

# ProFlex™ 500



**Flexible Rugged  
High-Performance GNSS Receiver**



# Powerful Positioning Solution

## ProFlex™ 500

Designed by our GNSS experts, the new ProFlex 500 is a powerful positioning solution that delivers state-of-the-art RTK features in a rugged, highly integrated receiver design. Embedded BLADE™ technology ensures powerful RTK performance and a patented way to use multiple GNSS constellations for high-accuracy positioning and surveying solutions. The ProFlex 500 works as either a base or a rover and is available with different application packages to adapt to various customer needs.



Its innovative design makes it the ideal solution for onboard system integration - it can be mounted easily on a machine or vehicle for land or sea operations - and it is also a perfect back-pack rover or reference station solution for precise land surveying.

ProFlex 500 offers GPS+GLONASS+20 years of field-proven Magellan technologies. It is made to withstand harsh environments, and gives you maximum flexibility in the field.

- Fast initialization and centimeter accuracy at long-range
- Unique BLADE technology for full benefit of any available GLONASS corrections
- Unique built-in communication features
- Rugged design for demanding work environments
- Advanced multi-path mitigation and robust signal tracking for maximum data reliability
- Interoperability with any vendor's reference station transmitting GPS+GLONASS L1/L2

## High-End Performance

The ProFlex 500 with BLADE has the ability to provide the best possible measurements from three constellations GPS+GLONASS+SBAS – one of the key differentiators offered by our BLADE technology. The receiver itself makes all the checks and preparations needed to mitigate any negative effects of GLONASS signal instabilities. The result is more reliable measurement processing and usage than with competing receiver offerings. Additionally, the ProFlex 500 can work with any other manufacturer's base or reference stations (VRS, FKP or MAC formats supported).

## Ruggedness

The innovative design integrates all the communication components (GSM/GPRS and/or UHF radios) offering an all-in-one robust solution to the user. The weatherproof, high-impact resistant molded aluminum housing ensures your investment is safe in all conditions, which is especially important for onboard machine usage or base station applications.

## Flexibility

The ProFlex 500 offers a unique design with various mounting capabilities. It includes a unique set of built-in communication options, internal and removable battery, internal memory, specific kits per application and full compatibility with various software solutions such as FAST Survey™, GNSS Solutions™ and Real Time Data Server (RTDS™).

Adaptable to most any specific positioning usage, the ProFlex 500 is also the ideal solution for people looking for a single GNSS receiver for multiple applications.





# Application Packages



## Survey Backpack

This kit is the ideal package for using your ProFlex 500 in the field for surveying. It includes a robust and comfortable water-resistant backpack specifically designed for ProFlex 500 and its accessories, a UHF pole and cable, a GPS cable with a smart quick-release system, a second Li-ion battery, a tape measure and our GNSS Solutions software for project and geoid management.

## Marine

GPS and UHF Marine Aerial Kits are available for the ProFlex 500 for easy and powerful installation onboard ships. Specifically designed for coastal works, dredging, bathymetry or offshore user needs, it includes low-loss GPS or UHF cables (10 or 30 meters), UHF antenna and rugged mounting parts. Our BLADE long range RTK capability combined with our UHF expertise will allow you to increase your productivity.



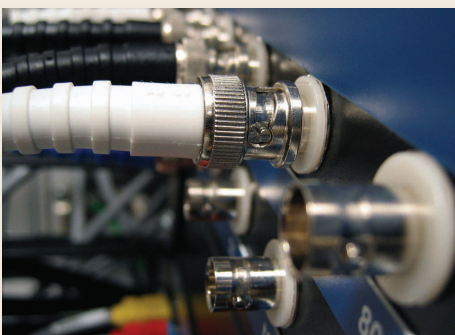
## Onboard Machine Integration

Ready for system integration, ProFlex 500 is a great GNSS solution alternative for OEM manufacturers and VARs who need precise positioning for the machine guidance/control markets, such as agriculture, construction or mining. Contact us to see how you can fully benefit from our unique BLADE technology for your application.

## Base Station

With its built-in Ethernet capability, you may access your ProFlex 500 from any computer connected to the Internet. You will be able to control and monitor your equipment and to stream data like you would do with a serial port.

In addition you may also use your ProFlex 500 with our RTDS software (Real Time Data Server) to build your own RTK corrections server via Direct IP. The RTDS software enables land surveyors to have an efficient alternative to RTK networks (public or private) and also solve radio propagation issues, provided a GPRS cellular network is available.



## Connectivity

In addition to those already provided within the standard configuration, this kit includes all the cables (serial cables, USB cable, 10m GPS cable, 10m UHF cable, power cable to connect on an external battery), and will allow you to always find the right set-up, and optimize the operational use of your receiver, either as a rover, a base or onboard a vehicle.

