Ashtech µZ-CGRS System

12-Channel, Dual-Frequency Continuously Operating Geodetic Reference Station for Scientific, Land Survey, GIS, and Engineering Applications

The Ashtech Micro-Z Continuous Geodetic Reference Station (µZ-CGRS) System provides the world's most powerful GPS Reference Station technology at an affordable price. At the heart of the µZ-CGRS system is the new Ashtech µZ-CGRS GPS receiver. The µZ-CGRS is the latest and most advanced receiver in the Z family and incorporates patented Z-Tracking™. Designed for high-accuracy scientific land survey, GIS engineering applications, the µZ-CGRS system is ideal as a permanent GPS base station.

The µZ-CGRS system includes all necessary components for continuous collection of high-quality dual-frequency GPS data through simple Unix, Windows® 95™, or Windows NT™ interfaces. Data can be downloaded from the µZ-CGRS while the receiver continues tracking and logging data.

Powerful Z-Tracking Technology

The µZ-CGRS system is built upon field-tested and patented Z technology. Z technology is the best technique available to recover code and carrier data from GPS when anti-spoofing is activated. This technology provides a 2 - 13 dB signal-to-noise ratio advantage over all other available techniques. What this means to the user is uninterrupted operation during Anti-Spoofing (AS) and large ionospheric activity. Standard features of the µZ-CGRS receiver include all-in-view 12-channel operation, multibit signal processing for RF jamming immunity, SAW filtering techniques, and industry-standard real-time kinematic (RTK) broadcast capability. Well over 60% of the National Geodetic Survey's (NGS) CORS sites rely on Z technology for their mission-critical work.

Choke Ring Antenna Designed for High Precision

The µZ-CGRS System incorporates the high-precision Ashtech L1/L2 Choke Ring antenna. This antenna is the accepted design for the International GPS Service (IGS) tracking network, the Southern California Integrated GPS Network (SCIGN), and numerous other networks around the world.

The antenna consists of a ground plane with five concentric ring assemblies, a Dorne & Margolin™ C146-10 dipole antenna element, and an Ashtech proprietary low-noise amplifier (LNA) for resistance to RF jamming. The result is an antenna that offers superior multipath rejection and maintains phase center stability to better than 1 mm.

Optional Remote Control Software

The µZ-CGRS system has been designed to meet the stringent requirements of continuous operation. Ashtech Reference Station systems form the backbone of over two dozen continuous GPS networks around the globe. Networks such as the U.S. and Canadian Coast Guards' DGPS, SCIGN, National Geodetic Survey's CORS network, the Bay Area Regional Deformation network, and the China Seismological Bureau rely on Ashtech Reference Stations.

A Windows 95/NT remote-control software package is offered for all µZ-CGRS systems and provides the user with complete control over remote sites. This software can remotely download data and set any of the receiver's parameters. Simply connect a modem or a radio to the remote receiver and start the remote software on a PC. Once the modems or radios are in place, the Ashtech user can enjoy full control of the site from virtually anywhere in the world. Many Ashtech users maintain networks that are thousands of miles from their control facility.

A Unix-based utility for remote control and downloading is also available.

Optional Geodetic Base Station Software (GBSS)

Designed in an efficient 32-bit multitasking environment, the GBSS logs GPS data to a PC hard drive and runs on a Windows 95 or NT platform. Data is archived in the Ashtech format or the RINEX format. The software supports secure, multiple user access through FTP, a WWW page, or a BBS system.

The Geodetic Base Station Software provides you with complete control over all data recording parameters, including the data file length. Once configured, the base software requires minimal maintenance and will provide high-quality data 365 days a year.

A Complete Reference Station Solution

Ashtech Reference Stations have set the industry standards for high-precision continuous operation. With the introduction of the µZ-CGRS system, powerful easy-to-use reference station technology is now available at an affordable price. The µZ-CGRS system is an easy-to-operate package that delivers high-accuracy results to meet your reference needs.

