



Government of Goa
Directorate of Mines Geology
Institute Menezes Braganza, Panaji-Goa
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No.03/11/2023/Adm/Mines/Procurement with NMET Fund/3254 Date 09/03/2023

To,
The Director,
National Mineral Exploration Trust(NMET),
Ministry of Mines,
F-114, 1st Floor,
Shastri Bhawan, New Delhi- 110001

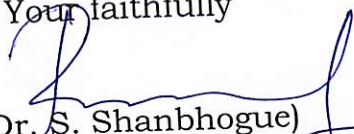
**Financial Assistance from NMET for Procurement of
Machinery/Laboratory Equipment's/Instruments, etc.**

Sr. no	Name of the Equipment	Rate (approx..)	Unit	Amount	Specifications	Availability within the Department
1	Leica GS18T (DGPS)	Rs. 23/- lakh(Including Tax)	1	Rs. 23/- lakh(Including Tax)	Enclosed in Annexure -	No
2	Lecia TS16 (Total Station cum multi station)	Rs. 36/- lakh(Including Tax)	1	Rs. 36/- lakh(Including Tax)	Enclosed in Annexure -	No
3	AutoCAD specialized toolset set SU new Commercial	Rs 95900/- (Including tax) 1 year subscription	2	Rs. 1,91,800 (Including Tax) 1 year subscription	3D software, 1 year subscription	No
4	Desktop	Rs 2,34,702/- (Including Tax)	4	Rs 9,38,808/- (Including Tax)	Enclosed in Annexure -	No such specification desktop available in department

Work projection for next 5 years and utilization of the instrument:

Directorate of Mines & Geology intend to auctions mineral blocks in next 5 years and do exploration for new mineral and do digitalization of data.in the State of Goa.

Your faithfully


(Dr. S. Shanbhogue)
Director of Mines & Geology.

Leica GS18 T

Data sheet



Engaging software

The Leica GS18 T is accompanied with the revolutionary Captivate software, turning complex data into the most realistic and workable 3D models. With easy-to-use apps and familiar touch technology, all forms of measured and design data can be viewed in all dimensions. Leica Captivate spans industries and applications with little more than a simple swipe, regardless of whether you work with GNSS, total stations or both.



Seamlessly share data among all your instruments

Leica Infinity imports and combines data from your GNSS RTK rover, total station and level instruments for one final and accurate result. Processing has never been made easier when all your instruments work in tandem to produce precise and actionable information.

ACC»

Customer care only a click away

Through Active Customer Care (ACC), a global network of experienced professionals is only a click away to expertly guide you through any challenge. Eliminate delays with superior technical service, finish jobs faster and avoid costly site revisits with excellent consultancy support. Control your costs with a tailored Customer Care Package (CCP), giving you peace of mind you are covered anywhere, anytime.



