Trimble Virtual Reference Station (VRS™) System
Versatile RTK positioning infrastructure for local and regional applications

**FEATURES**

| General | • High-accuracy real-time kinematic GPS positioning  
|         | • Fixed virtual reference station network available at any time without setting up a base station  
|         | • Common control network for large areas  
|         | • Real-time atmospheric error correction  
|         | • Built-in integrity monitoring by VRS server  
|         | • Seamless package of GPS hardware, modeling and networking software, and communications interface  

5700 CORS Receiver
• Tough, lightweight magnesium alloy casing  
• Compact flash data storage expandable up to 128 MB  
• Low power consumption  
• Up to 10 hours backup receiver operation on 2 internal miniature camcorder batteries  
• Dual rate logging up to rates of 10 Hz  

Zephyr™ Geodetic Antenna
• 4-point antenna feed for sub-mm phase centre repeatability  
• Trimble Stealth™ ground plane for reduced multipath  
• Superior phase center repeatability

GPSNet Software
• Communications control of remote receivers (no PC required at site)  
• RINEX file creation and archiving  
• Statistical analysis and integrity monitoring of reference stations  
• Single base RTCM generation

DGPSNet Software
• Network modeled RTCM messages optimized for networks with reference station spacing of 70–300 km, and L1 C/A roving receivers

RTKNet Software
• Full network modeling of ionospheric, tropospheric and ephemeris errors  
• VRProcessor provides network modeled RTK messages to roving receivers

**SYSTEM COMPONENTS**

5700 CORS Receiver
GPS measurements
• Advanced Maxwell 4 custom survey GPS chip  
• High precision multiple correlator L1 and L2 pseudorange measurements  
• Unfiltered, unsmoothed pseudorange measurements data for low noise, low multipath error, low time domain correlation and high dynamic response  
• Very low noise L1 and L2 carrier phase measurements with <1mm precision in a 1 Hz bandwidth  
• L1 and L2 Signal-to-Noise ratios reported in dB-Hz  
• Proven Trimble low elevation tracking technology  
• 24 Channels L1/C/A code, L1/L2 full cycle carrier WAAS/EGNOS tracking

Casing
• Tough, lightweight fully sealed magnesium alloy  
• IPX7 for submersion to depth of 1 m  
• Will survive a 1 m drop onto concrete; shock and vibration tested to 40 G random  
• With internal batteries, battery charger 2.9 lbs (1.3 kg)

Power
• DC input 10.5 to 28 V with over voltage protection  
• 2.5 Watts  

Power consumption
• 10.5 V ~ 20 V (Port 1), 10.0 V ~ 27.5 V (Port 3)

Certification
• Class B Part 15 FCC certification and CE Mark approved

Operating temperature
• 40°C to +65°C (-40°F to +149°F)

Storage temperature
• 40°C to +80°C (-40°F to +176°F)

Humidity
• 100%, condensing, passes testing per MIL-STD-810F, FIG. 514.5C-17

Communications and data storage
• CompactFlash—advanced lightweight and compact removable data storage. Options of 64 M B and 128 M B from Trimble  
• Dual position and data logging at rates of 1, 2, 5, and 10 Hz  
• Continuous logging support  
• Update firmware remotely over a modem line  
• Support for modem initialization  
• Logging and streaming of meterological data

Zephyr™ Geodetic Antenna
Tracking characteristics
• 4-point antenna feed for sub-mm phase center repeatability

Dimensions
• 34.3 cm (13.5") diameter x 7.6 cm (3") max depth

Weight
• 1.0 kg (2.2 lbs)

Operating temperature
• 40°C to +70°C (-40°F to +158°F)

Humidity
• 100% humidity proof, fully sealed

Shock
• MIL-810-F Figure 514 5c-17 vibration levels on each axis  
• Shock tested for a drop of 2 m (6.56 ft) onto concrete

GPSNet Software
Sensor compatibility
• Interfaces to Trimble’s 5700, 4700, M5750, and 4000 receivers  
• Interfaces to most third party receivers

Data integrity monitoring
• Gross error detection  
• Provides detection and correction of cycle slips  
• RAIM monitoring  
• Watchdog timer for reliable operation  
• User definable alarms via e-mail / SMS

Logging capability
• Capacity to log multiple RINEX files at different rates to local or LAN drives

FTP capability
• FTP mirror functionality for ease of publishing data

IGS compatibility
• Ability to use IGS Ultra Rapid Orbits

Single base positioning
• Single point RTCM or CMR RTK messages from the nearest base station

Reporting capability
• XML reports for easy web publishing
**DGPSNet Software**

**Error modeling**  
Modelling of atmospheric and orbital biases, reduction of multipath by network solution, optimized for differential positioning networks

**Accuracy**  
Allows differential positioning with sub 0.5 m accuracy using single frequency receivers

**Message types**  
RTCM 1,2,3, and 9

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**RTKNet Software**

**Error modeling**  
VRProcessor models systematic RTK errors (ionospheric, tropospheric, and ephemeris)

**Accuracy**  
Network corrected RTCM generator for fast initialization and centimeter level accuracy anywhere in the network

**Postprocessing data**  
RINEX files for postprocessing

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### MINIMUM SOFTWARE REQUIREMENTS

**Reference station requirements**  
Geodetic quality dual frequency receiver  
Terminal adapter or modem for ISDN or PSTN or terminal server for TCP/IP communications

**Central server requirements**  
PC with 1.7 GHz or faster processor with 512 MB RAM, a 40 GB hard drive, and a parallel port  
SVGA color monitor 800 x 600  
Multiple serial interface or Ethernet router  
Keyboard with mouse or trackball  
CD-ROM drive  
Microsoft Windows 2000, or Windows NT 4.0  
Access server or modem bank

**Mobile user requirements**  
GPS Receiver that accepts RTCM v2.1, 2.2, or CMR  
Cellular or CDPD modem

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### ORDERING INFORMATION

**Basic VRS Package**  
A complete VRS package that supports up to 50 mobile users, containing the following:  
- DGPSNet software  
- RTKNet software  
- 4 x 5700 CORS GPS receivers  
DGPSNet software can be purchased as an option.

For further information please contact your nearest Trimble Authorized Distributor or Trimble Office.  
You may also visit our web site at http://www.trimble.com

Specifications subject to change without notice.