

KEY FEATURES

Smart and rugged design for easy integration and demanding environments

Cost-effective GNSS positioning and/or Heading + Pitch/Roll determination

Embedded UHF TRx option for all in-one solutions

Ashtech Z-Blade Technology for optimal productivity

- GNSS-centric engine
- GLONASS-only capable



ABX SERIES GNSS SENSORS

RUGGED, COMPACT & HIGH-END GNSS SENSORS

ABX Series are state-of-the art GNSS sensors intended for general-purpose, real-time, high-accuracy, absolute positioning applications, with additionally accurate heading measurements and relative positioning for some of the available models.

RUGGEDNESS

All receivers from the ABX series share the same weatherproof, lightweight, small-sized and rugged enclosure capable of accommodating either one GNSS MB100 board (ABX100), one GNSS MB800 board (ABX800) or two GNSS MB800 boards (ABX802).

Designed for seamless integration, ABX Series allows OEM and system integrators to rapidly integrate centimeter level positioning into their application. Each receiver from the ABX series is fitted with a built-in power supply extending the input voltage range to between 9 and 36 V DC while maintaining a low power consumption regardless of the power input voltage.

Built in a weatherproof, rugged and small-size unit, the ABX receivers can be operated in harsh environments while requiring a minimum of space for their installation. As lightweight high-end units, all ABX receivers are also compatible with airborne applications for which weight considerations are critical.

Additionally, industry standard and independent I/O connectors simplify cabling for system integrators. 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.

Latest state-of-the art XDL Micro UHF Transceiver (TRx) from Pacific Crest are also available with ABX800 and ABX802 models.

HIGH-END PERFORMANCE

ABX receivers are smart GNSS receivers built around the GPS/GLONASS/SBAS, single- or dual-frequency MB100 or MB800 board recently introduced in the market. Embedded Z-Blade™ technology in the board ensures powerful performance and a patented way to use multiple GNSS constellations for high-accuracy positioning solutions

- Fast initialization and accuracy at long-range
- Patented multi-constellation signal processing
- RTK solution maintained if data link is briefly dropped
- Dependable Heading + Pitch/Roll measurements with baseline auto-calibration
- Advanced multi-path mitigation and robust signal tracking for maximum data reliability
- Unique Z-Blade “GNSS-centric” technology for outstanding GNSS performance in harsh environments

With the unique “Internal Heading” capability of the MB100 the ABX100 is an ideal low-cost solution for vector determination applications (Heading + Pitch/Roll) + SBAS/DGPS positioning, while the ABX802 is capable to deliver Heading + Pitch/Roll information in highly demanding environments in addition to outstanding RTK positioning.

GNSS CHARACTERISTICS

- 45, 120 or 240 (2*120) channels depending on model¹
 - GPS L1 C/A L1/L2 P-code, L2C, L5
 - GLONASS L1 C/A, L2 C/A code
 - GALILEO E1 and E5
 - SBAS L1 (WAAS/EGNOS/MSAS/GAGAN)
 - QZSS
- Z-Blade technology (Ashtech GNSS centric algorithm) for optimal performance in harsh environment²
- Quick signal detection engine for fast acquisition and re-acquisition of GNSS signals
- Fast and stable RTK solution
- Up to 20 Hz real-time raw data, position and heading output
- Advanced multi-path mitigation technique
- RTK base and rovers modes, post-processing

REAL-TIME ACCURACY (HRMS)^{3,4}

- SBAS (WAAS/EGNOS/MSAS)
- < 50 cm (1.64 ft)

DGPS

- 25 cm (0.82 ft) + 1 ppm⁵

RTK

- 1 cm (0.033 ft) + 1 ppm⁵

FLYING RTK

- 5 cm (0.165 ft) + 1 ppm for baselines up to 1000 km

HEADING, PITCH/ROLL

- Heading: <0.2 deg/baseline (m)⁶
- Pitch/roll: <0.4 deg/baseline (m)⁶

VELOCITY ACCURACY³ (knots)

- 95%: 0.1

REAL-TIME PERFORMANCE

INSTANT-RTK INITIALIZATION

- Typically 2-second initialization for baselines < 20 km
- Up to 99.9% reliability (user configurable)

RTK INITIALIZATION RANGE

- >40 km

RTK BASE

- RTCM-2.3 & RTCM-3.1
- CMR & CMR+
- DBEN & ATOM (Ashtech format)
- Moving base operation

RTK ROVER

- Up to 20 Hz Fast RTK
- RTCM-2.3 & RTCM-3.1
- CMR & CMR+
- DBEN, LRK & ATOM (Ashtech formats)
- Networks: VRS, FKP, MAC
- NMEA0183 messages output
- RTK with moving base operation
- Heading and pitch or roll determination with auto-calibration

I/O INTERFACE

- 2 RS232 for ABX100 ABX80x w/ UHF
- 3 RS232 for ABX80x
- 1 USB 2.0 port (all models)
- 1 PPS output
- 1 Event marker input
- 5V power output on RS232 pin 9 (h/w jumper)

PHYSICAL CHARACTERISTICS

- Size (WxHxD): 190x58x160 mm (7.48x2.28x6.3 in) Width sliding bars included: 221.5 mm (8.72 in)
- Weight: from 1.225 kg (2.70 lb)

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
- Shock: MIL-STD 810F, Fig. 516.5-10 (40g, 11ms, saw-tooth)
- Vibration: MIL-STD 810F, Fig. 514.5C-175

POWER CHARACTERISTICS

- 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 (ISO 7637 standard)
- Typical power consumption with 12-V DC input and GNSS antenna(s) connected:
 - ABX100: 2.1 W (one antenna); 2.4 W (two antennas)
 - ABX800: 3.05 W (one antenna)
 - ABX800 with internal UHF radio receiver: 3.55 W
 - ABX800 with 1-W transmitting UHF radio: 6.5 W
 - ABX802: 5.8 W (two antennas)
 - ABX802 with internal UHF radio receiver: 6.26 W
- GNSS antenna(s) powered from 5 V DC ($\pm 10\%$); DC current: 100 mA max, 5 mA min

RECOMMENDED ANTENNAS

- GNSS Survey Antennas: Ashtech ASH-660 & 661
- GNSS Machine/Marine/Aviation Antennas: Trimble LV59 & AV59
- Compact GNSS Machine/Marine/Aviation Antennas: Trimble AV33 & AV34

CONFIGURATION TOOL

Ashtech Communicator is a GNSS utility for boards and sensors evaluation and configuration.

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

ORDERING INFORMATION

- ABX Series is available in a variety of configurations
- UHF Models
 - Embedded Pacific Crest XDL Micro TRx (410-470 MHz, 12.5- or 25-kHz channeling, up to 0.5 W radiated power)
 - Ideal for Base and Rover modes

(* Including all available options

- (1) L2 GLONASS, GPS L5 and Galileo are not available on MB100/ABX100. For additional information on GNSS characteristics, please refer to MB100 & MB800 data sheets.
- (2) All the available GNSS signals are processed equally and combined to improve performance in harsh environment..
- (3) 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.
- (4) Typical values for properly installed antenna on vehicle body.
- (5) 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.
- (6) Back-up battery may be used for RTC (Real Time Clock) to improve hot start TTFF performances.



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