The Most Powerful CORS System in the World…
A Complete Solution

The Leica Advanced Continuously Operating Reference Station (CORS) System utilizes the RS500 GPS Receiver, a Choke Ring Antenna, and a suite of Windows 2000 or Windows XP based software to provide you with the most advanced Reference Station solutions available today. Absolutely everything you need to set up a GPS Reference Station is included in the package.

RS500 GPS Receiver…
Simply the Best

Quite simply, there is no other GPS receiver on the market that is so advanced: 12 dual frequency tracking channels; advanced signal jamming immunity, and Leica’s “ClearTrak On-board”, our patented tracking technique.

GPS measurements can be logged for post-processing, output for real-time use, or both. Any differential measurement is only as good as the reference receiver, and the RS500 is the best!

Built to Last

The RS500 is based on the proven “Leica System 500” technology, and is built to withstand the toughest environments.

Four power ports and four RS232 data ports provide the flexibility for your GPS Reference Station solution. The RS500 is fitted with a PC-Card slot, allowing a PCMCIA memory card of 85Mb and greater, to be used for data storage and transfer.

Top Quality Choke-Ring Antenna

The system includes an International GPS Service (IGS) Choke Ring Antenna designed by the Jet Propulsion Laboratory (JPL). This antenna features superior multipath rejection, with uncompromised phase center stability and is resistant to RF jamming.

This is a required global standard for permanent GPS networks and is provided as part of the Leica Advanced CORS System.

Multi-Purpose Configuration

The Advanced CORS System has a multitude of configuration possibilities. From a simple stand-alone reference station, to a fully featured real-time reference station network, the RS500 will meet or exceed your needs. It can broadcast to any number of RTK rover units using either RTCM, CMR, or Leica’s proprietary RTK data format.

Use Leica RTK messages and obtain up to 10 positions each second for all of your Leica RTK rovers.

The Leica RS500 supports transmission of DGPS RTCM differential corrections for use with single frequency GPS rovers. The system also outputs a wide variety of NMEA messages. Couple the RS500 with any of Leica’s Reference Station software solutions to get complete control of your CORS quality GPS data.

One Stop Shopping and Legendary Leica Geosystems Service

As your requirements change, Leica Geosystems will continue to provide you with new, innovative solutions, whether managing a single reference station or a national GPS network. With the Advanced CORS System, you’ve got it all covered. All the cables and fixtures are included and, of course, the Advanced CORS System is backed by Leica Geosystems, with the largest service and support network of any survey instrument manufacturer in the world.
### Advanced CORS Specifications

**RS500 Receiver**
- **Channels:** 12 L1 C/A or P-Code, 12 L2 P-Code
- **Full Wavelength L1 & L2 Carrier Phase P-Code (AS on or off)**
- **Capable of Tracking Satellites from Horizon to Horizon on L1 and L2.**

**AT504 Antenna**
- **Ground Plane:** Gold Anodized Choke Ring, Precision Machined from a Solid Aluminum Block.
- **Element:** Dorne & Margolin C-146-10
- **Gain:** 26dB +/-2dB (Noise 3dB max)
- **Mount:** 5/8 inch Whitworth (Standard Survey Thread)
- **Humidity:** Sealed
- **Rain:** IpX7 IEC529
- **Wind:** 150km/h
- **Dust:** IP5x IEC529

**Alternative Antennas**
- **AT503 Lightweight L1/L2 choke ring.**
- **AT502 Compact L1/L2 microstrip with internal groundplane.**

**Measurement Accuracy (AS off or on)**
- **L1 Carrier Phase:** 0.2 mm RMS, 1 sec
- **L1 C/A Code:** <5 cm RMS, 1 sec
- **L2 Carrier Phase:** 0.2 mm RMS, 1 sec
- **L2 P Code:** <5 cm RMS, 1 sec
- **Static Accuracy:** 3mm + 0.5ppm (using SKI-Pro).
- **GPS Time Recovery:** 120 nsecs (1 sigma).

**CPU**
- **RISC Processor:** Equivalent to 486DX-2 @ 66 MHz

**Data Ports**
- **Four RS232 Serial Ports:** Three support up to 115k baud. Two ports support CTS/RTS. Four power in ports. Over/Reverse voltage protection. Precision LEMO connectors.

**Software**
- Fully compatible with the following Leica PC software providing complete receiver control, data logging, and Internet and modem distribution.
- **Spider:** Reference Station Software Solution.

Leica SKI-Pro L1/L2 post-processing software compatible.

The accuracy obtainable is dependent upon the level of system performance provided by the US Government, as well as satellite geometry; the number of satellites in operation; ionospheric conditions; and other factors. The distance from the Differential GPS Reference Station to the Differential Mobile DGPS Receiver and the correction update rate can also affect the accuracy achievable by any manufacturers equipment.

**Physical**
- **Temperature:** Operating Storage
  - Receiver: -20° to +55°C -40° to +75° C
  - Terminal: -20° to +55°C -40° to +75° C
  - AT504 Antenna: -40° to +75°C -40° to +75° C
  - PC Card Memory: -20° to +75°C -40° to +75° C
- **Humidity:** 100% for Receiver
  - Receiver withstands rain, snow, dust, sand, cold and heat. Built for field use.
- **Size:**
  - Receiver: 6.5 x 8.1 x 2.8 inch (W x D x H) (165 x 205 x 72mm)
  - AT504 Antenna: 15.5 x 5.5 inch (Dia. x H) (394 x 140mm)
- **Weight:**
  - Receiver: 2.75 lbs (1.25 kg)
  - AT504 Antenna: 9.5 lbs (4.3 kg)
- **Power:**
  - Receiver: 10-16VDC, 7 Watts (With TR500 Terminal)
  - AT504 Antenna: Pre-amp: 4.75-15 VDC, 50mA Max.

**Timing and Event (Optional)**
- **Timing:** One pulse per second output port.
- **Event:** Two independant event input port.

**Output Message Formats**
- **Leica Binary (LB2); CMR, CMR+; RTCM V2.0, V2.1, V2.2, V2.3**
- Message Types 1, 2, 3, 9, 18, 19, 20, 21, 22, 24.
- Dual message output possible.

**Data Logging**
- **Maximum Data Rate:** 0.1 seconds (10Hz)
- **85Mbyte Capacity:** About 65 days for 12 sats with L1 and L2 at 30 seconds.
- **Primary Logging File:** Multiple configurations, one active.
- **Ring Buffer File:** Records in parallel to Primary with different user defined rate.

**Options and Accessories**
- **PC Card Memory:** 16, 128 MByte and greater.
- **Meteorological Sensor:** Outputs temperature, humidity and pressure to a GPS receiver.
- **Tilt Sensor:** Monitors antenna mount stability.
- **Lightning Arrester:** Protects the GPS receiver.
- **Radome:** Antenna weather protection.
- **Antenna Mount:** Stainless steel precision mount.
- **Antenna Pillar:** Stable antenna base.

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Leica Geosystems AG, CH-9435 Heerbrugg (Switzerland)
Tel. +41 71 727 31 31, Fax +41 71 727 46 73
www.leica-geosystems.com