

## RTD - Technical Specifications

### **Applications:**

Static geodetic networks, network RTK, deformation monitoring, aircraft approach and landing, precision agriculture, machine control, vehicle tracking, harbor navigation, robotics, GPS/INS integration, intelligent transportation, sports, fleet and product tracking, dwelling landslide alarm systems, and location based content services.

### **Operational Modes:**

*Real-Time:* Serial connection, dial-up modem, cellular phone, frame relay, radio modem, TCP/IP, wireless Internet.

*Dial-Up/Polling:* One or more modem(s) or TCP/IP connections for fast simultaneous data download.

*Post-Process:* RINEX from single frequency and dual-frequency geodetic receivers. Various raw data formats. Precise ephemerides (SP3 format).

*RTK:* Standard Client - Supports conventional network RTK using RTCM V2.2, CMR, CMR+. Allows for small deformation of base network.  
Smart Client - Supports initialization-free (instantaneous), wide-area network RTK from multiple base stations, including ionosphere correction. Troposphere is estimated Epoch-by-Epoch™. Precise ephemeris obtainable by ftp in real-time and dial-up modems.

### **Network**

### **Setup:**

*User Interface:* Intuitive, guides the user through the setup process. Includes full on-line help.

*Backup:* Multiple networks can be defined and saved.

*Site Info:* Comprehensive, names, coordinates as Cartesian or geodetic, position

*Replication:* Automatic network or FTP transfer of data for archival and network or Internet FTP and Web access.

*Utilities:* RINEX file manipulation, site coordinate transformation tool, baud-rate tool.

*Data Base:* Site coordinates database.

### **Analysis:**

*Algorithm:* Proprietary Real-Time Network Analysis (RNA) module with the Epoch-by-Epoch™ positioning algorithms.

*Solution:* Independent position computation at each epoch in baseline or network mode.

*Precision:* Single-epoch precision\* +- [10 mm + 0.2 mm/km] horizontal. 2 times less precise in vertical (1 standard deviation).

*Range:* Station spacing (nearest neighbor): up to 50 km\* with dual-frequency receivers unconstrained, up to 250 km with constrained coordinates (for static networks), up to 5 km with single-frequency receivers.

*Troposphere:* Zenith path-delay determined at each site for monitoring atmospheric water vapor content and short-term weather forecasting.

### **Network Analysis Output:**

*Archive:* GNS solution files for replay including Epoch-by-Epoch™ solutions. SINEX solution files for network adjustment.

*Visual Display:* Plots of Epoch-by-Epoch™ solutions for position, velocity and acceleration. Map of site locations.

*Logs:* Status and solution statistics.

*Alarms:* User-specified alarm tolerances (automatic notification of operators).

### **RTK and DGPS Real-Time Transmission:**

Formats: Leica Binary, RTCM V2.1, V2.2, CMR,

constraints, GPS receiver and antenna type.

*Sensors:* Thales Navigation (Ashtech) Z series. Leica CRS1000, RS500, MC500, 1200, SR530, Novatel OEM4, Trimble 4000 SSE, 4700/5800, TOPCON Odyssey, various single-frequency receivers, other receivers available upon request.

**Data:**

*Site Logging:* No PC required at the GPS sensor location.

*Transfer:* Continuous in Real-Time operational mode. Dial-Up/Polling at user defined intervals as frequently as five minutes.

*Archive:* Both raw and RINEX data formats. Stored in chronological directory structure. GNS file (binary log of single-epoch network solutions)

\*Accuracy and station spacing are dependent upon GPS satellite system performance, ionospheric conditions and other factors.

CMR+.

*Local:* Available by connecting a radio and/or cellular phone to each GPS sensor.

**PC Requirements (Each PC supports up to 30 GPS sites):**

*Processor:* At least Pentium 450MHz with 128 MB RAM

*OS:* Windows 98, Windows NT 4.0 (or later), Windows 2000, Windows XP.

*Hard Drive:* 500Mbyte spare capacity recommended.

*Peripherals:* CD-ROM drive, available serial and parallel ports, 800x600 pixel video card