

Technical Specifications of Global Positioning System GPS – RTK

Sl. No.	Specifications
A.	<p>Dual frequency, Differential GPS system with one base station and two rover unit with following broad features:</p> <ul style="list-style-type: none"> - RTK and Post processing capability - Constellation: GPS (NAVSTAR) and GLONASS or more - System shall be suitable for establishing control network, topographical survey and staking out - Data logger/ Controller - Bluetooth enabled - Processing software for both post-processing and RTK data. <p>Details are as follows:</p>
I.	<p>GPS Receivers (one as base and two as rover)</p> <ul style="list-style-type: none"> - Geodetic GPS, Dual frequency, Realtime RTK Receiver - Constellation: GPS (NAVSTAR) and GLONASS or more - DGPS/ WAAS/ EGNOS enabled - 72 channels or more - Measurement modes: Static, RTK <p>Accuracy</p> <p>* Static 5 mm + 0.5 ppm (Hor.) or higher accuracy 10 mm + 1.0 ppm (Vert.) or higher accuracy</p> <p>* Kinematic 10 mm + 1.0 ppm (Hor.) or higher accuracy 20 mm + 1.0 ppm (Vert.) or higher accuracy</p>
II.	<p>GPS Antenna Dual frequency antenna supporting GPS (NAVSTAR) and GLONASS or more constellations (Base Station- Choke Ring (DM) Antenna, Rover Station- Geodetic Antenna)</p>
III.	<p>Data Logger/ Controller External Data Logger/ Controller shall be provided with base and rover of GPS with following features:</p> <ul style="list-style-type: none"> - Graphic screen - Touch screen as well as alphanumeric keyboard
IV.	<p>Communication and data storage</p> <ul style="list-style-type: none"> - 1 GB or more external storage - Card reader - Devices and accessories for Radio modem, GSM/CDMA/ GPRS/CDPD <p>RTK Range : 10 km or more</p>
V.	<p>Power Supply</p> <ul style="list-style-type: none"> - Suitable internal batteries for receivers and other equipment - Suitable battery charger with necessary accessories - Suitable adaptors and cables for car battery

VI.	Environmental Specifications for receivers, antenna and controller <ul style="list-style-type: none"> - Water and dust proof - Shockproof up to 1 m height or more drop on to hard surface - Operating temperature : subzero to +60⁰ C
VII	Accessories <ul style="list-style-type: none"> - All necessary data transfer, power and antenna cables (minimum 30mt. for base station and 2/3 mt. for rover) and any other accessory to make the system fully functional - Transport cases for all accessories, minipack, belt pouch, hip pack - Wooden telescopic tripod (Tripod mounting/ pole mounting at Rover) - Tribach with optical/ laser plummet and tribach adaptor (for placing GPS Antenna over tripod and tribach) - Range pole for rover - H.I. Rod/ Height hook with tape - Any other accessory to make the system fully functional.
VIII.	Software System shall be supplied with Windows 2000/XP Professional based data processing software to perform the following tasks: <ul style="list-style-type: none"> - Data downloading, Import and Export - Visualization - RINEX Conversion - GPS base line processing - Perform network adjustments - Data uploading upto 20 Hz
IX	<u>Condition-</u> <ul style="list-style-type: none"> - All the accessories including radio and software must be from the original manufacturer only. - Base Station and Rover Station must be interchangeable. - The data from DGPS and Electronic Total Station should be compatible to each other for use with both the system. - Accuracy of angles and distances need to be certified by the vendor. - The manufacturer must have complete facilities available in the country in terms of service support and training support.
X	The manufacturer must directly provide full hand holding support during survey for a period of three years.
XI.	Calibration report from the manufacturer of the equipment shall be provided at the time of supply of the equipment. Calibration must be made locally.
XII	One hard copy and one soft copy of Operating Manuals shall be supplied for hardware and software.
XIII	<u>Annual maintenance contract (AMC)</u> The AMC with spare parts for all the instruments for a period of Four years after the expiry of warranty period, must be enclosed with the offer.
XIV	<u>Training:</u> Professional Training must be provided by the direct manufacturer at the site of operation.

Sl. No.	Survey application, computation & mapping software
C.	<p data-bbox="300 255 1437 398">Surveying software package, which runs on Windows or later versions and can directly access the data collected by Total Station and DGPS in the field to give desired output, for each and every following applications, to be supplied.</p> <ul data-bbox="347 456 1437 1536" style="list-style-type: none"> • Data Reduction and control network computations. • Transformation of data to and from different formats and survey equipments. • Helps to plot final map / CAD drawing in user defined scale & style. • Calculation of volume to a base datum, or between surfaces. • Validated and computes DTM's, segments breaklines and displays contours, of profiles as per user selection and also draw long sections, Cross sections, compute end area volumes, design surface etc. • Calculate quantities to a base datum, or between surfaces and can compute height differences. • Creating and editing sectional data for CAD output and end area volumes. • Should be capable of CAD editing, plotting and digitizing. • 3D visualization tool should be available. • Should have GIS support so that data can be used in GIS systems. • Should be able to produce cadastral or legal plans. • For creating contours, DTM, Cross-sections, COGO, traverse adjustments, volume computation, etc. • The software should be for OS Windows XP professional /2000. • The software offered shall be preferably stand-alone module. • If the software offered is add-on module then licensed copy of the host platform / software shall also to be offered.

Inbuilt Survey & Applications Programs

Instrument must come with built-in survey application programs like “**Survey** – for general topographic survey (with predefined configuration settings etc), **Station setup** in different methods, **Stakeout**-points, lines, **COGO** – for various on field calculations and all other standard programs.

Data down loading Software

Instruments should come complete with PC interface cable and suitable data downloading software for quick and systematic downloading of data from Total Station and DGPS.

Support for Integrated Survey

The data from total station and high accuracy DGPS should be able to be integrated (through a suitable detachable device like controller/ memory card) in the field itself for maximum flexibility and to maximize productivity in the field.

Accessories to be quoted with the instrument

- Wooden telescopic - 1no
- Tribrach with laser/ optical plummet - 1no
- Circular Prism with target Plate - 2nos.
- Telescopic Prism pole extendable at least 2.0 meter - 2nos.
- Rechargeable Plug –in battery for 6 hours of continuous use - 2nos.
- Intelligent charger with suitable adapters and cables - 1nos.
- Memory card of capacity at least 64 MB - 2 nos.
- Data down loading cable and software - 1 set

Traverse Kit

- Wooden telescopic tripod - 2nos
- Tribrach with optical Plummet - 3nos
- Prism carrier - 2nos

Annual maintenance contract (AMC)

The AMC with spare parts for all the instruments for a period of **Four** years after the warranty period must be enclosed with the offer.

NOTE. All the accessories must be from the original manufacturer only.