

**SinoGNSS**



# Mars Laser RTK

## Universe Series GNSS Receiver

LASER RTK - INNOVATION MAKES THE DIFFERENCE

# | Features

## DISCOVER A NEW ERA OF SURVEY WITH MARS LASER RTK RECEIVER

With cutting-edge laser technology, Mars Laser RTK revolutionizes your measurements, enabling you to tackle diverse surveying scenarios with ease. Explore new horizons, simplify your workflow, and embrace innovation with Mars Laser RTK.

| SATELLITE TRACKING                                                                |         |                              | SATELLITE TRACKING                                                                |       |                     |
|-----------------------------------------------------------------------------------|---------|------------------------------|-----------------------------------------------------------------------------------|-------|---------------------|
|  | GPS     | L1C/A, L1C, L2P, L2C, L5     |  | QZSS  | L1C/A, L2C, L5, L1C |
|  | BDS     | B1I, B2I, B3I, B1C, B2a, B2b |  | IRNSS | L5                  |
|  | GLONASS | G1, G2, G3                   |  | SBAS  | L1C/A               |
|  | Galileo | E1, E5a, E5b, E6, E5 AltBOC  |                                                                                   |       |                     |

### Laser Technology

The combination of the conventional GNSS receiver and the laser module reduces the difficulty of working in special cases, and fit the usage habits of surveyors.



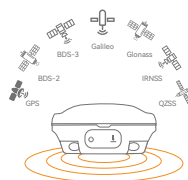
### Longer Working Range

The built-in transceiver datalink module has a super long working distance of up to 15KM. Mars can be switched as a rover or base at will.



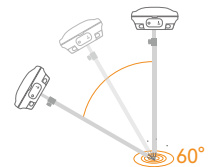
### Full-Constellation Multi-Frequency

With 1590 channels and 60+ satellite tracking capabilities, Mars also supports PPP service. Getting fixed in seconds boosts your productivity.



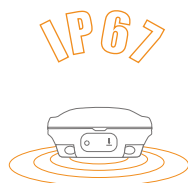
### Third Generation IMU Improves 30% Efficiency

Mars features a 3rd generation IMU, which significantly enhances initialization speed and simplifies surveying operations in the field. It can still support 60° compensation in the laser mode.



### Robust Design

A shock-resistant, dustproof, and waterproof aluminium magnesium alloy body ensures uninterrupted performance wherever you are.



# | Mars Laser RTK

The Mars Laser RTK is an innovative GNSS receiver that integrates the latest GNSS, IMU, and laser technologies, resulting in a stunning experience. In previously hard-to-reach, signal-obstructed, and dangerous fields, the millimeter-level laser distance meter on Mars's back makes surveying and stakeout easier and more stable. Mars is equipped with the latest K8 platform, and tracks 1590 channels for all running and existing satellite constellations. The built-in IMU sensor supports up to 60° tilt compensation, ensuring high-precision results.



LASER  
TECHNOLOGY



K8 MODULE



FULL-CONSTELLATION  
MULTI-FREQUENCY

IMU

Up to 60° Tilt

PPP

PPP

IP67

IP67



LONGER WORKING  
RANGE

# | R50 Data Collector

5.5-inch sunlight readable screen, 720\*1280 resolution

New exterior design, customized for engineers, more comfortable hold

With advanced NFC, tedious matching is a thing of the past

Large capacity 7000mAh battery, QC3.0 quick charging, long-lasting operation

Survive a 1.5m drop onto the concrete, anti-static design, excellent heat dissipation

Classic 9-key and center measurement shortcut speed up working efficiency

Qualcomm processor Android 12 operation system, faster performance, smoother operation

5.0 dual-mode Bluetooth, ultra long range Bluetooth connection

4+64GB memory



QC Quick Charging



Large Capacity



5.5" Display



Android 12



Ultra-long Range Connectivity



NFC



Qualcomm



IP67

# | Software

## Survey Master

Compatible with most of Android devices

Easier survey workflow via Wizard function

Support up to 60° IMU tilt compensation

Support all survey modes, including Static, PPK and RTK

Support Surface Stake, Mapping Survey and etc. to serve various survey tasks

Support CAD import and directly use for stake out operations

Support Convert function from ComNavBinary raw file to RINEX

### Optional



Microsurvey FieldGenius

Android



Microsurvey FieldGenius

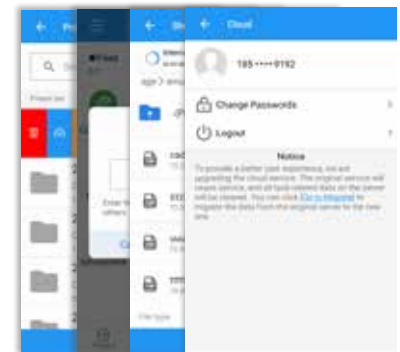
Windows



IMU Tilt Survey



CAD Basemap and Stake



Cloud Service

## Post-processing Software

## SinoGNSS Compass solution software

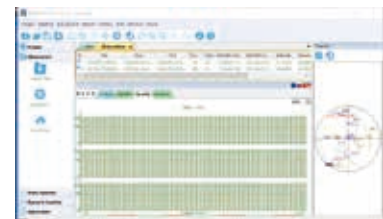
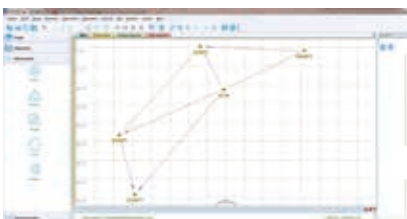
Provide the complete GPS/GLONASS/BeiDou/GALILEO post-processing solution

