

# ProMark™ 500



**Multi-constellation GNSS Receiver**



# The Winning Combination



## ProMark™ 500

The ProMark 500 rover and rover/base system offer GPS+GLONASS+20 years of field-proven technologies for surveying and geodesy. This powerful RTK survey solution delivers state-of-the-art GNSS in a smart, compact, light and cable-free design that gives you maximum mobility and flexibility in the field.

You will be able to not only take advantage of currently available GPS, GLONASS, and SBAS signals, but also be comfortable knowing that you can upgrade your receiver to meet the evolution to future constellations (Galileo).

Embedded BLADE™ technology introduces a unique patented way to use multiple GNSS constellations for high-accuracy positioning, maximizing the benefit of adding extra satellites to its already stellar GPS performance. BLADE insures fast initialization, long-range accuracy, and extensive compatibility with other manufacturer's GNSS products. Our new technology provides robust signal tracking, advanced multipath mitigation, and high availability of satellites in difficult conditions.

The ProMark 500 innovative design, comprehensive user interface and wide range of communications will empower you to extend your survey horizons. Combined with the new FAST Survey field software on either a MobileMapper™ CX or MobileMapper™ 6 data controller, plus the highly regarded GNSS Solutions office software, the ProMark 500 represents a unique cost-effective offer.

## Office Software

GNSS Solutions is a comprehensive software package with all of the tools required to successfully process GPS, GLONASS and SBAS survey data. Focusing on simplicity, the software guides you through mission preparation planning, processing, quality control, reporting and data exporting.

GNSS Solutions can handle both real-time and post-processing data within the same project. The software includes advanced blunder detection and quality analysis tools to ensure extremely accurate and reliable results. New in GNSS Solutions is the ability to download data from multiple reference stations to provide a post-processed network solution for measurements quality control. The innovative approach to presenting survey data in graphical and tabular form makes post-processing with GNSS Solutions a simple and enjoyable experience.

## Field Software

FAST Survey™ is a graphical field software for topography and construction, fully re-designed to optimize the functionality and performance of ProMark 500 GNSS system. The ability to collect single coordinate shots, full RTK vectors, raw GNSS data and all data types concurrently, provides a flexible solution for your changing needs. FAST Survey also works with your optical equipment allowing you to use one controller for both types of instrument.

FAST Survey is both powerful and easy to use. The scalable map-view screen displays points and lines as they are surveyed, offering large-print controls for rapid, reliable data collection. Rich attributing, full editing in the field and export to industry-standard data formats provides true field-to-finish capability, saving time and effort.



# Competitive Advantages



## BLADE Technology

In addition to the short time to fix, long-range RTK and solution reliability, ProMark 500 includes:

- Patented multi-constellation signal processing
- Use of SBAS and GLONASS ranging signals to strengthen the GPS solution
- RTK solution maintained if data link is dropped
- Interoperability with any vendor's reference station using GPS+GLONASS L1/L2

## All-in-one Flexibility

ProMark 500 offers all-in-one communication capabilities. It is the most flexible GNSS surveying system available, offering multiple operating modes, configurations and communication modules (UHF, GSM/GPRS/EDGE) and protocols.

## Ultra Mobility and Lightweight Design

The ultra rugged and lightweight design of ProMark 500 is waterproof and shock resistant, for maximum reliability in the field. With a total weight of less than 2 kg for the complete solution, including communications, batteries, controller and bracket, ProMark 500 offers a huge advantage for all-day intensive use.

## Ergonomics

ProMark 500 has a comprehensive built-in interface for receiver monitoring. This interface is based on a graphical display and functional keys that enable the user to interact directly with the GNSS receiver. In addition, the MobileMapper field terminals with FAST Survey field software provide a rich feature set for high-end field operations.



## Feature-rich Surveying Solution

### Field Terminal

The ProMark 500 is available with either a MobileMapper CX or a MobileMapper 6 field terminal, a handheld sub-meter GPS receiver for additional work such as pre-survey and GIS data collection. Features such as color touch screen, SD-card, USB and Bluetooth™ wireless technology, are included to ensure a robust, easy-to-use, cable-free RTK rover solution.



# ProMark 500 Technical Specifications

## GNSS Characteristics

- 75 channels:
  - GPS L1 C/A, L1/L2 P-code, L2C, L1/L2 full wavelength carrier
  - GLONASS L1 C/A, L2 C/A and L2-P code, L1/L2 full wavelength carrier
  - SBAS: code & carrier (WAAS/EGNOS/MSAS)
  - Low-signal acquisition and tracking engines for signal detection in difficult environments
- Fully independent code and phase measurements
- BLADE technology for optimal performance
- Advanced multipath mitigation
- Up to 20 Hz position and raw data output

## Real-Time Accuracy (rms)<sup>1-2</sup>

### SBAS (WAAS/EGNOS/MSAS)

- Horizontal: <3 m (10 ft)