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Leica GS18 T

GNSS TECHNOLOGY

Self-learning GNSS	Leica RTKplus SmartLink (worldwide correction service) SmartLink fill (worldwide correction service)	Adaptive on-the-fly satellite selection Remote precise point positioning (3 cm 2D) ¹ Initial convergence to full accuracy 20 - 40 min, Re-convergence < 1 min Bridging of RTK outages up to 10 min (3 cm 2D) ¹
Leica SmartCheck	Continuous check of RTK solution	Reliability 99.99%
Signal tracking		GPS (L1, L2, L2C, L5), Glonass (L1, L2, L2C, L3 ²), BeiDou (B1, B2, B3 ²), Galileo (E1, E5a, E5b, Alt-BOC, E6 ³), QZSS (L1, L2C, L5, L6 ³), NavIC L5 ³ , SBAS (WAAS, EGNOS, MSAS, GAGAN), L-band
Number of channels		555 (more signals, fast acquisition, high sensitivity)
Tilt compensation	Increased measurement productivity and traceability	Calibration-free Immune to magnetic disturbances
MEASUREMENT PERFORMANCE & ACCURACY ¹		
Time for initialisation		Typically 4 s
Real-time kinematic (Compliant to ISO17123-8 standard)	Single baseline Network RTK	Hz 8 mm + 1 ppm / V 15 mm + 1 ppm Hz 8 mm + 0.5 ppm / V 15 mm + 0.5 ppm
Real-time kinematic tilt compensated	Topographic points (not for static control points)	Additional Hz pole tip uncertainty typically less than 8 mm + 0.4 mm/° tilt down to 30° tilt
Post processing	Static (phase) with long observations Static and rapid static (phase)	Hz 3 mm + 0.1 ppm / V 3.5 mm + 0.4 ppm Hz 3 mm + 0.5 ppm / V 5 mm + 0.5 ppm
Code differential	DGPS / RTCM	Typically 25 cm
COMMUNICATIONS		
Communication ports	Lemo Bluetooth®	USB and RS232 serial Bluetooth® v2.1 + EDR, class 1.5
Communication protocols	RTK data protocols NMEA output Network RTK	Leica, Leica 4G, CMR, CMR+, RTCM 2.2, 2.3, 3.0, 3.1, 3.2 MSM NMEA 0183 v4.00 and Leica proprietary VRS, FKP, iMAX, MAC (RTCM SC 104)
Built-in data links	GSM / UMTS / LTE phone modem Radio modem	Fully integrated, external antenna Fully integrated, receive and transmit, external antenna 403 - 470 MHz, 1 W output power, up to 28800 bps over air
External data links		GSM / GPRS / UMTS / LTE / CDMA and UHF / VHF modem
GENERAL		
Field controller and software	Leica Captivate software	Leica CS20 field controller, Leica CS35 tablet
User interface	Buttons and LEDs Web server	On / Off and Function button, 8 status LEDs Full status information and configuration options
Data recording	Storage Data type and recording rate	Removable SD card, 8 GB Leica GNSS raw data and RINEX data at up to 20 Hz
Power management	Internal power supply External power supply Operation time ⁴	Exchangeable Li-Ion battery (2.8 Ah / 11.1 V) Nominal 12 V DC, range 10.5 - 26.4 V DC 7h receiving (Rx) data with internal radio, 5 h transmitting (Tx) data with internal radio, 6 h Rx/Tx data with internal phone modem
Weight and dimensions	Weight Dimensions	1.20 kg / 3.50 kg standard RTK rover setup on pole 173 mm x 173 mm x 108 mm
Environmental	Temperature Drop Proof against water, sand and dust Vibration Humidity Functional shock	-40 to 65°C operating, -40 to 85°C storage Withstands topple over from a 2 m survey pole onto hard surfaces IP66 / IP68 (IEC60529 / MIL STD 810G CHG-1 510.6 I / MIL STD 810G CHG-1 506.6 II / MIL STD 810G CHG-1 512.6 I) Withstands strong vibration (ISO9022-36-08 / MIL STD 810G 514.6 Cat.24) 95% (ISO9022-13-06 / ISO9022-12-04 / MIL STD 810G CHG-1 507.6 II) 40 g / 15 to 23 msec (MIL STD 810G 516.6 I)

LEICA GS18 T GNSS RTK ROVER	PERFORMANCE	UNLIMITED
SUPPORTED GNSS SYSTEMS	✓	✓
Multi-frequency	✓ / . / . / . / .	✓ / ✓ / ✓ / ✓ / ✓ / ✓
GPS / GLONASS / Galileo / BeiDou / QZSS		
SUPPORTED GNSS SYSTEMS	✓	✓
DGPS/RTCM, RTK Unlimited, Network RTK	. / .	✓ / .
SmartLink fill / SmartLink		
POSITION UPDATE & DATA RECORDING	✓ / ✓	✓ / ✓
5 Hz / 20 Hz positioning	✓ / . / .	✓ / ✓ / ✓
Raw data / RINEX data logging / NMEA out		
ADDITIONAL FEATURES	✓	✓
Tilt compensation	✓	✓
RTK reference station functionality	✓ / .	✓ / .
LTE Phone / UHF Radio (receive & transmit) modem		

¹ Measurement precision, accuracy, reliability and time for initialisation are dependent upon various factors including number of satellites, observation time, atmospheric conditions, multipath etc. Figures quoted assume normal to favourable conditions. A full BeiDou and Galileo constellation will further increase measurement performance and accuracy.

² Believe to comply, but subject to availability of BeiDou ICD and Galileo commercial service definition. Glonass L3, BeiDou B3, QZSS L6 and Galileo E6 will be provided through future firmware upgrade.

³ Support of NavIC L5 is incorporated and will be provided through future firmware upgrade.

