ProFlex™ Lite

Rugged and Compact High-end GNSS Sensor

The Ashtech ProFlex Lite is a powerful positioning solution that delivers state-of-the-art RTK features in a smart and rugged sensor. Designed for seamless integration, ProFlex Lite allows OEM and system integrators to rapidly integrate centimeter level positioning into their application.

ProFlex Lite offers real-time precision ranging from sub-meter down to centimeter level. It is a scalable cost-effective sensor, available in a variety of configurations from L1 GPS+GLONASS+SBAS up to L1/L2 GPS+GLONASS+SBAS. Firmware upgrades are possible at any time to adapt to new requirements.

Key Features:

- **Proven BLADE technology for optimal productivity**
- **Cost-effective GNSS positioning**
- **Smart and rugged design for easy integration**
- **Embedded UHF receiver option**

Ashtech High-End Performance

Embedded BLADE technology secures the best possible measurements from the GPS, GLONASS and SBAS constellations. BLADE perfectly mixes multiple observables with no compromise between quality and availability. This leads to an incredibly robust and dependable measurement processing resulting in optimized field productivity. Key features include:

- Fast initialization and centimeter accuracy at long-range
- Advanced multi-path mitigation and signal tracking for maximum data reliability
- Full benefit of any available GLONASS satellites to strengthen the GPS solution
- Interoperability with any vendor's reference station transmitting L1/L2 GPS+GLONASS

By receiving corrections from an external GSM/GPRS demodulator or via the embedded UHF receiver option, ProFlex Lite supports standard and advanced RTK operations such as:

- RTK against a static base with or without SBAS and GLONASS satellites
- Advanced RTK against an external moving base for relative positioning
- Network RTK using third-party network corrections: VRS, FKP, MAC
- Up to 10 Hz time-tagged RTK and up to 20 Hz fast RTK and raw data output

Flexible, Smart and Rugged Design

ProFlex Lite works flexibly either as a base or a rover. Users can also pair their receivers to build a standalone RTK system, using the embedded UHF option (rover) and an external transmitter (base).

ProFlex Lite is compact for easy integration. It features low power consumption and offers a wide variety of output messages and data formats for extensive solution interoperability. Additionally, industry standard and independent I/O connectors simplify cabling for system integrators.

With its waterproof, highly resistant aluminum casing, the ProFlex Lite is made to withstand harsh environments. Smart mounting bracket design allows seamless integration on board a machine or a vehicle for land, air or sea operations. Being a “plug and play” system, it is ideally suited for mobile positioning and navigation onboard-solutions for which precision and flexibility are equally important.

ProFlex Lite Technical Specifications (including all available options)

The ProFlex Lite is a multi-channel, multi-frequency single GNSS board enclosure. Harnessing the power of the embedded Ashtech MB 500 GNSS board, ProFlex Lite allows OEM and system integrators to rapidly integrate centimeter-level positioning into their applications.

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 code, L1/L2 full wavelength carrier
  - SBAS L1 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
- Ashtech BLADE technology for optimal performance
- Advanced multi-path mitigation
- Up to 20 Hz raw data and position output
- RTK base and rover modes

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+
- DBEN, LRK & ATOM (proprietary formats)
- Networks: VRS, FKP, MAC
- NMEA0183 messages output

Real-Time Position Accuracy[1]

Autonomous

- CEP: 3.0 m (9.8 ft)
- 95%: 5.0 m (16.4 ft)

Differential (Local Base Station)

- CEP: 40 cm (1.3 ft)
- 95%: 90 cm (2.9 ft)

SBAS Differential

- 0.9m (RMS) (2.9 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

I/O Interface

- 2 RS232 up to 921.6 kbits/sec, (1 RS232 when embedded UHF option is installed)
- 1 USB "Serial Port" up to 12Mbits/sec
- 1 PPS output
- 1 Event marker input

Physical Characteristics

- **Size (WxHxD):** 190x58x160 mm (7.48x2.28x6.3 in)
  Width with mounting brackets: W=221.5 mm (8.72 in)
- **Weight:** 1.33 kg (2.93 lb) with mounting brackets

Environmental Characteristics

- Operating temperature: -30° to +60°C (-22° to +140°F)
- Storage temperature: -40° to +70°C (-40° to +158°F)
- Humidity: 100% condensing
- IP67
- Shock: MIL-STD 810F, Fig. 516.5-10 (40g, 11ms, saw-tooth)
- Vibration: MIL-STD 810F, Fig. 514.5C-17[5]

Power Characteristics

- Typical power consumption: 3.5W with GNSS antenna
- 9-36 VDC input
- Protected against over voltage up to 70 Volts and against reverse polarity
- Protected against electrical disturbances of vehicles with 12v and 24V supply voltages (standard ISO 7637)

UHF Options

- Embedded U-Link Rx for Rover
- External U-Link TRx for Base Station

Recommended Antennas

- GNSS Survey Antenna (38dB gain)
- GNSS Machine/Marine Antenna (38dB gain)
- GNSS Choke Ring Antenna

Configuration Tool

Ashtech Communicator is a GNSS Utility software for sensor evaluation and configuration.

- Preset of commands
- Real time data logging
- Real time data visualization

Ashtech ProFlex Family also includes:

- ProFlex 500: rugged multi-application GNSS receiver, with extended built-in connectivity (GSM/GPRS, UHF, Ethernet).
- ProFlex Lite Duo: dual GNSS board enclosure providing extended capabilities like Heading, Relative Positioning, RTK + Heading, RTK + Relative Positioning or dual RTK solutions.
- Hardware upgrades from ProFlex Lite to ProFlex Lite Duo are possible. These upgrades must be done at the factory or by an authorized repair center.

(1) Accuracy and TTFF specifications may be affected by atmospheric conditions, signal multipath, and satellite geometry. 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) RTCA / DO-160 E (category S, curve B) when embedded UHF option is installed. Vertical installation is recommended for higher vibration conditions.

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