MAGELLAN®
PROFESSIONAL

ProFlex™ 500 Base Station

High-Performance GNSS Receiver for Real-Time Network Applications

Features

- **Rugged all-in-one GNSS base station**
- **Instant real-time multi-data streaming**
- **Enhanced RTK accuracy**
- **Multi-application base/rover**

With its instant multi-data streaming capability, the ProFlex 500 base station offers easy access to RTK corrections for real-time centimeter accurate land surveying and mapping applications. ProFlex 500 enhanced Internet connectivity provides NTRIP and Direct IP capabilities enabling users to build their own DGPS and/or RTK corrections server without any additional software or equipment. The built-in Ethernet feature and Web Server, for full remote control and monitoring, enable Survey and GIS professionals to have an efficient and cost-effective alternative to correction networks (public or private).

High-End Performance

The ProFlex 500 base station has the ability to provide the best possible measurements from three constellations GPS+GLONASS+SBAS – one of the key differentiators offered by Magellan Professional BLADE technology. The receiver itself makes all the checks and preparations needed to mitigate any negative effects due to GLONASS biases. The result is more reliable measurement processing and usage than with competing receiver offerings.

- 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 GNSS receiver

Dependable and Rugged

We have included in ProFlex 500 all the features you need for precise and reliable positioning, including internal and removable battery, which acts as an Uninterruptible Power Supply (UPS) in case of power source outage, and an internal memory expandable through USB key. The innovative design integrates all the communication components (Ethernet, GSM/GPRS, UHF radio, Bluetooth) offering an all-in-one robust solution to the user.

Rugged and IP67 rated, the receiver is made to withstand harsh environments. Its high-impact resistant molded aluminum housing ensures that your investment is safe in all conditions.

Flexibility

Adaptable to most any specific positioning usage, the ProFlex 500 is the ideal solution for people looking for a single GNSS receiver for use in various applications (base station, rover, or aboard a vehicle). ProFlex 500 supports various field and office software, and is also compatible with all standard data formats (RTCM, CMR/CMR+, LRK, etc.)

ProFlex 500 base station is a highly versatile product that can possibly be upgraded from a basic L1 GPS-only to L1/L2, and up to GPS/GLONASS configurations. Each ProFlex 500 base station can also be set up as a rover and is fully compatible with the Magellan Professional ProMark™ and MobileMapper™ product ranges for complete cost-effective survey and mapping RTK solutions.

ProFlex 500 Base Station 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
- Magellan Professional 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™ (Magellan Professional 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

- ProFlex 500 base station combined with MobileMapper CX, or ProMark 3 RTK for GIS, offers a complete solution for real-time decimeter GIS and mapping.
- ProFlex 500 base station combined with ProMark 500, ProMark 3 RTK or ProFlex 500 rovers, offers a complete cost-effective solution for centimeter RTK surveying.

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.

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