

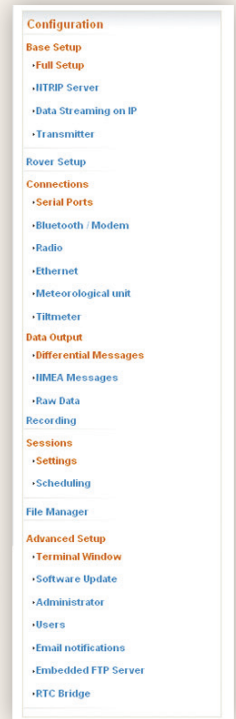
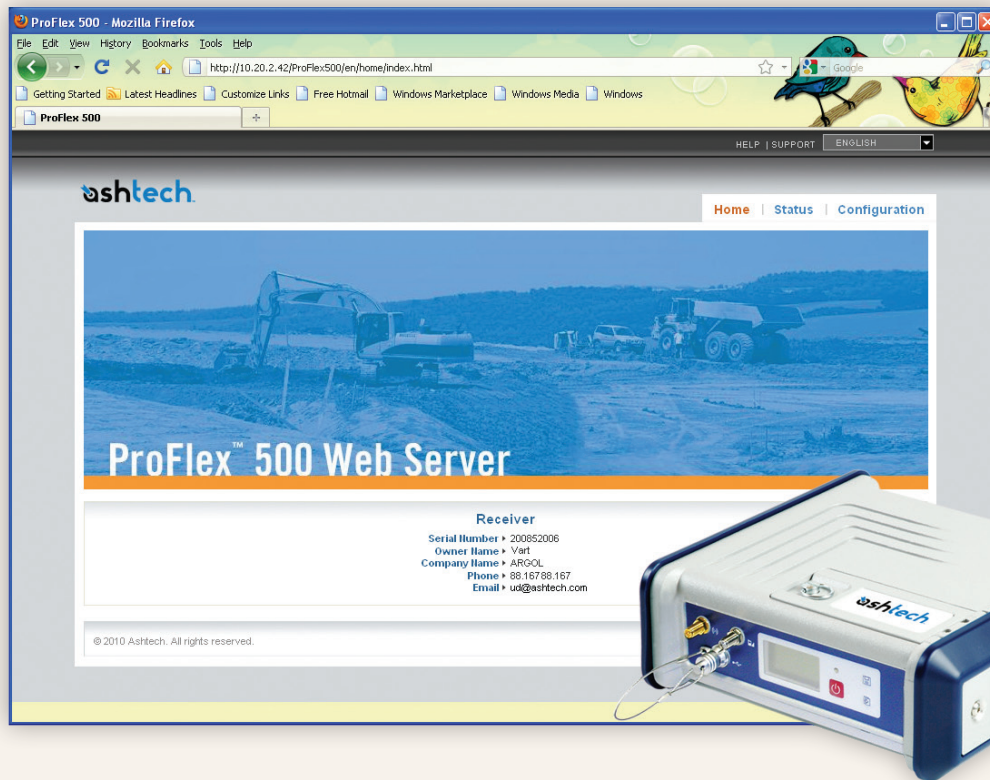
ProFlex™ 500 CORS



Advanced Continuously
Operating Reference Station



Advanced Continuously Operating Reference Station



The Best Ever Ashtech Reference Station

The ProFlex™ 500 CORS is designed to collect, store, and transfer high quality GNSS raw data. Advanced CORS features such as, automatic sessions programming, ring file buffer, embedded RINEX converter with Hatanaka compression, automatic FTP push feature, which securely uploads data files, or embedded FTP server, for those who wish to manually retrieve their data, are all included. ProFlex 500 CORS data and powerful capabilities are easy to access and configure remotely via the built-in user-friendly web server interface.

Embedded memory can be easily extended through USB sticks or external hard drives to securely store your GNSS and external sensors data. The ring file memory ensures that the most recent data are always available to the users and reference station administrators. Sensor data may be pushed or retrieved with the same simplicity as GNSS data.