⁴ Might vary with temperature, age of battery, transmit power of data link device.

Technical Specification for GNSS Receiver

Specification	Specification Name	Bid Requirement
RECEIVER POSITIONING PERFORMANCE & ACCURACY (RMS)	Differential GPS (DGPS) Accuracy - (Horizontal)	25 cm + 1 ppm Or Better
	Differential GPS (DGPS) Accuracy - (Vertical)	50 cm + 1 ppm Or Better
	High Precision / Long Observation Static Accuracy - Horizontal	3 mm + 0.1 ppm or better
	High Precision / Long Observation Static Accuracy - (Vertical)	3.5 mm + 0.4 ppm or better
	Static and Fast Static Accuracy - (Horizontal)	3 mm + 0.5 ppm or better
	Static and Fast Static Accuracy - (Vertical)	5 mm + 0.5 ppm or better
	Real-Time Kinematic (RTK) Accuracy - (Horizontal)	8 mm + 1 ppm or better
	Real-Time Kinematic (RTK) Accuracy - (Vertical)	15 mm + 1 ppm or better
	Stand alone L-band Accuracy via satellite based correction (95%) - (Horizontal)	Less than 5 cm or better
	Stand alone L-band Accuracy via satellite based correction (95%) - (Vertical)	Less than 10 cm or better
RECEIVER FEATURES & FUNCTIONS	Receiver Type	Base, Rover, Base compatible to other makes of Base/Rover, Rover compatible to other makes of Base/Rover
	Interchangeable / Configurable as Base or Rover	Yes
	Base Station able to serve multiple Rovers	Yes
	Provision to Indicate the Connectivity with Base Station	Yes
	Mode of Processing	Static & Fast Static, RTK with Single Base, RTK Correction, RTK with Network RTK Correction
	RTK processing	Any value
	Built-in stand alone L-band facility and satellite based correction	Yes
	Receiver Antenna	Integrated
	Multi-path Mitigation for Receiver Antenna	Any value
	Post Processing Software with free updates upto Warranty period inclusive in the scope of supply	Yes
	Compatible to Electronic Total Station (ETS) of Other Makes	Yes

	All Control functions available with receiver	Yes
RECEIVER TRACKING CAPABILITIES	Base Line Processing Range (Static)	500.0, 1000.0 or better
	Number of Channels	555, 672 or better
	Initialization Time	Any value
	Maximum Position Update Rate	20.0 or better
	Tilt Sensor	Yes
	Position Acquisition Method	Any value
GNSS TRACKING SIGNALS (RECEIVER)	GPS Tracking Signals	L1, L2, L5
	GLONASS Tracking Signals	L1, L2, L3
	NAVIC Tracking Signals	L5
	Galileo Tracking Signals	E1, E5 a, E5 b, E5 ab, E6
	BeiDou Tracking Signals	B1, B2, B3
	L-band tracking Signals	Terrastar, RTX, Omnistar
	SBAS Support	GAGAN, WAAS, EGNOS, MSAS, QZSS
	Subscription license for satellite based correction, inclusive in the scope of supply	Yes
	If Yes, Validity of License period	0, 1, 2, 3, 4, 5, 6, 7, 8
COMMUNICATIONS	Communication Ports	USB, Bluetooth/WLAN
	Communication Protocols	RTCM V3, Leica, Leica 4G, CMR or better
	Phone Modem Antenna	Internal Antenna
	Radio Modem Antenna	Internal
	Built-in Data Links - Phone & Radio Modems	4G LTE or better
	External Data Links Supported	*
	Interface & Communications	Network RTK Corrections from VRS, FKP and mac Solution through NTRIP Protocol
	Data Storage Medium	Internal
RAM / STORAGE	Internal Storage Capacity	4GB, 6GB, 8GB, 16GB or better
	External / Removable Storage Slot	Micro SD, SDHC, USB
	External / Removable Storage Card Capacity supplied with Receiver - inclusive in the scope of supply	8, 16, 32 Or higher
	Radio Power	0-50
GENERIC	Weight of Receiver (including Battery)	Any value