### Real-Time DGPS position

- 25 cm (0.82 ft) + 1ppm (rms) in typical condition<sup>3</sup>

### Real-Time Kinematic Position (fine mode)

- Horizontal 10 mm (0.033 ft) + 1.0 ppm
- Vertical 20 mm (0.065 ft) + 1.0 ppm

## Real-Time Performance

### Instant-RTK® Initialization

- Typically 2-second initialization for baselines < 20 km
- 99.9% reliability

### RTK Initialization range

- > 40 km

## Post Processing Accuracy (rms)<sup>1-2</sup>

### Static, Rapid Static

- Horizontal 5 mm (0.016 ft) + 0.5 ppm
- Vertical 10 mm (0.033 ft) + 0.5 ppm

## Long Static<sup>4</sup>

- Horizontal 3 mm (0.009 ft) + 0.5 ppm
- Vertical 6 mm (0.019 ft) + 0.5 ppm

## Post-Processed Kinematic

- Horizontal 10 mm (0.033 ft) + 1.0 ppm
- Vertical 20 mm (0.065 ft) + 1.0 ppm

## Data logging Characteristics

### Recording Interval

- 0.1 - 999 seconds

## Physical Characteristics

### Size

- Unit: 22.8x18.8x8.4 cm (9x7.4x3.3 in)

### Weight

- GNSS receiver: 1.4 kg (3.1 lb)

## Monitoring Screen

- Graphical OLED display

## Memory

- 128 MB internal memory (expandable through USB)
- Up to 400 hours of 15 sec. raw GNSS data from 18 satellites

## I/O Interface

- RS232, RS422, USB, Bluetooth
- PPS

## Data Format

- RTCM 2.3, RTCM 3.1
- CMR, CMR+
- ATOM, DBEN & LRK proprietary formats
- NMEA 0183
- NTRIP protocol

## Operation

- RTK rover/base, post-processing
- RTK Network rover: VRS, FKP, MAC
- Point-to-Point Circuit Switched Data (GSM)
- Point-to-Point GPRS through Real-time Data Server Software (internal GPRS or external cell phone)
- Limited RTK in standard (baseline 3kms)
- Full RTK option (long baseline)
- RTC Bridge

## Environmental Characteristics

- Operating temperature: -30° to +55°C (-22° to +131°F)
- Storage temperature: -40° to +70°C (-40° to +158°F)
- Humidity: 100% condensing
- Waterproof, sealed against sand and dust
- Shock: ETS300 019
- Vibration: EN60945

## Power Characteristics

- Li-ion battery, 4400 mAh
- Battery life time: > 6hrs (UHF rover @ 20 °C)
- 6-28 VDC input

## Optional System Components

- Communication Module
  - U-Link Rx
  - Pacific Crest UHF
  - GSM/GPRS/EDGE (class 10) Quad-band
- Transmitter Kits
  - U-Link TRx
  - Pacific Crest UHF
- Rechargeable Battery kit
- Field Terminal kit with FAST Survey
  - MobileMapper CX
  - MobileMapper 6
  - Allegro CX from Juniper

## Office Software Suite - GNSS Solutions

### Key software functions include:

- Network post-processing
- Integrated transformation and grid system computations
- Pre-defined datums along with user-defined capabilities
- Survey mission planning
- Automatic vector processing
- Least-squares network adjustment
- Data analysis and quality control tools
- Coordinate transformations
- Reporting
- Exporting
- Geoid03
- Language: English, Spanish, French, German, Portuguese, Italian, Russian

## System Requirement

- Windows 2000 / XP / Vista
- Pentium® 133 or higher
- 32 MB RAM
- 90 MB disk space required for installation

## Field Software Suite – FAST Survey

### Key software functions include:

- ProMark 500 GNSS Support: configuration, monitoring and control
- Volume computation
- Background raster image
- Network connectivity
- Coordinate System Support: predefined grid systems, predefined datums, projections, Geoids, local grid
- Map view with colored lines

- Geodetic Geometry: intersection, azimuth/distance, offsetting, poly-line, curve, area
- Data import/Export: DXF, SHP, RW5, LandXML ...
- Survey Utilities: calculator, RW5 file viewing
- Optical Surveying Instruments (optional)
- Road Construction (optional)
- Robotic Total Stations (optional)

## Supported Hardware<sup>5</sup>

- MobileMapper CX
- MobileMapper 6
- ProMark 3
- Juniper Allegro CX

<sup>(1)</sup> Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High-multipath areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.

<sup>(2)</sup> Accuracy and TTFF specifications based on tests conducted in Nantes, France, and Moscow. Tests in different locations under different conditions may produce different results.

<sup>(3)</sup> Open sky at base and rover, good pseudo range correction, after transient period.

<sup>(4)</sup> Long baselines, long occupations, precise ephemeris used.

<sup>(5)</sup> Other field software & controllers are also compatible with ProMark 500.

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