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Ashtech µZ-CGRS System Specifications

µZ Measurement Precision[1]

C/A (>10° elevation)

- Pseudo-range: 25 cm/3.6 cm (raw/smooth)[2]
- Carrier phase: 0.9 mm

P-Code AS Off (>10° elevation)

- L1 Pseudo-range: 15 cm/0.9 cm (raw/smooth)[2]
- L1 Carrier phase: 0.9 mm
- L2 Pseudo-range: 21 cm/1.3 cm (raw/smooth)[2]
- L2 Carrier phase: 0.9 mm

P-Code AS On (Z-Tracking)

- L1/L2 Pseudo-range (raw/smooth)[2]
- 10–30° Elevation: 120 cm/20 cm
- 30–50° Elevation: 25 cm/6 cm
- >50° Elevation: 10 cm/3 cm

L1/L2 Carrier phase

- >10° Elevation: 1.4 mm

Systematic Errors (Between Satellites)

- Pseudorange (all bands): <1.00 cm
- Carrier phase (all bands): <0.01 cm

[1] Precision specifications are rms values for the lowest possible signal strengths as specified in ICD-GPS-200B.

[2] The µZ receiver provides both raw pseudorange and a smoothing correction. Applying the smoothing correction to the raw pseudo-ranges yields the high accuracy pseudoranges.

System Components

- µZ-CGRS receiver
- Choke Ring antenna
- 110/220 VAC, 50/60 Hz, UL, CE power supply
- DC power cable
- I/O cable
- Dual-channel I/O cable
- 30 meter antenna cable
- Receiver reference manual
- Software utilities

Standard Features

µZ-CGRS Receiver

- 12-channel all-in-view operation
- Patented Z-Tracking technology
- Full tracking of L1 C/A Code, L1/L2 P Code, and L1/L2 full-cycle carrier
- 16 MB memory
- 3-LEDs; power/sv; raw observable data logging; MET/TILT data logging
- 4 independent programmable serial ports
- Remote monitoring capability
- External frequency input (1 to 20 MHz in 10 kHz steps)
- Real-time data outputs
- Z-Modem protocol
- NMEA 0183 message outputs
- Session programming
- Rugged construction
- 1-year warranty
- Free technical support
- 30-m antenna cable
- 5 Hz data output

Choke Ring Antenna

- 100% IGS compatible choke ring design
- Dorne & Margolin C146-10 dipole antenna element
- Proprietary Ashtech low-noise amplifier (LNA)

Communications

- 4 bi-directional RS-232 serial ports (115,200 baud rate)

Environmental and Physical Specifications

Dimensions

- Inches: 2.5 H x 7.0 W x 9.6 D
- cm: 6.33 H x 7.71 W x 24.3 D

Weight

- Receiver: 3.75 lbs.(1.7 kg)
- Antenna: 9.41 lbs. (4.3 kg.)

Power

- 10-28 VDC, 8.0W

Temperature Ranges

Receiver

- Operating: -40°C to +55°C
- Storage: -40°C to +75°C

Antenna

- Operating: -40°C to +65°C
- Storage: -55°C to +75°C

Meets MIL STD 810E for wind-driven rain and dust.

µZ-CGRS back panel

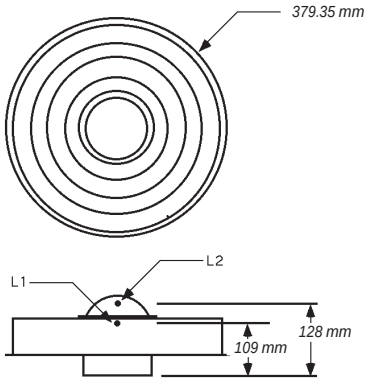

Figure above: Choke Ring Antenna: top and side view (phase centers are published NGS values)

Optional Accessories and Features

- Hemispherical radome
- 32 or 80 MB memory upgrade
- 1 PPS timing signal (5V TTL)
- Fast data output (10 Hz)
- Antenna line amplifier
- Geodetic Base Station Software
- Remote 32 Remote Operation Software
- Ashtech Office Suite for Survey (AOSS)
- Ashtech Solutions™
- Real-time Kinematic (RTK) broadcast capability for centimeter-level accuracy
- 60 m antenna cable
- RTCM message outputs
- Meteorological package

Ordering Information

Product	Part Number
µZ-CGRS	990397-16

Specifications are subject to change without notice.

Ashtech
PRECISION PRODUCTS