

Specifications for an Electronic Robotic Total Station

The following specification outlines the accuracy and performance characteristics of a robotic total station. The robotic total station must be a completely cable free solution, including batteries, and allow for the quick transfer of data from the total station via a standard USB thumb drive. Additionally the robotic system must utilize communications from the instrument to the remote data collector via a long range wireless communication technology referred to as Longlink. Lastly, in order to locate and maintain future software versions the instrument must provide an Anti-Theft technology that is integrated within the total station. This protective technology must also locate the instrument and provide remote firmware updates and reminders.

Technical Specification for performance:

Angle Accuracy: '3 Arc-Seconds

Coaxial Red laser pointer

Telescope resolving power: 2.5"

Magnification of Telescope: 30X

Rotation Speed: 85 degree/Second

Auto-Tracking Speed: 20 degree/Second

Weight: Less than 15.2lbs

Tilt Compensation: Dual Axis up to +/- 6 minutes of tilt

Distance Measurements:

EDM Prism Range 6000mtrs

EDM Prism Accuracy 1.5mm + 2ppm

Non-Prism Range: 1000mtrs

Non-Prism Accuracy: 2mm+2ppm (0.3-200mtr)

Measurement Time: Fine Mode – 0.9 Seconds

Rapid Mode – 0.6 Seconds

Tracking Mode – 0.4 Seconds

Communications: Via LongLink (Secure BT Version 1.0) 600mtr Range to remote control system

Security: TSshield Advanced Security and maintenance on board

Display: 3.5inch - Color Touch Screen TFT 240 X 320 Pixels QVGA Display

Keyboard: 25 Keys with Illumination

Interface: USB V2.0 Type A and mini B

On Board Software: Modern User Interface Software installed on board the robotic total station

Battery: Up to 4 Hours per internal battery

Environmental Protection: IP65 Rating

Operating Temperature: -4 F to + 122 F

Remote Control System: On demand remote for rapid prism search via built in directional sensor.

Remote control Range: Far mode from 2 to 300mtr Range – Measurement time 15 seconds

Dealer: Local technical support and full repair capabilities must be available from a dealer within 100 miles of the division office.

Training: Up to one day of on-site training must be provided by the local dealer. The trainer must be a qualified, factory certified trainer with a minimum of 5+ years of survey training experience.

Equipment List:

Qty – 1 Topcon PS103 Robotic Total Station with hard case

Qty – 2 On board Li-Ion batteries

Qty – 1 Dual Charger

Qty – 1 Hard case with shoulder straps

Qty – 1 Lens Cover

Qty – 1 Anti-Rotation Tribrach

Qty – 1 USB Thumb Drive

Qty – 1 On Board Magnet Survey Software

Qty – 1 360 Degree Prism with protective cover sleeve

Qty – 1 8.5ft Graphite Telescopic Prism Pole with height set pin

Qty – 1 Heavy Duty Wood Tripod

Qty – 1 Tesla Handheld Data Collector with Magnet Field Software (See Separate Specs for Tesla)

Surveying Data Collector BID SPECIFICATIONS

I. Introduction:

The following specification defines the requirement for the purchase of a handheld field controller. For the purpose of this document this shall be referred to as a field data collector. It is intended to provide the vendor with both general and specific system requirements, however is not intended to be all-inclusive or specific to any particular make or model of system. Each vendor may consider this to be a minimum specification and should formulate a quote for a system that meets or exceeds these requirements.

II. General System Hardware Requirements:

The proposed system must:

- Operating System must be Windows Mobile Version 6.5.3 Professional
- Must have an integrated 3.2 Megapixel camera with autofocus.
- Must have a processor speed of 806MHz or higher.
- Must have a microprocessor of PXA320 or higher.
- The unit must be configurable with a GSM internal modem.
- Battery, Up to 16 hours operating time – recharging time 2 to 4 hours
- The unit must have 256Mb RAM, 4Gb flash storage.
- The unit must have built-in Bluetooth Version 2.0 + EDR, Class 1 and Wi-Fi technology.
- The unit must have a built-in L1 antenna on handheld for 3 to 5 -Meter applications.
- The Keypad must have 15 control buttons and 5 way navigation button and backlit keys
- The unit must have a 5.7” VGA LCD color touchscreen display, with a built-in magnetic compass.
- Be IP-67 waterproof and shock resistant to a drop of 1.2 meter onto a concrete surface.
- Support commonly available SDHC™ 32GB memory media card technology for onboard data storage internal to the receiver housing.
- The unit must support internal cellular communications with a SIM™ card enabled internal modem that may operate as a primary or secondary mode of communications for the system. This cellular connection must support common IP protocols that will connect it via the internet to other receivers or to a network that supports networked base station correction technology.

III. System Software:

Field Controller Surveying Software:

The system shall be supplied with receiver utility software for operation on a standard office Windows Mobile platform. This software shall provide the user with the ability to manually control the receiver operation, set receiver parameters and system operation defaults, and manually configure receiver options.

Controller software Windows Mobile 6.5.3 operating system based controller field software must be provided with the Magnet Field Collection Software.

IV. Physical Hardware Specifications:

Dimensions not to exceed

Size W: 5.3" x 8.6" x 2.0"d(136mm x 220mmx 51mm)

Enclosure Magnesium Housing, IP-67 Waterproof

V. Environmental Specifications: Handheld

Operating Temperature: -30C° ~ +60C°

Operating with Camera: -10C° ~ 50C°

Storage Temp. -30C° ~ +71C°

Waterproof IP-67 waterproof/dustproof

Shock Resistance 1-meter pole drop to concrete surface

IX. Power Specifications:

Standard Battery: Intelligent Lithium-Ion, Rechargeable

2550mAh 7.4V (2)

Operating times

Battery usage: 16 hours

Battery charge time: 2 to 4 hours for full charge of 2 Lithium Ion battery with AC charger

VI. Memory & Recording:

Memory Environmentally protected, removable SDHC™ media card slot

Support of up to 32 GB SD™ card capacity standard

Logging Intervals: Selectable.

VII. Vendor Requirements:

Vendor Support

Vendor must have 800 toll free phone technical support available M-F 8am to 5pm central time. Vendor must have manufacturer certified repair center in house. No need to send to factory for repair. Vendor must provide onsite delivery of equipment with ½ day installation and training if needed.

VIII. Exceptions

Any exceptions to any of the physical, performance, core technology or accuracy specifications listed above shall be described fully on a separate sheet, and be attached to the bid submission. The Alabama Dept of Transportation reserves the right to eliminate any respondent if they fail to meet the required bid specifications as listed.