BATTERY	Power Source	Internal – Rechargeable Battery
	Supports 12 V External Battery	Yes
	Chemistry of Battery	Li-ion
	Battery Back Up Time	7 or better
	Number of Batteries required for OPERATION	1
	Number of Batteries Supplied	2 Or higher
	Battery Chargers for Rechargeable Batteries (inclusive in the scope of supply)	Yes
	Hot - Swappable b/w External and Internal Power Sources without affecting Data Recording	Yes
ENVIRONMENTAL PARAMETERS	Minimum Operating Temperature	-10, -15, -20, -25, -30, -40 Or higher
	Maximum Operating Temperature	65, 70, 75 Or higher
	Minimum Storage Temperature	-10, -15, -20, -25, -30, -40 Or higher
	Maximum Storage Temperature	70, 75 Or higher
	Non-Condensing Humidity, Rh	95% Or higher
	Ingress Protection	IP68 or higher
	Maximum operational Altitude	Any value
WARRANTY / TRAINING	Warranty	2, 3 Or higher
	Training Type	At Buyer's Premises
	Training Period	3 days
TEST REPORTS	Compliance to Dust test	MIL-STD-810 F, MILSTD-810 G, IEC-60529 or Equivalent Specn
	Compliance to Water Intrusion test	MIL-STD-810 F, MILSTD-810 G, IEC-60529 or Equivalent Specn
	Compliance to Vibration / Shock test	MIL-STD-810 F, MILSTD-810 G
Any Specific technical specification	Tilt Sensor	IMU Based tilt sensor must be available with Rover
	Post Processing Software	1 No. GNSS Post Processing software must be provided

Technical Specification for Controller for GNSS Rover

Specification	Specification Name	Bid Requirement (Allowed Values)
CONTROLLER SOFTWARE AND FEATURES	Field Software with free updates up to warranty period inclusive in the scope of supply Controller	Yes
	Operating System	Windows
	OS Version	7 and above
	Allow Configurable Survey Style for Static Mode	Yes
	Allow Configurable Survey Style for Post - Processed Kinematic (PPK) Mode	Yes
	Allow Configurable Survey Style for Real - Time Kinematic (RTK) Mode	Yes
	Allow Configurable Survey Style for Standalone L- band Processing mode and and satellite based correction	Yes
	Capable of Multitasking so that Multiple Operations can be Opened at a time, eg, COGO, Stakeout, Point Manager etc	Yes
	Datum and Projection Support and Support Grid Coordinates	Yes
	Graphical Support to Visualize Work while Working	Yes
	"Support Feature Coding with Attributes for GIS Data Collection, 3D Control coding possible for automatic plot creation "	Yes
	Support COGO Functionality and Able to Key in Lines, Sub Divide Lines and Creating Parallel Lines for Staking out Purpose	Yes
	User Friendly and Menu Driven for Easy Field Operation	Yes
	Able to Store GNSS Data Collected by the RTK System	Yes
	Able to email Data Collected in the Field in case Facility is Available and Able to Import & Export User Configurable Files for Effective GIS Support	Yes
INTEGRATED PERIPHERALS/ CONNECTIVITY	"Support Graphical Stakeout, for Points, Lines and DTM as well and Able to Perform Real Time"	Yes
	Able to Accept Background Maps in CAD Format	Yes
	Ability to Convert Grid to Ground and Vice Versa Conversion Onboard	Yes
	Camera	With
	Camera Capacity (MP)	5MP, 8MP or better
	Flash	Yes
	Integrated GPS	Any Value

	Integrated Compass	Yes
	Integrated Accelerometer	Yes
	Integrated Cellular modem	Yes
	SBAS Support	Yes
	Connectivity	Bluetooth / WLAN
RAM / STORAGE	Memory - RAM	2GB, 4GB, 6GB or higher
	Internal Storage Capacity	4 GB or higher
	External / Removable Storage Slot	MicroSD, USB
DISPLAY / KEYPAD	Type of Display	TFT
	Colour Display	Yes
	Touch Screen Display	Yes
	Sunlight-readable Display	Yes
	Display Resolution	WVGA or better
	Display Size (in inch)	5.0-5.9, 7.0-7.9 or better
BATTERY	Keyboard	Full Alphanumeric QWERTY Keyboard
	Power Source	Internal - Rechargeable Battery
	Chemistry of Battery	Li-ion
	Battery Back Up Time	8 Or higher
	Number of Batteries required for operation	1
	Number of Batteries Supplied	2 Or higher
OPERATING CONDITIONS	Battery Charger for Rechargeable Batteries inclusive in the scope of supply	Yes
	Minimum Operating Temperature	-20, -30, -40 Or lower
	Maximum Operating Temperature	60, 70, 75 Or higher
	Non-Condensing Humidity, Rh	90% Or higher
	Ingress Protection	IP68 Or higher
WARRANTY / TRAINING	Warranty	2, 3 or higher
	Training Type	At Buyer's Premises
	Training Period	3 days
	Compliance to Dust test	MIL-STD-810 F, MILSTD-810 G, IEC-60529 or Equivalent Specn