High-Quality GNSS Raw Data

The ProFlex 500 CORS features Ashtech's BLADE technology to provide the best possible measurements from the three constellations, GPS+GLONASS+SBAS. The ProFlex 500 CORS has been extensively tuned to provide the highest quality raw data and specific observation masks to ensure the perfect synthesis between quality and availability, depending on each user's application. BLADE technology ideally matches your data to your application, and provide optimal results to the ProFlex 500 CORS users.

Flexible and Rugged Campaign Receiver

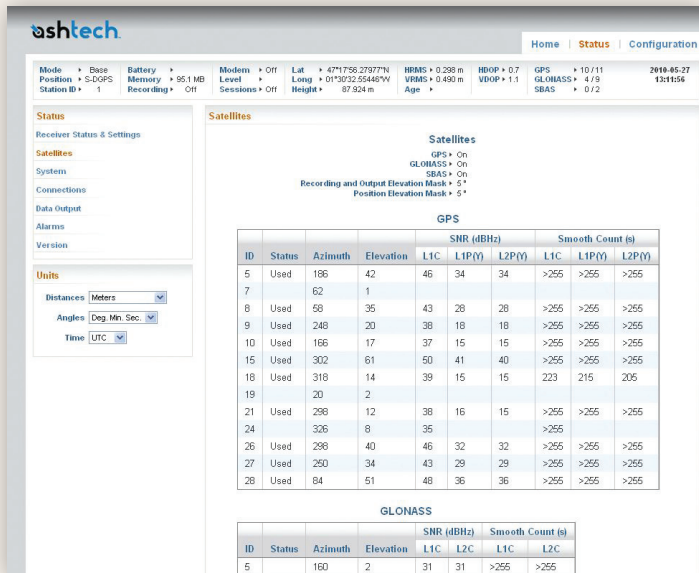
The Ashtech ProFlex 500 CORS receiver operates equally well as a CORS, a campaign GNSS receiver or a portable or permanent base station for post processing or RTK applications.

It has the flexibility to either collect raw data only or to simultaneously collect data and broadcast RTK corrections. Thanks to its instant multi-data streaming capability, the ProFlex 500 CORS offers easy access to RTK corrections for real-time centimeter accurate surveying and mapping applications. Enhanced Ethernet connectivity provides NTRIP and Direct IP capabilities enabling users to easily build their own DGPS and/or RTK corrections server without any additional software or equipment.

The ProFlex 500 CORS is an all-in-one robust solution, with fully integrated communication components (Ethernet, GSM/GPRS, UHF radio, Bluetooth). It includes an internal removable battery, which acts as a built-in uninterruptible power supply (UPS). Rugged and IP67 rated, the receiver is made to withstand harsh environments.



Advanced Web Server using Web 2.0 Technology



User-Friendly Remote Control via Internet

- The ProFlex 500 CORS embedded and password-protected web server provides full remote control of the reference station via an internet connection.
- GNSS and sensor data may be pushed or retrieved with the same simplicity using the innovative web server interface.
- Raw data files can be pushed automatically to an external FTP server.
- The embedded FTP server permits the administrator to perform maintenance steps remotely and allows authorized users to download raw data files directly from the receiver.

Automatic Email Reporting

- For quicker responses to a triggered alarm, ProFlex 500 CORS administrators can choose to be informed via email of possible malfunctions detected by the receiver. ProFlex 500 CORS administrators can rely on this function in case of main power supply failure for example

Fast and Advanced Session Programming

- Generation of raw data files organized as sessions are entirely manageable through the web server, with preset duration, ensuring round-the-clock data recording, day-after-day and year-after-year. Up to 96 sessions can be created per day.
- Raw data files can be converted to Rinex 2.11, Rinex 2.11 Hatanaka or TarZ before being made available to users.
- An embedded ring file memory function offers unlimited use of the storage medium. When this function is enabled, it allows the oldest files in memory to be automatically deleted, if necessary, to provide storage space for current files being recorded.
- The ring file buffer function allows raw data recording simultaneously with data recording performed through the programmed sessions. Settings such as site name, recording elevation mask, recording interval, etc. can be different from those found for sessions.

