ashtech
BY MAGELLAN PROFESSIONAL

ProFlex™ 500 Marine

High-Performance GNSS Receiver for Marine Positioning

Features

- **Fast, real-time centimeter accuracy**
- **Long-range kinematic positioning**
- **Multi-application GNSS receiver**
- **Rugged and ergonomic**

Designed by our GNSS experts, the 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 high-end RTK performance and a patented way to use multiple GNSS constellations for high-accuracy positioning and surveying solutions. Available in single- and dual-frequency versions, ProFlex 500 delivers real-time precision ranging from the submeter to centimeter level, and is compatible to the previous renowned Aquarius and Sagitta series.

High-End Performance

The ProFlex 500 is the right solution for Marine RTK applications such as bathymetry, dredging or coastal works. Its fast output rate (up to 20 Hz) makes it the ideal receiver for many types of demanding kinematic applications. Thanks to its unique design, the ProFlex 500 is made to withstand harsh environments, and optimize your field productivity:

- 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

Ergonomic and Rugged

ProFlex 500 can easily be configured and monitored in real-time either locally or remotely via the embedded Web Server software.

The innovative design integrates all the communication components, either GSM/GPRS and/or the latest U-Link UHF radios, offering an all-in-one robust solution to the user. The weatherproof, high-impact resistant molded aluminum housing, the floating power input, the earth terminal and the optical isolation from internal circuitry of all available signals, ensures that your investment is safe in all conditions.

Flexibility

We have included in the ProFlex 500 all the features you need for reliable marine surveying, including internal and removable battery, which acts as an Uninterruptible Power Supply (UPS) in case of power source outage, internal memory expandable through USB key, UHF and GPS aerial kits with low-loss cables and rugged mounting parts for easy and powerful installation aboard ships.

Benefiting from a high degree of flexibility in its design, ProFlex 500 can also be used as a base station or backpack rover. It is the ideal solution for companies looking for a single GNSS receiver for multiple offshore and onshore applications. To even more increase your project flexibility, ProFlex 500 is also compatible with several data formats (RTCM, CMR/CMR+, LRK, etc.)

ProFlex 500 Marine 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 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
- BLADE technology for optimal performance
- Advanced multi-path mitigation
- Up to 20 Hz raw data and position output
- RTK base and rover modes, post-processing
- L5, Galileo upgradeable

RTK Base

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

RTK Rover

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

Real-Time Position Accuracy[1]

Autonomous

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

SBAS Differential

- 0.9 m (RMS)(2.95 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[2,3]
  - Vertical 1 sigma: 2 cm (0.065 ft) + 1 ppm[2,3]
- Flying RTK
  - CEP: 5 cm + 1 ppm[2,3]
  - CEP: 20 cm + 1 ppm[2,4]

Real-Time Performance

Instant-RTK Initialization

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

RTK Initialization range

- > 40 km

Velocity Accuracy[1] (knots)

- 95%: 0.1

Post Processing Accuracy (rms)[1-2]

Static, Rapid Static

- Horizontal 5 mm (0.016 ft) + 0.5 ppm
- Vertical 10 mm (0.033 ft) + 1 ppm

Long Static[5]

- 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

- 0.05 - 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)
  - Embedded Web Server for monitoring and configuration
  - NTRIP Server and instant real-time multi-data streaming over Ethernet
- 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 ºC)
- 9-36 VDC input
- Typical power consumption with UHF radio and GNSS antenna: < 5W

Complementary System Components

Transmitter Kits

- U-Link TRx
- Pacific Crest UHF

Rover Communication Modules

- U-Link Rx
- 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

[1] 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.

[2] 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.

[3] Steady state value for baselines < 50 km after sufficient convergence time.

[4] Typical values after 3 minutes of convergence for baselines < 50 km.

[5] Long baselines, long occupations, precise ephemeris used.

Survey Solutions Contact Information:
In USA +1 408 572 1103 ▪ Fax +1 408 572 1199
In South America +1 786 220 2579
Email surveysales@ashtech.com

In France +33 2 28 09 38 00 ▪ Fax +33 2 28 09 39 39
In Russia +7 495 980 5400 ▪ Fax +7 495 981 4840
Email surveysalesemea@ashtech.com

In Singapore +65 9838 4229 ▪ Fax +65 6777 9881
In China +86 10 5802 5174 ▪ Fax +86 10 5802 5135
Email surveysalesapac@ashtech.com
www.ashtech.com

ashtech™
BY MAGELLAN PROFESSIONAL