Leica Nova MS60

Data sheet

Nova



When you are out in the field, you need a fast and versatile instrument. Leica Nova MS60 is the world's first MultiStation, helping you perform all required surveying tasks with just one instrument. The MS60 can be used as a **total station without any compromise** and offers the option to scan with a speed of up **30,000 points per second**. Benefit from **digital imaging** and **GNSS connectivity**. Master your projects by performing point cloud analysis directly in the field – such as flatness analysis or as-built checks in the **Inspect Surface** app – and by automatically measuring your instrument height with the **AutoHeight** feature. Seamlessly transfer your data with **Leica Exchange** into **Leica Infinity** to manage, process, analyse and quality check it.

LEICA NOVA MS60 MULTISTATION: MASTER YOUR PROJECTS WITH THE ULTIMATE ALL-ROUNDER

- **Surfaces and volumes in construction and mining:** spoil heaps and stock piles, DTM creation and checking surfaces, material thickness, blast faces and ground levels.
- **Analysis of complex structures and objects within plant, marine and utility projects:** dimensional control, as-built and record keeping.
- **Measuring buildings and structures:** bridge condition/clearance analysis, BIM and as-built.
- **Façade, elevations and heritage work:** creation of traditional façade deliverables, 3D models and photographic documentation.
- **Traditional topographic surveys for surveying and mapping:** creation of traditional deliverables like 2D maps or 3D models.
- **Enhanced prism monitoring with scanning:** 24/7 automatic mm-level measurements of surfaces like roads, buildings, dams and tunnels with real-time messages in case of detected movements.

- when it has to be right

Leica Nova MS60 MultiStation

ANGLE MEASUREMENT

Accuracy ¹ Hz and V	■ Absolute, continuous, quadruple	1" (0.3 mgon)
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DISTANCE MEASUREMENT

Range ² / Accuracy / Measurement time	■ Prism (GPR1, GPH1P) ^{2,3,5} ■ Single (any surface) ^{2,4,5,6}	1.5m to >10,000m / 1mm + 1.5ppm / typ. 1.5s 1.5m to 2,000m / 2mm + 2ppm / typ. 1.5s
Measurement technology	Wave Form Digitising	Coaxial, visible red laser, dot size 8mm x 20mm @ 50m

SCANNING

Scan Rate / Maximum Scan Speed	30.000 Hz	30,000 points per second
Max. Range ⁷ / Range noise (1 sigma)	■ 30 kHz mode ■ 8 kHz mode ■ 1 kHz mode ■ 1 Hz mode	60m / 3mm @ 50m 150m / 1.5mm @ 50m 300m / 1.0mm @ 50m 1,000m / 0.6mm @ 50m
Scan data	3D point cloud including true colour, intensity and signal-to-noise data	
Scan duration	■ Full dome scan 400gon x 155gon ■ Band Scan 400gon x 50gon	Resolution 50mm @ 15m, duration 12mins Resolution 12.5mm @ 50m, duration 45mins

IMAGING

Overview and telescope camera	■ Resolution / Frame rate ■ Field of view (overview / telescope)	5 MPx CMOS / up to 20 fps 19.4° / 1.5°
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MOTORISATION

Direct drives based on Piezo technology	Rotation speed / Time to change face	Maximum 400 gon (360°) per s / typically 2.9s
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AUTOMATIC AIMING - ATRplus

Target aiming range ² / Target locking range ²	■ Circular prism (GPR1, GPH1P) ■ 360° prism (GRZ4, GRZ122)	1,500m / 1,000m 1,000m / 1,000m
Accuracy ^{1,2} / Measurement time	ATRplus angle accuracy Hz, V	1" (0.3 mgon) / typically 2.5s

