix II with its 1408 channels new generation full GNSS chipset ability to support multiple satellite constellation including GPS, GLONASS, BEIDOU, GALILEO, OZSS, SBAS and IRNSS provides precise and accurate spatial data for all users around the world.

## 64GB SSD

### 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, with this excellent performance, 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.