Support GNSS observation data in RINEX and ComNav Raw Binary Data format

Support different post-processing in static and kinematic modes

Output analysis reports in various formats (web format, DXF, TXT, KML)

Supports DJI's P4R data format. Processing results can be imported into photogrammetry and 3D modeling software directly



# Mars Laser RTK

GNSS Surveying System

Ver.2026.08.06

## Signal Tracking

Channel: 1590

GPS: L1, L2, L5 (L1C/A, L1C, L2P, L2C)

BDS: B1, B2 (B1I, B2I, B3I, B1C, B2a, B2b)

GLONASS: L1, L2, L3 (G1, G2, G3)

Galileo: E1, E5a, E5b, E6, E5 AltBOC

QZSS: L1C/A, L2C, L5, L1C

IRNSS: L5

SBAS: L1C/A

## Performance Specification

Signal Re-acquisition:  $\leq 1s$

Cold Start:  $\leq 45s$

Hot Start:  $\leq 15s$

RTK Initialization Time:  $< 10s$  (Baseline  $\leq 10km$ )

Initialization reliability:  $\geq 99.9\%$

Data Update Rate: 1Hz, 2Hz, 5Hz, 10Hz, 20Hz

| Mode                     | Accuracy                                                         |
|--------------------------|------------------------------------------------------------------|
| Static and Fast Static   | Horizontal 2.5 mm + 0.5 ppm RMS<br>Vertical 5 mm + 0.5 ppm RMS   |
| Long Observations Static | Horizontal 3.0 mm + 0.1 ppm RMS<br>Vertical 3.5 mm + 0.4 ppm RMS |
| Signal Baseline RTK      | Horizontal 8mm + 1ppm RMS<br>Vertical 15mm + 1ppm RMS            |
| DGPS                     | $< 0.4m$ RMS                                                     |
| SBAS                     | Horizontal 0.5m RMS<br>Vertical 0.8m RMS                         |
| Standalone               | 1.5m 3D RMS                                                      |
| Laser Tilt Measurement   | $\leq 5.5cm$ (5m range, $\leq 60^\circ$ Tilt in laser mode)      |

## Data Format

Correction Data I/O: RTCM2.X, 3.X, CMR (GPSonly), CMR+ (GPSonly)

Position Data Output: - ASCII: NMEA-0183 GSV, RMC, HDT, GGA, GSA, ZDA, VTG, GST; PTNL, PJK; PTNL, GKG  
- ComNav Binary update to 20 Hz

## Electrical and Battery

Voltage: 7-28VDC

Power Consumption: 1.7W<sup>4</sup>

Li-ion battery capacity: 2 x 3400 mAh

Working Time:  $\geq 20h$

Memory: 8GB

1. UHF modem is default configuration and it can be removed according to your specific needs.

2. Integrated UHF ranges from 410 to 470 MHz.

3. Working distance of internal UHF varies in different environments, the maximum distance is 15 Km in ideal situation.

4. Power consumption will increase if transmitting corrections via internal UHF.

## Communication

1 Serial Port (7 pin Lemo)

- Baud rates up to 921,600 bps

Enhanced UHF modem<sup>1</sup>

- Tx/Rx with full frequency range from 410-470MHz<sup>2</sup>

- Transmit power: 0.5W, 1W, 2W adjustable

- Air Baud Rate: 9600/ 19200/ 11000 adjustable

- Range: 15 km<sup>3</sup>

- Protocol type: support Transparent/TT450S/South/Mac/ SNLonglink, compatible with all the ComNavTech GNSS Receivers

WiFi: 802.11 a/b/g/n, 2.4Ghz

4G Modem:

- LTE-FDD:

B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28

- LTE-TDD: B38/B39/B40/B41

- WCDMA: B1/B2/B4/B5/B6/B8/B19

- GSM: B2/B3/B5/B8

Position Data Output Rates: 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz

5 LEDs (indicating Satellites Tracking, RTK Corrections data, GPRS Status and Power)

2 Function Buttons for Power and Static Data Record

Bluetooth<sup>®</sup>: V 4.0 protocol, compatible with Windows OS and Android OS

Calibration-free IMU integrated for Tilt Survey

Up to 60° tilt with 2.5 cm accuracy

## Environmental Specification

Working Temperature:  $-40^\circ C \sim +65^\circ C$

Storage Temperature:  $-40^\circ C \sim +85^\circ C$

Humidity: 100% non-condensing

Water- & Dustproof: IP67

Shock: Survive a 2m drop onto the concrete

Vibration: MIL-STD-810G Method 514.6 procedure I

## Physical Specification

Dimension:  $\Phi 15.5cm \times 7.3cm$

Weight: 1.2kg with two batteries

## Laser Specification

Range: 15m uses iToF sensors with imaging architecture of conventional cameras

Accuracy (room temperature): (3-5) mm + 1ppm Measuring

Frequency: Classic Value: 3Hz

Maximum Value: 5Hz

Laser Injection Power: 0.9mW~1.5mW

Working Temperature:  $-20^\circ C \sim +50^\circ C$

Storage Temperature:  $-30^\circ C \sim +60^\circ C$

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