

### Specification of Total Station

S. N.	Parameter	Specification	Remarks
<b>Distance Measurement</b>			
1	Measurement Range	Single Prism: 1.5 m to 5000 m or more	
		Reflectorless: 1.5m to 800 m or more	
		With reflector sheet: 1.5m to 300m or more	
2	Measurement Accuracy	Prism mode: $\pm(2 + 2\text{ppm} \times D)\text{mm}$	
		Reflector less: $\pm(3 + 2\text{ppm} \times D)\text{mm}$	
3	Measurement Time/Least Count	Precise Mode: Maximum 1.0s/0.1mm	
		Normal Mode: Maximum 0.5s/10mm	
		Fast Mode: Maximum 0.3s/10mm	
4	Prism and Reflector less Laser	Class I	
<b>Angle Measurement</b>			
5	Accuracy	Maximum 3" (second)	
6	Reading System	Absolute encoder	
7	Least Count	Maximum 1" (second)	
<b>Telescope</b>			
8	Tube Length	Minimum 125 mm	
9	Image	Erect	
10	Magnification	30X or better	
11	Field of View	1° 25' (minute) or better	
12	Autofocus	Required	
<b>Tilt Sensor</b>			
13	Type	Dual-axis; Liquid-electric detection	
14	Compensation Range	$\pm 3'$ (minute) or better	
<b>Communications</b>			
15	Communication Ports	Serial (RS-232C), USB host, USB Client	
16	Wireless	Integrated Bluetooth	
<b>Power</b>			
17	Battery Type	2 x Internal Li-ion	
<b>General Specifications</b>			
18	Sensitivity of Circular level	10'/2 mm or better	
19	Display Face 1	Graphical LCD; Numeric Keyboard; Back lit; Minimum (128 x 64 pixels)	
20	Display Face 2	Graphical LCD; Numeric Keyboard; Back lit; Minimum (128 x 64 pixels)	
21	Optical Plummet Magnification	3X or better	
22	Internal Memory	Minimum 50000 points	
<b>Environmental</b>			
23	Operating Temperature	-20° C to +50° C	
24	Storage Temperature	-25° C to +60° C	
25	Dust and Water Protection	IP66 or better	

<b>Accessories</b>			
26	Tripod	1 set	
27	Single Prism	3 sets (with a pole and 2 stands) compatible with the instrument.	
28	Download Cable	USB	
<b>Training and Warranty</b>			
29	Demonstration	The vendor must provide a demonstration of the instrument and accessories to confirm the above specification.	
30	Training	Training in instrument operation and general maintenance for 4 persons for 2 days	
31	Warranty	Minimum 2 years/provided by OEM whichever is greater	
32	Service Center	Manufacturer's Authorized Service Center in Nepal is mandatory. A letter from manufacturer's with the details of the Service Center must be included with the bid. Nepal Army shall visit company authorized Service Center.	
<b>Remarks:</b> Any technical requirements as per the specification above, Which is not mentioned in the product brochure should be defined by the Authorized letter from the manufacturer.			

**Specification of Hand GPS, Data Collection Software and Post Processing Software**

S.N	Parameter	Technical Specification	Remarks
1	Display Options	Controller should be provided at least 3.7" full VGA color touch screen with functional keys.	
		Should be capable to track a minimum of 72 Channel simultaneously	
2	Satellite Tracking	GLONASS	
		BEIDOU (Carrier phase, Code phase and Pseudo-range, Doppler)	
		SBAS (WASS, EGNOS, GAGAN)	
3	Connectivity	USB, Wifi, Bluetooth	
4	Operating System	Windows Mobile 6.5 or better	
5	Processor	Minimum 800MHZ	
6	RAM	Minimum 256 MB	
7	External Memory	Micro SD card slot upto 32 GB	
8	Internal Flash Memory	Minimum 8 GB	
9	Camera	At least 5 MP with auto focus, Digital zoom	
10	Battery	Lithium Ion battery with capacity to operate continuously for at least 9 hrs.	

11	Accuracy	With stand Alone/Autonomous: 1 to 5m With PPK; within 1m	
12	Environmental Characteristics	IP65 Dust proof and water proof Operating Sys: -30°C to 60°C Shock: At least 1.5 m free fall Humidity: 95% to non condensing	
13	COGO	Should support COGO Functionality Should be able to key in line, polyline, Zoom in, Zoom Out function etc. Feature coding Should support coding with attributes Control coding should be possible for automatic plot. Should be able to accept background map in CAD format.	
14	Export/Import	Direct export and import data in excel, CAD, XML, Shape file etc.	
15	Data Downloading Software	Able to download the raw data. Perpetual hard key License of software for computers/laptops. Perform all necessary functions of transferring data to card/external data logger/computer. Support computation of transformation parameters, coordinate transformation and user defined coordinate system for given set of common points. Support features like ellipsoids, projections, geoidal model. GNSS measured ellipsoidal height can be converted to orthometric height. Compatible with Windows 7 or later. CAD and COGO features.	
16	Post Processing Software	Able to process the raw data obtained from hand GPS, and other standard GPS/GNSS devices and adjustment etc. The Post Processing module should be able to allow extended user control over the parameters used in the baseline computation, result reports provide the details about the processing procedure and accuracies obtained.	
17	Compatibility	Hand held GPS, Data downloading software and Data processing software should be of same manufacturer.	

18	Demonstration	The vender must provide a demonstration of the instrument and accessories to confirm the above specification.	
19	Training	User manual should be provided prior to training.	
		On-site comprehensive training of one day for two staffs. (Training to operate and user the equipment data collection, data downloading, data editing, data processing, network adjustment, coordinate transformation and report generation.)	
		All the necessary arrangements will be made by the vendor.	
20	Warranty	Minimum 1 year/provided by OEM whichever is greater	
21	Service Centre	Manufacturer's Authorized Service Centre in Nepal is mandatory. A letter from manufacturers with the details of the Service Centre must be included with the bid. Nepal Army shall visit company authorized Service Centre.	

**Remarks:** Any technical requirements as per the specification above, is not mentioned in the product brochure should be defined by the Authorized letter from the manufacturer.

### Specification of Survey Scanner

S.N	Parameters	Specification	Remarks
1	Image Sensor	CCD or better	
2	Optical Resolution	Minimum 600 dpi	
3	Hardware Resolution	Minimum 600 x 1200 dpi	
4	Scan Modes	Color: Minimum (48-bit input, 24-bit output)	
		Grayscale: Minimum (16-bit input, 8-bit output)	
5	Scanning Speed	Maximum 3 sec (Color mode, 300dpi, A3)	
		Maximum 2.5 sec (Grayscale/ B&W mode, 300dpi, A3)	
6	Maximum Scanning Area	Minimum A3	
7	Daily Duty Scan ( Sheets )	Minimum 5000	
8	Interface	Minimum 1 x USB 2.0	
9	OS	Minimum Windows XP / Vista / 7 / 8	
10	Standard	ISO or Equivalent	
11	Warranty	Minimum 1 year/provided by OEM whichever is greater	