POWERSEARCH

Range / Search time	360° prism (GRZ4, GRZ122)	300m / typically 5s
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GUIDE LIGHT (EGL)

Working range / Accuracy	5–150m / typically 5cm @ 100m	
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GENERAL

Operating system / Field software	Windows EC7 / Leica Captivate and its apps, supports onsite and realtime decisions	
Processor	TI OMAP4430 1GHz Dual-core ARM® Cortex™- A9 MPCore™	
Autofocus telescope	Magnification / Focus Range	30 x / 1.7m to infinity
AutoHeight Module	■ Distance accuracy ■ Distance range	1.0 mm (1 Sigma) 0.7 m to 2.7 m
Display and keyboard	5" (inch), WVGA, colour, touch, both faces	37 keys, illumination
Operation	3x endless drives, 1x Servofocus drive, 2x Autofocus keys, user-definable SmartKey	
Power management	Exchangeable Lithium-Ion battery	Up to 9h, internal charging capability
Data storage	Internal memory / Memory card	2 GB / SD card 1 GB or 8 GB
Interfaces	RS232, USB, Bluetooth®, WLAN	
Weight	MultiStation including battery	7.7kg
Environmental specifications	■ Working temperature range ■ Dust & Water (IEC 60529) / Blowing rain ■ Humidity	-20°C to +50°C IP65 / MIL-STD-810G, Methods 506.5 I and 507.5 95%, non-condensing

¹ Standard deviation ISO 17123-3

² Overcast, no haze, visibility about 40km, no heat shimmer

³ 1.5m to 3,000m for 360° prisms (GRZ4, GRZ122)

⁴ Object in shade, sky overcast, Kodak Gray Card (90% reflective)

⁵ Standard deviation ISO 17123-4

⁶ Distance > 500m: Accuracy 4mm + 2ppm, Measurement time typically 4s

⁷ Object in shade, sky overcast, uninterrupted visibility, static target object, Kodak Gray Card (90% reflective)



Laser radiation, avoid direct eye exposure.
Class 3R laser product in accordance with IEC 60825-1:2014.

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Integrate with LOC8 – Lock & Locate

For more information visit: leica-geosystems.com/LOC8

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TECHNICAL SPECIFICATIONS FOR TOTAL STATION CUM SCANNER		
Sr No.	Description	Specification
1	ANGLE MEASUREMENT	
(A)	Method	Absolute, continuous
(B)	Accuracy Hz & V	1" (0.3 mgon)
2	DISTANCE MEASUREMENT	
(A)	Range (with prism)	1.5 m to >10000 m
(B)	Range (with non-prism)	1.5 m to 2000 m
(C)	Accuracy	1 mm + 1.5 ppm
(D)	Accuracy (with non-prism)	2 mm + 2 ppm
(E)	Laser dot size	At 50 m. : 8 mm x 20 mm
(F)	Measurement Technology	Wave Form Digitising
(G)	Type	Coaxial, visible red laser
3	SCANNING	
(A)	Scan Rate / Maxi. Scan Speed	30.000 Hz / 30000 points per sec.
(B)	Scan Data	3D point cloud including true colour, intensity and signal-to-noise data
(C)	Scan Duration	
	(1) Full dome scan : 400gon x 155gon	Resolution 50mm @ 15m, duration 12 min
	(2) Band Scan : 400gpn x 50gon	Resolution 12.5mm @ 50m, duration 45 min
4	IMAGING	
	Overview and Telescopic Camera	
(A)	Sensor	5 Mpixel CMOS sensor
(B)	Field of view (overview)	19.4 degree
(C)	Field of view (telescopic)	1.5 degree
(D)	Frame rate	Up to 20 frames per second
5	MOTORISATION	
(A)	Drive Technology	Direct drives based on Piezo technology
(B)	Rotation speed / Time to change Face	max. 400gon (360 degree) per sec. / typ. 2.9 sec.
6	AUTOMATIC AIMING (ATR)	
(A)	Range (ATR mode)	1500 m. with Circular Prism and 1000 m. with 360° prism
(B)	Range (Lock mode)	1000 m. with Circular and 360° prism
(C)	ATR angular accuracy / Measurement time	1" (0.3 mgon) / typ. 2.5 sec.
7	POWERSEARCH	
(A)	Range / search time	300 m / typ. 5 sec.
8	GUIDE LIGHT (EGL)	

