# ProFlex™ Lite Duo


## Dual GNSS for RTK, Heading and Relative Positioning

### Key Features:

- **Dual GNSS board enclosure**
- **RTK accuracy, heading and relative positioning**
- **Proven BLADE technology for optimal productivity**
- **Smart and rugged design for easy integration**

ProFlex Lite Duo is a rugged dual GNSS board enclosure that delivers state-of-the-art RTK accuracy, including heading and relative positioning. It is a powerful cost-effective GNSS sensor designed for seamless onboard system integration.

ProFlex Lite Duo is available in a variety of configurations to meet up to the most demanding applications needs. Embedded BLADE technology secures the best possible measurements from the GPS, GLONASS and SBAS constellations to deliver outstanding heading and/or relative positioning while securing RTK accuracy and fast initialization. Key features include:

- L1 GPS/GLONASS + SBAS, L1/L2 GPS or GPS/GLONASS + SBAS dual board combinations
- RTK positioning + heading or RTK positioning + relative positioning
- Dual RTK solutions for maximum redundancy, safety or specific heading computation

### Heading and Relative Positioning

ProFlex Lite Duo offers powerful real-time capabilities to ideally suit a wide array of precise positioning needs, such as vessel or machine heading determination, antenna pointing, structure deformation monitoring, etc. ProFlex Lite Duo can operate in two different modes:

- Heading: ProFlex Lite Duo delivers accurate heading (0.1° accuracy for a 2-meter baseline), plus pitch or roll. Baseline auto-calibration is fast and secure, relieving users of any tedious pre-adjustments or settings.
- Relative positioning: ProFlex Lite Duo allows a robust moving baseline RTK solution to be computed between two antennas. The resulting centimeter accurate vector can be output to the serial port in an NMEA-like message format.

Connected to an external demodulator (radio, GSM/GPRS), ProFlex Lite Duo will deliver simultaneously to heading or relative positioning, an outstanding RTK precision down to centimeter accurate position if needed, like in machine control, dredging, or mining.

### Dual RTK Flexibility

Each GNSS board embedded in a ProFlex Lite Duo can process GNSS data independently. The two boards may be receiving two different sets of corrections to compute two independent RTK solutions while using the same GNSS antenna. This dual RTK processing is ideally suited for positioning back-up on large scale sites with multiple reference stations or for safety reasons such as offshore applications calling for redundancy with the constant collection of two independent fixes.

ProFlex Lite Duo can even provide dual RTK solutions to enable heading computation via specific data acquisition software. The boards will be connected to two different antennas, using the same set of corrections to compute independently two RTK solutions.

# ProFlex Lite Duo Technical Specifications (including all available options)

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

## GNSS Characteristics

- 2 x 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]
- Heading, Pitch/Roll
  - Heading (1 sigma): 0.2 deg/baseline (m)[2,5]
  - Pitch/roll (1 sigma): 0.4 deg/baseline (m)[2,5]

## 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 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:** 1.42 kg (3.13 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

## Power Characteristics

- Typical power consumption: 6.5W with 2 GNSS antennas
- 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)

## Recommended Antennas

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

## 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: single GNSS board enclosure for centimeter-level RTK positioning

(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) Typical values for properly installed antenna on vehicle body.

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