The screenshot displays the 'Settings' page of the Ashtech ProFlex 500 CORS web interface. It is divided into several sections: 'Parameters', 'G-File conversion', 'File move', and 'Ftp transfer to external server'. The 'Parameters' section includes fields for Session Programming (Disable), Reference Day (1), Offset Per Day (mm:ss) (00:00), Site Name (1111), Recording Elevation Mask (5), Storage (Internal Memory), Observation Mask (Reference station), Ring File Memory (checked), and Data Type Set To Port R (ATMNAV(1.00s),MES(1.0)). The 'G-File conversion' section has checkboxes for Rinex 2.11 (checked), Hatanaka (checked), Tarz (checked), and Delete original G-File (unchecked). The 'File move' section has checkboxes for Move Converted Files (unchecked) and Move G-files (unchecked), and a Destination Location dropdown (Internal Memory). The 'Ftp transfer to external server' section has checkboxes for Automatic Transfer (unchecked) and Delete Files After Transfer (unchecked), and fields for Ftp Server, Port (21), Login, Password, Path, and Sub-directory name format. A 'Configure' button is at the bottom right.

Instant Real-time Multi-Data Streaming

- In addition to delivering raw data files in Ashtech Optimized Messaging (ATOM) or Rinex format, the ProFlex 500 CORS can simultaneously deliver real-time RTK corrections in ATOM, RTCM2.3, RTCM 3.0 & 3.1 or CMR & CMR+ format in multiple ways, including Direct IP, NTRIP server, radio, GSM modem, Ethernet data streaming as a server or a client – with up to 9 virtual IP ports available, each with a specific data format.

Full Met/tilt Sensors Integration

- Meteorological and tilt sensors can be fully controlled by the receiver. The ProFlex 500 CORS can collect the data from these sensors and broadcast them at the same time than GNSS data, with perfect time synchronization.

ProFlex 500 CORS Technical Specifications (all options listed)

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
- 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

Data Logging Characteristics

Recording Interval

- 0.05 - 999 seconds

Memory

- 128 MB internal memory, expandable through USB sticks or external hard drives
- Ring File Memory function offering unlimited use of the storage medium

Sessions

- Up to 96 sessions per day
- Embedded Rinex converter
- Automatic ftp push function

Ring File Buffer

- Concurrent and independent to sessions raw data recording to collect data with different user settings like update rate

Embedded Web Server

- Web 2.0 Technology
- Password-protected Web Server for Administrator and Users
- DHCP or manual configuration (static IP address)
- Full receiver monitoring and configuration
- FTP push function
- Embedded FTP server
- NTRIP Server and instant real-time multi-data streaming over Ethernet
- Email alerts for automatic notification of status

Full MET/TILT Sensor Integration

- Both sensor types can be connected simultaneously
- Met and Tilt data can be:
 - Logged and downloaded together with the GNSS data (legacy D-File supported)
 - Streamed in real time

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 Accuracy¹

Autonomous

- CEP: 3.0 m (9.84 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 (0.066 ft) + 1 ppm^{2,3}
- Flying RTK
 - CEP: 5 cm (0.16 ft) + 1 ppm^{2,3}
 - CEP: 20 cm (0.66 ft) + 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

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 Static⁵
 - 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

I/O Interface (Rugged, Waterproof 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)
- 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)
- 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 @ 20 °C (68°F)
- 9-36 VDC input
- Typical power consumption with 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: GNSS Survey antenna (38dB gain)
- Choke Ring: GNSS Choke Ring antenna (39dB gain)

⁽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 times horizontal error.

⁽²⁾ Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High multipath 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.

PHM Survey Equipment

Lv1, 71 Victoria Road

Rozelle

NSW

2039

Tel: 02 9555 9175

Email: Nic.Adams@PHMSurvey.com.au

www.ashtech.com