(A)	Working range	5 to 150 m.
(B)	Accuracy	Typ. 5 cm. at 100 m.
9	GENERAL	
(A)	Autofocus telescope	Available
	Magnification / Focus Range	30X / 1.7 m. to infinity
(B)	Operating System	Windows EC7
(C)	Processor	1GHz Dual Core
(D)	Display and Keyboard	5 inch, WVGA, Colour, touch, both faces, 37 keys, illumination
E	Keyboard operation	3x endless drives, 1x Servofocus drive, 2x Autofocus keys, User-definable Smartkey
(F)	AutoHeight Module	Measure height of instrument directly without height tape
a.	Distance Accuracy	1.0 mm
b.	Distance Range	0.7 m. to 2.7 m.
(G)	Power Management	
a.	Battery type	Exchangeable Lithium-ion battery with internal charging capability
b.	Operating time	Upto 9 hrs.
(H)	Data Storage	Internal memory 2 GB Memory card as SD card, expandable upto 32GB
(I)	Interfaces	RS232, USB, Bluetooth, WLAN
(J)	Weight	7.7 kg (inc. internal battery)
(K)	Environmental specifications	
a.	Working temperature range	-20 to 50 degree C
b.	Dust and water	IP65
c.	Humidity	95%, non-condensing
10	Office Data Processing Software	
a.	Data import and Export	Support OEM proprietary data formats including ASCII, RINEX, DXF/DWG, SHP, PTS, LAS/LAZ
b.	Data Manager	Able to create points, lines, areas from point cloud, images and from field collected data. Field to office workflows including Survey, Stakeout data reporting and processing results. COGO functionality. Create features like Points, lines, Splines, Arcs & Areas. Features like creating code table, import/export codelists, copy features & layers from CAD
c.	Total Station Processing Features	The software should be able to perform Traverse adjustment and export traverse adjustment reports, Updating stations,
d.	Surface and Scanning Option	Create full 3D surface computation from individual points and point cloud. To organise the particular or individual scans the software can create multiple scan groups. Precise Volume computation with methods of Stockpile, To point/height, surface to surface. Create Surface report, Volume reports, Cut-fill map report, Comparison map report

Performance

Desktop

Chipset	Intel C422
Processor	Intel Xeon W-2235
CPU Socket	LGA 2066 (R4)
CPU	3.8 to 4.6 GHz 6-Core
L3 Cache	8.25 MB
Graphics Type	Dedicated
GPU	NVIDIA Quadro P4000 with 8 GB GDDR5 VRAM
Memory Type	2933 MHz DDR4
Total Installed Memory	16 GB
Memory Configuration	2 x 8 GB (User-Replaceable)
Maximum Memory Capacity	512 GB
Memory Slot Type	288-Pin DIMM
Memory Slots	8 (6 Available)
Buffered Memory	Yes (RDIMM)
ECC Memory	Yes

Storage and Expansion

Total Drive Bays	2 x 2.5/3.5" (Internal) 2 x 5.25" (External)
SSD Slots	1 x M.2 2280 PCIe (Unspecified Interface) x4 (In Use) 1 x M.2 2280 PCIe (Unspecified Interface) x4

(Available)

Total Installed Capacity	2.512 TB
Solid State Storage	1 x 512 GB M.2 NVMe PCIe
Hard Disk Storage	1 x 2 TB 3.5" SATA (7200 rpm)
PCI Expansion	2 x PCIe 3.0 x16 [x16 Mechanical] 1 x PCIe 3.0 x8 [x16 Mechanical] 2 x PCIe 3.0 x4 [x16 Mechanical]
Optical Drive	8x-Speed Tray-Load SuperMulti DVD Burner with Dual Layer Support

I/O

Ports	10 x USB-A 3.0 / 3.1/3.2 Gen 1 2 x PS/2
Display	3 x DisplayPort 1.4
Audio I/O	1 x 1/8" / 3.5 mm Headphone/Microphone Input/Output 1 x 1/8" / 3.5 mm Line Input 1 x 1/8" / 3.5 mm Line Output
Built-In Speakers	None
Built-In Microphones	None
Media/Memory Card Slot	None

Communications

Ethernet	2 x RJ45 (Gigabit)
Wi-Fi	None
Bluetooth	None