# ProFlex 500 Technical Specifications (all options listed)

## GNSS Characteristics

- 75 channels:
  - GPS L1 C/A L1/L2 P-code, L1/L2 full wavelength carrier,
  - GLONASS L1 C/A, L2 C/A and L2P code, L1/L2 full wavelength carrier,
  - SBAS: code & carrier (WAAS / EGNOS / MSAS),
  - Quick signal detection engines for fast acquisition and re-acquisition of GPS / GLONASS / SBAS signals.
- Fully independent code and phase measurements
- Magellan BLADE technology for optimal performance
- Advanced multi-path mitigation
- Up to 10 Hz raw data and position output, 20 Hz upgradeable
- RTK base and rover modes, post-processing
- L2C, L5, Galileo upgradeable

## RTK Base

- RTCM-2.3 & RTCM-3.1
- CMR™ & CMR+
- ATOM™ (Magellan proprietary format)

## RTK Rover

- BLADE technology
- Up to 10 Hz Fast RTK, 20 Hz upgradeable
- RTCM-2.3 & RTCM-3.1
- CMR & CMR+
- DBEN & ATOM (proprietary formats)
- Networks: VRS, FKP, MAC
- NTRIP protocol
- NMEA0183 messages output

## Real-Time Position Accuracy<sup>1</sup>

### Autonomous

- CEP: 3.0 m (9.843 ft)
- 95%: 5.0 m (16.4 ft)

### Differential (Local Base Station)

- CEP: 40 cm (1.31 ft)
- 95%: 90 cm (2.95 ft)

### RTK (kinematic)

- Fixed RTK
  - Horizontal 1 sigma: 1 cm (0.033 ft) + 1 ppm<sup>2,3</sup>
  - Vertical 1 sigma: 2 cm (0.065 ft) + 1 ppm<sup>2,3</sup>
- Flying RTK
  - CEP: 5 cm + 1 ppm<sup>2,3</sup>
  - CEP: 20 cm + 1 ppm<sup>2,4</sup>

## Real-Time Performance

### Instant-RTK Initialization

- Typically 2-second initialization for baselines < 20 km
  - 99.9% reliability
- ### RTK Initialization range
- > 40 km

## Velocity Accuracy<sup>1</sup> (knots)

- 95%: 0.1

## 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) + 1 ppm
- ### Long Static<sup>5</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

## Monitoring Screen

- Graphical OLED display (128x64 resolution)

## Memory

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

## I/O Interface (Rugged and Waterproof Fischer Connectors)

- 1 RS232/RS422 up to 921.6 kbits/sec
- 2 RS232 up to 115.2 kbits/sec
- USB 2.0 host and device
- Bluetooth 2.0 + EDR Class 2, SPP profile
- Ethernet
  - Full-Duplex, auto-negotiate 10 Base-TX / 100 Base-TX
  - DHCP or manual configuration (static IP address)
  - Receiver Configuration and data output through TCP/IP server
- 1 PPS output
- Event marker input
- Earth terminal
- 12V/0.5A (1A peak) output available on serial port A
- All signals available are optically isolated from receiver's internal circuitry (except USB)

## Physical Characteristics

### Size

- Unit: 21.5x20x7.6 cm (8.46x7.87x2.99 in)

### Weight

- GNSS receiver: from 2.1 kg (4.6 lb)

## Environmental Characteristics

- Operating temperature: -30° to +65°C (-22° to +149°F)
- Storage temperature: -40° to +70°C (-40° to +158°F)
- Humidity: 100% condensing
- IP67 (waterproof and dustproof as defined in EN60945)
- Salt mist as defined in EN60945
- Shock: MIL-STD 810F, Fig. 516.5-10 (40g, 11ms, saw-tooth)
- Vibration: MIL-STD 810F, Fig. 514.5C-17

## Power Characteristics

- Li-ion battery, 32.5Wh (7.4Vx4.4Ah). Acts as a UPS in case of a power source outage
- Battery life time: > 6.5hrs (UHF rover @ 20 °C)
- 9-36 VDC input
- Typical power consumption with UHF radio and GNSS antenna: < 5W

## Complementary System Components

### Transmitter Kits

- Magellan UHF
- Pacific Crest UHF

### Rover Communication Modules

- Magellan UHF
- Pacific Crest UHF
- GSM/GPRS/EDGE (class 10) Quad-band Antennas

- Geodetic: L1/L2 GPS/GLONASS Survey antenna, 38dB gain

- Machine: contact us
- Choke Ring: contact us

### Software Solutions

- GNSS Solutions, RTDS, FAST Survey

### Field Terminal kit with FAST Survey

### Connectivity kit

<sup>(1)</sup> Accuracy and TTFF specifications based on tests conducted in Nantes and Moscow. Tests at different locations under different conditions may produce different results. Beacon tests based on 40 km baseline. Position accuracy may degrade with longer baselines. Position accuracy specifications are for horizontal positioning. Vertical error is typically < 2 time's horizontal error.

<sup>(2)</sup> Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High multi-path areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.

<sup>(3)</sup> Steady state value for baselines < 50 km after sufficient convergence time.

<sup>(4)</sup> Typical values after 3 minutes of convergence for baselines < 50 km.

<sup>(5)</sup> Long baselines, long occupations, precise ephemeris used.